The Economics of Copyright, Parallel Imports and Piracy in the Music Recording Industry.

Theo Papadopoulos

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Declaration of Authenticity

I hereby certify that, unless otherwise stated, the work presented in my own and has not been submitted previously, in whole or in part, for any other academic award.

Theo Papadopoulos

Abstract

Australia has been at the forefront of trade-related copyright reform having, after almost a decade of debate and controversy, amended the import provisions of the *Copyright Act 1968* to allow parallel imports of sound recordings. The related issues of the exhaustion of copyright, parallel imports and international piracy, is a complex area of international law and economics, and highlights the interplay between competition policy, intellectual property law and trade policy.

We begin with an investigation of the economics of the music recording industry, encompassing the nature of demand and supply of sound recordings, profit maximising price strategies for a multi-product firm, and an investigation into the market structure and international distribution of sound recordings. This is followed by an investigation of the economics of copyright with respect to sound recordings and the evolution of international intellectual property rights law. This leads to a critical evaluation of the controversy surrounding the exhaustion of copyright and the case for copyright owner control over parallel imports.

We then develop a model of the market for sound recordings to investigate the income redistributive effects and welfare consequences of adopting the principle of international exhaustion. We demonstrate that parallel imports, by introducing intra-title competition, can undermine a strategy of international price discrimination and can be welfare enhancing for a nation like Australia that is a net-importer of sound recordings. The model is extended to analyse the contention that the removal of the prohibition on parallel import would cause an increase in the level of sound recording piracy.

Drawing on a review of literature on smuggling and piracy, we develop a theoretical model of international sound recording piracy. The determinants identified encompass both economic and institutional factors including, parallel imports, an affordability index (or price-earnings ratio), a nation's dependence on foreign repertoire, the strength of domestic IPR enforcement, the prevalence of informal (or black) markets, corruption in the civil service and membership to international copyright conventions. The sound recording piracy model is tested using cross-section data on sound recording piracy market shares for 84 countries. We show that the model is robust and compares favourably with other models of international piracy. The empirical model and the hypotheses examined are consistent with the predictions of our theoretical model.

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1. Introduction

As we move into the post-industrial information technology age, intellectual property has emerged as an important focus of economic policy in a range of areas including, international trade and competition policy. The economics and law of intellectual property (IP) presents a number of challenges for policy makers at both the national and international levels. Efforts made at the international level, through organisations such as the World Intellectual Property Organisation (WIPO) and World Trade Organisation (WTO), have attempted to introduce a more uniform treatment of trade in IP related products. Intellectual property regulation encompasses patents, trademarks, copyright and industrial designs. There are few modern industries that are not affected by IP regulation. The international harmonisation of regulation with respect to IP related trade inevitably imposes restrictions on national government policy-making (in convention member countries), and impacts upon the nature and direction of international trade across a broad range of industries and products.

One of the key controversies in the latter part of the 20th century relates to copyright owner control over the international distribution of copyright product. The inclusion of an importation right, in the bundle of exclusive rights bestowed by copyright law, provides copyright owners with greater control (market power) over the international distribution of copyright product. This enables copyright owners to partition the global market into national territories and implement territory specific pricing, marketing and promotion strategies. There exists considerable controversy over the economic and legal merit of an importation right and the timing of the exhaustion of copyright. This is a complex area of economic policy that encompasses IP regulation, trade policy and competition policy. To date there has been little attention given by economists to the trade restraining effects of intellectual property regulatory regimes and how these impact upon market conduct, international trade and national welfare.

> *This is a somewhat obscure area of economic policy making, partly because policy making and intellectual debate has largely been captured by the intellectual property law users and by producer interests. Economists have taken relatively little interest partly because of the complexity of the law and its surrounding mystique. (Fels, A., 1995:2)*

After many years of policy review and debate, Australia initiated a series of copyright law reforms that liberalised trade in specific copyright products. In 1998, the adoption of the principle of international exhaustion with respect to sound recordings saw the introduction of parallel imports, which can now be imported from anywhere in the world without first obtaining authorisation from the copyright owner or their local licensee. In the government's view, parallel imports would be pro-competitive and lower the domestic price of sound recordings, which where significantly higher (during the 1990s) than in comparable countries. This reform was introduced despite strong protests from a large number of domestic music industry organisations and businesses. At the international level, the U.S. (the world's largest exporter of sound recordings) threatened to take action against Australia for breaches of its international obligations as a WTO member. Record companies (distributors) and music publishers argued that parallel traders would free ride on pre-sales investments in marketing and promotion and, by focussing on successful sound recording titles, would cannibalise their profits. The argument followed that the introduction of parallel imports would lower investment in the local market resulting in decreased variety (new foreign title releases) and a reduction of investment in the development of local repertoire. Opponents to the reforms made dire predictions of the demise of the Australian music industry. One of the key concerns raised during the debate was the threat posed by piracy in a regulatory regime that permitted parallel imports. This concern is understandable given that piracy is perhaps the single most important threat to copyright owner revenues.

There exists very little international and domestic literature investigating the economics of the music industry. That which exists has not focussed on the potential distorting effects of intellectual property and copyright regimes on the distribution of sound recordings within global and national music markets. The issue of global market segmentation and international price discrimination in the music recording industry has attracted some attention in recent years. However, to date, there has been no theoretical or empirical analysis of the impact of copyright law reform and the debate surrounding sound recording parallel imports and sound recording piracy. Australia is one of only a handful of nations that has expressly adopted the principle of international exhaustion with respect to sound recordings. This provides a unique opportunity to investigate the economic consequences of this form of trade liberalisation and the income redistributive effects and welfare consequences on consumers, copyright owners and net-importers of copyright product.

A number of copyrights can co-exist in a single copy of a sound recording title, and each copyright might be owned by one or more parties, for example, the lyricist, composer, performing artist and/or record company. The financial and contractual relationship between these parties is somewhat complex, the understanding of which is a prerequisite to an economic analysis of parallel imports and piracy. In Chapter 2 an analysis of the economics of the music recording industry is undertaken. The chapter begins with an outline of the sound recording production process and the contractual relationships that exist between creators and performers of musical works and those firms (record companies and music publishers) that invest in its commercial application; namely, the creation of the sound recording. An outline of the somewhat unique financial arrangements arising from the multiple copyrights embodied in the sound recording is then presented, leading into an illustration of a typical recording company's cost structure. This analysis highlights the physical and intellectual nature of the product and how the practice of *recoupment* (deducting a range of production and marketing costs from artist royalties) impacts upon a record company's cost structure. The comparison of a typical record company's break-even sales volume, to the volume of sales at which the artist is "recouped", highlights the controversy surrounding the contractual and financial arrangements between record companies and performing artists.

This analysis forms the basis of an investigation into the nature of demand for sound recordings and the profit maximising pricing strategy for a multi-product firm operating in a relatively concentrated market that faces a stochastic demand function. Record companies cannot predict with any certainty, which of the numerous sound recording titles released per time period will be successful (profitable). The stochastic nature of demand for sound recordings exposes record companies to considerable uncertainty and risk. A model is developed to investigate the profit maximising price for new sound recording title releases in the presence of stochastic demand and monopoly control over an artist specific title. This leads into an investigation of market structure, in both a domestic and international context, and the impact of technological innovation on barriers to entry and competition. This analysis is presented to help explain the continuing domination of both national and global sound recording markets by a small number of large multinational record companies. The chapter concludes with an investigation of the international dimensions of the market for sound recordings and the evolution of international licensing and distribution networks. A schematic diagram

illustrates how parallel imports represent a competing distribution channel to those within which authorised distributors or licensees operate.

Chapter 3 presents an investigation of the economics of intellectual property and copyright, and outlines the exclusive commercial rights bestowed on songwriters, performers and producers of sound recordings. This is followed by an examination of the evolution of intellectual property right conventions and international law with respect to the exhaustion of copyright. This review of international copyright and intellectual property conventions includes an examination of the Berne Convention, the WIPO Copyright Treaty (WCT) and the Trade Related Intellectual Property Rights Agreement, including trade in counterfeit goods (TRIPS). Specifically, we investigate the treatment of the exhaustion of copyright within each of these international treaties to determine whether or not the adoption of national exhaustion by member states is mandated. The controversy surrounding the exhaustion of copyright is central to the debate over the legitimacy of parallel imports. A review of literature on the debate surrounding the competing principles of national versus international exhaustion and the economics of parallel imports more generally is presented. The chapter concludes with a critical analysis of the economic case for copyright owner control over the parallel importation of sound recordings. In particular, we investigate the key issues of free riding, monopoly power and price discrimination as causes of parallel imports. The issue of the detection of illicit copies as a justification for copyright owner control over parallel imports is left to Chapters 5 and 6, where a detailed analysis of the determinants of sound recording piracy is presented.

Chapter 4 presents a model of the market for sound recordings where an illustration of the welfare consequences of adopting the principle of international exhaustion, for a small net-importer like Australia, is presented. The model helps identify what constitutes a market, and provides clues as to the degree of market power enjoyed by producers and distributors of sound recordings and the prevailing competitive dynamics. This model also provides an insight into the income redistributive effects of the introduction of parallel imports, and the price and volume effects of the introduction of intra-title competition. This analysis is preceded by a review of the contemporary history of copyright reform in Australia, and includes a review of the (somewhat limited) Australian literature on this issue. The model is extended to provide a critical analysis of the contention that the introduction of parallel imports will result in an increase in sound recording piracy. The chapter concludes with

an analysis of the Australian market for sound recordings in the post-reform period, including the impact on domestic prices and competition in the wholesale distribution market.

Chapter 5 investigates the phenomenon of international sound recording piracy with a view to determining the relative importance of parallel imports in observed variations in cross-country piracy market shares. In the Australian debate over the introduction of parallel imports, the single most controversial issue was that of piracy. This chapter develops a theoretical model of sound recording piracy to help identify its key determinants. The chapter begins with a depiction of the nature of international sound recording piracy and efforts at the international level to address the problem. The development of a theoretical model of international sound recording piracy follows, drawing on a review of literature on smuggling and piracy. The model is presented in both a general and partial equilibrium framework, each highlighting different aspects of the phenomenon. While the general equilibrium model facilitates an investigation of the welfare consequences at the national level, the partial equilibrium model provides a more detailed analysis of the market for sound recordings in the presence of smuggling and piracy, and the possible strategic responses by copyright owners to protect their copyright assets and revenues. This is followed by the development of a model of the smuggling firm's decision-making process and an examination of the key factors that determine variations in expected profit between countries. An investigation of the nature of demand for pirate product is presented to help identify the determinants of demand for pirate in preference to legitimate sound recordings. The chapter concludes with an identification of the key determinants of sound recording piracy, drawing on the theoretical models developed therein. This forms the foundation for the development of an empirical model of sound recording piracy.

Chapter 6 presents an empirical model of international sound recording piracy, using variables suggested by our theoretical model, and those variables included in other empirical models of piracy. Using cross-section data of sound recording piracy market shares in 84 countries, we estimate the model (using both ordinary least squares and multinomial logistic estimation techniques) to assess the relative importance of a range of institutional and economic variables in explaining cross-country variations in sound recording piracy market shares. Previous studies of international piracy have focused on the role of international convention membership, economic development (as measured by GDP per capita) and domestic institutional support for IPR, in influencing

observed levels of piracy market share. While GDP per capita is a common measure of relative national wealth, an individual consumer's willingness and ability to buy is more closely related to product price and personal income. The ratio of legitimate product price to average hourly wages provides a measure of affordability and may provide some clues as to the strength of demand for pirate product distributed within informal or black markets. Moreover, for IP dependent nations, high piracy market shares can have a beneficial impact on the balance of trade with respect to copyright product. A nation's dependence on foreign IP may therefore help explain why some national governments officially outlaw piracy, but unofficially seem to tolerate it. Our empirical model seeks to measure the significance of these economic variables in influencing cross-country sound recording piracy market shares. This model differs from other models in its use of an affordability index and a nation's dependence on foreign copyright product (the balance of trade with respect to copyright license and royalty fees).

A final chapter provides a summary of the major findings and conclusions of each chapter. It includes a brief overview of the success of the empirical model of sound recording piracy in supporting the predictions of our theoretical model, and summarises the advances in the theoretical and empirical analysis of sound recording parallel imports and piracy.

2 The Economics of the Music Recording Industry

This chapter presents an investigation of the market for sound recordings and an outline of the process from creation to production, the stochastic nature of demand and product pricing for a multi-product record company. Firstly, we need to determine what constitutes a market for sound recordings, the vertical relationships that exist in distributing music product and the dynamics of competition at the national and international levels. This analysis will provide the necessary background knowledge of the economic and financial relationships within the music industry, to enable a more comprehensive analysis of the economics of music copyright, parallel imports and piracy.

2.1 The Market for Sound Recordings

2.1.1 Market definition

The music industry is a complex mix of interconnected sectors (markets) which includes publishing, recording, manufacturing, retailing, sound recording studios, artist management, merchandising, promoters, booking agents, performers and songwriters/composers. The term music industry is often used to describe all these sectors combined, and sometimes used in reference to just one sector, such as recording.

At the broadest level, a market may be defined as a group of firms selling goods or services that are close substitutes, to a group of consumers. To obtain an operationally more useful definition, we need to consider the geographical and other dimensions of a market. The consideration of geographical boundaries involves the identification of a common group of buyers for whose patronage a group of rival sellers are competing. For most sectors of the music industry, the geographical boundary is not regional or national but global. For example, performing artists residing in Sydney compete with each other for the patronage of concertgoers living in that city. For venue operators the geographical boundary of the live performance market is Sydney and the surrounding suburbs within reasonable commuting distance. Sydney based performers, on the other hand, must compete with both interstate and international performing artists who tour Sydney from time to time. These tours are income generating activities in there own right, but are also an important means of promoting the principal music industry product, the sound recording.

In this thesis the focus is on the market for sound recordings. The geographical dimension of the sound recording market is international. Record companies, both domestic and multinational, compete to sign performing artists to exclusive recording contracts. These sound recordings are then marketed and promoted by a record company nationally and/or internationally. It is important to note that there are a number of sub-markets within the sound recording market. There is little if any inter-genre competition between these sound recording sub-markets, which encompass recordings of many divergent musical styles, referred to as *genres*. For example, a sound recording of performing artist Shania Twain is not in direct competition with a sound recording of the rock band AC-DC, but might compete for the custom of consumers who have a preference for the genre of *Country* music. That is, the market for sound recordings is fragmented into a number of sub-markets defined by genres, serving consumers with quite distinct and divergent musical tastes. The larger record companies operate a number of *record labels* which often market and promote recordings within distinct music genres. The proliferation of record labels is partly a response to the existence of these genre specific sub-markets. There is often little, if any, competition between sound recordings of artists with distinct musical styles. Indeed, it can be argued that an artist specific sound recording is a unique product for which, in the view of dedicated fans, there is no substitute. In reality there is not *a* market for sound recordings but rather, a market for artist specific sound recording titles.

The task of identifying an operationally workable definition of the market for sound recordings is a complex one. Issues of the product, geographical and sub-market dimensions need to be carefully considered. Our definition will range from the global market for all sound recordings to the market for an artist specific sound recording, depending on the particular operational aspect of the market that we wish to analyse. In reality, the music industry is a complex network of interrelated businesses. For example, publishing companies are affiliated with record companies, which in turn, own music distribution companies. Many record companies and music publishers are part of a portfolio of businesses owned by global entertainment corporations, which have interests in motion pictures, sports, broadcasting and information (newspapers). The market structure of the music industry, as well as vertical and horizontal relationships, will be investigated more thoroughly in section 2.2. In the next section I investigate the production process more closely to help identify the key market participants and set the

scene for constructing the cost structure faced by a typical record company in producing a sound recording title. This analysis is necessary to facilitate a more comprehensive investigation of the economic impact of parallel imports on the various stakeholders.

2.1.2 The Creation and Production Process

A song (musical work) is the "raw material" of the music industry. It is the essential ingredient or input into the production of a sound recording: the recording of a specific performance of a musical work. A sound recording is the principal output or final product of the music industry. Other outputs include live performances, radio broadcasts, music videos and sheet music. The creation of the musical work itself incorporates two elements – the lyrics and the musical composition. Copyright in the lyrics and musical composition coexist and may be owned by one or more individuals (the creator/s). We use the term songwriter to collectively refer to the lyricist and composer. The role of the record company is to transform a musical work into a marketable commodity – the sound recording. The transformation of a musical work into a sound recording can be an expensive and high-risk endeavour.

> *For most CD/cassette releases, sales of over 250,000 units (all audio formats) are required for a record company to recoup its investment. Yet, over 80 percent of new releases never even reach the break-even point (Fink, 1996:94)*

A successful sound recording is, nonetheless, a valuable asset capable of generating tens (or even hundreds) of millions of dollars in revenue. Figure 2.1 provides a schematic illustration of the stages of production and the various entities involved in the process. The songwriter typically enters a contract with a music publisher that is responsible for the commercial application of the songwriter's musical work. Where the songwriter is also the performer, the publisher may assist in securing a recording contract with a record company. The publisher typically receives a percentage share of all publishing revenues generated from the commercial application of the musical work.

The publisher enters a contract with a record company to record the musical work, that is, to produce a sound recording. The record company invests a sum of money by

way of a recording advance paid to the artist or group of artists[1] performing the musical work. The artist, in collaboration with the record company, engages a record producer to record the musical work and produce a *master recording*. It is from the master recording (which is typically owned by the record company) that multiple copies of the sound recording are manufactured, either in CD pressing plants and/or audiocassette duplication plants.

Distributors are responsible for the timely delivery of the product to retailers, typically coinciding with a marketing and promotion campaign for the sound recording. The marketing campaign incorporates a range of activities and includes advertising, publicity, radio airplay, music TV and live performances. Attending concerts, listening to radio and watching music television programs are consumption activities in their own right and generate income for publishers, songwriters and performers alike. However, each of these outputs are intrinsically linked to the key output of the music industry, the sound recording, and form part of a coordinated marketing and promotion strategy designed to maximise record sales. Figure 2.1 is a simplification of the organisational structure of the music industry and focuses on the production and distribution of the sound recording. Other income generating activities, including live performances and merchandising, are not dealt with here.

The financial arrangements underpinning the schematic illustration of the production process are presented in Table 2.1 which presents the distribution of income from the sale of a CD sound recording. The record company is obliged, under contractual arrangements, to pay a royalty to the publisher and the performing artist for each copy of the sound recording sold. The royalty paid to the publisher is called the *mechanical royalty* and is paid in recognition of the songwriters copyright in the musical work embodied in the sound recording ($1.88 or 6% of the retail price). In addition, the recording contract with the performing artist obliges the record company to pay an artist royalty in recognition of the artist's copyright in the specific performance of the musical work embodied in the sound recording.

The manufacturing (duplication) cost is relatively insignificant at $1.00, and represents only 3% of the retail selling price. The government collects $3 per CD in sales tax (11%) while the retail margin is 28% of the retail price ($8.25). By far the

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[1] Hereafter we use the term artist to describe either a solo performing artist or a group of artists (band).

largest share of the retail price, 47% ($14.07), accrues to the record company. At first sight this might seem somewhat excessive, but closer inspection of the cost components demonstrate that record company profits may not be as lucrative as they may at first seem. Table 2.2 presents a more detailed decomposition of the cost components borne by a record company expressed as a percentage of the retail selling price. The total income accruing to the record company represents 40.5% of the retail selling price.[2] The combined activities of duplication (product cost), recording, publicity, marketing, distribution and administration represents 34.8% of the retial price. The balance of record company income, 5.7%, represents earnings before interest and taxation.[3]

The major discrepancies between Table 2.1 and 2.2 are the Manufacturing or duplication cost as 3% and 12.6% respectively. This may reflect considerable technological advances that have decreased the cost of duplication. The other significant difference is the record company share of retail price is 47% and 40.5% respectively. This can be explained by the inclusion of royalty advances in Table 2.2, which (as presented) suggests that artists receive 14.3% of the retail selling price. This is clearly not the case as record companies recoup certain costs from artist royalties. Artist royalties are a fixed percentage of the selling price or a fixed absolute value based on unit sales. The method for calculating royalties varies between countries. In Australia, for example, royalties are expressed as a percentage of the wholesale price (published price to dealer or PPD), while in the USA royalties are expressed in absolute values per unit sold. I now investigate the cost structure of a record company more closely.

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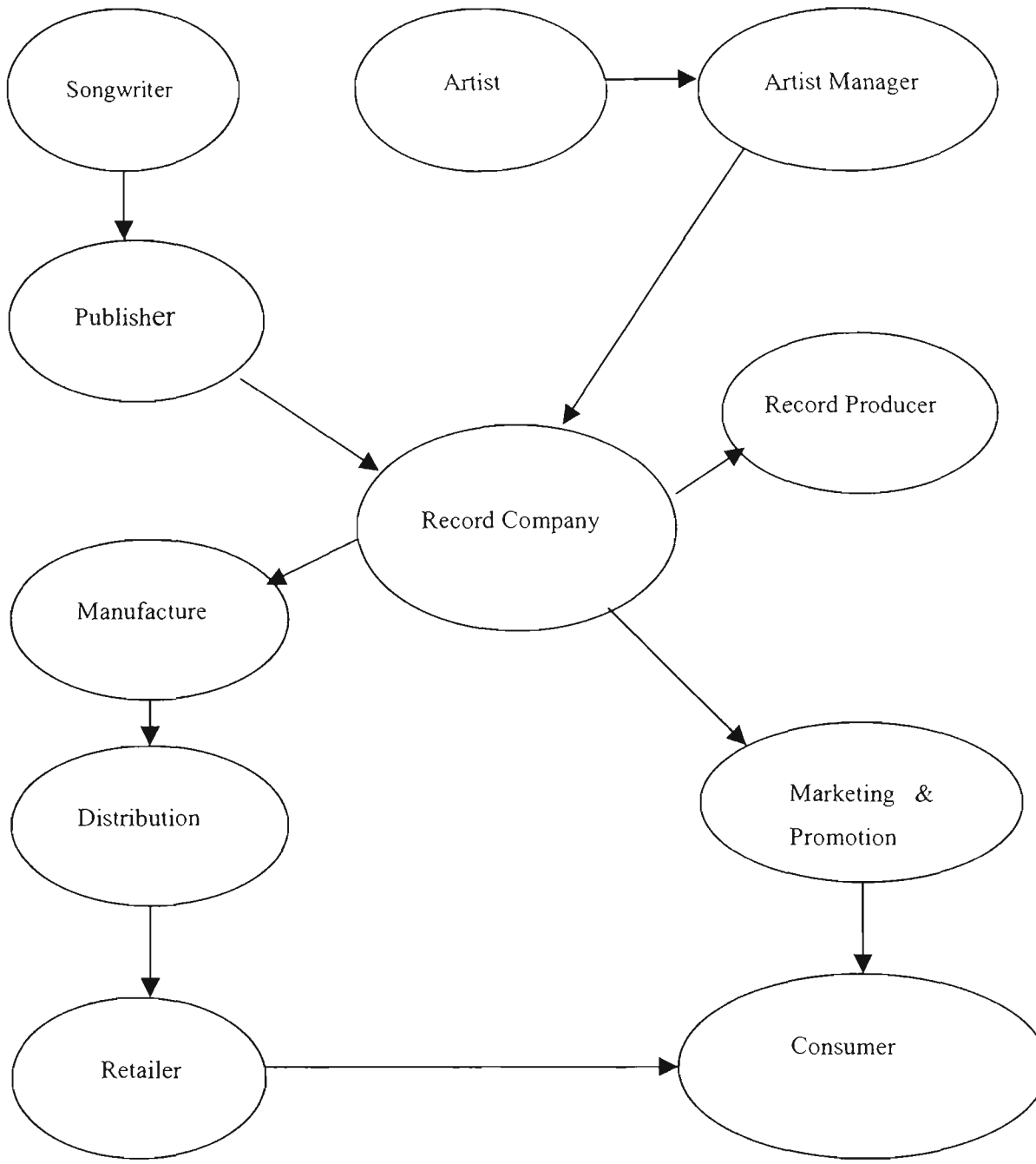
[2] Note that Figures in Table 2.1 refer to 1998 while Table 2.2 refers to 1989. This may account for the discrepancy of 47% versus 40.5% of the retail price in the two periods respectively.

[3] This represents 9.4% of the wholesale price.

Figure 2. 1 The Production Process



2.1.3 Physical and Intellectual Costs of Production

To understand the cost structure of the recording sector of the music industry we need to have a clear understanding of the nature of the product. Record companies are multi-product firms. Each artist's sound recording is unique, the production of which requires a substantial investment by the record company. The relevant quantity measure for a record company is therefore not simply the number of units sold but also the number of sound recording titles (referred to as *albums* or *records*) released per time period. Each title involves a distinct production activity in its own right, including an investment in research and development (R&D).

R&D is the responsibility of the Artist and Repertoire (A&R) department of a record company. The A&R activity is akin to the R&D activity in the pharmaceutical sector in which scientists conduct research to discover the next wonder drug. The role of A&R is to "discover" the next superstar artist, that will create one or more high-selling or *hit* records. While there exists an oversupply of artists, rivalry between record companies to sign specific artists thought to have superstar potential, can be quite intense. Negotiation between a record company and the artist manager culminates in a recording contract, the duration of which typically covers a number of sound recording title releases.

Investment opportunities (artists and their songs) are evaluated and ranked according to a set of financial criteria. The A&R department acts as a filtering system for the record company, short listing prospective investment opportunities and presenting these to management for consideration. Only a small number of artists secure recording contracts. The record company subsequently invests in the development and production of the artist's sound recording. Table 2.3 presents expenditure items for a sample title produced by an anonymous record company.[4] The financial strength of individual record companies varies considerably, as does the level of investment in the production and marketing of individual sound recordings. For illustrative purposes we

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[4] Executives of the U.S. offices of Universal, Warner, Sony, BMG and EMI provided Philips, (2001) with access to internal budgets and cost-analysis data for dozens of recording projects. Information was disclosed was subject to a confidentiality agreement to retain anonymity for both the record company and the artist. The data in Table 2.3 details actual expenditure by one of the major record companies for an artist specific sound recording title.

assume that the data contained in Table 2.3 depicts a typical sound recording title released by one of the multinational (major) record companies which is expected to be an international hit record. A total of $US5.55 million dollars, excluding manufacturing (duplication) and distribution costs, was invested in the development and marketing of this particular sound recording title. This represents a fixed (sunk) cost and exposes the record company to considerable financial risk.

The recording contract typically provides for an advance to cover the recording costs, $750,000 in our example, which is then recouped from future record sales by way of a deduction from artist royalties. In this way, the record company partially covers the risk arising from the unpredictable level of demand for a new sound recording title release. The record company also invests in the marketing and promotion of the artist's sound recording, which incorporates television and radio advertising, as well as a series of promotional performances. In our example, the record company invested $2 million in the marketing campaign for this title. Another $1.2 million was spent on retail product placement, tour support and other advertising measures during a six month advertising campaign. This followed the release of the title in an attempt to boost sales (Philips, 2001). It is widely acknowledged in the industry that radio airplay is a key determinant of sales. For this reason a further $800,000 was expended on *independent promoters*, whose job it is to lobby radio programmers to have a song from a new title added to a radio station's play list. Most recording contracts will require more than just recording related costs to be recouped from artist royalties. Recoupable items may include promotion, tour support, video production and independent promoters, and can vary from 50 to 100 percent of each expenditure item.[5]

There is considerable controversy over this aspect of recording contracts. Many artists, and their managers, believe that record companies use their considerable market power to exploit them and impose unfavourable contracts. Recoupment of marketing and promotion expenses is seen as shifting both the cost and risk of the investment onto the artist. Particularly vocal on this issue is the singer-songwriter Courtney Love who describes what she believes to be grossly unfair recording contracts as piracy. Her somewhat unusual definition of piracy is based on the view that these contracts amount to stealing artist's copyright and income. Love outlines a hypothetical scenario in which

[5] The recoupable items and values presented in Table 2.3 are hypothetical values as contract details were not provided for our sample title.

a band receives a 20% royalty (which she acknowledges is impossible to negotiate) on the sale of 1 million copies of a new sound recording title. Despite a $1 million dollar advance, most of which is spent on production of the master recording, each member of the band receives a relatively modest $45,000 income from the advance. The royalties that would otherwise have accrued to the band are used to recoup the initial advance and a range of marketing and promotional expenditures.

> *Story after story gets told about artists, some of them in their 60s and 70s, some of them authors of huge successful songs that we all enjoy, use and sing, living in total poverty, never having been paid anything. Not even having access to a union or to basic health care. Artists who have generated billions of dollars for an industry die broke and uncared for. And they're not actors or participators. They're rightful owners, originators and performers of original compositions. (Love, 2000:3)*

Record Companies, in their defence, claim that the contractual arrangements include the practice of recoupment, are necessary to cover the substantial risk associated with investing in a new artist and sound recording title. Indeed, the data released to The New York Times for the Philips article, was an attempt to demonstrate the size of the individual investments and the considerable financial risk borne by individual record companies. The mega-profits that artists point to (generated on a small percentage of titles) are necessary to recover the substantial losses incurred on the many titles that fail to break-even. Only around 10% of title releases are financially successful (Philips, 2001).

The size of the investment in the production and promotion of the sound recording will be commensurate with the projected sales of the specific title, and this will vary from artist to artist, and will also depend on the financial strength of the individual record company. With this cautionary note in mind, the expenditure data presented in Table 2.3 prove useful in evaluating a record company's cost structure and the sales required to break-even on an artist specific sound recording title. This analysis is useful in facilitating a better understanding of the physical and intellectual property characteristics of the product and the risk undertaken by artists and record companies alike. The familiar cost function for a typical firm is:

$$TC = TFC + TVC \qquad (2.1)$$

where *TC* is total cost, *TFC* is total fixed (or sunk) cost and *TVC* is total variable cost. For our record company, the *TVC* function is:

$$TVC = MPC(Q) + DIST(Q) + R_A(Q) + R_P(Q) \qquad (2.2)$$

where *MPC* is the marginal physical cost (that is, the manufacturing or duplication cost), *DIST* is the distribution cost, R_A is the artist royalty, R_P is the publishing (or mechanical) royalty and Q is the quantity of sound recordings manufactured. Substituting equation (2.2) into (2.1) we obtain:

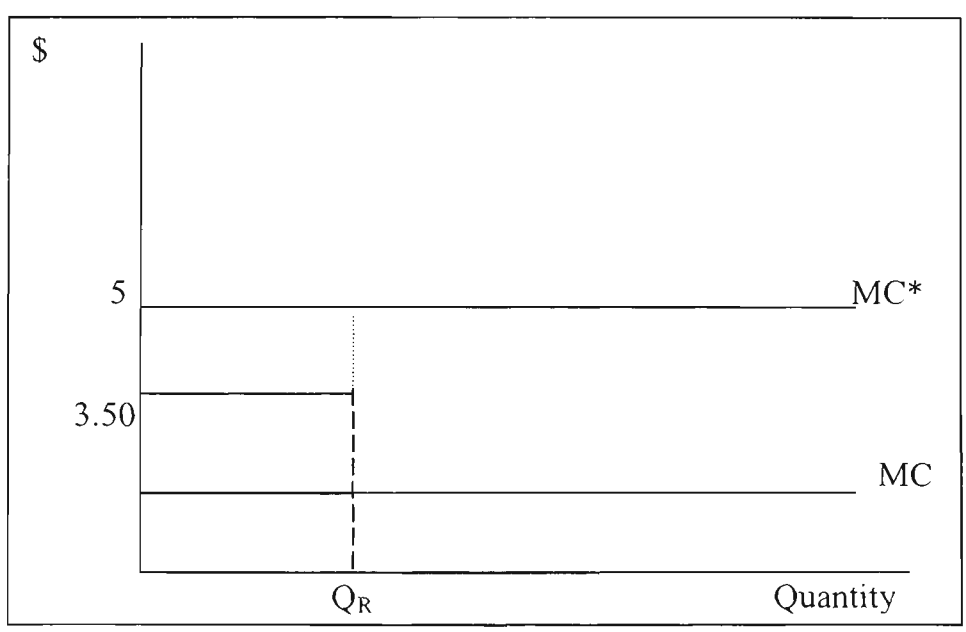
$$TC = TFC + MPC(Q) + DIST(Q) + R_A(Q) + R_P(Q) \qquad (2.3)$$

Differentiating equation (2.3) with respect to Q we obtain:

$$dTC/dQ = MPC + DIST + R_A + R_P \qquad (2.4)$$

Equation 2.4 depicts the record company's marginal cost of production *(dTC/dQ)* (which we represent with the symbol *MC*)* and clearly illustrates the physical component (*MPC* + *DIST*, represented by the symbol *MC*) and an intellectual property component ($R_A + R_P$) of the sound recording. These components of *MC** are presented in Figure 2.2.

Figure 2. 2 Marginal Cost of Production



To illustrate the break-even point for our representative record company, we assume a selling price (published price to the dealer or PPD) of $10. The firm's profit function is:

$$\Pi = P.Q - [TFC + (MC^*.Q)] \qquad (2.5)$$

where Π is economic profit and P is the selling price (PPD). Substituting data from Table 2.3we obtain:

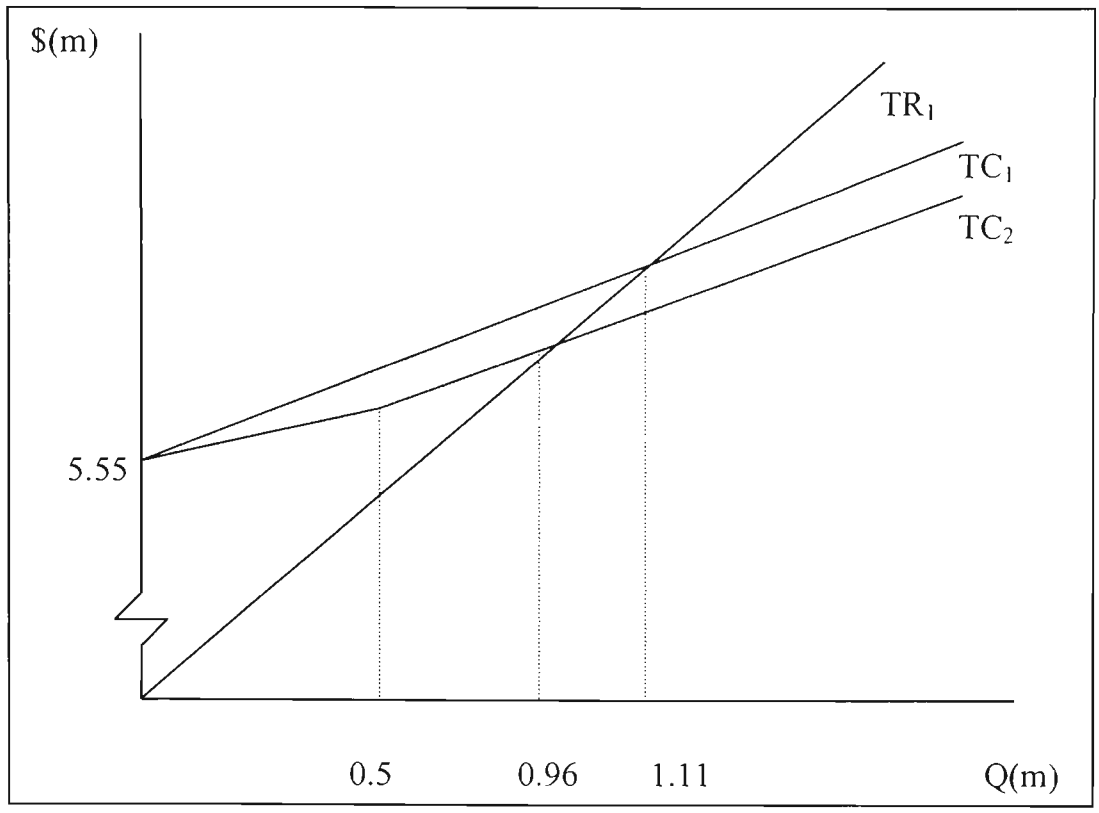
$$\Pi = 10.Q - [5{,}550{,}000 + 5(Q)] \qquad (2.6)$$

The break-even point occurs at a volume of sales where total revenue ($P.Q$) is equal to total cost ($TFC + MC^*.Q$). Break-even sales can be identified by solving for Q in equation 2.6, when $\Pi = 0$. Setting profit to zero and re-arranging (2.6) we obtain:

$$10Q = 5{,}550{,}000 + 5Q$$
$$5Q = 5{,}550{,}000$$
$$Q = 1{,}110{,}000$$

That is, the break-even volume of sales for our sample title is 1.11 million sound recordings. This is depicted diagrammatically in Figure 2.3 as the intersection of TR_1 and TC_1. This would appear to be the volume of sales required for the record company to recoup its investment. Any sales beyond this volume would generate a profit for the record company.

Figure 2. 3 Break-Even Sales: Scenario One



Recall, however, that the contractual arrangement with the artist enables the record company to recoup its investment in the production of the sound recording and other marketing and promotion costs from artist royalties.[6] To illustrate how the contractual arrangement regarding the sharing of investment costs (recoupment) between the artist and record company can impact upon their respective financial positions, we develop two scenarios. In scenario one only the recording advance is recouped, while in scenario two, the more likely scenario of additional recoupable expenses will be considered.

Scenario One

In this scenario, the artist is recouped at a sales volume of 500,000 units, derived by dividing the value of the recording advance by the value of the artist royalty (750,000/1.50 = 500,000). In effect, the record company, having already advanced

[6] Indeed, as already mentioned, many other expenses relating to promotional tours and even packaging, have often been included as recoupable items in recording contracts. For ease of illustration we assume for the moment that only the recording advance is recouped.

$750,000 to the performing artist, does not pay artist royalties on the first 500,000 sound recording sales. TC_1 in Figure 2.3 therefore overstates the actual cost function faced by the record company. The marginal cost of production up to a sales volume of 500,000 will be $3.50 ($MC^* - R_A$)[7]. For every unit sold beyond 500,000 the record company must pay the artist royalty. This produces a discontinuous marginal cost curve as depicted in Figure 2.2, where MC^* is equal to $3.50 up to Q_R (500,000 units), the sales volume at which the artist is recouped, and $5 thereafter. As a result, the total cost curve (TC_2) has a gradient of $MC^* - R_A$ up to 500,000 units and a gradient equal to MC^* thereafter. The point of inflection of TC_2 in Figure 2.3 coincides with the discontinuous section of the marginal cost curve and represents the volume of sales at which the artist is recouped. The practice of recoupment means that, in reality, the record company's break-even sales volume is not 1.11 million units, but instead occurs at a volume of sales equal to 960,000 units and coincides with the intersection of TR_1 and TC_2 in Figure 2.3.[8] As depicted the artist begins to earn royalty income (on each sale beyond 500,000 units) before the record company's break-even point (at 960,000 units).

Scenario Two

In this scenario, the contractual arrangement enables the record company to recoup the range of expenditure items as depicted in Table 2.3. The items listed in column 3 (recoupable) total $2.05 million. As such, the artist will remain unrecouped until the title sells ($2,050,000/1.5=) 1,366,667 units. The record company will face a marginal cost curve of $3.50 up to 1,366,667 units and $5 thereafter. This produces the total cost function depicted by TC_3 in Figure 2.4. Inspecting Figure 2.5 we find that the break-even point for the record company is now 853,846 units[9]. It is noteworthy that, in this scenario, at the volume of sales at which the artist is recouped (1,366,667 units), the record company generates a profit of Π_1.

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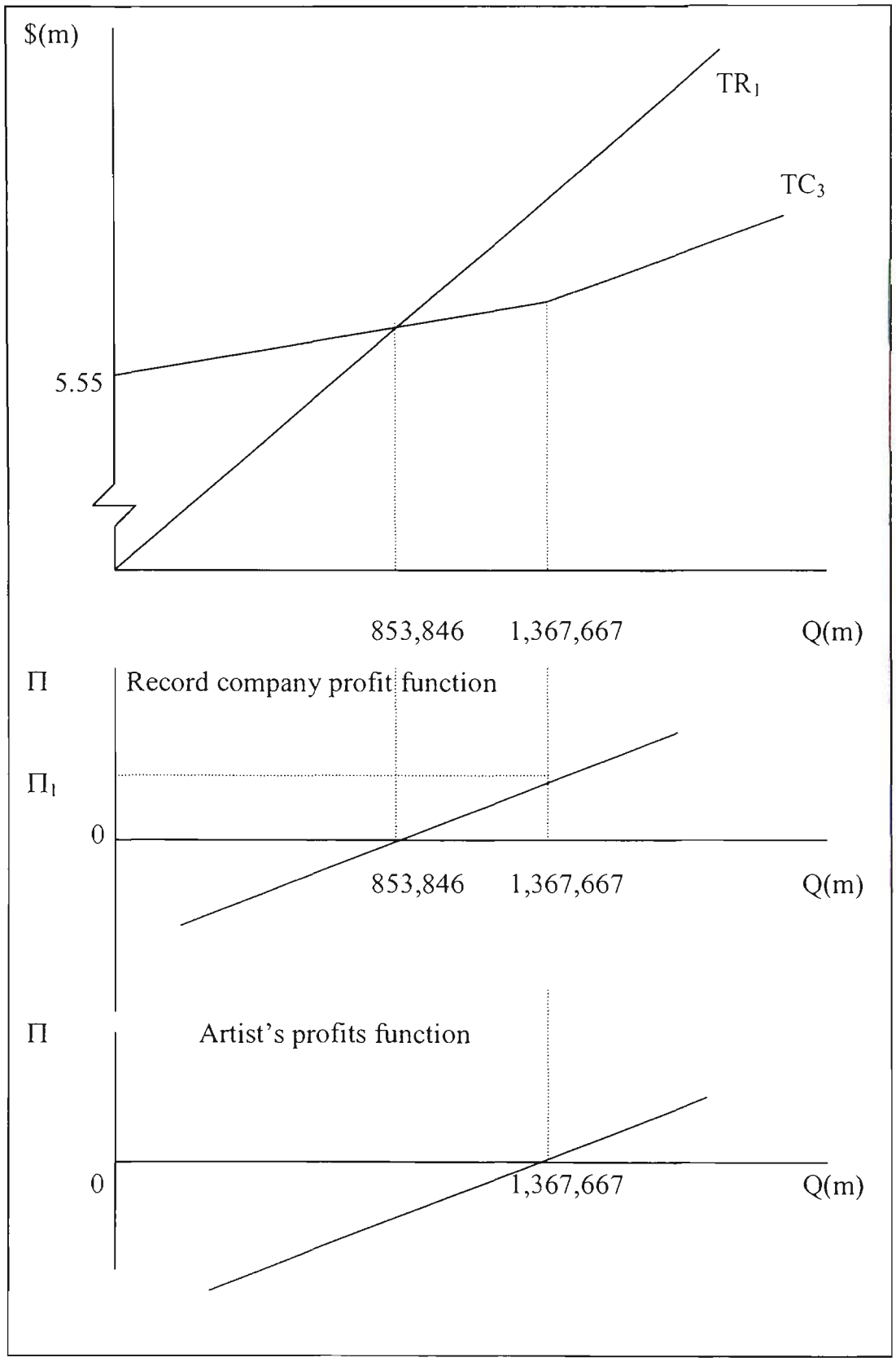
[7] Mechanical royalties are normally quarantined from the practice of recouping costs from royalties.

[8] The derivation of the break-even point is presented in Appendix 2.1.

[9] Re-arranging the equation, $10(Q) = 5.55 + 3.5(Q)$, for Q we obtain 853,846 units.

Figure 2. 4 Break-Even Sales: Scenario Two



The practice of recouping a proportion of establishment costs from artist royalties (achieved via a contractual arrangement with the artist) effectively shifts some of the financial risk to the artist and improves the profit position of the record company. While this has been a bone of contention between artists and record companies for many years, it is noteworthy that, as depicted in scenario one, the artist begins to earn royalty income after 500,000 units which is well before the record company reaches break-even sales, let alone earned a profit. This situation is reversed in scenario two with the record company earning profits well before the artist is recouped. The challenge is to find an appropriate balance of financial risk and income that is equitable for all parties. While the industry is rife with stories of rip-offs and exploitation of artists, these are somewhat less frequent today than they once were.

The anonymous record company illustrated in this example, sold around 100,000 units of the sound recording title and incurred a substantial loss. The artist was "dropped" from the record company's artist roster and no additional investment in the title or artist would take place. For the record company, the small percentage of successful investments (around 10 percent of titles released) must cover the losses incurred from all unsuccessful releases. This suggests that, while a record company will generate profits on sales of a specific title beyond 853,846 units (Figure 2.4), it will remain in a "loss" position on overall title releases until profits from successful releases cover losses on all unsuccessful releases. This cross-subsidisation of speculative investments in new sound recording titles will be investigated more thoroughly in section 2.1.4 below.

The cost structure presented in this section will be particularly useful in our analysis of parallel imports and piracy presented in Chapters 3 and 4, respectively. Traders in pirate product (unauthorised duplicates of a sound recording), by avoiding the payment of royalties (as well as marketing and promotion expenditure), have a considerable cost advantage over record companies. Moreover, parallel importers focus on successful titles and in this way free ride on the substantial investment (and risk) in the production of the sound recording and the marketing and promotion expenditure undertaken by record companies. It has been argued that parallel importers cannibalise the sales of profitable sales. Piracy can have serious consequences for the profitability and viability of the market for sound recordings more generally. Intellectual property

laws are essential for the protection of commercial rights. An evaluation of the economics of copyright law as it relates to the music industry is presented in section 2.3.

We now consider the demand side of the market which, combined with the cost analysis presented in section 2.1.2, will enable us to investigate the pricing and output outcomes for an artist specific sound recording.

2.1.4 The Nature of Demand for Sound Recordings

Nelson (1970) distinguished between search goods and experience goods. Search goods, such as electrical machinery, have properties that can be inspected prior to purchase. The attributes of experience goods, on the other hand, can only be established via use. Because music is to a large extent an experience-good, promotion via radio broadcasting, music videos and live performances, are an important means of communicating product information to consumers.[10] Audio presentation of the musical work is therefore a prerequisite to purchasing. Radio airplay both informs consumers of new artists and titles, as well as providing the musical experience itself.

Dolfsma (1999) depicts the demand for sound recordings as the consumption of symbolic goods. The consumption of music is a means by which individuals can exhibit socio-cultural values and their association to a social network. In this way, the consumption of conspicuous goods such as clothing, cars and music can have a social function in that they signal an individual's identity and socio-demographic network association.

> *People consume certain kinds of music because the music expresses certain kinds of basic socio-cultural values they are attracted to and want to express. In what people consume, they express who they are or want to be: consumption (partly) creates identity, consumption is a way of communicating messages to the relevant 'audience'. (Dolfsma, 1999)*

As such, products are multi-dimensional and incorporate both physical and social attributes (Lancaster, 1966). Network association and the resulting demand for fashion goods have an element of imitation and demarcation (Dolfsma, 1999). An individual's consumption preferences will be influenced by and imitate those of the

social network to which they wish to be associated. Simultaneously, these revealed preferences simultaneously act as a demarcation line, differentiating the individual and the group from other social collectives or networks. Dolfsma constructs a picture of the consumption of popular music from the observation of Frith (1983, 1987).

> *...by using pop music, we create for ourselves a particular sort of self-definition. (Frith 1987:140) The teenager consumes conspicuously – particularly pop music is a means of expressing identity, of the socio-cultural values or beliefs adhered to (Frith, 1983:183). An 'us' and 'them' are simultaneously constructed (Frith, 1987:98). (in, Dolfsma, 1999:1037-1038)*

The relationship between musical preferences and social network ties is also explored by Noah (1998) who argues that individual music preferences are shaped by the specific homophilous social network to which they are aligned. Noah's ecological theory of music preference is based on a number of assumptions including the network transmission assumption, the homophilous assumption and the time constraint assumption. The network transmission assumption holds that music preferences spread through social networks. The homophily assumption contends that individuals with similar socio-demographic characteristics are more likely to interact within a social network. As Noah describes this phenomenon, "birds of a feather flock together". The network transmission assumption and the homophily assumption suggest that individual musical preferences will be shaped by the dominant musical forms (genres) within a particular network to which an individual is aligned. The time constraint assumption contends that the more time and energy allocated to one music genre, the less is available to explore other musical forms. Allocating time to explore one musical form imposes time constraints on the exploration of other musical forms and thereby limits an individual's exposure to and the development of preferences for a variety of musical forms. According to this model, where an individual has weak musical preferences upon entering a social network in which the dominant genre is "alternative rock", it is more likely that s/he will form a strong preference for that genre than say "dance" music.

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[10] For example, in Australia the government funded national youth radio network, "Triple J", has been responsible for launching the careers of many young Australian artists, which would otherwise have found it difficult to obtain radio airplay on more conservative commercial radio stations.

A record company is a multi-product firm releasing numerous sound recording titles per time period. Marketing and promotion of artist specific titles target well defined listener demographics. Since music is an experience good, radio broadcasting is an important means by which record companies communicate new musical forms and/or titles to consumers.

> *In radio broadcasting, music formats are made to appeal to the tastes of specific demographic groups, allowing stations to sell a specialized audience to advertisers. For example, Soft Adult Contemporary is supposed to appeal to women in their 30s and 40s, and Modern Country seeks a younger audience than traditional country formats. (Greve, 1996:2)*

Despite the implementation of well planned and funded marketing campaigns, many new title releases fail to make a profit. This results from the unpredictable nature of demand for music.

> *...the system that produces popular music consists largely of a set of organisations, roles, and processes whose primary goal and motivation is the maximisation of profits. Attaining this goal is limited by an aesthetic product (popular music) that is subject to largely unpredictable short-term changes. The inability to anticipate short term trends results partly because of the unpredictability of both aesthetic innovation and the changing taste among culture consumers...(Burnett,1992:5)*

For this reason record company operations have been likened to oil drilling, in which one successful strike covers the cost of all speculative ones (Harris, 1992).[11] According to Soundscan – an independent firm that monitors U.S. sound recording sales – of the 6,188 titles released in the year 2000, only 50 had sales in excess of 1 million units, 65 titles had sales greater than 500,000 units, while 365 titles had sales in excess of 100,000 units (in Philips, 2001). Philip's analysis of (U.S.) financial data supplied by the major record companies suggests that sales of 400,000 units are required for a title release to be profitable. He cites record company executives who claim that it is a high-risk low-return industry in which around 90% of title releases fail. According to one

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[11] However, unlike oil companies, record companies often recoup the cost of these speculative investments from artist royalties and thereby shift a substantial portion of this risk onto the artist who does not receive any royalty income until after these costs have been recovered.

music attorney (Jay Cooper), this high ratio of failures to successes is the result of inefficient and extravagant practices employed by record companies.

> *"These companies are run by intelligent, well-paid executives who have no one but themselves to blame that the industry's failure rate is so high," Cooper said. Cooper and other critics contend that record labels should be more discriminating when signing artists and stop wasting so much money on videos, retail positioning and independent promotion. If record labels ran their labels more efficiently, critics say, they could afford to pay better royalties to the artists who succeed, instead of forcing them to offset the losses of so many failures. (Philips, 2001:4)*

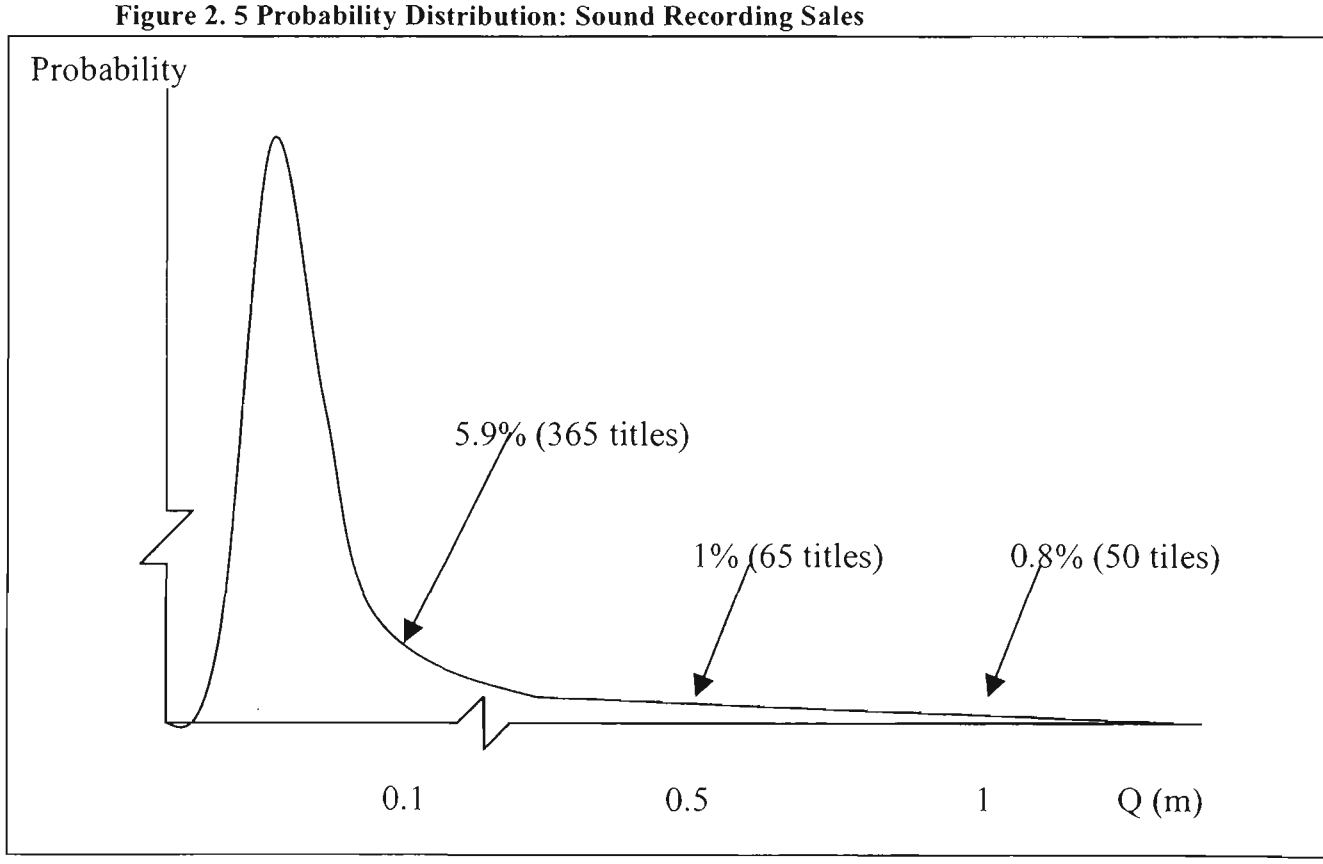
In their defence record companies point to the unpredictable nature of the demand for sound recordings and point out that "...music is not a commodity and...public taste is not easy to discern" (Philips, 2001:4). According to one executive interviewed by Philips, running a record company sometimes feels like working in the emergency ward of a hospital. "The odds are so severely stacked against you. No matter how hard you try, in the end you know from experience that the vast majority won't make it. Every now and then you get lucky. It is not as easy as it looks." (p.4)

The probability of releasing a successful sound recording title can be represented by way of a probability distribution, utilising the Soundscan data cited in Philips (2001), as presented in Figure 2.5. The probability of achieving a certain threshold level of sales is obtained by dividing the number of titles with sales over that threshold, say 1 million units, by the total number of releases (50/6188). While the Soundscan data provides us with only a small number of discrete observations, Figure 2.5 portrays the data as a continuous distribution. This clearly illustrates the high-risk low-return faced by record companies investing in new sound recording title releases. According to Philips (2001) a major record company needs to sell 400,000 units to reach profitability. On these figures, in excess of 90 percent of title releases are financial failures. However, this depiction may overstate the true risk:return faced by record companies. The four majors have a combined market share of around 80 to 90 percent of global sales and around 70 percent of sales in the U.S. The 6188 title releases cited by Soundscan incorporates all U.S. territory releases including those by many small independent and boutique record labels. We can safely assume that the failure:success ratio will be somewhat lower for the major record companies, than those suggested by the Soundscan data. If we assume, for example, that the major record companies released half of the 6188 tiles but

accounted for 70 percent of all sales (distributed evenly), then the probability of a title released by a major achieving sales greater than 100,000, 500,000 and 1 million rises to 12.2, 2.2 and 1.6 percent respectively. However, even after these adjustments, around 85 percent of title releases are financial failures.

Another factor not considered in the Philips analysis is the variation in establishment costs (investment by record companies) for each title. Establishment costs include recording and mastering of the sound recording, marketing and promotion expenditure, video production and independent promotion. Major record companies do not invest the same amount in each and every title. It would be incorrect therefore to conclude that sales of 400,000 units is required to reach profitability for each and every new title release. The break-even level of sales is directly related to the level of investment (establishment costs). Titles with relatively low establishment costs will require lower sales to break-even, while titles with higher establishment costs will have a higher break-even sales volume. For independent record labels, the break-even sales volume is likely to be lower than that faced by the major record companies. Nonetheless, Figure 2.5 provides a reasonably accurate depiction of the shape of the probability distribution of sound recording title releases and the high-risk low-return faced by all record companies.

Figure 2. 5 Probability Distribution: Sound Recording Sales



While the success of a new artist's sound recording is often unpredictable, once successful, a record company has monopoly control over the reproduction, and often the distribution, of that specific sound recording title. The success of a specific title is measured in terms of sales volumes per time period and all titles are ranked in a "Top 40" chart. These top 40 titles generate the vast majority of record company revenues and demand for these titles is relatively price inelastic.

> *[Y]our top 20 A-zone stuff, such as contemporary popular recordings at first release, is not price sensitive. If you have a market of 250,000 kids in the western suburbs of Melbourne or Sydney and you put out a Michael Jackson record or a Nirvana record, they will buy it even if they have to sell their mother for it. They will pay $100 for it if they have to. It is not price sensitive. If you can constrain the cost in that sector, you can milk the market. You do not care about the rest of it. (Dwyer. P, in SLCLC, 1998:9)*

Rather than compete on price, it is in the interest of each firm to set price so as to maximise industry profits, where a firm's share of profit would be a function of market share. Competition for market share takes the form of product differentiation, where record companies compete to sign artists to exclusive recording contracts. The demand for Top 40 sound recordings is relatively price inelastic, with the bulk of sales occurring within a very short time from when a market segment "reacts" to an album. When this occurs sales can increase suddenly and decline almost as quickly.[12] For the record company a "hit record" is a random and unpredictable event, but when it occurs will shift its marketing, promotion and distribution in support of that specific sound recording title.

The stochastic nature of demand for sound recording title releases has important implications for business decision-making, including investment levels and price setting. To better understand the impact of stochastic demand, it may prove useful to include a stochastic element in the demand function for sound recordings. I now consider the profit maximising record company in the presence of stochastic demand for a new title release and constant marginal cost. While demand is uncertain, record companies can influence consumer preferences via marketing and promotion strategies.

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[12] This occurs when listeners call radio stations to play an artist's song causing other radio stations to add the track to their play list which induces further retail sales.

Assuming that each new title has the same establishment (fixed) cost, record company profits will be determined by the realised strength of demand for a specific title. Aggregate demand for a hypothetical artist specific sound recording title may be depicted as follows:

$$Q_i = \alpha + \beta P_i + s_i \qquad (2.7)$$

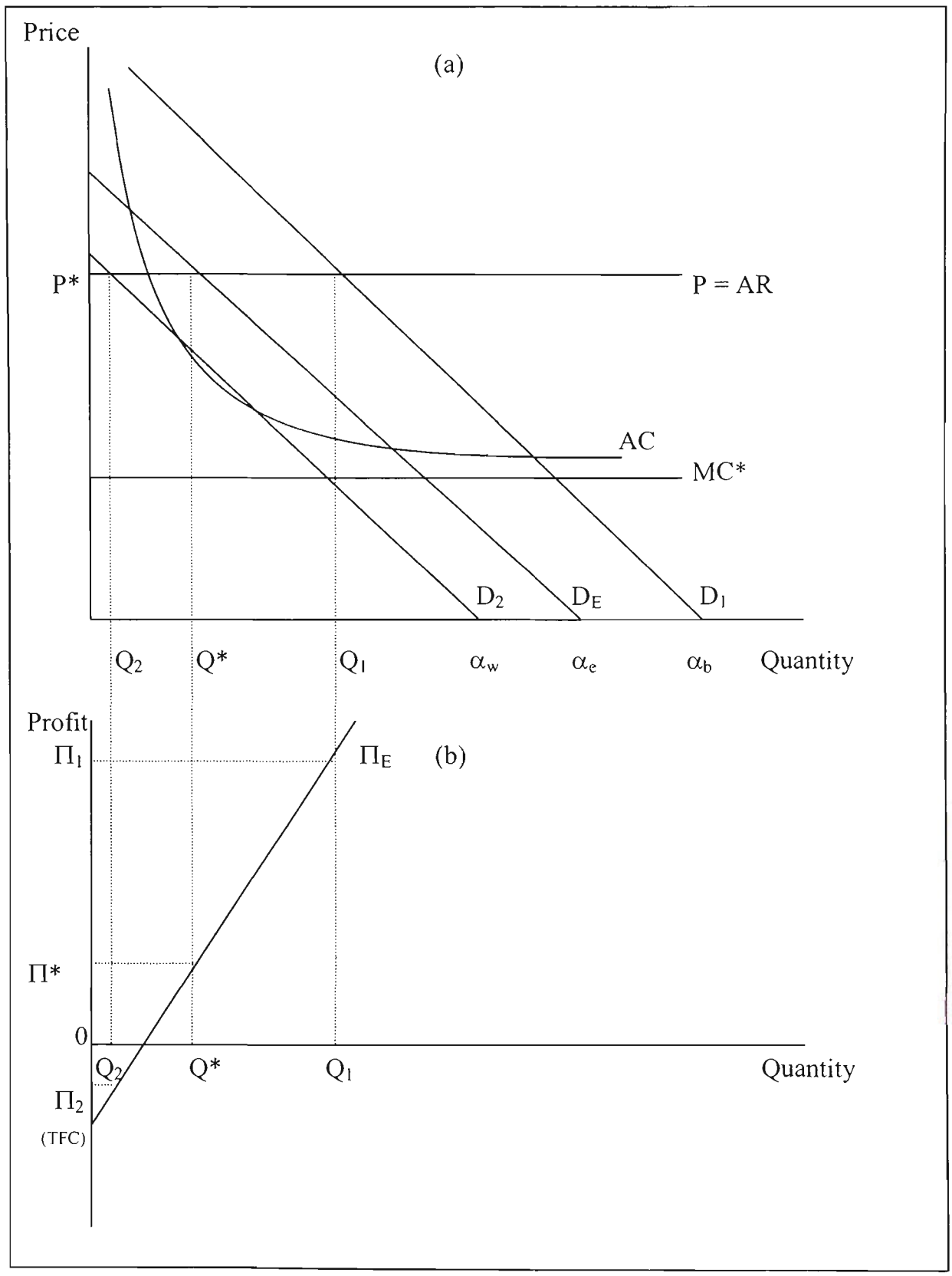
where Q_i is a range of quantities demanded for a given range of prices P_i, α_i is the total size of the market for the title (horizontal intercept of the demand curve), s_i is a variable that measures a stochastic or random element of demand and β measures the marginal response of quantity demanded (Q_i) to a change in price (P_i), ceterus paribus.

The presence of the stochastic element, s_i, means that record companies face an uncertain demand for artist specific titles and have no way of accurately forecasting the actual size of the market. Record companies expect a new title to be successful, or they would not have invested time and resource into the production of the sound recording. For the expected demand function to be realised, the stochastic element must be equal to zero. Where $s_i < 0$, realised demand will be less than expected demand and the sound recording title will be a failure. Where $s_i > 0$, realised demand will exceed expected demand and the sound recording title will be a success (hit). Expected demand (Q_e) may be depicted as follows:

$$Q_e = \alpha_e + \beta P_i \pm s_i$$

where α_i is the expected market size of the sound recording title. As a generalisation we can depict realised demand as falling into three categories (failure, break-even and successful) and assign probabilities to each of these categories based on historical probability distributions as depicted in Figure 2.5. This produces three possible demand curves, as depicted in Figure 2.6, where the horizontal intercept, which measures the total size of the market for the artist specific title, is a function of the stochastic element s_i.

Figure 2. 6 Price and Profit in the Presence of Stochastic Demand



Panel (a) depicts three demand functions each representing the following scenarios:

- Expected demand (D_E) $Q_e = \alpha_e - \beta P_i$
- Optimistic or Best Case (D_1) $Q_b = \alpha_b - \beta P_i$
- Pessimistic or Worst Case (D_2) $Q_w = \alpha_w - \beta P_i$

The profit maximising selling price is determined on the basis of the expected demand function (D_E). Since each sound recording title release faces the same expected demand curve, a uniform price of P* will be set. The expected profit function Π_E in panel (b), is the difference between total revenue (P*.Q) and total cost (AC.Q) over a range of possible sales volumes. That is,

$$\Pi_E = (P^*.Q) - (AC.Q) \tag{2.8}$$

If the expected demand is realised, the record company will sell Q* units and generate a profit of Π^*. Differentiating equation (2.8) with respect to Q, we obtain:

$$d\Pi_E/dQ = P^* - AC \tag{2.9}$$

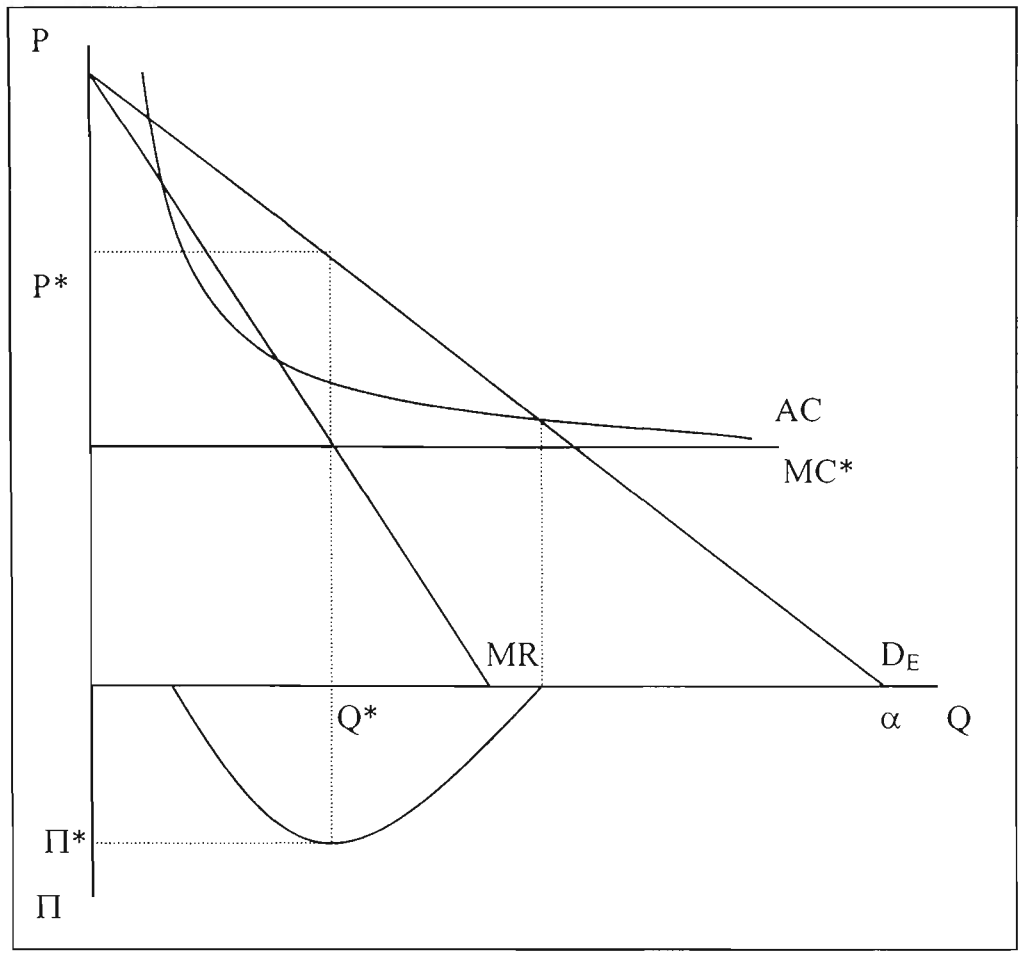
Since P^* is constant and AC is declining throughout, profit per unit increases as sales volumes rise. This reflects the significant economies of scale depicted by the downward sloping AC curve, which approaches MC^* as quantity rises. Consider, for example, the best-case scenario in which realised demand for a sound recording title is represented by D_1. At a price of P^*, Q_1 units of the title will be sold and realised profit is Π_1, by far exceeding the expected profit of Π^*. This would be the level of profit generated from a hit record selling millions of copies worldwide. However, most title releases are unsuccessful in that they do not reach expected sales volumes. In the worst-case scenario, depicted by the demand curve D_2, only Q_2 units of the sound recording title are sold, generating a loss of Π_2 for the record company.

In the presence of stochastic demand, record companies cannot predict which of the numerous titles released per time period will be successful. Each title will have substantial establishment and promotion costs. Product differentiation, in the form of multiple artist title releases, is one way of minimising the risk associated with a stochastic demand. Sound recordings compete with a range of other entertainment

activities for limited discretionary income and as such, only a limited number of large selling titles can be supported per time period. Uncertain demand, combined with large sunk costs, means that record companies must carefully select the artists in which they invest limited financial resources. These dynamics mean that record company market shares will depend upon the relative number of successful title releases by individual companies. One might therefore expect market shares to shift from time to time and reflect the relative strength, or perhaps more importantly, the relative luck associated with the A&R activity. This suggests that the larger the number of title releases per time period, the greater the probability of releasing a hit record. The record company knows from previous experience that only a small percentage of titles will be successful. The risk to which record companies are exposed can be minimised by reducing the number of investments (title releases) per time period. However, the smaller the number of releases, the lower the probability that a record company will produce one or more of the next highly successful (hit) records. As a risk minimisation strategy, reducing sound recording title releases could lower market share, including the share of successful titles. It is these hit records that provide the profit to cross-subsidise losses incurred on failed releases, and improve the record company's overall profit position.

Assuming that firms will set the profit maximising price according the expected demand function (D_E) as depicted in Figure 2.6, we can investigate the relationship between price and profit over a given range of output. Following standard economic analysis of the theory of the firm, we can utilise this expected demand function to identify the profit maximising price and quantity traded, as depicted in Figure 2.7. As a monopoly supplier of an artist specific sound recording, the record company faces the market demand curve (D_E) for this title. MR is the marginal revenue curve associated with the market demand curve. MC^* is the royalty inclusive marginal cost curve as derived in equation (2.4).

Figure 2. 7 The Market for an Artist Specific Sound Recording



The record company maximises profit (Π^*) at a price of P^* and a sales volume of Q^*. In the presence of constant marginal costs (MC^*) the average total cost curve (AC) is declining throughout and approaches MC^* for large volumes of output. This suggests that there are considerable scale economies to be enjoyed by the record company on individual titles. Indeed, you will recall from section 2.1.2 that expenditure items for our anonymous record company and the sound recording title included $1.2 million dollars in additional tour support and promotional measures during a six-month period after the release of the title. This was an attempt to boost flagging sales. Given the somewhat fickle nature of demand for a sound recording title, additional promotion (for example, leading to increased radio airplay) can sometimes create a momentum that could lead to greater acceptance of the title in the market place leading to a bandwagon effect that could substantially increase sales. A sound recording release that was heading for the remainder bin could suddenly and unexpectedly become a hit record. Given the

significant investment already made in the title and the presence of scale economies, additional promotional expenditure can deliver high returns.

The model depicted by Figure 2.7 may help to explain the price uniformity observed in the market for sound recordings, argued by some to be the result of an oligopolistic market structure and collusive pricing. The contrary view, is that uniform pricing is not the result of collusion between record companies operating in an oligopoly market but instead a function of the stochastic nature of demand for a title in which the expected demand function is uniform for all releases (Silva and Ramello, 2000). If we assume that the demand curve D_E in Figure 2.4 depicts the expected demand function for each new sound recording title, then price uniformity is the logical consequence of constant marginal cost in the presence of unpredictable demand.

The record company is a multi-product firm, releasing multiple sound recording titles per time period. There are two countervailing forces that will determine the specific number of titles released. Firstly, rivalry between record companies and the desire to sign the largest proportion of successful artists, will cause record companies to increase the number of record contracts offered per time period and thereby, increase the number of titles released. Secondly, the high establishment (sunk) costs combined with stochastic demand, cause record companies to limit the number of titles released per time period. The probability of releasing an unsuccessful title and incurring losses is compensated for by the probability of releasing a successful title on which substantial profits can be generated.

To illustrate the effect of stochastic demand on the firm's decision making I now develop a hypothetical scenario in which we examine a record company that faces an investment environment in which, based on previous experience, only one in five title releases is profitable, two titles break-even while the remaining two titles incur a loss. The losses incurred by the record company on unsuccessful releases must be covered by profits generated on successful title releases. In this sense, profits from successful releases subsidise speculative investments in new artists and sound recording titles. This means that the cost function of the successful title will incorporate the expected losses incurred on unsuccessful title releases. These losses may be thought of as un-recouped R&D investment or establishment costs necessary to release multiple titles per time period. To capture this cost sharing practice we can conceptualise the cost function

presented in equation (2.3) incorporating a variable that represents the un-recouped investment in unsuccessful releases. That is,

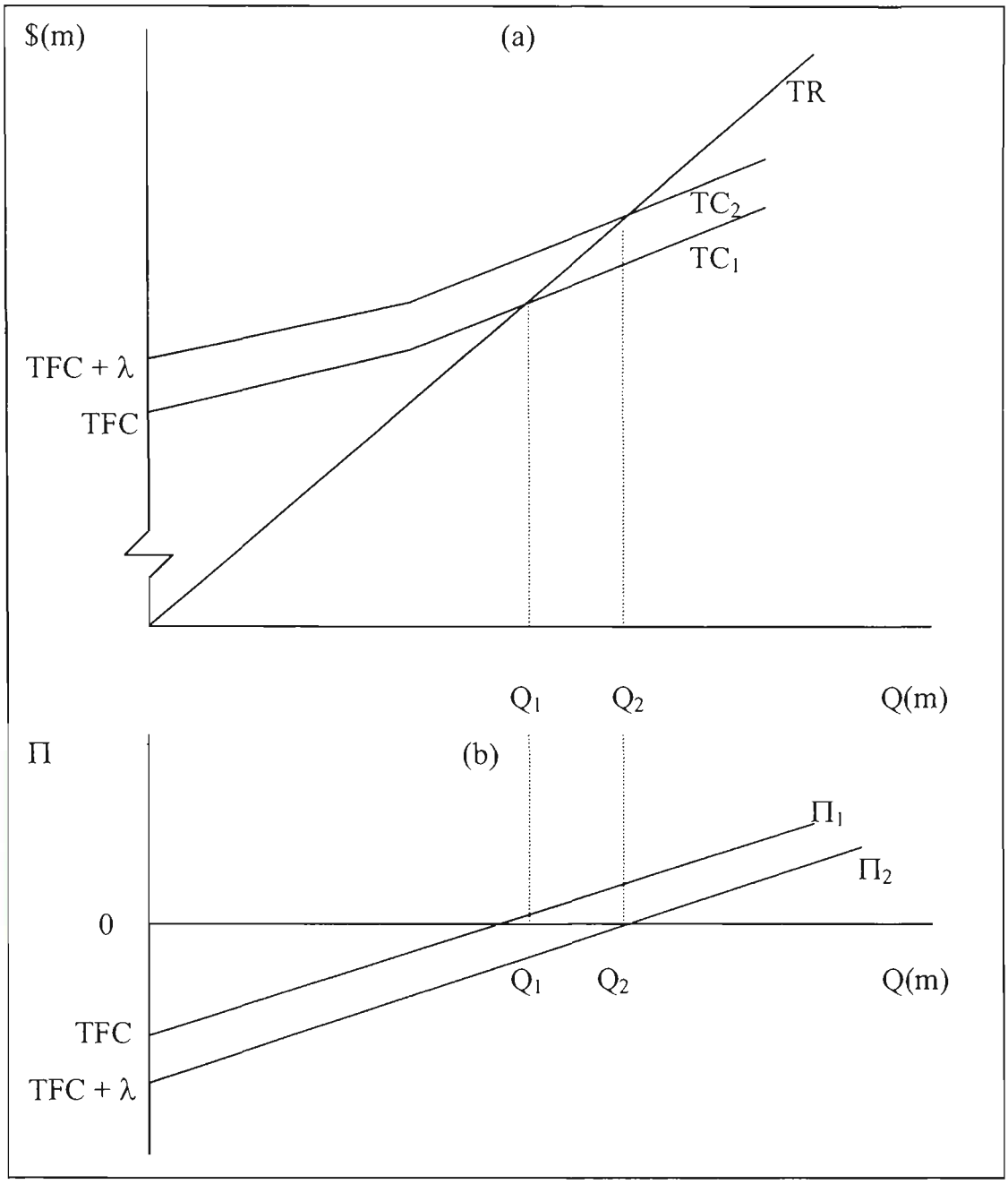
$$TC = \lambda + TFC + MC^*.Q \qquad (2.10)$$

where λ is the un-recouped investment (loss) incurred on unsuccessful title releases. This would shift the TC curve upward at every output level by a value of λ. The break-even sales volume for the successful title would therefore be higher than would otherwise be the case. The presence of losses on unsuccessful titles (λ) shifts the record company's total cost curve upward to TC_2, as depicted in panel (a) of Figure 2.8, raising the break even sales volume from Q_1 to Q_2. Panel (b) illustrates the profit function, which shifts downward by a factor of λ, and shows that the record company will not generate profits until sales of the successful title exceed Q_2.

Considered from the artist's perspective, there are a large number of artists, only a very small percentage of which will receive record contracts. Of these only about 1 in 10 will be successful. In this context, an artist's investment of time, money and effort would seem somewhat irrational, in economic terms. The balance of probabilities is stacked against them. This seemingly irrational behaviour might be explained by the desire for fame, wealth and the promise of a glamorous lifestyle. For others, the opportunity costs might be relatively insignificant or they may be risk takers. Few artists full-fill the dream. The illustration presented in this section demonstrates that an investment of millions of dollars expended on recording, marketing and promotion does not guarantee success. Recall that an artist does not receive income (beyond the initial recording advance) until s/he is recouped. What might be perceived by consumers and aspiring superstars as success (music videos, radio airplay and tens of thousands of record sales) may in fact be a failed investment, for both the record company and artist.

Having investigated the cost, demand and pricing aspects of the market for an artist specific sound recording, we now turn our attention to the aggregate market and investigate market structure and the implications this has for the nature and degree of rivalry between firms.

Figure 2. 8 Break-Even Sales with Cross-Subsidisation



2.2 *Market Structure*

In the first comprehensive investigation of the Australian music industry the Australian Bureau of Statistics (ABS) measured total income at $1,064 million during 1995-96. The study covered some 541 businesses comprising record companies, distributors, manufacturers of recorded music, music publishers and sound recording

studios.[13] Some 3,886 persons were employed by these businesses and of these, 60 per cent were employed by record companies and distributors. Music businesses recorded an operating profit of $80.1 million (before tax) and an overall profit margin of 7.5 per cent (ABS: 1997).

While a total of 153 record companies and distributors were operating in Australia during this period, the market for sound recordings was dominated by five *Majors*, which are vertically integrated Multinational Enterprises (MNEs). The majors and their respective market shares are presented in Table 2.4 and in order of estimated global market share are Universal (23%), Sony (19%) EMI (14%), Warner (12%), and BMG (12%). Cumulative percentages indicate concentration ratios for the industry. In Australia the five largest companies are local subsidiaries of the majors and in order of estimated national market share are Universal (20%), Sony Music Entertainment (20%), BMG Australia (18%), EMI Music Australia (15.5%) and Warner Music Australia (15.3%). This level of concentration continues despite declining technical barriers to entry. Together these companies share almost 90 percent of sound recording sales in Australia and an estimated 80 per cent of world trade in sound recordings. Clearly, the national and international market for sound recordings is oligopolistic. Other significant players in the Australian music industry are Festival and Mushroom Records, both owned by News Corporation and now operating as the Festival-Mushroom Group (FMG), and Shock Records, now the largest independent record company in Australia. The Australian subsidiaries of the multinational record companies distribute sound recordings in the domestic market via licensing deals with the overseas affiliate or parent company. These licensing deals typically provide the local subsidiary with the exclusive right to market and distribute the title within the territory, in exchange for a royalty fee for each copy sold.

The dominance of the domestic market by a small number of multinational record companies has important consequences for the domestic competitive environment and for trade in music product. Table 2.6 presents a summary of income sources for various sectors of the music industry in 1996. Of the total industry income of $1,064 million, $607.6 million was earned by record companies and distributors and derived from the sale of sound recordings, the bulk of which ($447.5 million or 74 per

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[13] The study therefore excluded concert promoters, venue operators, booking agents, music retailers, performers and songwriters/composers.

cent) was distributed via licensing agreements. A further $53.8 million was for the sale of sound recordings purchased for re-sale. Taken together these two items represent 82.5 percent of all income derived from the sale of sound recordings in Australia (ABS, 1997). This figure reflects the domination of foreign repertoire in Australian sound recording sales where 83.4 percent of sound recordings sold in Australia is foreign repertoire. By comparison a relatively small proportion of income was generated from the sale of sound recordings released by record companies operating in Australia. Not surprisingly, only 11.9 percent is of sound recording sales is domestic (HMV, 1998). A further $27 million was generated from packaging and distribution (P&D) fees. P&D deals involve the distribution (and sometimes the manufacture) of sound recordings by a major record company (or its distribution arm) on behalf of smaller independent record companies.

2.2.1 Technological Change & Minimum Efficient Size

Both the domestic and international market structure is oligopolistic and this structure has persisted over many decades. Numerous studies have investigated the causes of this high concentration and the continued dominance of the major record companies in the international market place (Alexander, 1990). Technological change in both sound recording production and manufacturing has lowered the minimum efficient scale of output. This technological change effectively reduces barriers to entry into the market for sound recordings, at both the production (producing the master recording) and the manufacturing (duplication) stages. Low unit cost renders markets more competitive, a phenomenon that should ultimately result in a lowering of market concentration. Despite this technological progress, levels of market concentration persist.

Often, minimum efficient scale dictates a small number of firms operating in a market. That is, the combination of market size (demand) and economies of scale sometimes means that the market can only support a small number of efficiently sized firms. Large numbers would fragment the market into smaller, inefficiently sized firms producing at higher unit costs. This inefficiency is ultimately paid for by the consumer, in the form of higher prices charged by firms to cover the higher unit cost of

production.[14] Where technology permits a small minimum efficient scale of production, relative to market size, the market can support a larger number of firms. Large numbers stimulate rivalry and thereby imposes the discipline of the market. Competition from rival firms exerts pressure to minimise cost and the adoption of competitive price strategies. Price will approach average cost and firms will enjoy normal profits. Inefficient firms will need to adopt best practice measures to ensure that they remain competitive. Lowering costs will enable them to lower price and increase market share to remain competitive.

Technological developments in sound recording and reproduction mean that we now have a small minimum efficient scale of production so that smaller firms can now compete with the larger, dominant firms. However, as the concentration ratios indicate, clearly the large record companies continue to dominate the market for sound recordings. This begs the question: why have independent record companies failed to capture a significant share of the market for sound recordings? The answer to this question may prove useful in our investigation of the interplay between the range of exclusive rights bestowed by copyright law and trade in sound recordings. The persistence of market concentration suggests the existence of barriers other than production and manufacturing technologies, that limits the growth of new entrants.

In an investigation of the relationship between technological change and market concentration in the U.S. recording industry, Alexander (1990(b)) found that technological change between 1909 and 1990 lowered the cost of recording and reproduction of musical works. This technological development continues at an ever-increasing rate.

> *A home computer with $10,000 of add-on memory and processing kits can now do everything that a $200,000 synthesiser used by pop groups and recording studios could do one year ago. (The Economist, 1999, p. 15)*

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[14] Price may exceed average cost due to inefficiency. This dictates a smaller number of firms. Small numbers introduces the possibility of collusive behaviour, which may ultimately raise price above average cost. Consumer bears the burden in both cases.

The question Alexander sought to answer was why, in the face of technological change that lowers technical economies of scale, do a handful of vertically integrated firms dominate the recording industry?

The strategic response of the large vertically integrated MNEs to lower technical economies of scale, has been to exploit their market power to raise other entry barriers and/or limit the growth of rival independents. This has traditionally taken the form of formal or informal vertical integration, such as the control of distribution channels and the control of promotional channels, especially radio broadcasting.

Distribution channels for sound recordings are controlled by the major record companies. According to Greer, 1984, p.25 (in Alexander, 1990(b))

> *...the distribution of records in the United States is closely controlled by the major record companies, and there are many in the business who use the word "monopoly" quite freely in describing the distribution situation. Certainly there has been a shakeout in record distribution in recent years, a shakeout that has meant the loss of a thriving business to many 'indies'.*

According to Alexander many independent record companies were squeezed out of the market by the restrictive practices employed by vertically integrated firms. Control of distribution meant that the majors could control prices, demand that independent record companies contract a bundle of services (for example, manufacturing and distribution). The majors allegedly employed deliberate inefficient distribution of independent records resulting in revenue losses, and used distribution service contracts to monitor sales volumes of specific artists signed with independent record companies.

> *Once the major firms have detected a trend based on the manufacturing orders and distributed sales of the independent, the major firm has the option of inducing artists to breach their contracts, buying out the independent firm, buying out the relevant contracts of the independent roster, or perhaps issuing a product that is a substitute of the independents product.* (Alexander, 1990(a):60)

Independent distribution channels, an option for independent record companies ("indies"), often led to delays in payment. With manufacturing costs typically payable in 30 days and revenue from distribution on 90-day terms, indies have a serious cash flow problem resulting from an inability to synchronise payments and receipts. This financial constraint makes it difficult for independent firms to release new albums.

Alexander concludes that concentration continues in the face of increased contestability as a result of strategic behaviour by the major record companies. This included a policy of mergers and acquisitions and the control of distributional channels and radio promotion. He argued that this domination was harmful both economically and culturally. It was harmful economically because market power produces monopoly pricing and is harmful culturally because market power reduces product diversity and variety. Both effects, he suggests, reduce national welfare.

Alexander recommends economic policies that promote greater consumer choice (diversity and variety) and greater price competition. These include the establishment of distribution cooperatives by independent record companies and the rationing of radio licences. Although Alexander provides an insight into the economics of the music industry, unfortunately he largely ignores the regulatory environment (for example, copyright and parallel imports) within which firms operate and does not address the complex interrelationship between the international and domestic market for sound recordings. These issues were outside the scope of the of the study but will be the focus of the present thesis.

A key strategic response by the majors to the growth in independent record company sales was to capture radio programming. This was an attempt to secure radio airplay for their sound recording title releases thereby displacing records released by independents. The direct relationship between radio airplay and record sales is generally acknowledged in the industry.

> *...the economic value of radio exposure, that is, its potential bandwagon-creating and information disseminating qualities, has led to the sale of air time to firms and their promotional agents within the record industry. (Alexander, 1990(a):71)*

Getting a song onto a radio station play list is crucial to success for any artist and indeed any record company. According to Dannon (1990) the major record companies in the U.S. attempted to raise barriers to entry and limit the growth of independent record companies by raising the cost of obtaining airplay. This was achieved via the manipulation of programming policy and selection, and proved to be an effective, albeit artificial, barrier to competition. The critical role of radio broadcasting was highlighted

in the U.S. during the Payola[15] scandal. Payola describes financial inducements payed to radio DJs and programmers (via independent promoters), to play and promote specific songs on the radio. The majors would employ promoters in an "arms length" arrangement to promote records to radio station programmers. This was alleged to be a veiled attempt to insulate themselves from illegal practices.

In the United States, this gave rise to a "Network" of promoters, where each member of the network would be allocated a "territory". The member would have exclusive access to radio stations within the territory, for the purpose of promoting records. Because small independent firms lack the financial resources to match these inducements (which included money, sex and drugs), radio exposure, record sales and market shares decline. This proved an effective means by which the majors obtained and retained market share. This phenomenon helped to explain the continuing concentration of ownership and control in the U.S. market for sound recordings despite technological change lowering technical barriers to entry.

By increasing the cost of promotion, the major record companies erected an artificial barrier to competition, which reduced the competitiveness of the independent record companies, unable to match the promotional expenditure of the majors. Payola and promotion becomes an effective barrier between independent firms and consumers. Consumer choice, to the extent that it is determined by radio broadcasting, is subsequently limited to the artists signed by the major record companies. This reduced variety can lower consumer and national welfare.

> *...product diversity and variety are critical features of performance in culture-based industries, because culture based industries are educational in nature and thus consumers benefit from the exposure to a broad range of distinct culture-based products (Alexander, 1990(a):78)*

According to Alexander, consumers benefit from a broader cultural vocabulary and for this reason, variety is welfare enhancing. The concentration of ownership and control of the music industry, by lessoning diversity, reduces consumer welfare.

It may be useful to illustrate the impact of these strategies on the cost structure of the firm presented in Section 2.1.3. The record company cost structure depicted in

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[15] Payola is derived from two words, pay-off and Victrola

Figure 2.4 and the model of an artist specific sound recording presented in Figure 2.6 can be used to illustrate the dual impact of the introduction of independent promoters and payola (or simply an increase in promotion more generally). Firstly, payola and the use of independent promoters more generally, introduced an additional and significant establishment cost for a new title. While technology related establishment costs had been declining, these had been offset by an increase in promotion costs. Technological advances in recording a musical work lower establishment costs and shift the TC curve downward. This reduction in total cost lowers barriers to entry and should result in an increase in rivalry and subsequently, a lowering of market concentration. However, the introduction of independent promotion raises establishment costs and thereby, barriers to entry. This may partly explain why high concentration ratios persist despite technological advances that lower the minimum efficient scale of production.

Secondly, independent promoters, by increasing the level of radio broadcasting for a new title, can facilitate an increase in sales and the exploitation of economies of scale. These countervailing effects are depicted in Figure 2.9. Independent promotion raises the likelihood of a new title being added to a radio station's play list. Regular broadcasting of the title on key radio stations is necessary, though not sufficient, for the expected demand function *De* to the realised. Recall that music is an experience good, increased radio broadcasting somewhat reduces the stochastic nature of demand, and thereby, the risk associated with investing in a new sound recording title. However, independent promotion raises the establishment cost and shifts the average cost curve upward. Since radio stations add only four or five new songs to their play-list each week, independent promotion reduces the probability of radio broadcasting of titles released by competing record companies that do not engage the services of independent promoters (or otherwise cannot match marketing and investment expenditure). The result is that the realised demand for the latter group of titles is more likely to be D_2 as depicted in Figure 2.9. This figure demonstrates that, while independent promotion raises the average cost curve, this can be more than offset by an increase in demand induced by radio airplay, thereby raising economic profit. The benefits of economies of scale are reflected in the lower average cost at D_E and AC_2 as compared with D_2 and AC_1, that is, $AC_A > AC_B$. For smaller, independent record companies, the relative lack of financial resources to match the marketing and promotion expenditure of the larger

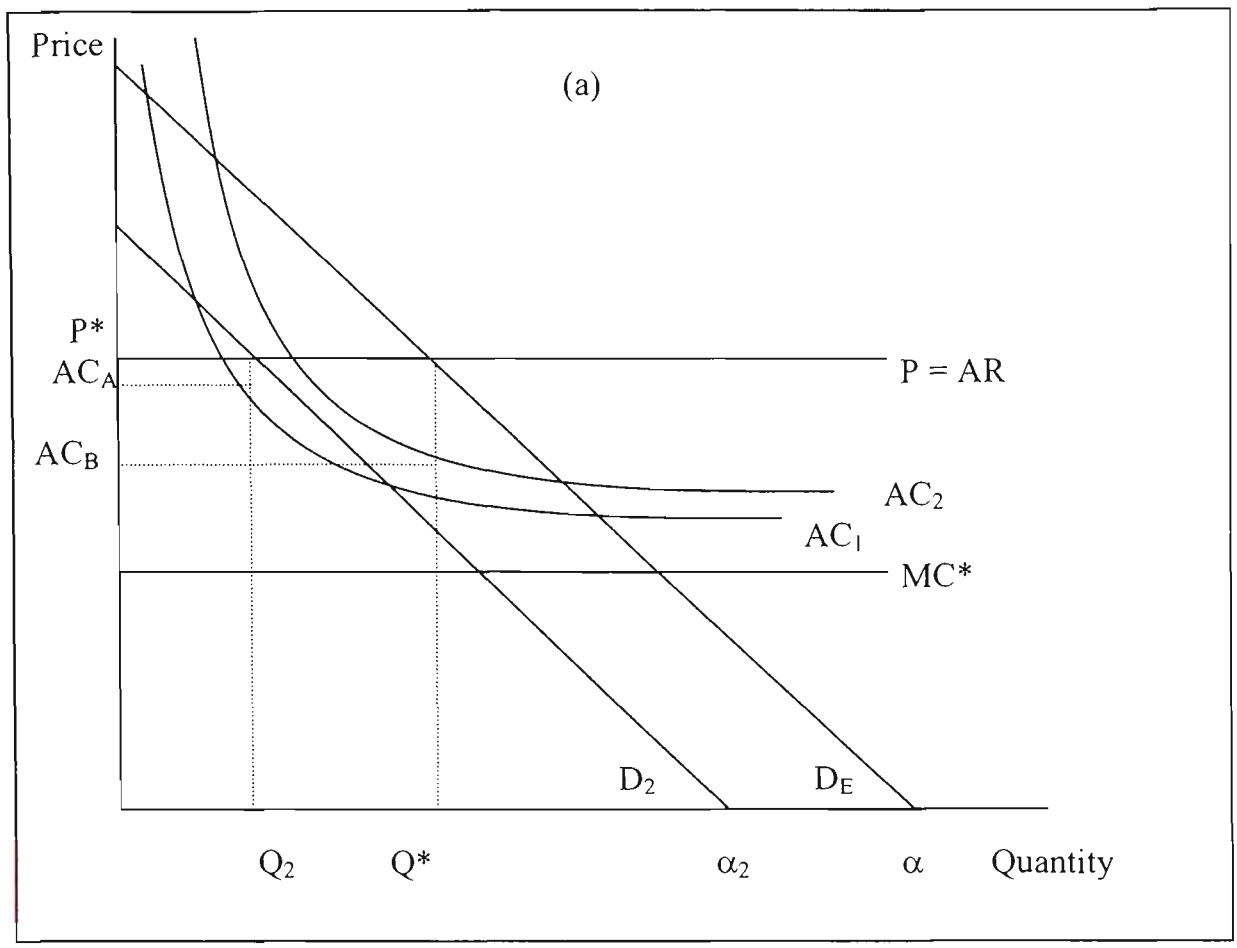
major record companies, means that the former are less likely to realise the expected demand depicted by D_E. Instead, independent record companies may have lower expected demand functions as compared with the majors. For example, a realised demand curve of D_2 (and a cost function represented by AC_1) would result in a somewhat modest profit for the record company. Accordingly, despite significantly lower establishment costs, independent record companies can face higher risks as compared with major record companies. However, the relationship between the majors and independents has been evolving over the years.

Burnett (1992) challenges what he describes as the "old popular music model" which depicts the market for sound recordings as highly concentrated and controlled by dominant firms (the majors). This historical domination has impacted upon the degree of creativity and diversity and was as the degree of rivalry and particularly with smaller independent record companies. The so-called "new model" depicts the relationship between independents and majors as cooperative rather than competitive. Independent record companies act as R&D divisions for the majors, seeking out new popular music innovation and trends. These new musical forms and/or artists are then transformed by the majors into domestic and/or international "brands" using their sophisticated global marketing, promotion and distribution networks. Reciprocal licensing arrangements between MNEs and independents sometimes provides for independent distribution of MNE titles within specific domestic territories, while the MNE would distribute independent titles globally.

> *...the transnational phonogram companies have adopted an organisational strategy of coopting or incorporating independent producers and labels. This "open" system of production establishes a number of semi-autonomous label divisions within each company that are free to work with small independent labels and producers. (Burnett, 1992:763)*

According to Burnett it is this symbiotic relationship that has enabled the majors to maintain their dominance in the international market for sound recordings.

Figure 2. 9 Increasing Barriers to Entry



Notwithstanding this more cooperative approach, concentration of market share may be detrimental to economic welfare in some circumstances, while monopolisation may lead to the abuse of market power against smaller rivals or consumers. Competition policies are specifically designed with this possibility in mind. According to the Head of the European Commission Competition Department, Kard van Miert,

> *...the majors hold around 80% of the world market, but this is not good or bad itself. It's my job to ensure that no anti-competitive behaviour arises from this oligopolistic structure. (MBI, 1998:11)*

Indeed, this market concentration involves both horizontal and vertical integration, with nearly half of all sound recording sold in the world produced by companies controlled by consumer electronics companies, such as Sony.

...two of the six major record companies are owned by publishing groups, and Japanese consumer-electronics companies....control two or more of the majors and are nibbling into others. (The Economist, 1991)

A series of mergers and acquisitions in the last decade of the twentieth century has seen the formation of six global media and entertainment companies whose products incorporate both hardware (sound carriers, sound equipment, computers, televisions and the like) and software (video games, music etc) products across a range of industries, including film, music, video games and television. These companies and their valuation are Newscorp (US$11.2 billion), Viacom (US$11.2 billion), Seagram (US$18 billion), Disney (US$25 billion), Time-Warner (US$24.6 billion) and Sony (US$51.8 billion) (Fortune, 1998). The result is a complex web of interconnected businesses in which rivals are also suppliers and customers. The result is a classic prisoners dilemma in which vigorous competition would lead to significant damage to all parties concerned. In relation to expanding into developing markets, particularly in Asia, Phillipe Danman of Viacom says "Its hard. So it makes a lot of sense to join together so we're not killing each other splitting a smaller pie." (Rose, 1998:98). In some respects these mergers have made the industry more complex, shifting from a business of relationships to a business of entanglements (Rose, 1998).

Fighting and suing each other and making love – to me that's too schizophrenic. Either you love somebody or you hate somebody. I can't quite deal with this idea that you love them on Monday and hate them on Tuesday. But that is the business." (Eisner, in Rose, 1998)

Entangled within these global corporations are the major record companies and the numerous record labels that have been acquired (or merged) over many decades. Music is a global industry with sales in excess of $40 billion USD in 1998, generated from the sale of 3.7 billion records. Table 2.5 presents the worlds top ten national markets by sales revenue and projected sales to the year 2004. Clearly, the USA and the EU represent the largest music markets. Growth projections are an encouraging prospect for the music industry given the concern over music piracy and counterfeiting, estimated to be a $5.3 billion USD business (MBI, 1999(a)).

It is clear from the forgoing that both the international and domestic markets for sound recordings are oligopolistic. In addition to the market power that this suggests, copyright laws backed by provisions that restrict parallel imports, provide the opportunity for the segmentation of the international market into smaller, national markets. By exploiting varying price elasticities of demand, a strategy of price discrimination would enable dominant firms to maximise economic profits. To be successful, such a strategy would need the support of barriers that prevent enterprising individuals from on selling (or importing) products from low-priced markets into high-priced markets. The mechanism that provides this barrier is parallel import restrictions (the "importation right").[16] Copyright laws that prohibit parallel imports provide the rights holder with the wherewithal to partition the global market into discrete national segments. Exclusive licensing for each territory enables the firm to control the price and distribution of artist specific sound recordings beyond the point of first sale. It has been argued, in some quarters, that this exclusivity is essential to effectively combat the smuggling of pirated copies of sound recordings. The contrary view, that parallel import restrictions are an unnecessary extension of property rights, is based on the belief that the market imperfection that the importation right attempts to address, creates an even greater and more costly, by-product distortion, that is, monopoly distribution and pricing.

This raises an important question. Why do copyright laws in the vast majority of countries go beyond the protection of intellectual property, and bestow monopoly power on a territorial copyright license holder?[17] The answer to this question requires an investigation into the historical development of copyright law and its international dimensions.

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[16] Technological change has enabled consumers to circumvent these trade barriers and purchase CDs over the Internet. The volume of Internet trade is, however, insignificant at this point in time.

[17] The term *monopoly* rather than *market* power is used deliberately because of the unique nature of the product. Unlike the pharmaceutical industry, in which a functionally similar drug can be independently created, a specific artist's sound recording, eg a Savage Garden album, is unique.

2.3 *International Dimensions of the Distribution of Sound Recordings*

There are two principal means of exporting sound recordings. The obvious way is to export physical copies (audiocassettes and CDs) of the finished product. These transactions appear in the merchandise trade section of the current account. Trade in music product is, however, more about trade in intellectual property (IP) than it is about the export of physical product. Licensing deals between foreign and local record companies (often a subsidiary of an MNE or its affiliate) bestow territorial rights to the license holder in the domestic market. This enables local record companies to manufacture and distribute copies of the sound recordings in the domestic market in exchange for a license fee. The local record company is also obliged to pay publishing and artist royalties for each copy of the sound recording sold. In effect, this represents a payment for the importation of a copyright product (the musical work and performance). These payments appear as "license and royalty payments" in the services section of the current account. Record companies export music predominantly via licensing deals rather than physical exports. As such, license and royalty income is more significant than merchandise trade in the balance of trade in music product.

Table 2.7 presents Australian data on the share of copyright product to total trade in goods and services. In 1996-97 copyright royalty exports represented 0.8% of total trade in goods and services, twice that for copyright merchandise as 0.4%. By comparison, copyright royalty and merchandise imports were 1.5% and 1.7% of trade in goods and services.[18] This suggests a deficit in Australia's balance of trade with respect to copyright product. This dependency of foreign IPR is revealed in Table 2.8 where we present merchandise trade in sound recordings between 1976-77 and 1996-97. This long-term picture of trade in sound recordings reveals Australia's increasing dependence on foreign repertoire with a deficit of $799 million in sound recording merchandise trade in 1996-97, compared to a relatively modest $26 million in 1976-77.

For the publisher and songwriter, the choice between physical exports and licensing has important income consequences, beyond those referred to in the accounting procedures of the current account. Publishing royalty rates vary from

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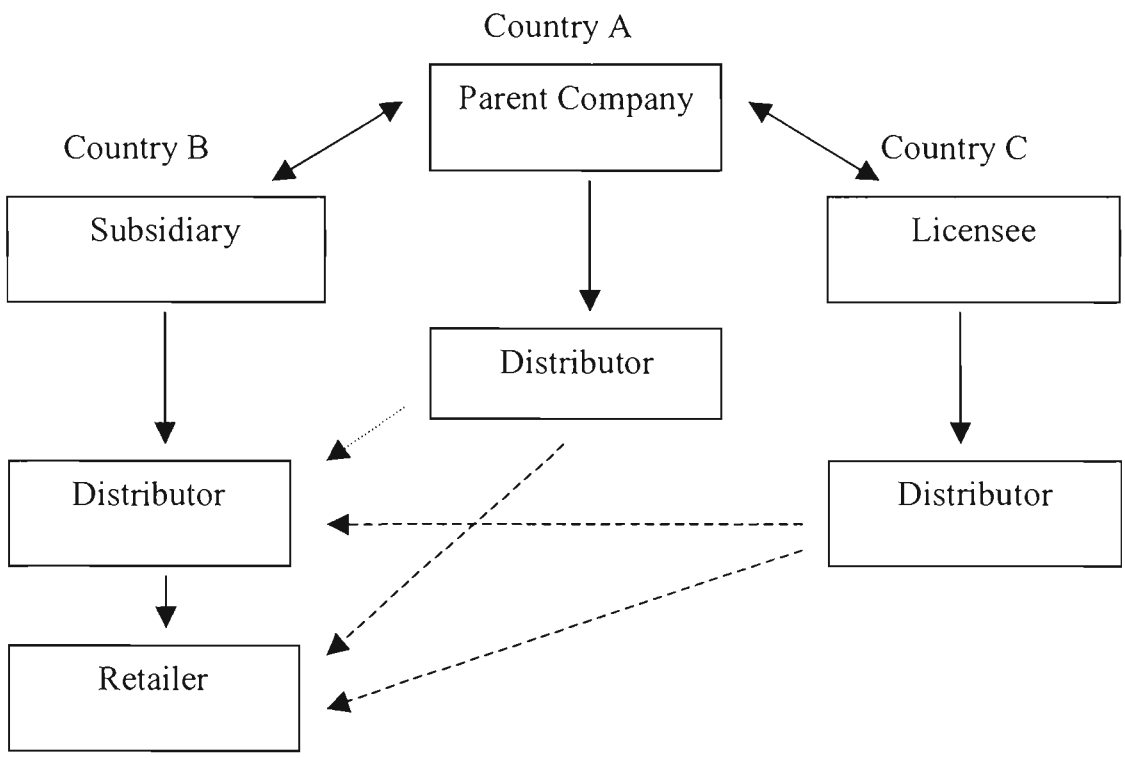
[18] Sound recording royalty and license trade are unavailable.

country to country. The applicable rate payable is that which applies in the country in which the sound recording is manufactured (duplicated). That is, a lower foreign mechanical royalty relative to that which prevails in the publishers home market, will translate into lower royalty income. Parallel imports involve the importation of sound recordings (produced under license for sale in another territory) by a party other than the local territorial license holder. By shifting production location and country of origin, parallel imports can have a significant impact on royalty income.

Figure 2. 10 International Licensing & Distribution Networks



In Figure 2.10 we present a typical international licensing and distribution network, between three countries (A, B and C). The Parent Company is located in Country A, the home country. It negotiates exclusive territorial licenses for its music catalogue to either a subsidiary (Country B) or an independent record company (Country C). These arrangements allow the territorial licenses to either import sound recordings from the Parent Company or to make reproductions of a sound recording from a master recording, for distribution in the designated territory. Likewise each territorial licensee (record company) will exclusively license (or assign) its music catalogue of sound recordings, developed in their respective territories, to the Parent

Company. These reciprocal licensing arrangements enable to Parent Company to control the international distribution and pricing of the combined music catalogues. For example, a sub-license granted by the Parent Company to the independent record company would allow that licensee (in Country C) to exclusively distribute the music catalogue of the subsidiary record company located in Country B. So as to avoid intra-title competition between licensees, licenses are normally limited to the distribution of the music catalogue within a specific territory, often identified on a national basis.

However, once an individual copy of a sound recording is sold to an independent distributor, this copy can then be resold to a distributor or retailer in a third country. These parallel import flows are represented in Figure 2.10 by dotted arrows. Parallel trade, or unauthorised exports/imports of legitimate copies sound recordings, can undermine the Parent Company's international distribution and pricing strategies. Distributors and retailers will be motivated to engage in parallel trade whenever a price divergence exists between territories. A strategy of price discrimination, that exploits territorial differences in price elasticity of demand, could only be sustained if parallel trade can be impeded. The impediment that facilitates copyright owner control over parallel imports is a statutory importation right embodied in national copyright laws. The controversy surrounding parallel imports is investigated in Chapter 3, where an economic analysis of the phenomenon is presented.

The right to commercially exploit copyright in the sound recording is what underpins the economic viability of the global music industry. This viability is threatened by any activity that impinges on these copyrights. Given the importance of copyright in the music industry, it is imperative that we investigate the economics of copyright as they apply to sound recordings. This analysis is presented in Chapter 3 as a prelude to the parallel import controversy.

2.4 Summary

The music recording industry consists of multi-product firms releasing numerous artist specific sound recordings per time period. Each new title represents an individual investment with high establishment costs. The stochastic nature of demand for sound recordings, and the ensuing uncertainty with respect to the volume of sales for specific titles, makes this a high-risk industry. However, successful titles can generate

enormous economic profits, a portion of which covers losses incurred on, what is for the majority of titles, unsuccessful releases.

Despite technological advances and declining barriers to entry, a small number of large MNE record companies dominate the sound recording industry. This market dominance prevails in both the domestic and international market. An understanding of these market and structural characteristics is essential in demystifying the nature of the contractual relationships between record companies, artists and songwriters. Central to this relationship is the commercial application of copyright. In Chapter 3 we investigate the economics of copyright, leading into an economic analysis of trade related aspects of music copyright.

Table 2. 1 Distribution of Income from a CD (Australia, 1999)

Income Component	%	$ (Retail Price)
Artist Royalty	5	1.45
Mechanical Royalty	6	1.88
Manufacturing	3	1.00
Sales Tax	11	3.00
Retailer	28	8.25
Record Company	47	14.07
Total	100	30.00

Source: Dywer, 1998.

Table 2. 2 Record Company Costs

Cost Component	% of Retail Price
Product Cost	12.6
Origination & Recording	2.5
Publicity	7.2
Distribution	2.1
Administration	5.7
Selling (Marketing)	4.7
Earning (before income and tax)	5.7
Artist Royalties (including advances)*	14.3
Mechanical Royalties	5.8
Sales Tax	12.1
Retail Margin	27.5
Total	100

Source: Price Surveillance Authority, Report No. 35, December 1990 (Figure 5.2 (p.78)

*The inclusion of advances, which are recoupable against artist royalties, undervalues the record company's share of income from the sale of a sound recording, 40.5% in Table 2.2 versus 47% in Table 2.1.

Table 2. 3 Cost of Production: Sample Sound Recording Title

Expenditure	$USD	Recoupable (a)	Items
Recording Advance	750,000	750,000	
Marketing Campaign	2,000,000	500,000	
Music Videos	800,000	400,000	
Independent Promoters	800,000	400,000	
Retail Product Placement & Tour Support	1,200,000		
Total	5,550,000	2,050,000	
Duplication Cost	1		
Distribution	1		
Artist Royalty (a)	1.50		
Mechanical Royalty (a)	1.50		
Marginal Cost	5		

Source: Philips (2001)

(a) Hypothetical values included for illustration purposes

Table 2. 4 Sound Recording Industry Market Shares

Record Company	Global Market Share (a) (%)	Concentration Ratio (Cumulative)	Australia (b)	Concentration
Universal	23	23	20	20
Sony	19	42	20	40
EMI	14	56	15.7	55.7
BMG	12	68	18	73.7
Warner	12	80	15.3	88

(a) MBI, 1999(a)

(b) MBI, 1999(b)

Table 2. 5 Top 10 National Markets 1999-2004

Country	1999	2004	Projected Growth (%)
US	13,286.5	14,309.1	20.2
Japan	6,847.3	7,211.3	9.0
Germany	3,109.7	3,195.5	3.1
UK	2,995.4	3,191.5	15.0
France	2,298.1	2,522.7	15.3
Brazil	876.4	1,399.5	16.7
Canada	974.5	1,145.2	16.8
Australia	788.4	998.5	37.6
Spain	629.4	890.0	48.8
Mexico	561.3	848.2	79.6

Source: MBI, 1999(a)

Table 2. 6 Record Company & Distributor Income: Australia

Income Items	$m
Sales of Recorded Music	
Released by the business	106.3
Distributed via licensing deals	447.5
Purchase for re-sale	53.8
Packaging & Distribution Fees	27.0
Sales of Sheet Music	0.2
Sales of Music Videos	9.6
Sales of Other Products	41.8
Publishing Royalties	9.7
Sound Recording Royalties	32.9
Other Income	25.1
Total	792.4

Source: ABS (1997)

Table 2. 7 Share of Traded Copyright in Total Trade in Goods and Services

	1996-97 (%)	1986-87 (%)
Exports		
Copyright royalties	0.8	0.4
Copyright merchandise	0.4	0.2
Total copyright material	1.2	0.5
Imports		
Copyright royalties	1.5	1.1
Copyright merchandise	1.7	1.8
Total copyright material	3.1	2.9

Source: Revesz, J. (1999) Table 4.10 (p.7)

Table 2. 8 Share in Merchandise Trade of Copyright related goods

	Exports (%)		Imports (%)	
	1996-97	1986-87	1996-97	1986-87
Books, newspapers, periodicals	0.37	0.12	1.08	1.60
Sound recordings, tapes, discs	0.13	0.11	1.14	0.79

Source: Revesz, J. (1999) Table B.2 (p.117)

3 The Economics of Intellectual Property and Copyright

In this Chapter we investigate the economics of copyright as applied to the music recording industry, and in particular, the international dimensions of trade in sound recordings. We present a critical review of international intellectual property (IPR) law and the controversy surrounding the exhaustion of copyright. This analysis enables us to ascertain the legal obligation, with respect to copyright exhaustion, imposed by membership to various international copyright conventions. A review of the literature on the economics of the exhaustion of copyright sets the scene for a more comprehensive analysis of the adoption of the principle of international exhaustion with respect to sound recordings in Australia.

3.1 Intellectual Property Rights

Intellectual property may be defined as the expression of an idea or concept as a consequence of an individual's creative endeavour. There are two main branches of intellectual property; industrial property (including trademarks, patents and industrial designs) and, copyright (relating to literary and artistic works). IPR law typically grant creators a bundle of exclusive rights. These amount to economic rights that enable the commercial exploitation of copyright product and are designed to encourage and reward creative effort. This encourages technological progress by enabling creators to derive financial rewards from their creations.

Intellectual property displays the public good characteristics of non-excludability and non-rivalry. Non-excludability refers to the difficulty faced by a creator in preventing unauthorised use. Non-rivalry means that the use of the creation by one person does not prevent use by another. Additional users neither reduce the quantity or the quality of the good. An obvious example of non-rivalry is the distribution of literary or musical works using the Internet where an infinite number of copies can be reproduced at close to zero cost. It may be conceptually useful to consider copyrightable creative works as "information goods" in which the creative work is fixed to an information carrier (Koboldt,1995), for example, a musical work fixed to a sound recording (CD or cassette). While rivalry and exclusivity exist for individual copies of a CD, the musical work itself can be separated from the original carrier and fixed to another. It is this separation and duplication that gives rise to the public good characteristics of the sound recording, and intellectual property more generally.

The public good nature of intellectual property, combined with high establishment costs and low reproduction costs, encourages imitation. Imitation of this kind is referred to as *free riding*; individuals waiting to copy the creation rather than engaging in creative endeavour themselves. The unauthorised commercial reproduction and distribution of intellectual product is referred to as *piracy*. A deceptive trademark or design used to "pass-off" as an original authorised product is typically referred to as *counterfeit* product.

Granting exclusive rights to creators of intellectual property provides the market power to commercially exploit the work and thereby provides the economic incentive for the creation/production of intellectual property. Exclusive economic (monopoly) rights to the intellectual property helps to eliminate free riding. Unfettered piracy would drive down the price of the creative work to the marginal cost of reproduction rendering it commercially unprofitable. Without the opportunity to commercially exploit the intellectual property, creators may be unwilling to allocate resources to creative activities. This would lead to *market failure*, the underproduction of intellectual property. The protection of IPR via copyright law prevents free riding and encourages the production of creative works.

A conflicting consequence of exclusivity, however, is a restriction in the dissemination of the intellectual property that reduces consumption levels. Dissemination increases consumption and thereby increases consumer welfare. Minimal rights for creators will encourage dissemination and enhance consumer welfare. This increased welfare has the consequential cost of reducing economic returns to copyright owners and thereby discourages creative endeavour. The static consumer welfare gains resulting from increased dissemination may therefore be at the cost of foregone dynamic gains resulting from decreased creative activity.

Numerous attempts have been made to construct economic models that identify the optimal level of protection, portraying copyright law as a means of achieving an efficient allocation of resources (Landes and Posner, 1989; Koboldt, 1995). While useful in helping to conceptualise the key issues confronting regulators, these models provide little hope of identifying the optimal level of protection. The information constraints are simply too restrictive. For example, Landes and Posner (1989) depict the supply of creative works (q) as a function of price (p) and a hypothetical index of copyright protection (z):

$$q = q\ (p,z) \qquad (3.1)$$

Following this procedure we can modify equation (3.1) to depict the consumption of creative works (c) as a function of p and z as follows:

$$C = c\ (p, z) \qquad (3.2)$$

The higher (lower) is z and p, the lower (higher) is c and the higher (lower) is q. That is, consumption is inversely related to copyright product price and the level of protection, while the supply of copyright product is directly related to copyright product price and the level of protection. The higher the value of z, the higher the market power enjoyed by creators, and thereby the higher the ensuing market price. The objective is to set z at a level that will maximise national welfare (w),

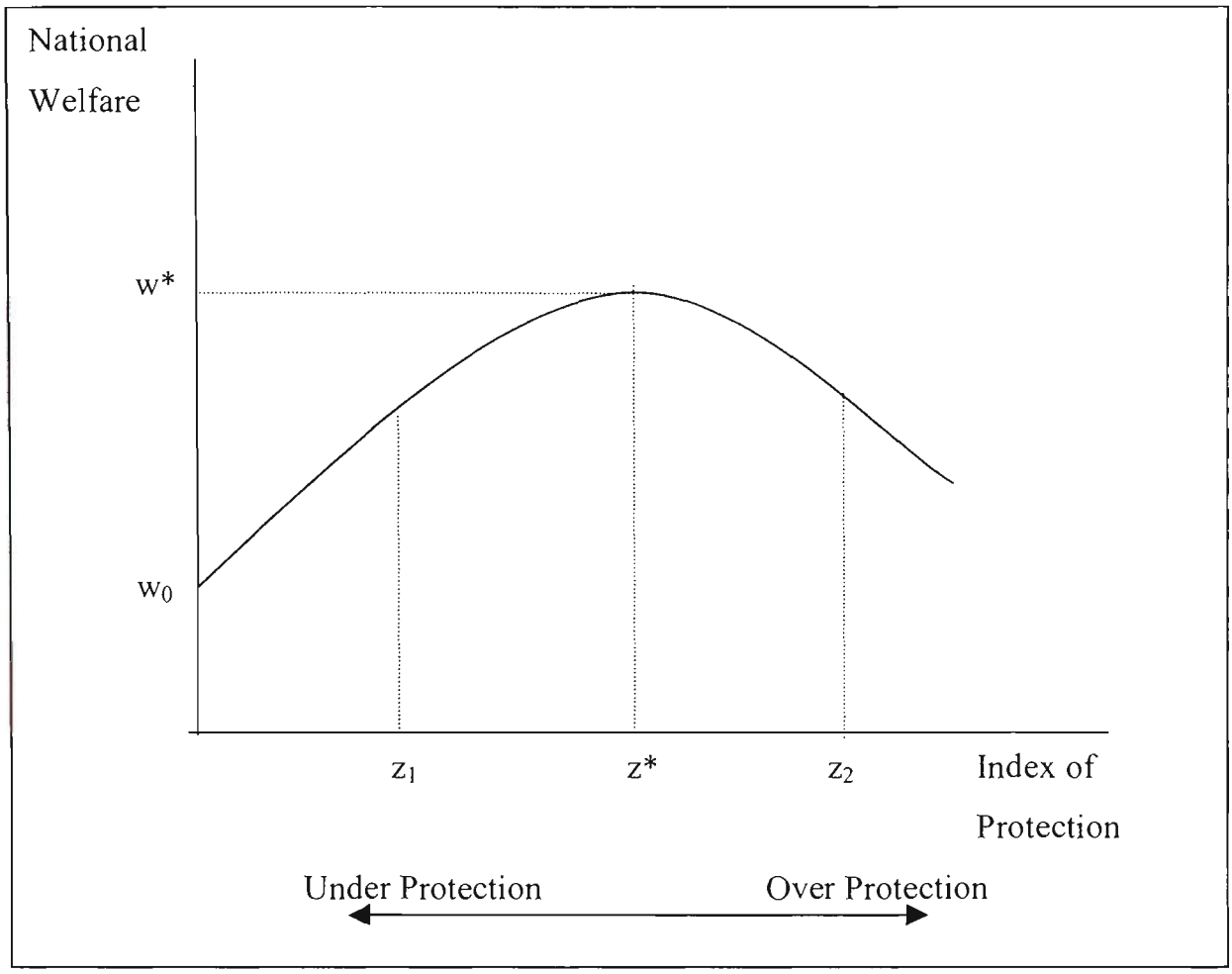
$$w = w\ [c(p,z),\ q(p,z)] \qquad (3.3)$$

Equation (3.3) depicts national welfare as a function of both consumption and production of copyright product, which are in turn a function of the level of protection and price.

> *The key issue is how the level of protection, z, ...is set along several dimensions. In general, the modern law of copyright makes intelligent estimates (about the level, breadth and duration of protection) (Landes and Posner, 1989:336)*

The challenge for policy makers is to set the appropriate level of market power in a way that balances the interests of both producers and consumers. The socially optimal outcome would be one in which the creator and/or producer is rewarded for their endeavour with a (normal) profit, while maximising consumption subject to the constraint of profitable commercial application. This trade-off can be illustrated in a diagram measuring the theoretical level of national welfare against varying levels of intellectual property right protection, as presented in Figure 3.1.

Figure 3. 1: The Welfare-Protection Trade-Off



At low levels of protection (z_1), creative works will be under-produced because unrestricted competition at the commercial application stage will result in significant levels of piracy. As the level of protection rises, the production of creative works increases thereby increasing consumption and social welfare. Increased protection will enable creators to charge a higher price and this will lower dissemination. Thus, while social welfare rises as we move toward the optimal level of protection, this rise disguises a shift in the distribution of income from consumers to producers of creative works. This redistribution continues as the level of protection rises. Beyond some theoretical optimal level of protection, depicted as z* in Figure 3.1, the market power of copyright owners is so high that the costs of reduced dissemination exceed the benefits derived from the production of additional creative works.

In a sense, setting the level of copyright protection is an attempt at balancing two welfare losses and gains. Increasing protection raises prices and induces an increase in the production of copyright product. This reduces welfare losses resulting from

piracy and underproduction while at the same time excluding potential consumers and thereby lowering consumer welfare. In reality, the information constraints are so severe that setting the optimal level of copyright protection is problematic. Referring to the first order maximisation problem derived from a model for optimal copyright protection, Koboldt (1995) states that it is obvious that:

> *the determination of the optimal level of copyright protection is a difficult task and requires lawmakers to possess complete information about the production technologies and demand structures. (p.147)*

Clearly, policy-makers do not, and will never have complete information. Setting the optimal regulatory regime is made even more difficult by the several dimensions of copyright protection, including the breadth, level and duration of coverage, and the nature and severity of the penalties for IP infringement. For this reason, the politics of competing interests often takes precedent over economic cost-benefit analysis in setting the regulatory framework, without any clear notion of net social gain.

> *...legal interest-balancing leads to no unique solutions, only acceptable bargaining outcomes. The law can more easily recognise the existence of competing interest than measure relative costs and benefits. Even more to the point, interest balancing embodies no clear notion of net social gain (Peyton 1986:92, in Office of Regulation Review, 1995)*

While there may be little hope that economic analysis can resolve the question of the appropriate scope of IPR protection it can nonetheless make an important contribution to our comprehension of the multidimensional nature of copyright law and the challenges faced by policy-makers in attempting to set the optimal level and nature of protection. More precisely, economic analysis can, at the margin, investigate and measure the likely distributional consequences of different levels of copyright protection for producers and consumers of copyright product and on overall social welfare. For example, economic analysis can effectively deal with the following question. Does the inclusion of a distribution right, in which the creator of a copyright product can control its distribution beyond the point of first sale, increase the production of creative works? If so, do the benefits thus derived, outweigh the costs to consumers and thereby increasing social welfare? The answer to this question is a key aim of this thesis.

3.2 *The Evolution of International IPR Conventions*

The importance of intellectual property in generating wealth for both individuals and nations has led to concerted efforts at the international level to create a legal and institutional framework to foster the recognition and protection of intellectual property. In 1886 ten nations established the *International Union for the Protection of Literary and Artistic Works* by signing the *Berne Convention for the Protection of Literary and Artistic Works (1886).* The latest revision taking place in Paris and producing the *Berne Convention for the Protection of Literary and Artistic Works Paris Act of July 24, 1971* (as amended on September 28, 1979). The primary purpose of this convention was to provide foreigners with protection equal to that enjoyed by local residents in member countries. The *Berne Convention* rests on three basic principles:

- National Treatment: copyright owners must be given equal protection in member countries as is granted to their own nationals.
- Automatic Protection: protection is not conditional on any formality, such as, registration (as is the case with a trademark, for example).
- Independence of Protection: that protection granted is independent of the existence of protection in the country of origin.

The *Berne Convention* provides protection for literary, dramatic, musical and artistic works. Sound recordings and broadcasts were covered by the inclusion of a category "subject matter other than works". The Berne Convention sets minimum standards of protection relating to the "economic rights" of creators. These exclusive rights include the right of:

- Translation (Article 8)
- Reproduction (Article 9)
- Public Performance and Communication (Article 11)
- Broadcasting (Article 11)
- Adapting, Altering and other Alternations (Article 12)

The general rule in relation to minimum duration of protection is the expiration of the 50th year after the author's death. The Convention also provides for certain "moral

rights" which bestow the right to claim authorship and the right to object to any modification or mutilation of the work that is detrimental to the author's reputation. In recognition of the welfare reducing effects of excessive market power, a number of exemptions to the bundle of exclusive rights are specified. Known as *fair dealing*, this includes the recording or reproduction of works for private use, research or study, criticism or review and reporting of news. As at October 15, 2000, the Berne convention had 147 member states (countries).

Efforts at protecting music copyright at the international level have not been limited to the Berne Convention. The establishment of the International Federation of the Phonographic Industry (IFPI) in 1933, today representing some 1,700 record producers in over 70 countries, was designed to focus efforts on enforcing intellectual property rights for the music industry and to help thwart the growth in international music piracy. The IFPI's goal is to secure effective legislation to protect intellectual property rights and to ensure adequate enforcement of that legislation.

> *Creating an international organisation such as the IFPI was seen as a means of establishing specific audio copyright legislation where it did not exist, and at the same time harmonising legislation so that piracy and parallel imports were illegal." (Burke, 1996:54)*

To help achieve this goal the IFPI negotiated the establishment of the *International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations,* otherwise known as the *Rome Convention (1961)*, which unlike the *Berne Convention* was specific to copyright in musical works, and designed to improve protection for artists and record companies. Specifically, the Rome Convention grants:

(i) performers exclusive rights to the communication of their live performance to the public, the fixation of their live performance (for example, as a sound recording) and the reproduction of such a fixation.

(ii) producers of phonograms (sound recordings) the right to authorise or prohibit the direct or indirect reproduction of their phonograms.

(iii) broadcasters the right to authorise or prohibit the rebroadcasting of their broadcast, the fixation and reproduction of any fixation of their broadcast.

Burke (1996), asserts that the specificity of the Rome Convention discouraged membership, which by 1970 amounted to only 11 countries. As at October 15, 2000 the Rome convention had 67 member states. Notably, as many as 30 members signed only recently (during the 1990s) and the U.S.A., a major exporter of music product, is not a signatory.

In light of this failure and the need to continually upgrade and improve international protection in the face of new challenges to the protection of copyright, the IFPI negotiated the introduction of the *Geneva Convention for the Protection of Producers of Phonograms Against Unauthorised Duplication of their Phonograms (1971).* This convention was less onerous on member countries as compared to the Rome Convention and was therefore more successful in attracting membership. By October 15, 2000 membership numbered 63 states and included the United Kingdom and the U.S.A. The main aim of the Geneva Convention was to combat the growth of piracy, particularly international piracy, where large quantities of pirate sound recordings were being distributed all over the world. International piracy increased as a consequence of technological developments, namely the shift from vinyl to audiocassette as the main sound carrier and the development of hardware technology (such as the twin audiocassette deck). These technological advances reduced the cost of duplicating sound recordings and thereby stimulated music piracy. To address this the *Geneva Convention* expressly prohibits:

(i) the making of duplicates without consent of the producer
(ii) the importation of such duplicates
(iii) the distribution of such duplicates to the public

The *Berne, Rome* and *Geneva* conventions are all implemented by an agency of the United Nations (UN), namely the World Intellectual Property Organisation (WIPO). Despite the comprehensiveness of these existing treaties, many developing nations have yet to become signatories of these international agreements, and some that did, failed to effectively enforce domestic IPR laws. As net importers of intellectual property, developing nations choosing to ignore the adoption and implementation of IPR laws are able to free ride on the creative efforts of foreigners in developed countries.

> *...it is in the narrow national interest of technology and entertainment importing countries not to pay much attention to IPR protection, because this way they might be able to acquire IPR goods at a cheaper price through imitation or copying (Revesz, 1999:XII)*

Technological progress has made copying of information goods, such as sound recordings and computer software, a fairly simple and inexpensive process. The next wave of sound carrier technology was the compact disc and digital quality audio. "CD-writers" (or *CD-burners* as they are often described) provide the opportunity to produce perfect reproductions (or clones) of the original sound recording. With the continuing reluctance of many countries to enforce IPR regulations, developing countries, led by the USA and the European Union (EU) pushed for the adoption of a new international treaty. The forum chosen was not WIPO but the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), now the World Trade Organisation (WTO). This new treaty was the *Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods* (TRIPS), which came into effect in 1995. Developing countries were induced to join TRIPS in return for the relaxation of controls over textile and agricultural imports by developed countries. This was a strategic move designed to extend membership to an international IPR convention, and importantly, one that is backed by the power of the WTO to enforce the law and impose penalties on rogue nations.

The TRIPS Agreement is the most comprehensive multilateral agreement on intellectual property thus far and covers copyright, trademarks, geographical indications (country of origin), patents, industrial designs, designs of integrated circuits and trade secrets. In relation to copyright, the TRIPS Agreement obliges members to comply with the main provisions of the *Berne, Paris, Geneva and Rome Conventions*. One advantage of negotiating an IPR agreement within the WTO is that it automatically extends coverage to all WTO member countries, some of which were not signatories to the WIPO conventions. In this way TRIPS is expected to help curb the growth in international piracy. The three main features of the TRIPS Agreement require:

(i) a set of minimum standards to be provided by each member

(ii) members to establish a set of domestic procedures and remedies for the enforcement of IPR

(iii) disputes to be subject to WTO settlement procedures.

It is this last element that makes the TRIPS agreement different from all preceding IPR conventions. TRIPS departs from earlier IPR treaties in that disputes between members will be subject to WTO settlement procedures, where a WTO panel can impose trade sanctions on countries in violation of the TRIPS agreement. By comparison, WIPO was considered to be a toothless tiger because of the absence of any effective enforcement powers.

There is an expectation among the net-exporters of intellectual property that TRIPS will bring about the international harmonisation of IPR laws. Samuelson (1999) suggests this is both difficult and undesirable because;

> *...national intellectual property laws are (especially copyright laws) often intertwined with cultural values and policies that are deeply connected to national identity. (p.97)*

She expresses concern over the *commodification* of artistic and literary works and suggests that the dominant values of free trade may bring about a homogenised global culture. With WTO settlement procedures in place to deal with disputes over IPR infringements, the cultural argument for intervention may well be deemed protectionist and subject to challenge. This potential loss of national autonomy and control over domestic cultural activities is of concern to many. Weinstock (1998) presents a model of copyright law in a framework of democracy rather than a mere item of international trade. He notes that:

> *...recent years have seen a dramatic move to reconceptualise copyright in terms of international trade. TRIPS epitomised that move. It aims to ratchet up worldwide copyright protection and enforcement in order to remove barriers to copyright industry exports. (p.218)*

There are few industries that do not rely in IPR protection of one form or another, be it, copyright, industrial design or trade marks. The phenomenon of globalisation is an inescapable process that is integrating markets and economies. Music is a global industry and the development of harmonised international IPR regulation is inevitable and will come at the cost of national legislative, and perhaps cultural, autonomy.

Notwithstanding these developments, WIPO remains an important international body in the protection of IPR and is collaborating with the WTO on these matters. Two

treaties were recently negotiated within WIPO in 1996, the *WIPO Performances and Phonograms Treaty* (WPPT) and the *WIPO Copyright Treaty* (WCT). These treaties are designed to update rights in the context of new digital and Internet technologies. The WCT requires signatories to comply with the main provisions of the Berne Convention and deals specifically with computer software and databases. The WPPT, on the other hand, deals with the IPR of performers (actors, singers, musicians, etc.) and producers of phonograms. It was introduced in recognition of the need to provide adequate solutions to the challenges of economic and technological developments, and in particular, the impact of the development of information and communication technologies, particularly the Internet, on the production and use of performances and phonograms. *Article 10*, the "Right of Making Available of Fixed Performances" and *Article 14* the "Right of Making Available of Phonograms" provide performers and producers

> *"...the exclusive right of authorizing the making available to the public of their performances fixed in phonograms, by wire or wireless means, in such a way that members of the public may access them from a place and at a time individually chosen by them." (WIPO, 1996(a))*

The right of "making available" is clearly designed to cover on-demand communication of copyright material via the Internet. These determinants of international sound recording piracy and the role played by economic factors will be examined in Chapter 4. In the next section we investigate one of the more controversial aspects of copyright protection; the exhaustion of copyright, importation right and parallel imports.

3.3 The Distribution Right and the Principle of Exhaustion

Copyright law in most countries bestow a bundle of rights on creators, including the right to make copies available to the public. This amounts to a right of *first sale* or distribution. However, copyright law generally provides that the distribution right is *exhausted* with respect to a particular copy, after the copyright owner or his/her licensee has sold that copy. The principle of exhaustion means that the purchaser of the copyright product can subsequently re-sell the product without the consent of the copyright owner. It is for this reason that it is also referred to, principally in legal literature, as the *first-sale doctrine*.

The principle of exhaustion lies at the heart of a contentious and unresolved issue in international law; whether or not the copyright owner should control distribution beyond the first sale. Under the principle of *international exhaustion* (sometimes referred to as universality) the exclusive right to distribute a work is extinguished after the first sale of a particular copy anywhere in the world. The rationale behind this is that the copyright owner, having sold the product, has obtained the benefit of exclusive commercial exploitation rights bestowed by IPR law and should no longer control its distribution beyond the first sale. Under the principle of national exhaustion (or territoriality), however, the exclusive right to distribute survives until the first sale of a particular copy within a specific nation. The sale of a copyright product in one country does not extinguish the right of first sale for that same copy in a second country.

The adoption of national exhaustion amounts to granting an *importation right* in which only the copyright owner or their licensed agent can legally import copies of a copyright product for distribution to the public. In effect, this amounts to a prohibition on parallel imports. Parallel imports refers to copyright product manufactured within a specific territorial jurisdiction by the owner of the copyright or their authorised licensee, which is then imported for re-sale into another territorial jurisdiction by someone other than that territory's copyright license holder.

The importation right enables copyright owners to partition the global market into national segments, setting price according to the price elasticity of demand in each segment, and thereby extracting monopoly profits (PSA, 1990; Capling, 1997; Richardson, 1996; Papadopoulos, 2000). In this context, it has been argued, that parallel imports provide effective competition to authorised distribution channels, thereby breaking this anti-competitive strategy. Proponents of the importation right argue that parallel import restrictions are expected to bolster the protection of copyright for the owner or licensee within a specific territorial jurisdiction and remove distortions arising from rivalry between licensees operating in different (national) territories. The latter argument amounts to the utilisation of government intervention (IPR law) to assist copyright owners in governing the vertical distribution of copyright products. In 1997 the U.S. Trade Representative threatened to initiate proceedings against Australia in the WTO if it proceeded with the planned amendment to the *Copyright Act 1968* that would allow parallel importation of sound recordings. This implied that Australia would be in breach of its international obligations with respect to the TRIPS Agreement. In the

following section we review international IPR law to evaluate the merit of this argument.

3.4 International IPR Law & the Exhaustion of Copyright

There are essentially two sets of international laws with respect to IPR, those managed by the World Intellectual Property Association (WIPO) and more recently, those embodied in the TRIPS Agreement of the WTO. An IPR owner's exclusive right to make the product available for sale is incorporated in the *Berne Convention*, *Rome Convention* and *Geneva Convention*. These conventions are described in considerable detail in section 3.2. Disputes arising between convention member countries can be brought before the International Court of Justice.

Distribution is a key right identified in the World Copyright Treaty (WCT) and World Phonograms and Performers Treaty (WPPT). The WPPT (1996) defines the right of distribution in Article 12 (paragraph (1)):

> *Producers of phonograms shall enjoy the exclusive right of authorising the making available to the public of the original and copies of their phonograms through sale or other transfer of ownership. (WIPO, 1996 (a))*

Importantly, paragraph two of Article 8 explicitly avoids determination with respect to the timing of the exhaustion of this right.

> *Nothing in this Treaty shall effect the freedom of the Contracting Parties to determine the conditions, if any, under which the exhaustion of the right in paragraph (1) applies after the first sale or other transfer of ownership of the original or a copy of the phonogram with the authorisation of the producer of the phonogram. (WIPO, 1996 (a))*

The text of WCT (Article 6) is identical except that it refers to the making available of "literary and artistic works" rather than phonograms. In other words, members of both conventions are free to determine the timing of the exhaustion of the right of distribution and adopt the principle of national or international exhaustion as they see fit.

Negotiations within the WTO, as evidenced in the text of the TRIPS Agreement, have also left the controversial issue of the importation right up to individual national regulators. Article 6 of TRIPS deals with the issue of exhaustion in the following way.

> *For the purposes of dispute settlement under this Agreement, subject to the provisions of Articles 3 and 4, nothing in this Agreement shall be used to address the issue of the exhaustion of intellectual property rights. (Part I: General Provisions And Basic Principles)* (WTO, 1995)

Unable to agree on whether the principle of national or international exhaustion should prevail, negotiators agreed to disagree and this question was left to individual member states to determine at a national level. Patented products would seem to be an exception to this rule as indicated in Article 28, which confers the following exclusive rights:

> *...where the subject matter of a patent is a product, to prevent third parties not having his consent from the acts of: making, using, offering for sale, selling, or importing (footnote) for these purposes the product;*

This would seem to suggest that patent owners have exclusive importation rights and that member states are unable to adopt international exhaustion with respect to patents. However, the footnote specific to the importation right states that the rights conferred are subject to Article 6. This seemingly contrary indication might be explained by Article 28, which prohibits importation, or any other act specified therein, by third parties "without the owners consent". The making available or distribution of the patent product in a member country would suggest consent and thereby enable third parties to import and distribute copies first sold overseas.

The issue of the exhaustion of copyright has implications for the nature of the bundle of exclusive rights and market power bestowed copyright owners, and thereby on the distribution of income between consumers and producers of copyright product. Moreover, in an international context it can impact upon the distribution of income and welfare among nations via its impact on domestic prices and trade flows. This would seem to have been recognised during the negations of the TRIPS agreement. Specifically, Article 7 states that IPR laws should promote technological innovation, transfer and dissemination:

> *...to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to balance rights and obligations.*

This statement would seem to provide support for a policy of selective international exhaustion by product class, as espoused by Donnelly (1999). That is, either national or international exhaustion should be adopted for specific classes of products (for example, sound recordings and business software) where it can be demonstrated that the adopted position "balances rights and obligations" in a way that maximises social and private efficiency. Indeed, Article 8 of TRIPS makes it clear that WTO members have the right to adopt national rules and policies to prevent restrictive practices by IPR owners.

> *Appropriate measures...may be needed to prevent abuse of IPR by holders or the resort to practices, which unreasonably restrain trade or adversely affect the international transfer of technology.*

In specific product classes the exploitation of an importation right embodied in the principle of national exhaustion may be deemed to "unreasonably restrain trade" and be detrimental to the national welfare of a member state. Specifically, an importation right may enable copyright owners and their licensees to extract monopoly profits from a specific territory at the expense of domestic consumers. Indeed, the potential for certain types of licensing arrangements to be anti-competitive was recognised within Section 8 of TRIPS which explicitly deals with "Control of Anti-Competitive Practices and Contractual Licences". Article 40 enables member states to adopt appropriate measures to prevent anti-competitive practices. Parallel import prohibitions have been described, in some quarters, as anti-competitive and the adoption of the principle of international exhaustion for the purpose of removing price discrimination and/or collusive conduct by monopoly IPR rights holders is consistent with this section of the TRIPS Agreement. It would seem that under international law neither the WTO or WIPO treaties prescribe either national or international exhaustion with respect to the distribution right. We now briefly review the literature on this legal issue.

In an investigation of patent rights under WTO laws, Bronckers (1998) seeks to answer the legal question of whether the WTO obliges or prohibits member countries from adopting international exhaustion. In doing so he deliberately ignores the economic issues and welfare implications relating to the timing of the exhaustion of the distribution right. In a review of the negotiating history of the TRIPS Agreement Bronckers points out that the primary objective for developed countries was to improve the effectiveness of IPR protection in developing country markets. Moreover, the

dispute resolution mechanisms of the WTO would provide the necessary vehicle for the effective implementation of enforcement measures against offending member countries. This was something that was lacking in the WIPO treaties. Under the dispute settlement mechanism of the WTO, a member country can initiate the establishment of a tribunal to adjudicate alleged violations by another member country. Importantly, WTO and TRIPS now provide for cross-sectoral retaliation. If a member country infringes on copyright, then the aggrieved national government can impose a punitive tariff on another product, say clothing. Under the old GATT framework, the country imposing the tariff would have been in violation of the GATT (Nimmer, 1995). Bronckers points out that, as disputes between parallel importers and copyright owners or licensees often occur in the same country, WTO and TRIPS are unable to assist in settling what are essentially domestic disputes.

On the issue of the exhaustion of the distribution right, Bronckers contends that TRIPS was not intended to rule on the issue of exhaustion of IPR and that any creative interpretation to the contrary could not be used to impose restrictions on member countries with respect to their ability to independently rule on this issue. Citing a ruling by the WTO Appellate Body (to which a member state can appeal if unsatisfied with the decision of the tribunal) Bronckers demonstrates that in the context of ambiguity the less onerous meaning (in terms of obligations and sovereignty of members) is to be preferred to the more onerous.

> *Accordingly, from a WTO perspective, the discussion of the proper policy to be followed by individual Member States on the exhaustion of patent rights is entirely open. The WTO members must reconcile their views on policy, rather than on law, where the exhaustion of rights is concerned. Thus, if policy-wise it made sense to negotiate different rules on exhaustion for patent rights than for trademark rights, then there is nothing in WTO law that would prohibit this. (Bronckers, 1998:159)*

This conclusion is consistent with the policy options suggested by Donnelly (1997) regarding the adoption of selective international exhaustion by product class, based on the economic costs and benefits unique to a specific product. Donnelly presents an excellent review of the legal precedent (judicial rulings) with respect to parallel imports and the exhaustion of rights in the U.S., Japan and E.U., highlighting the somewhat complex and confusing legal environment within which traders are operating.

> *The current state of the exhaustion of rights principle internationally is uncertain and ambiguous and the practical results of the fractured state of the law probably makes little sense to commercial traders...The move towards the intellectual harmonization of intellectual property laws is clear and growing. (Donnelly, 1997:496-497)*

However, attempts at international harmonisation to date, as evidenced by the TRIPS Agreement, have proved difficult. Donnelly concludes that harmonisation of laws is necessary and considers four harmonisation models: *international exhaustion*, *national exhaustion*, *selective international exhaustion by product class*, and *rule of reason exhaustion*. National exhaustion, he argues, is inconsistent with the fundamental principle of international harmonisation and the harmonisation of rules within free-trade areas such as the E.U. and NAFTA. International exhaustion would seem to be the simplest model but, given the diverging views of numerous national governments on this issue, is not at present feasible. For this reason, Donnelly suggests that the remaining two models are achievable and consistent with present international IPR laws.

Selective international exhaustion by product class is a hybrid model of national and international exhaustion.

> *Such a position has been investigated by the Japanese Ministry of International Trade and Industry. One option considered was to authorize parallel trade of products such as compact discs and watches but bar parallel imports of products such as industrial machinery and electrical goods. (Donnelly, 1997:499)*

The advantage of this model is that it provides the flexibility for policy to respond to the specific circumstances prevailing in a particular product market rather than apply either national or international exhaustion universally. This approach is consistent with Article 6 of TRIPS whereby each government is free to determine policy with respect to IPR law (patent, trademark, copyright etc.) in each product class (sound recording, business software, machinery etc.)

The R*ule of Reason Exhaustion Model* sets international exhaustion as the default, with the possibility of an IPR holder making a case that the IPR has not been exhausted by the first sale in another territory.

> *The strength of such a model of harmonization is its ability to accommodate many interests. On the one hand, it has as the default rule international exhaustion which is both theoretically appealing and most vigorously promotes free trade and movement of goods. On the other hand, it affords intellectual property owners – acting through their government if necessary – the ability to prevent the exhaustion of their IP rights when circumstances warrant it in light of the policies of intellectual property rights and free trade in goods and services. (Donnelly, 1997:500)*

However, as Donnelly points out, genuine harmonisation would require consistent rulings in determining the validity of exemptions to the rule. This ambiguity is likely to result in considerable disputation. In practical terms I do not believe there to be a significant difference between the proposed hybrid models. In either case, a policy review committee would need to be established in which each product class would be examined and the economic, commercial and welfare implications considered. Representations and submissions would be sought from all interested parties after which, balancing the costs and benefits, a position would be reached regarding the exhaustion of IPR and parallel imports.

In the rule of reason model, this process would be initiated by the IPR owner or their territorial agent. In the alternate hybrid model, the process would be initiated by government, which would conduct a policy review over a period of time, investigating each product class sequentially. As will be demonstrated in Chapter 4 this was the approach taken by the Australian government on the issue of the exhaustion of IPR and parallel imports, which first ruled on books, then sound recordings and more recently, computer software.

In an investigation of the cultural dimensions of the TRIPS Agreement, Samuelson (1999) contends that the objective of the developed countries was to bring IPR within the dispute resolution framework of the WTO. This would ensure that national governments enact and implement laws that prohibit piracy and counterfeit. Samuelson expresses concern over the use of TRIPS as a means of harmonising IPR laws if it leads to further international acceptance of the "freedom imperialism" already embodied in the WTO. She contends that the artistic and cultural nature of many copyright products may provide justification for specific national laws that protect products that are deemed to be of national cultural significance.

...substantial harmonisation of national intellectual property laws may be difficult to achieve unless one wished to bring about a homogenized global culture of which commodification and free trade are dominant values. (Samuelson, 1999:98)

The potential distortion of economic activity and resources resulting from the importation right, a form of non-transparent trade barrier, clearly warrants further investigation to determine its relevance in the contemporary trading environment. Indeed, while copyright has historically been defined on a territorial basis, there are two contemporary developments that will render these practices obsolete in the near future. The first development is the integration of the global market and the continuing establishment and extension of free trade areas. A good example of the latter is the EU "Rental Directive", which allows individuals or companies to purchase and import copyright goods from any EU member country, irrespective of the territorial jurisdiction of the copyright license holder from which they are purchased. That is, the EU applies a notion of *community exhaustion*. No doubt contractual arrangements between copyright owners and licensees within the E.U. are adapting to this changing regulatory environment. This would add some credence to the argument that the conflict between the territorial license holder and the parallel importer is a contractual problem between the copyright owner and the licensee. Secondly, changes in digital technology and the Internet provide for the direct sale of copyright material to consumers in other territorial jurisdictions, while on-line delivery of digital quality sound recordings will challenge traditional means of promoting and distributing sound recordings.

Exclusive territorial licenses mean that, in practice, parallel importation is severely restricted. This provides the copyright holder, often the local subsidiary of a MNE, with exclusive importation and distribution rights. This exclusivity may impact upon the structure of the domestic market, influence prices and quantity traded and cause a redistribution of income between copyright owners and consumers and between foreigners and local citizens. We now review related literature investigating the economics of parallel imports generally with a view to developing a theoretical model of parallel imports with respect to sound recordings.

3.5 *The Economics of Exhaustion and Parallel Imports: A Review of Literature*

The term parallel imports itself suggests that there exists two separate but parallel import flows for the same product. Generally speaking, parallel imports refer to the unauthorised importation of goods for sale in a country other than that for which they have been authorised. Following Chard and Mellor (1989) there are 3 distinct situations in which parallel imports can occur:

- goods are produced locally for export, which are subsequently re-imported without the authorisation of the territorial license holder;
- unauthorised imports compete with authorised domestically produced goods; and
- unauthorised imports compete with authorised imports.

Clearly then, the term parallel imports is being used fairly loosely to describe a range of transactions and not just the strict definition of two separate but parallel inflows of the same product as described in (iii) above. In each case described parallel imports results in an unauthorised but parallel distribution channel for copyright product authorised for sale in another territory. This amounts to intra-brand or, in the case of a sound recording, intra-title competition.

The rationale for the importation right as outlined in the HMSO Report of the Copyright Committee, London, 1952 (cited in SLCLC Report, 1998:3) may be summarised (and generalised) in the following way. Copyright is often assigned or licensed on a territorial basis. A creator may retain copyright in the home country, while licensing it in a second country and selling it outright in a third country. It is therefore desirable to prevent the importation of material which, though made lawfully in another country, would compete with material lawfully produced locally and would infringe copyright if made locally. The importation right provides the copyright owner with greater control over the vertical distribution of copyright product throughout the global economy.

However, as parallel imports are authorised copies manufactured legally in another country, it cannot be argued that importation is, in itself, an infringement of copyright. Indeed, it could be argued that the production and sale of an authorised copy

of the copyright product anywhere in the world should exhaust the owner's copyright over that specific copy. That is, having once sold an authorised copy of the product, the copyright owner or its licensee should not thereafter control its subsequent distribution. In the context of the principle of international exhaustion, the importation right is an extraterritorial right and an extension of rights beyond that required to address the free-rider problem, and as such, may increase the commercial value of copyright.

> *Any provision in national law that the holder of copyright may also award rights to distribute copyrighted material to others in foreign jurisdictions is an additional and incidental benefit. The result is twofold: it secures a second payment for copyright; and it is an extraterritorial extension of authority. (Oxley, 1998:4)*

Oxley, former Australian ambassador to the GATT, was critical of U.S.A. threats of retaliation should Australia proceed with amendments to the *Copyright Act 1968* that removed parallel import restrictions on sound recordings. Oxley describes these restrictions as a non-tariff barrier to trade and a direct contravention of the GATT rules. Indeed, it can be argued that parallel import restrictions contravene the underlying principles of free trade embodied in the GATT and WTO.

Having established that there is no legal impediment to the adoption of international exhaustion, we now examine the economic literature on the phenomenon of parallel imports and the issue of national versus international exhaustion. An investigation of the economic costs and benefits of parallel imports should enable us to determine whether or not, policy wise, international exhaustion is superior to national exhaustion.

In an analysis of the global welfare consequences of allowing parallel imports in the presence of price discrimination, Malueg and Schwartz (1994) argue that price discrimination is (welfare-wise) superior to uniform pricing. Price discrimination would enable IP owners to supply low-income countries, while parallel import prohibition would ensure that these products would not be re-exported to high-price markets. They acknowledge, however, that the adoption of international exhaustion by individual (high-income) countries may increase national welfare.

In an extension to this analysis, Richardson (2002) portrays national policy vis-à-vis parallel imports as a game in which individual countries choose national or international exhaustion "simultaneously and non-cooperatively" (p.235). The model

predicts that high-income countries that permit parallel imports (and the ensuing arbitrage operations) can undermine a strategy of international price discrimination. The resulting Nash equilibrium is a uniform world price. As noted by Malueg and Schwartz (1994), this would result in low-income countries being dropped (excluded) with a consequentially reduction in global welfare. However, Richardson demonstrates that low-price countries can support the monopolist's international price discrimination strategy by prohibiting parallel exports. Richardson acknowledges that this is a policy not observed in practice and that it is the monopolist rather than a national government that is more likely to impose restrictions of this nature.[1]

Chard and Mellor (1989) investigate the economic effects of parallel imports and provide an excellent review of the motivating factors for IPR owner attempts to prevent unauthorised trade in IPR product. Since parallel imports displace sales by authorised local licensees, then it is reasonable to assume that they lower the collective profit of the copyright owner, their licensees and authorised distributors. IPR owners can restrict parallel imports via copyright law (in the form of an importation right) or via contract law, whereby licensing agreements prohibit the sale of the product outside a designated territory. A prohibition on parallel imports would protect the interests of individual agents, who have been granted exclusive territorial distribution rights, by limiting opportunistic selling and competition between licensees and authorised distributors.

That the contractual solution is imperfect is evidenced by the growing trade in parallel imports across a wide range of IPR product markets. Moreover, as Chard and Mellor point out, the vertical restrictions between licensees and distributors may contravene domestic competition policy which often precludes vertical restraints such as exclusive dealing. The range of motivating factors citied by the authors for the IPR owner attempts to prevent parallel imports are:

- quality consistency in the eyes of the consumer
- maintenance of pre-sales and after-sales services
- efficient collection of information and investment decisions
- collection of lump-sum fees

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[1] Indeed, as noted in Chapter 4, this is the strategy adopted by Australian subsidiaries of MNE record companies attempting to impede parallel exports from Indonesia that competed with full-price sound recordings in the former market.

- detection of illicit copies
- creation and maintenance of monopoly power and
- price discrimination

We examine each of these factors in turn to consider their relevance to the market for sound recordings.

Product Quality

In the case of trademark or patent related products, goods manufactured and sold under license may have varying quality specifications as required by local national laws. Parallel imports could thereby undermine quality assurance measures undertaken by territorial licensees, where products of varying qualities are traded across territories. Since sound recordings are essentially clones of the master recording, the issue of quality control is irrelevant to this particular product market.

Investment in Pre-Sales and After-Sales Services

The prevailing price in a domestic market typically incorporates a margin to cover an investment in pre-sales and/or post-sales services. Parallel imports free ride on these investments and can potentially undermine the provision of these services to consumers, leading ultimately, to a reduction in sales. After-sales services, such as the provision of warranties and repair services, are important features of many trademark products but are irrelevant to the market for sound recordings. Chard and Mellor cite examples where parallel imports in the USA are pronounced in IPR product markets where marketing expenses are large relative to selling price (8 to 25%) while shipping costs are relatively low (1%). This type of free riding on pre-sales marketing and promotion expenditure can severely undermine the profitability of local licensees and distributors. Marketing and promotion are financially significant activities in the music recording industry, and represent a critical element of competition between rival firms in the market for sound recordings. The characteristics of this aspect of the market for sound recordings, and the economic consequences of parallel imports, warrants further investigation.

Sales Information and Investment Planning

In the absence of parallel imports, local licensees will be free to focus on market conditions in the domestic territory and need not concern themselves with the disruptive influences of intra-brand competition from overseas licensees and/or distributors. By displacing authorised sales parallel imports can make it difficult to monitor domestic sales and thereby disrupts marketing, promotion and infrastructure investment by the local licensee/distributor. To the extent that this results in inefficiencies in information collection and investment planning, parallel imports could have a detrimental effect on the territorial market. In the case of sound recordings, the volume of sales of artist specific titles is closely monitored at the point-of-sale (retail stage). This data forms the basis of the compilation of various music charts that monitor the popularity of individual titles by sales volumes. Parallel imports will be sold alongside authorised product within the various types of retail outlets and will be captured by this monitoring system. This data could provide authorised local distributors with the information required to estimate total sales of a specific title. As such, the information and planning argument is unlikely to have any relevance to the market for sound recordings.

Recouping Lump Sum Fees

Where a territorial licensee pays a lump-sum fee to the IPR owner in exchange for exclusive rights to a specified territory, he will justifiably demand security with respect to the territorial market from which they will recoup that investment. Competing with low-priced parallel imports undermines the licensee's ability to do so. This in turn will undermine the IPR owner's ability to negotiate favourable license fees that maximise global profits. We are unaware of any arrangements within the sound recording market that require local licensees to pay lump-sum fees. Typically royalties and fees for sound recordings are paid on a volume basis.

Detection of Illicit Copies

It is contended that parallel imports make it more difficult to detect IPR infringing (pirate and counterfeit) product. IPR infringing product can enter a national market:

- via a customs port, purporting to be authorised or legitimate product,
- via a clandestine port (smuggled via illegal points of entry), or
- camouflaged within a consignment of legitimate product

In the second and third scenarios, the implication is that where parallel imports are permitted, it will be difficult to distinguish between legitimate and illicit product. Chard and Mellor (1989) suggest that the problem caused by parallel imports in the detection of infringing product is not a major reason for IPR owners wishing to prevent parallel imports.

However, in the market for sound recordings, this may be a serious concern since advances in duplication technologies (CD pressing and cover jacket printing) is so advanced that it is difficult, and sometimes impossible, to distinguish between authorised and illegal reproductions of a sound recording. The allocation of exclusive territorial licenses means that only the local agent has the copyright owner's authority to import copies of a sound recording title. Parallel imports will increase the number of import consignments and thereby reduce the probability and risk of detection for smugglers of pirate product. Accordingly, the level of sound recording piracy in a parallel import environment may be a valid concern and is worthy of further investigation. The phenomenon of international sound recording piracy will be investigated in some detail in Chapters 4 and 5, and not discussed herein.

Monopoly Power

Exclusive territorial licenses bestow monopoly power on the domestic agent with respect to a particular brand of product. Restricting intra-brand competition is not in itself anti-competitive. Indeed, exclusive territorial licenses can have a pro-competitive influence by enabling the territorial licensee to focus on rivalry with competing brands, rather than being distracted by free-riding parallel importers. The argument is that, free riding by parallel traders may result in lower levels of pre-sales and after-sales investment by authorised local agents and reduce the availability of inter-brand substitutes. However, any assessment of the potential impact of parallel imports on the competitive environment must first consider the nature and degree of inter-brand competition. This point was acknowledged by Chard and Mellor (1989):

> *A proper analysis requires an examination of inter-brand competition and should not be limited to an examination of intra-brand competition. (p.76)*

In an oligopolistic market, parallel import restrictions may be used to facilitate collusive pricing by IPR owners and/or their licensees. Parallel imports undermine this strategy

and can reduce profits of IPR owners, licensees and distributors within a specific territorial market. Given the oligopolistic nature of the Australian and global sound recording market, monopoly power and collusive pricing may be a motivating factor in IPR owner preference for national over international exhaustion. The structure of the international and domestic market for sound recordings, and the potential impact of parallel imports, warrants further investigation.

Price Discrimination

The segmentation of the global market into smaller national markets enables IPR owners to set territorial prices so as to maximise global profits. This price discrimination strategy would be undermined by parallel imports from low to high-priced markets and, thereby, lower global profits. Chard and Mellor (1989) point out that territorial price differentials are not evidence of price discrimination but could instead reflect variations in costs, such as pre-sales and post-sales investments. Moreover, price discrimination is only possible where IPR owners possess considerable market power and there is minimal inter-brand competition.

> *If aggressive inter-brand competition exists in a market, attempts by a trademark owner to discriminate in price against consumers in that market will fail. Inter-brand competitors will simply undercut discriminatory prices and thus reduce the market share of the trademark owner. Trademarks are perhaps less likely to confer monopoly power than patents or copyright. (Chard and Mellor, 1989:77)*

In the case of sound recordings, a record company has monopoly control over an artist specific sound recording. Given the nature of demand for a hit-record, one could reasonably argue that, for the period in which the title was popular, there exists little inter-title competition. This temporary monopoly power, combined with the potential for collusive pricing between a small number of dominant firms, provides the conditions for monopoly pricing. In an international context, this collusive conduct could result in a regime of discriminatory prices based on varying elasticities of demand across territories. Price discrimination, as a motivation for preventing parallel imports of sound recordings warrants further investigation.

The final analysis presented in the Chard and Mellor paper, is the welfare effects of parallel imports. They identify two countervailing welfare effects resulting from

parallel imports. Parallel imports may reduce efficiency by reducing the quality of pre-sales and post-sales services, and raise costs by disrupting investments plans and reducing innovation. On the other hand, by undermining collusive pricing and price discrimination strategies, parallel imports can improve efficiency by promoting competition. Lower prices benefit consumers while lowering profits to domestic IPR owners. Chard and Mellor argue that we cannot determine the net-welfare effect for an individual nation without knowing the size of these two opposing forces. If parallel imports reduce productive efficiency then consumers and producers will be worse off, and national welfare will decline. If parallel imports simultaneously undermine collusive behaviour then the welfare consequences are more complex. Lower prices enhance domestic consumer welfare and would likely outweigh losses in profits to foreign IPR owners, resulting in an increase in national welfare. However, Chard and Mellor note that, parallel imports can reduce the profits of domestic rights holders on sales in foreign countries. The net-welfare effect, they argue, is therefore unclear.

In assessing the likely costs and benefits of parallel imports on the various stakeholders, Chard and Mellor conclude:

> *Our assessment of the costs and benefits of parallel trading suggests that there are fairly certain welfare losses to domestic consumers in terms of less reliable quality, fewer pre-sales and after-sales services, fewer innovations and possibly higher prices in product markets. There may be some benefits to consumers of parallel trading, especially when foreign-based rights owners are discriminating in price against domestic consumers. Given, though, that the net benefits of parallel trading in undermining price discrimination are as likely to be negative as they are to be positive, we conclude that the overall balance of effects of parallel trading is probably adverse." (p.79)*

Competition policy, they argue, is the most appropriate means of dealing with the situations in which exploitation of IPR has negative economic consequences. This is a somewhat general conclusion regarding the adoption of international exhaustion with respect to all IPR related products. It ignores considerable variation in market conditions prevailing in various IPR markets, the relative size of the respective IPR markets prevailing in individual nations and the level of intra-industry IPR trade. We argue, however, that one can state with a considerable degree of confidence that national welfare is more likely to increase for a net-importer as compared to a net-exporter of IPR product. Moreover, the unique characteristics of the market for sound

recordings and the prevailing market structure in both the domestic and international market place, would suggest that the welfare enhancing effects of parallel trade may outweigh the welfare reducing effects, for a country like Australia. This proposition will be explored in greater detail in Chapter 4, where we present a welfare analysis of the effects of parallel imports for a net-importer of sound recordings.

This product specific approach to the welfare analysis of parallel trade was followed by Abbott (1998), who investigates the question of whether the benefits of a monopoly importation right outweigh the potential costs resulting from the anti-competitive trade-impeding effects of national exhaustion. He concludes that the benefits that might ensue from an importation right are insufficient to justify the fettering of trade in authorised product. Most of the objectives that IPR owners attempt to achieve via this vertical restraint, he argues, are achievable via contract.

> *The underlying purpose of each form of IPR is substantially different, and it should not be assumed that data and conclusions with respect to one form of IPR will be equally valid with respect to the other forms. (Abbott, 1998:614)*

While vertical territorial restraints might be justifiable in the field of patents, for the purpose of protecting investment in pre-sales and post sales services, it does not necessarily follow that this applies to copyright products. In relation to the proposition that copyright owners will respond to the international harmonisation of IPR laws and the adoption of international exhaustion by excluding developing country markets (from which low-price products are redirected to high-price markets) Abbott contends:

> *It remains to be explained why software developers should not be required to face price competition in international markets as other products, and to charge a price that allows them a reasonable rate of return across all markets, even if this means reducing prices in developed country markets. (p.627)*

Abbott concludes that parallel import restrictions are a non-tariff barrier to trade and that IPR owners have contractual means of allocating and protecting exclusive territorial markets. A draft WTO rule is proposed which allows for the importation of an IPR product that has been first sold in a member country with the consent of the IPR owner. Two exceptions to this international exhaustion rule were noted: public health goods

(pharmaceuticals) and the audiovisual market (motion pictures). In the former case, Abbot acknowledges that national government price controls can provide significant export profits relative to the domestic market. This policy distortion provides a justification for IPR owner control over exports. In the second case, because IPR owners depend on repeated public broadcasts or performances of an audiovisual work, a case could be made that the first public performance should not constitute first-sale in the context of parallel imports.

The Abbott approach is consistent with the Donnelly model of *selective international exhaustion by product class*. With the two exceptions cited above, Abbott believes that there is insufficient evidence to suggest that a universally applied importation right bestowed on IPR owners and their licensees will produce a welfare benefit.

These same conclusions can be found in other studies. Gallini and Hollis (1999) explore the question of what is the appropriate legal mechanism for an exclusive territorial restriction that prevents parallel imports. They recommend a contractual approach, combined with anti-trust law, as the most efficient means of regulating parallel imports. National exhaustion with respect to trademarks, they argue, indiscriminately removes intra-brand competition and may be contrary to the objectives underlying competition policy. In addition, such trade impediments can restrict the available range of distribution channels.

The authors identify a conflict of interest in an international distribution network between the manufacturer (copyright owner) and its territorial distributors that may encourage parallel trade. In a globally coordinated price discrimination strategy, these interests should coincide, however, while the copyright owner attempts to maximise profit, the distributor cares only about profits within a specified territory. The conflict arises when individual distributors attempt to expand sales by selling product into another distributor's territory. For this reason the copyright owner may need to impose vertical controls to ensure that territorial distributor behaviour is consistent with the objectives of the organization overall.

The motivations cited by Gallinis and Hollis for IPR owners wishing to establish exclusive territories (ET) are price discrimination, collusion, preventing free riding and preventing consumer confusion. These motivating factors are familiar and we need not revisit them here. On the issue of the welfare consequences of parallel imports, the authors suggest that there is a potential conflict between the private efficiency

(maximising global profits via a coordinated distribution system backed by ET) and social efficiency. Private and social efficiency coincide if parallel import restrictions are designed to prevent free-riding and consumer confusion, but conflict if it supports price discrimination and collusion. It follows from this that the national and international welfare implications of adopting national or international exhaustion depend on which of the motivating factors for ET prevail. This is a complex issue as these factors are not mutually exclusive and can co-exist. Proponents of national exhaustion cite free-riding and consumer confusion as having severe negative impacts on efficiency and welfare, while proponents of international exhaustion cite the potential for price discrimination and collusion to support the pro-competitive effects of parallel imports.

In an investigation of the economic causes of parallel imports Maskus (2000) describes the adoption of national exhaustion as "a government enforced international territorial restriction on vertical distribution" (p.1270). Maskus contends that the piracy and counterfeit arguments for restricting parallel imports are irrelevant to the issue since the former is a distinct activity to the latter. Price differentials, the motivation for parallel trade, arise for four reasons: price discrimination, vertical price controls, variation in pre-sales and post-sales marketing, and national price regulations.

Maskus argues that, where the adoption of national exhaustion promotes market segmentation and collusive behaviour, a shift to international exhaustion would serve as a form of competition policy. Furthermore, the claim that price discrimination is harmful and promotes collusion must be qualified on two grounds. Firstly, monopoly importation and distribution of a specific brand may not have detrimental economic consequences if there is considerable inter-brand competition. Secondly, under certain assumptions, price discrimination can enhance national or even global welfare.

Maskus correctly point out that there is no way of unambiguously ranking global welfare in a regime of national versus international exhaustion. He is critical of the Mallueg and Scwhartz (1994) conclusion that price discrimination, which provides developing country access to low-priced goods, raises global welfare because it is based on somewhat restrictive assumptions. Specifically, the conclusions are dependent on restrictive assumption regarding the demand and marginal cost functions. It also ignores important income redistributive effects from consumers in high-priced to consumers in low-priced countries, and between net-importers and net-exporters of IPR products.

The second economic argument for parallel import restrictions is vertical price controls. Maskus points out that the notion that manufacturers (or copyright owners)

implement a strategy of international price discrimination is somewhat misleading. Manufacturers typically sell to distributors, which in turn sell to retailers. A copyright owner can set wholesale prices in various territories so as to induce profit maximising retail prices, which vary according to country variations in price elasticity of demand. Contractual arrangements that bestow exclusive territorial rights, backed by parallel import restrictions, enable IPR owners to inhibit parallel trade between distributors and/or between distributors and retailers located in various countries. These arrangements can lead to collusive conduct among exclusive rights owners and distributors within a specific territory. This is evidenced, for example in Australia, where record companies charge uniform prices to retailers (via their distribution companies) which, in turn, charge prices at the retail level that vary from the recommended retail price (RRP). This price competition at the retail stage will reflect varying retail margins and/or passing on bulk discounts and allowances negotiated by large retailers and/or music retail chains on specific titles.

That parallel imports reduce R&D (A&R) is an empirical question. It is not known whether the relationship between profit and R&D is linear or non-linear. "R&D could be insensitive to parallel imports until there is a marked reduction in expected profit" (Maskus, 2001:25). Regardless there is little evidence that the MNE record company subsidiaries invest a great deal in local repertoire, instead choosing to market foreign sound recordings with proven sales records. The impact on local independent record companies is less clear, since many have reciprocal licensing arrangements with foreign independents. Income generated from these reciprocal deals might be undermined by parallel imports, which could, in turn, reduce investment in local repertoire.

International price differentials caused by national pricing regulations, such as those found in pharmaceuticals, are designed to achieve specific social objectives. These regulations provide low-income families with access to a merit good, and have the effect of lowering both household and national (health budget) expenditure on drugs (Maskus, 2000). Parallel imports could redirect low-priced drugs to high-priced markets and thereby impose significant costs on IPR owners. Parallel import restrictions are an effective means of protecting IPR owner profits in an unregulated (high-price) market. Maskus concludes that on economic welfare grounds, there may be a case for providing IPR owner control over the parallel importation of pharmaceuticals. This conclusion is

based on the somewhat unique product and market characteristics and does not necessarily apply to other product classes.

Some studies have considered not only the economic but also the cultural aspects of parallel imports. Weinstock (1998), for example, presents an alternative framework for copyright globalisation. He argues that copyright law is a necessary foundation of democratic culture but it should not be so broad as to inhibit diversity and the exchange of information and ideas.

> *To assert the principle that copyright should further democracy is thus not to require that all countries adopt Western-style copyright laws. It is rather to examine particular issues, market sectors, and local conditions with an eye towards tailoring copyright towards furthering democratic development. (Weinstock, 1998: 231)*

Copyright products, he argues, are not a mere item of international trade but a form of cultural expression. He views international developments in copyright law, such as TRIPS, as a move to reconceptualizing international trade. "*It aims to ratchet up worldwide copyright protection and enforcement in order to remove barriers to copyright industry exports*" (p.218).

Weinstock notes the duplicity in the U.S. position where, domestically, the courts have caused great uncertainty with respect to the issue of the exhaustion, while simultaneously U.S. trade representatives have "*aggressively sought to implement the principle of national exhaustion in international trade and intellectual property agreements.*" (p.229) Though counterintuitive, Weinstock suggests that a regime of national exhaustion to support price discrimination may be more conducive to global democracy than international exhaustion and parallel imports. Price discrimination, by charging lower prices in low-income countries, can increase the dissemination of cultural works in developing countries. This, he argues, amounts to a developed country consumer subsidy for the distribution of cultural goods to developing countries.

Barfield and Groombridge (1998) examine the economic case for copyright owner control over parallel imports. The analysis provides a comprehensive review of (the somewhat limited) empirical and theoretical literature on the subject and, from this, conclude that the principle of national exhaustion be adopted by national governments and the international trading system (via TRIPS). They argue that territorial control over the production and distribution of copyright product, including sound recordings,

movies, business software, books and video games, is an important determinant of competition in these industries.

> *Allowing the copyright owner to control the importation of legitimate goods and services sold in disparate markets with different local conditions is an indispensable means of competing on the basis of the territorially distinct content, packaging and release timing for such copyright material. The efficient working of these marketing and distribution strategies ultimately benefits the consumer as well through enhanced product choice" (Barfield and Groombridge, 1998:910)*

The assertion that national exhaustion is pro-competitive implies an increase in rivalry beyond that which would otherwise exist. The argument, that an importation right and exclusive monopoly control over the distribution of a brand beyond first-sale is pro-competitive and enhances consumer choice, is as follows. Intra-brand competition, arising from parallel imports, will have a detrimental impact on the market because parallel importers free ride on the investment in marketing and promotion made by territorial license holders. This will cause territorial licensees to lower the level of investment and perhaps the number of products released in the territory, thereby lowering consumer choice. The lower the number of brands released per time period, the lower the level of inter-brand competition. From this perspective, and subject to the behavioural assumptions presented, it could be argued that territoriality, by increasing the level of investment in marketing and promotion and the number of products released, is pro-competitive. An increase in the number of products will also enhance consumer choice, and thereby, welfare.

This argument may be challenged along the following lines. Marketing and promotion investments stimulate sales of the copyright product irrespective of the country of origin from which the product is sourced. The copyright owner receives a payment for their IPR albeit at potentially different rates (as reflected in territorial price differentials). The argument that all parallel imports free ride on marketing and promotion expenditure is therefore contestable, and depends on the nature of the contractual relationship between the copyright owner and the territorial license holder. The principal (copyright owner) contracts with a local agent (licensee) to provide an exclusive territory within which to market and sell the product, in exchange for a license fee. One of the principal's foreign agents, or another member of the distribution chain, then sells copyright product into the local agents territory, displacing sales and reducing

profits. For this argument to hold the local licensee must be independent of the copyright owner, where parallel imports displace the local distributors sales and diminish their ability to recoup the territory specific investment in marketing and promotion. The argument does not hold where the local license holder is a subsidiary of the copyright owner. Marketing and promotion expenditure, whether expended by the licensee or the copyright owner, stimulates sales in the domestic territory that might be sourced from one or more authorised distributors operating in various territories. In this scenario the free-rider argument does not hold since parallel imports simply redirect the source of supply to a distribution channel located in another territory, replacing authorised with so-called unauthorised sales.

It is noteworthy that, as authorised reproductions, parallel imports of sound recordings deliver a return to the respective copyright owners – record company, performing artist and songwriter.[2] However, for an independent license holder, parallel imports lower the value of the territorial license and reduce the incentive for investment in marketing and promotion. That copyright law, embodying a monopoly importation right, is an appropriate means of protecting the interests of local licensees is contestable. The free-riding problem arises from the nature of the contractual relationship between the copyright owner and the licensee and is not a shortcoming of copyright protection per se. It could therefore be argued that a contractual solution may be more appropriate, particularly if the monopoly importation right creates other by-product distortions that are detrimental to consumer and national welfare.

The Barfield and Groombridge proposition that monopoly importation rights increase variety is also contestable. As a cultural product, music is one form of expressing cultural and national identity. The domination of the global music market by the major record companies is seen, in some quarters, as a threat to cultural autonomy. To the extent that a national market is dominated by foreign record companies and foreign music, a reduction in the number of foreign sound recording title releases would be seen as a positive outcome. In this view, the domination of national music markets by the major record companies may lead to a homogenised global culture of mediocrity,

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[2] Incomes for the latter may, however, vary because of the differential royalty rates that prevail in various territories. It was argued during the Australian parallel imports debate that artist and songwriter incomes would decline as product was sourced from low royalty countries.

in which variety is reduced rather than expanded and local cultural uniqueness is being overshadowed by a largely Anglo-American culture. (Samuelson:1999, Capling:1996).

The monopoly argument, that an importation right is anti-competitive, is refuted by Barfield and Groombridge. An importation right restricts intra-brand competition not inter-brand competition. The empirical evidence that IPR owners can create effective barriers to entry, they argue, is limited. This point is illustrated using the example of a video game (in which the player has the task of saving the world from alien attack) for which there are numerous effective substitutes. Any attempt by the copyright owner to charge monopoly prices would result in substitution. However, considering the nature of music product as described in Chapter 2, an artist specific sound recording is a unique product and for many consumers is without substitute.[3] Even if we accept that there exists a degree of inter-title substitution, this argument still ignores the importance of market structure. In an oligopolistic market, such as that prevailing in the music recording industry, collaborative price setting can limit the opportunity for consumer (welfare maximising) inter-title substitution. Barfield and Groombridge acknowledge that market structure could impede inter-brand competition but discard this as empirically unlikely. The market structure prevailing in the domestic and international market for sound recordings, as outline in Chapter 2, demonstrate that the conditions for collusive conduct and monopoly pricing are present and warrant a closer investigation than that provided in the Barfeild and Groombridge analysis.

Barfield and Groombridge (1998) acknowledge that monopoly importation rights might produce certain inefficiencies but argue that both the businesses community and economist increasingly view

> *"...trade, investment and control over intellectual property as complementary means of deploying comprehensive global production and distribution activities – that is, world-wide production of individual components, services, assembly, and finally, customisation and distribution of the product or service to be provided."(p.909).*

Parallel import restrictions are viewed as an integral component of the vertical arrangements necessary to facilitate the coordination of these global activities, and in

the view of Barfield and Groombridge, economise on the cost of contracting and increase global revenue by increasing distributive efficiency. The authors, while favouring the efficiency over monopoly view of territoriality, acknowledge that they are not mutually exclusive. In their view, the efficiency gains outweigh any possible inefficiencies and/or distortions resulting from the monopoly power embodied in an importation right.

The distributive efficiency gains arise via the coordination of global product distribution which enables the copyright owner to monitor licensees and distributors to ensure that they are making the appropriate pre- and post-sales investment so as to maximise sales and profits. While globalisation, where MNEs exploit national comparative advantage in deploying production activities, is a modern day reality, it does not necessarily follow that territoriality and national exhaustion is an essential component of these cost saving and efficiency seeking strategies. That an importation right is a prerequisite for these efficiency gains needs to be demonstrated. In the case of sound recordings, the manufacturing process - the duplication of a sound recoding fixed to an audio carrier (CD or cassette) - is rather straightforward. There is little if any comparative advantage in duplication costs, which in any case represents an insignificant component of product price. While a degree of customisation may be required in certain territories to accommodate language and cultural differences, the customisation and distribution efficiency argument are more relevant to other product categories where components and user instructions are critical.[4]

> *"...for the copyright industries dealt with in this study, the market structure data suggest little possibility for oligopolistic price collusion. For instance, in the software industry, small independent software vendors account for roughly two-thirds of the demand in the United States, Western Europe and Japan." (Barfeild and Groombridge, 1998:928)*

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[3] Consumers do not purchase a Madonna title over a Brittney Spears title because it has a lower price but because they prefer the music of Madonna and what it represents within the socio-cultural sub-market within which the purchaser is located.

[4] Many electrical appliances and tools, for example, now include instruction manuals that include a range of languages. These products are assembled in one country and distributed internationally. The "customisation" has occurred overseas and not in the country of destination.

This is however, not the case in the music recording market where the four major record companies control approximately 80 percent of world sound recording sales and as much as 90 percent in Australia. This provides the dominant record companies with the market power to implement collusive pricing so as to maximise industry profits. This is not to say that market power will automatically lead to monopoly pricing. It is not the existence of market power itself, but its abuse that is of concern. Evidence of collusive pricing needs to be demonstrated and empirically, is relatively unstable.

> *Abusive price discrimination is a possibility, but two factors mitigate against this concern. One, price discrimination does not necessarily decrease consumer welfare. Two, the possibility of abusive price discrimination must be weighed against the pro-competitive benefits conferred by allowing companies to control parallel imports. (Barfield and Groombridge, 1998:906)*

Exactly how an importation right and exclusive monopoly distribution over an artist specific sound recording beyond first sale is pro-competitive and enhances consumer choice is not clear. Barfield and Groombridge argue that even where price fixing can be demonstrated, it is competition policy and not IPR law that should be looked to for a solution. This argument can be refuted on two grounds. Firstly, the first best policy is one that addresses the distortion at its source. If monopoly pricing is a function of international market segmentation and price discrimination supported by an importation right, then the first best policy is to remove the distortion that facilitates this market segmentation, namely, the importation right. Secondly, domestic price fixing is difficult to demonstrate. International price comparisons provide an important guide here. In an investigation of sound recording prices in Australia, the PSA (1990) and ACCC (1998) concluded that there was clear evidence of a price differential between Australia and comparable overseas markets. Whether or not this was the result of collusive conduct and price discrimination is not clear. Regardless, domestic competition policy prohibits collusive pricing and price discrimination in the domestic marketplace. International price discrimination, of the sort purportedly identified in the market for sound recordings, cannot be addressed by domestic competition policy.

Barfield and Groombridge conclude that any investigation any investigation of collusive conduct within copyright industries must determine;

- what constitutes a market
- what constitutes market power
- the dynamics of competition within specific industries

They believe that parallel import restrictions are essential to achieve vertical efficiency gains and possible monopoly pricing distortions are best dealt with via national competition policy. Nonetheless, they acknowledge that not every use of IPR should be afforded immunity and that policy with respect to the exhaustion of IPR rights must take a rule of reason approach in the context of specific product market conditions. In the next section we apply this rule of reason approach to the market for sound recordings and investigate the nature of demand and supply, the degree of market power and the degree of competition prevailing in the market.

3.6 The Exhaustion of the Right of Distribution and Sound Recordings

In the literature review presented in section 3.3, the following issues where identified as being relevant to the market for sound recordings:

- Maintenance of pre-sales investment (marketing and promotion)
- Detection of illicit copies (piracy)
- Creation and maintenance of monopoly power
- Price discrimination

The issue of piracy will be investigated in Chapters 5 and 6 and will not be discussed here. In the proceeding analysis we consider the economic rationale for sound recording copyright owner control over parallel imports. Specifically, we will address the issues of monopoly power, price discrimination and the protection of territorial investments in marketing and promotion. In doing so, we will attempt to gauge the likely impact of the alternate positions on exhaustion on both private and social efficiency and welfare.

3.6.1 Pre-Sales Investment: A&R, Marketing and Promotion.

In the case of sound recordings, after-sales service is not a feature of the market so the free-riding argument is not relevant in this regard. However, the nature of the market requires considerable pre-sales investments that are often territory specific. In

Chapter 2 a musical work was characterised as an experience good in which radio broadcasting, music television and live performances are the key means by which potential consumers are exposed to a new sound recording title. National markets are culturally, economically and socially disparate and geographically separate markets that often require country specific marketing and promotion strategies. Territorial licensees often invest substantial amounts of money in tour support, TV and radio broadcasting, and in-store merchandising. Parallel importers free-ride on this investment and by focussing on successful titles, can cannibalise the sales and profits of the territorial licensee.

If each national market is viewed as an independent and isolated market, then the rationale underpinning copyright law (the exclusion of free-riders) would suggest, or perhaps even direct, the adoption of the principle of national exhaustion. However, in an increasingly integrated global economy this argument is less tenable. Segmentation of the global market into national markets involves the allocation of (often exclusive) territorial licenses. Where the nature of the product requires the national (territorial) rights holder to make a considerable investment in the development of the local market, then the national exhaustion argument might be more appealing. By displacing authorised sales, parallel imports will reduce the commercial value of the exclusive territorial license. The contractual arrangements (and thus the license fee payable) would need to reflect these commercial realities to ensure the local license holder receives an adequate return on their investment in an environment of parallel imports. To the extent that this results in lower license fees and/or royalties for the copyright owner, parallel imports would lower global profits for the copyright owner. This outcome is consistent with the price deflating effect of parallel imports as the convergence of license and royalty payments result in lower domestic prices to combat falling authorised sales displaced by parallel imports.

> *Without the exclusive right to sell a good in a particular market, the supplier may not be willing to make the optimal amount of investment in marketing, the provision of repair facilities or other such services because of the consumer's and parallel importer's free-riding on those investments" (Ministry of Economic Development, 1998:2)*

Whenever pre-sales and post-sales investments are high relative to transportation costs, and the level of investment varies between territories, there will be an incentive for

parallel trade. Sound recordings, both CD and audiocassette formats, are relatively small and lightweight. As a result, international transportation costs are relatively low. To the extent that there is a variation in territory specific marketing and promotion expenditures by various independent licensees, this could result in a marked difference between the price of an imported sound recording (where the wholesale price reflects a relatively low pre-sales investment) and the wholesale price prevailing in the local market, where the latter incorporates a margin to cover the substantial investment in marketing and promotion. As such, local licensees can justifiably argue that parallel traders have an unfair advantage, which enables them to capture a share of artist specific sound recording sales. Free riding on the investment of the local licensee lowers profit and thereby reduces the value of the "exclusive" territorial license. The licensee will likely respond by lowering investment.

Because the majority of new sound recording title releases fail to recover establishment costs, profits generated on successful titles are necessary to cross-subsidise losses incurred on unsuccessful titles. The displacement of authorised sales by parallel imports could have adverse consequences on consumers if local licensees respond by reducing investment in marketing and promotion and/or reducing the number of titles released per time-period. The ensuing reduction in variety and consumption would lower consumer welfare. However, the response of the territorial license holder to parallel imports will depend on, among other things, whether the territorial license holder is an independent agent or a subsidiary of the foreign copyright owner.

In the case of a wholly owned subsidiary operating in the domestic market, all territorial profits accrue to the foreign copyright owner. Since parallel imports are authorised copies of a sound recording the copyright owner receives a payment for the copyright embodied in the sound recoding regardless of the country of origin. Rather than free-riding on pre-sales investments, parallel traders simply divert sales from high-price to low-price territories. While this is likely to lower global profits for the copyright owner, it is unlikely to impact upon pre-sales investment levels nor the number of locally released sound recording titles. New title releases will be profitable so long as the combined revenue generated from authorised and unauthorised sales exceeds territory specific establishment costs and pre-sales investment.

Where the local agent is independent of the foreign copyright owner, the free rider argument is more appealing. As the exclusive territorial rights holder, the local

agent will have the confidence to invest in the marketing and promotion of an artist specific sound recording in which they have monopoly distribution rights. Because marketing and promotion are critical to sales in a specific territory, the local independent license holder is particularly vulnerable to the displacement effect of parallel imports sourced from a foreign territorial distribution channel. As such, the impact of parallel imports are likely to be more detrimental to the local agent than for the copyright owner.

By diverting copyright product sales between otherwise exclusive territorial distribution channels, parallel trade presents a disruptive force to otherwise predictable distribution arrangements with relatively clear costs and rewards for each member of the respective channels. The development of competing unauthorised distribution channels, impose costs on members of territory specific channels (licenses and distributors) while benefiting members of the distribution channels from which authorised copyright product is diverted.

A possible contractual solution is for the copyright owner to implement a centrally controlled marketing and promotion strategy. This would remove the free-rider problem faced by the territorial licensees that might lower territory specific investments and product/brand variety. This could be funded, for example, by applying a mark-up on all license fees set out in the exclusive territorial contract. This would have the effect of raising license fees in low-price territories relative to those in high-price markets, and would likely increase the wholesale price in those markets. This is akin to a redistribution of income from licensees in low-price (from which copyright product is diverted) to licensees in high-price territories (in which authorised product is displaced). A disadvantage of this approach is that it is indiscriminate and would penalise licensees in territories in which there is little or no parallel trade.

The alternative is an exclusive territorial license that incorporates an "export tax" on all products diverted from the domestic market for which they were intended. This has the advantage of being targeted and does discriminate against licensees in territories from which little or no product is diverted. However, the approach is perhaps unworkable for territorial distribution channels in which independent entities operate. For example, it may be relatively straightforward to impose a tax on a territorial licensee. However, once the licensee loses affective control of the copyright product, to a wholesaler or retailer, it is not possible thereafter for the copyright owner to impose

restrictions that bound other (independent) members of the distribution channel. Such a restriction would likely infringe upon domestic competition law.

Parallel import restrictions are clearly the most effective means of protecting the interests of the copyright owner and the territorial license holder's pre-sales investment. Independent territorial license holders, having paid an exclusive license fee, justifiably view parallel imports as cannibalising their sales. Because parallel importers do not incur the cost of pre-sales investments they can enjoy an unfair competitive advantage over the domestic agent.

These free-rider problems arise as a result of the territorial division of copyright by the copyright owner via contractual arrangements with licensees located in various territories. If the copyright owner wishes to protect the interests of an individual rights holder in a specific territory with whom they have entered a licensing agreement, then the restrictions as to the geographic trading rights of other licensees should be incorporated into the contractual arrangements. Indeed, in the case of sound recordings, product is often distributed in various national markets via subsidiaries of the MNE copyright owner. The vertical distribution of sound recordings could be managed via intra-firm arrangements along the lines suggested here. In this context, it could be argued that vertical restraints on the distribution of copyright product should not be the responsibility of government, bestowing an importation right as embodied in copyright law, but is instead a contractual issue arising as a result of the nature of the commercial relationship between the copyright owner and its licensees.

The vertical distribution of copyright product often involves exclusive territorial licenses in return for a royalty or license fee. As exclusive distributors of copyright product, local licensees invest considerable time and resources into the development of the local market. Different levels of investments by individual right holders in various territories can result in price variations where the mark-up applied to the purchase price in each territory reflects, among other things, the level of investment by the individual territorial rights owner.

The ensuing price differentials could encourage parallel imports into high priced markets that could undermine the economic viability of local rights holders. Arbitrage operations of this nature amount to free riding on the investment and the development of the market by the local rights holder. While consumers might benefit from lower prices in the short run, the long-term costs and benefits are less clear. Parallel imports that free ride on the investment of local rights holders could be detrimental to

consumers in the long run as local license holders, facing lower sales and profits, reduce investments in the development of the local market.

In the case of sound recordings, it has been argued that local profit levels are a key determinant of investment in the development of local repertoire. The A&R activity, which focuses on "discovering" new artists is akin to R&D investment for the music recording industry. This is a variation of the R&D argument in pharmaceuticals. Patent protection is necessary to provide monopoly rights to protect income and profits. This encourages R&D and is technologically progressive. A proportion of this monopoly profit is then re-invested into the development of new drugs that will provide economic rents when patents on current exclusive drugs expire. However, copyright in a sound recording continues for at least 50 years after the death of the songwriter.

It has been argued that the vertical restraints underpinned by national exhaustion are necessary for the efficient distribution of copyright product. According to WIPO, "*The principle of territoriality provides security for the chain of authorizations that permit (an) orderly supply of copies for international distribution*" (in Maskus 2000). A disruption to the orderly supply of products may cause a reduction in consumer welfare. It is noteworthy that the motivation for parallel imports is greatest for the most successful (Top 40) sound recording titles. Revenue from these titles cross-subsidise investments made in many unsuccessful titles. By focusing on successful titles, parallel traders avoid the uncertainty and risk associated with investing in either the master recording or the marketing and promotion of a specific sound recording title. Parallel imports can thereby have a significant and detrimental effect on the profitability of the copyright owner.

Once again, the issue of whether to impose vertical distribution restraints via the commercial contractual relationship between copyright owner and its numerous licensees or via government intervention is debatable. A possible contractual solution to differential marketing and after-sales investment expenditure may be to increase the license fee to individual national distributors. This additional mark-up could fund a minimum level of marketing, promotion and infrastructure investment in each territory, that is paid directly by the copyright owner rather than individual licensees. With respect to sound recordings, where the issue of after-sales service is irrelevant, this may provide a relatively efficient market solution to the problem of free-riding between territorial rights holders and/or their distributors. Regardless, for a territory in which sound recording titles are distributed via local subsidiaries, the free-rider argument does

not hold. By comparison, the potential disruption to an independent licensee is quite severe. The displacement effect of parallel imports in this case, can impose considerable costs on the local agent and may lower investment and thereby reduce variety (new title releases) in the territory. Importantly, the interests of the independent agent and foreign copyright owner diverge. For the latter, parallel imports diverts authorised product from a foreign distribution channel ensuring that copyright payment (albeit at a potentially lower rate) is received. The contractual solution, along the lines suggested here, may be more appropriate on efficiency grounds.

3.6.2 Monopoly Power

There exist a number of contractual and statutory arrangements relating to commercial arrangements within the music recording industry that provide a considerable degree of market power for the copyright owner. Firstly, recording contracts between the recording artist(s) and the record company provide the latter with exclusive manufacturing rights to the artist's sound recording(s). As copyright owner, copyright law provides the record company with a bundle of exclusive rights. These contractual arrangements and statutory rights amount to the granting of monopoly supply of an artist specific sound recording title. This monopoly supply is extended into global distribution via two vertical restraints, one contractual the other statutory. Copyright is divisible by act and territory. Contractual arrangements between parent and subsidiary companies, affiliates and third party record companies and/or distributors, include exclusive territorial licenses to distribute the artist specific sound recording title within a specified territory. The second vertical constraint comes in the form of IPR law, whereby the adoption of the principle of national exhaustion, as embodied in a nation's copyright law, provides a statutory monopoly over an artist specific sound recording. This statutory monopoly effectively prohibits the importation of a sound recording by parties other than the territorial copyright owner or licensee or by his/his consent. This amounts to a prohibition on parallel imports and intra-title competition.

That monopoly control over an artist specific sound recording exists is not a point of contention. The debate surrounds the issue of whether or not this monopoly control amounts to market power in the market for sound recordings more generally. To determine whether monopoly supply of artist specific sound recording titles (the record company's music catalogue) translates into market power, we need first to ascertain

what constitutes a market for sound recordings and the nature of competition that prevails in that market.

The market for sound recordings consists of a number of sub-markets, related principally to a specific musical style or genre. For many consumers, there is often little substitution between these genres. Indeed, according to music retailers, the majority of consumers enter a store to purchase a specific title and, rather than substitute for another title, will go to a competing retailer (or go without) if the title is unavailable (Federal Court of Australia, 2001). In other words, the demand for an artist specific sound recording, over which a record company has monopoly control, is for the majority of consumers, highly inelastic. High selling titles are ranked in music charts compiled by ARIA (and individual retail chains). From time to time, each of the major record companies will have one or more sound recording titles listed in these charts. Since the majors control around 90 percent of music sales in Australia, coupled with the fact that around 80 percent of sales are generated by 20 percent of titles, it is clear that the majors have monopoly distribution rights over the vast majority of hit titles. As such, given that consumer demand is highly inelastic for hit records, a record company can enjoy a temporary monopoly in the market for hit records. It is temporary in sense that, within a relatively short time frame, this title will be displaced by a new sound recording title, perhaps released by a rival record company or from the record company's own music catalogue. Of course, even though the title is no longer on the charts, monopoly control over the title is retained. However, the monopoly status of the title in the charts is displaced by another title that will, in turn, enjoy a temporary chart success.

Rivalry between record companies for a place on the charts is intense. This rivalry does not, however, take the form of price competition. Instead rivalry is most intense at two stages. Firstly, there is competition to sign new artists capable of producing one or more hit sound recording titles. It is the individual record company's ability to "discover" and sign new artists that ultimately determines their market share and, in an environment of uniform pricing, their share of industry profits. Secondly, the marketing and promotion of new title releases is critical to ensuring that consumers are exposed to the music embodied in the new sound recording title. As an experience good, radio airplay, promotion tours and music video programs play a crucial role in the dissemination of new musical forms or styles and the formation of musical tastes within a range of socio-demographic networks within which particular genres of music are dominant.

While it might reasonably be argued that there exists a degree of substitution between competing titles that appear in the charts, copyright for the vast majority of these charting titles is owned or controlled by the major record companies or their subsidiaries. This oligopolistic market structure, combined with the dominance of exclusively distributed titles, represents a significant degree of market power, which would encourage the prevalence of non-price rather than price competition. In an oligopolistic market structure, collusive pricing can produce monopoly profits for the industry, the share of which is determined by the relative market share of each firm. In this environment parallel trade, and the intra-title competition that this would introduce, may provide the only force for injecting price competition in the wholesale sound recording market.

Whether or not an importation right amounts to monopoly control and power is a contentious issue. The answer lies in the nature of the product, the market boundaries within which competing products are distributed and the number and relative size of rival producers. The nature of the market for sound recordings, coupled with the level of market concentration in the hands of the four MNE record companies, would suggest that collusive behaviour and monopoly pricing is, at the very least, a possibility. Collusive pricing, and the market power required for its successful implementation, is refuted by advocates of the principle of national exhaustion and the prohibition of parallel imports.

> *"...while it is true to say that copyright confers a monopoly on an individual title, that is a narrow, static and, with respect, inadequate definition of the market." (Rothnie, in Barfield and Groombridge, 1998:916)*

As discussed in Chapter 2, we can define a market as narrowly or as broadly as we choose. Whether or not a definition is "adequate" depends largely on the numerous product dimensions (geographical, sub-market and time dimensions) and the functional level of the market. We can broadly define the market for sound recordings as encompassing every title ever released. A more effective definition, for the purposes of identifying the degree of competition between rival record companies, is to define the numerous sub-markets classified by genres. These genres or musical styles attract a specific listener demographic. It is nonetheless, somewhat difficult to classify certain musical styles and from time to time new genres emerge. On many occasions, artist

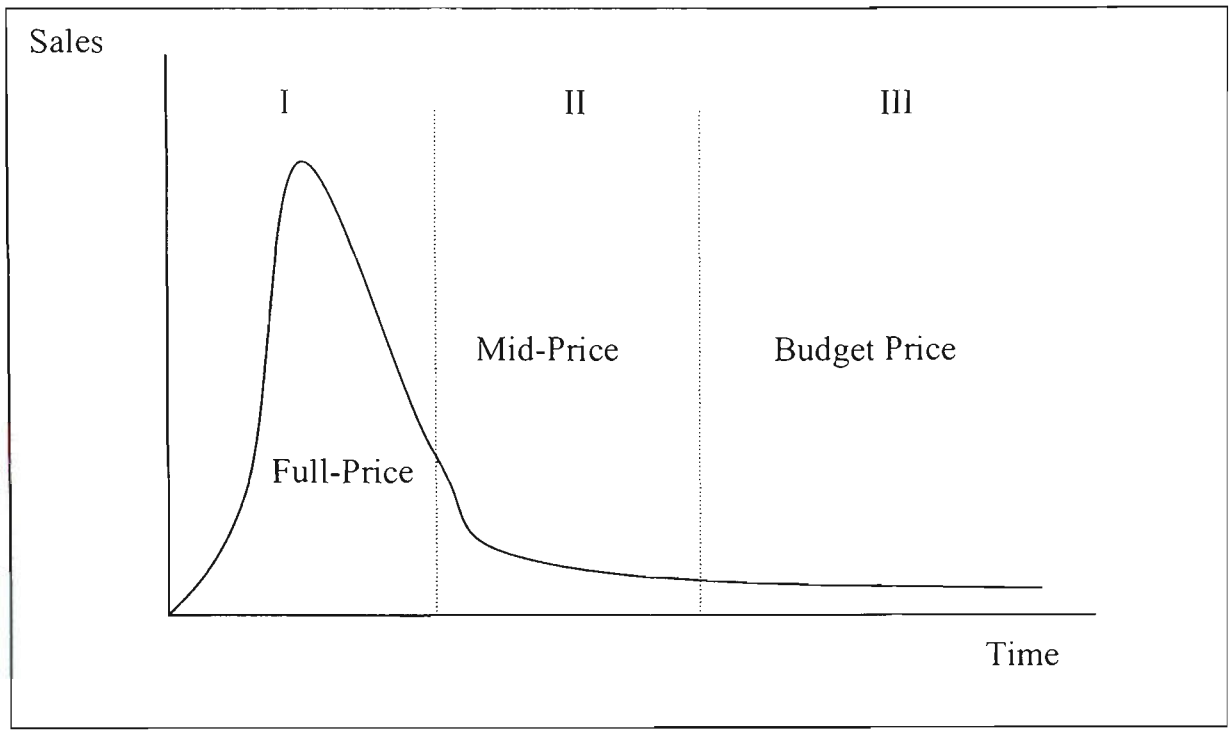
specific titles within a genre will attract a broader listener demographic and thereby compete with sound recordings of differing musical styles. To achieve international super-stardom an artist must be able to attract a broad range of listeners or, alternatively, a large percentage of listeners within a specific genre. The major record companies look to develop artist specific titles that have the potential for international success.

While it is acknowledged that there exists a degree of competition between artists and their recordings, it can equally be argued that, for a significant proportion of listeners, an artist specific sound recoding is unique and without substitute. It is within this sub-market that we can justifiably define the market for an artist specific sound recording as a monopoly product, albeit a transitory one.

The suggestion that this definition is "static" implies that a more dynamic definition would recognise that tastes and preferences change and evolve and that new title releases compete with current and previously released titles. This is evidenced, for example, by the changing position of artist specific titles on various music charts. Recall, however, that music is akin to a fashion good with a very short life cycle, within which the vast majority of sound recordings are sold. A somewhat "static" definition of the market for an artist specific sound recording may therefore be warranted.

An analysis of the time dimension, or life cycle of a sound recording, is also important in understanding the nature of demand and competition that prevails. The life cycle of a hit record is relatively short and can often be counted in weeks. Record companies typically sell sound recordings at three "price points", where each point corresponds to a stage in the sound recording's life cycle. Figure 3.2 depicts the life cycle of a typical sound recording that enjoys chart success.

Figure 3. 2 Life Cycle of a Hit Record



Stage I is the highest selling stage where an artist specific title would appear on one or more hit record charts. It is at this stage that the title is sold at the full-price pricing point. Over time, this title will become less popular or fashionable and will begin to experience falling sales. It is at this stage that the title is displaced from the upper reaches of the charts by new sound recording titles. Stage II coincides with the mid-price pricing point. This displacement of new title releases for "old" titles in the charts is evidence of the fashion or fad element in the demand for sound recordings. As such, there is a relatively small window of opportunity for record companies to sell high volumes of a specific title. In Stage III of the life cycle, sales bottom out and the title moves into the budget price category. At this stage of the product life cycle the title forms part of a record company's "back catalogue". Back catalogue refers to sound recording titles released in a previous period for which the record company continues to have monopoly supply, that may or may not have previously been a high-selling hit record. It should be pointed out that while the transition from stage one to stage two might be relatively short (a matter of weeks), the transition from stage two to three might be considerably longer. Indeed, record companies continue to apply a mid-price point to many titles despite the fact that it has entered stage three of its life cycle. As such, while the stage of the life cycle roughly coincides with the pricing points outlined

above, this is not a universal rule. The fact that record companies can continue to supply back catalogue at the mid-price point suggests that the price elasticity of demand is relatively high for some titles despite the fact that they have entered stage three of the life cycle.

Table 3.1 presents the three price points as they apply to the Australian market. The published price to dealer (or PPD) is the wholesale price and is estimated by subtracting the retail margin (approximately 29%) and sales tax (10%) from the (record company) recommended retail price (RRP). Interestingly, regardless of whether or not a new title becomes a hit record, record companies release all new titles at the same full-price point. Given the stochastic nature of demand, record companies cannot predict with any great certainty which of the numerous titles released per time period will be successful. Indeed, record companies argue that the vast majority of new titles will fail to break-even, subjecting the record company to substantial losses on these individual investments (Philips, 2001). These losses must be recovered from profits generated on the small percentage of title releases that are successful. The typical market response to a lack of consumer interest is a lowering of product price to clear the surplus. The obvious question is, why is the price for sound recording title releases insensitive to demand?

In summary, there are a number of factors that can be identified as contributing to the market power enjoyed by major record companies in the Australian market place. These are:

- An oligopolistic market structure
- Monopoly control over the distribution of artist specific titles
- Highly inelastic demand for hit records
- Temporary Monopoly over hit-records

The major record companies can exploit their dominance in the market by employing a strategy of uniform pricing that maximises industry profits. Competition for a share of these monopoly profits takes the form of competition to sign new artists to exclusive recording contracts and to market and promote these exclusive titles. The relative success of individual titles exclusively distributed by a record company determines its relative share of hit records appearing in the charts at any point in time. This in turn, determines the record companies share of industry profits.

3.6.3 Price Discrimination

To sustain a strategy of profit maximising price discrimination the copyright owner must be able to implement a strategy of territorial market segmentation. To be successful, profit maximisation requires a form of coordination that will enable the MNE to separate territorial distribution channels and ensure that product is not diverted from low-price to high-price markets. This can be achieved by centralising and controlling the production and distribution of product in each territory while setting price at the MNE corporate headquarters. Licensing arrangements can achieve the same result, whereby a specific territorial license fee reflects the elasticity of demand (and the expected profit) in that territory. A licensee in a high-income country would need to set a higher mark-up on manufacturing (and other costs) so as to recoup the investment in the exclusive territorial rights. Variations in territory specific license fees that reflect varying elasticities of demand, combined with exclusive territorial licenses, can produce the same price divergence as a centrally coordinated pricing strategy.

The major record companies that operate within specific national territories are often affiliated with MNE record companies with global production and distribution networks operated via a network of subsidiaries and joint ventures. These affiliates engage in reciprocal licensing agreements that facilitate exclusive territorial vertical restraints on the distribution of firm specific catalogue within a national territory. Contractual arrangements with exclusive territorial rights holders could include clauses that prohibit on-selling the product outside the designated territory (country). However, this contractual solution is imperfect as leakage from low-price to high-price markets may occur at a stage of distribution within a specific territory where the copyright owner or its licensee loses effective control.[5] The most effective means of implementing a strategy of territory specific market segmentation that facilitates profit maximising price discrimination is via an importation right. An importation right bestowed on the owner or his/her licensee provides for the monopoly control over the importation and distribution of a record company's catalogue within the specified territory.

This method of market segmentation requires a government enforced restriction on the importation of legitimate copyright product released in another territory by the copyright owner or with his/her consent. An importation right, embodied in national

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[5] This is evidenced, for example, by a sound recording sold in an Australian retail store containing the words "Not for sale outside Indonesia".

copyright laws, provides an effective impediment to the free flow of authorized copyright product released onto the world market by the copyright owner or with his authority. Parallel import restrictions enable copyright owners to segment the international market into smaller national territories. An importation right effectively excludes parallel imports since importation of a copyright product would first require the authorisation of the copyright owner or territorial licensee, which is unlikely to be granted. As such, national exhaustion provides copyright owners with the market power to exploit variations in price elasticity of demand between territories and to maximize global profits. Such conduct within the domestic market would contravene competition policy. Accordingly, the market power bestowed on the copyright owner by an importation right could justifiably be described as anti-competitive.

To illustrate, let us consider international price discrimination in the context of a high-income country, such as Australia, that is a net importer of sound recordings. The Australian market is dominated by four MNE record companies (the majors), which control around 90% of total sound recording sales in the territory. These subsidiaries of foreign owned MNEs distribute largely foreign sound recording. This is evidenced by the fact that around 85% of sound recordings sold in Australia is foreign repertoire. As a high-income country, sound recording prices are relatively higher than in many other countries, including low and high-income countries alike.[6] Rivalry between these dominant firms, which enjoy monopoly distribution rights over their catalogue of sound recordings, takes the form of non-price competition. High and uniform prices combine to maximise industry profits, the individual share of which is determined by the relative success of specific sound recording titles exclusively distributed by the record company. Profits generated from local sales are remitted to the overseas parent company. Moreover, publishing, artist and performance royalties accrue to foreign songwriters and recording artists. An importation right, that eliminates intra-title competition, provides the barrier that enables copyright owners to sustain a strategy of international price discrimination in which monopoly profits may be extracted from high-income countries like Australia.

In this context, an importation right can be viewed as an extraterritorial right that unnecessarily increases the market power of copyright owners that dominate the market

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[6] The recent devaluation of the Australian currency has reduced the price differential between Australian prices and those prevailing in the U.K. and U.S.A, for example.

for sound recordings. It would bring about a redistribution of income from domestic consumers to foreign copyright owners, and from net-importers to net-exporters of sound recordings and other IPR products. As a result, an importation right in the market for sound recordings would most likely cause a reduction in Australian consumer and national welfare. The adoption of the principle of international exhaustion of copyright would thwart any attempts by copyright owners to exploit the additional market power embodied in an importation right, to generate monopoly profits. In the absence of an importation right, a strategy of territory-specific pricing and the resultant price divergence, gives rise to arbitrage, that is, buying copyright product in a low-price market and reselling it in a high-price market. Parallel trade could be undertaken by territorial licensees, distributors and/or enterprising third parties. Adopting the principle of international exhaustion would remove the government-sanctioned impediment that fetters opportunistic arbitrage between high and low-price national markets. Barfield and Groombridge (1998) argue that, while abusive price discrimination is a possibility, it is the role of anti-trust law to deal with anti-competitive collusive price fixing. The problem with this argument is that competition policy is applied at the national and not international level. Domestic competition policy may be an ineffective instrument to combat international price discrimination.

Unfettered parallel imports would be a force for the convergence of prices for an artist specific sound recording title distributed in various national territories. Copyright owners may respond by not supplying low-price countries from which product is diverted to more profitable high-price markets. Parallel import restrictions and the ensuing price discrimination enables copyright owners to supply low and high-income countries alike. In and investigation of the welfare consequences of parallel imports, Malueg and Schwartz (1994) conclude that price discrimination, and the consequential increase in production and consumption, could increase world welfare. Allowing parallel imports may result in copyright owners excluding low-income markets in order to protect profits in high-income territories. Price discrimination, they argue, ensures that low-income countries can be supplied without fear of parallel trade interrupting supply in full-price markets. The analysis, however, ignores that this theoretical increase in world welfare involves a transfer of income from consumers in high-price markets to those in low-price markets and from consumers to copyright owners and their licensees. For high-income countries that are net-importers of copyright product, like Australia, this is not an attractive proposition. Moreover, it is an empirical question as to whether

copyright owners would discontinue to supply copyright product to low-price countries where a regime of international exhaustion prevailed. Australia amended the copyright act in 1998 to remove the importation right. The resultant introduction of parallel imports from low-price territories in South East Asia, has not resulted in a cessation of supply nor an increase in price in those markets.

Intra-title competition via parallel trade may be the most effective means of introducing effective price competition into a high-price market. Parallel imports, by diverting product from low-price to high-price markets, will undercut monopoly prices and thereby have a pro-competitive effect on the market for Top 40 sound recordings. To the extent that parallel imports undermine collusive pricing, this will enhance both consumer and national welfare in high-price national territories.

3.7 Summary and Conclusions

Copyright is essential to protect the commercial interests of creators and investors in musical works. In this Chapter we set out to investigate the economics of intellectual property and copyright with respect to sound recordings, and in particular, to determine the international legal obligation imposed on individual nations with respect to the exhaustion of copyright.

The literature review reveals a considerable divergence of views on this issue. While compelling arguments are presented by proponents of the competing principles of national versus international exhaustion, the economic evidence is unclear. Certainly, there is no basis for the contention that there exists a legal imperative that binds individual nations to adopt either policy position. Our critique of the case for copyright owner control over the parallel importation of sound recordings suggests that parallel imports can provide a competitive force that introduces intra-title price competition capable of undermining monopoly pricing strategies employed by oligopolistic firms. The introduction of parallel imports will have important income redistributive effects that will impact upon creators, producers, distributors and consumers of music product alike. The important question is whether the introduction of intra-title competition via parallel imports is welfare enhancing for the nation.

Chapter 4 will review the contemporary history of copyright reform in Australia, leading to the adoption of the principle of international exhaustion with respect to sound recordings. A model is developed to facilitate the identification of the income

redistributive effects and the overall national welfare consequences of this policy reform.

Table 3. 1 Wholesale and Retail Price Points: Australia

Price Point	Recommended Retail Price	PPD (approximation)
Full-Price	29.95	18.00
Mid-Price	19.95	12.00
Budget-Price	14.95	9.00

4 Parallel Imports and Sound Recordings

This Chapter develops a model of the market for sound recordings within which we illustrate the welfare consequences of an importation right and the income redistributive effects of the alternate policy positions of national and international exhaustion. The chapter begins with a review of copyright reform in Australia, a process culminating in the adoption of the principal of international exhaustion with respect to sound recordings, and a review of the literature on the Australian parallel import debate.

4.1 Australian Copyright Law Reform and Parallel Imports

4.1.1 CLRC Review of Copyright Import Provisions

In the mid 1980s the Attorney General requested the Copyright Law Review Committee (CLRC) to investigate whether the government should repeal the import provisions prohibiting parallel importation of copyright products. The CLRC (1988) recommended that the *Copyright Act 1968* be amended so that the importation of non-pirated copyright product is permitted, under certain conditions, without requiring the authorisation of the copyright owner or domestic licensee. This was to be conditional on the copyright product not being released in Australia within a "reasonable time". The committee avoided prescribing a specific time frame in recognition of industry specific variations in supply conditions for the range of copyright product classes in question.

In reaching this recommendation the CLRC reviewed each product class and concluded, in effect, that parallel import restrictions should remain, subject to product availability within a reasonable time. The recommendation to amend the import provisions for all copyright products was not adopted by the government of the day. Since that initial inquiry, Australian copyright law reform, and the liberalisation of trade in copyright product, has progressed in a step-wise fashion for individual product classes.

4.1.2 PSA Inquiry Into Book Prices

Growing concern over the level of book prices and title availability, lead to a Prices Surveillance Authority (PSA) review of the Australian book market in 1987. It has been argued, in some quarters, that in setting the level of copyright protection, the balance of power has been shifted too far in favour of producers of copyright material.

Nile (1990) argues that this dates as far back as early this century when creators and producers of intellectual property lobbied the British Government to enact the Copyright Act of 1911.

> *Within twelve months virtually identical Copyright Acts were passed in all colonial and former colonial countries including Australia. In almost every respect these colonial Copyright Acts protected the British trading monopoly (Nile, 1990:5)*

Nile argued that the *Traditional Markets Agreement*, as it was then described, resulted in the monopolistic control of the manufacture and distribution of books.

> *The British monopoly began as a natural consequence of colonial rule...but it was shored up immediately after World War Two by a critical agreement between British and American publishers in which they divided the world of books between them rather as the Seven Sisters of Oil divided the world of petroleum. (Nile, 1990:1)*

After a comprehensive review of Australian prices and title availability the PSA (1988) recommended a repeal of parallel import restrictions with respect to books. This recommendation was only partially adopted in the 1991 amendments to the import provisions of the *Copyright Act 1968,* allowing for parallel imports of books where specific titles were not made available in Australia within a certain time period.

The amendments required copyright owners or their licensees to make new book title releases available within 30 days of the first overseas publication, after which time the importation right lapsed. Moreover, purchase orders for titles that had satisfied the "30 day rule", had to be supplied within 90 days after which time the importation right would expire and local retailers would be free to parallel import. The implementation of the 30 day rule was problematic as it required book retailers to posses information about release timing in overseas countries that would be difficult, if not impossible, to obtain. These amendments were designed to address the issue of the availability of book titles, considered to be low by comparison to comparable markets such as the U.S.A and U.K. Also, prices in Australia were relatively higher than book prices in these overseas markets. An analysis of international book prices revealed that Australian consumers were paying an average of 31% more than consumers in the U.K for the same title (PSA, 1988).

The 1991 amendments to the import provisions of the book market were reviewed by the PSA in 1995 to determine if the changes were effective in addressing concerns about title availability and prices. The book publishing market, like that for sound recordings, is dominated by foreign MNEs. These companies control the wholesale distribution market for books and independent wholesalers are non-existent. At the time of the 1995 inquiry, the largest 4 companies enjoyed a market share of 35%, while the Top 20 firms accounted for 80% of the market (PSA, 1995).

The PSA concluded that there was some evidence that international price differentials had fallen since the 1991 copyright import provision amendments. However, international price comparisons revealed that Australians were still paying, on average, between 15% and 19% more for new title releases compared to those prevailing in the U.K. and U.S.A. respectively, and as much as 46.8% more than the U.K. for tertiary textbooks (PSA, 1995). There was little evidence of parallel importing taking place, suggesting that the 30-day rule effectively blocked potential price benefits flowing from import competition. In the view of the PSA, the only way to ensure that book prices were a function of competitive forces was the complete removal of the importation right. Failing implementation of this recommendation, the PSA recommended a reduction in the time limit for filling orders from 90 to 30 days. Neither of these recommendations were adopted.

4.1.3 Inquiry into the Prices of Computer Software

In a review of the computer software market, the PSA (1992) examined prices for 33 of the highest selling business software programs between the period 1989-1992. It found that prices were on average 49% higher in Australia than in the U.S. In response industry representatives claimed that these prices reflected cost differentials between the two markets, citing a smaller and geographically dispersed population. The result was an absence of economies of scale and higher servicing and support costs. Moreover, the cost of doing business in Australia was higher due to higher telephony and travel costs, as well as higher airfares and motor vehicle expenses.

Regardless, the PSA recommended a repeal of the importation provisions to allow parallel imports from countries that were members of international IPR conventions such as the *Berne Convention*. The PSA was mindful of the potentially damaging consequences of piracy in a parallel import environment, which would make the task of identifying pirate product more difficult. Nonetheless, the view was that the

removal of the importation right would not result in a significant increase in pirate imports, and that the greatest threat from software piracy originated within the domestic market.

A review of computer software was subsequently undertaken by the CLRC (1995). In its Draft Report the committee recommended the removal of the importation provisions to allow parallel imports of computer programs. However, the committee was split fairly evenly on this issue. In the Final Report, this decision was reversed, citing difficulty in determining the likely future consequences of either course of action. In justifying this reversal the committee cited the serious threat of software piracy should parallel importation be allowed and "*recent advise prepared by the Attorney-General's Department on the compatibility of the majority's draft recommendation...with Australia's obligations under the TRIPS Agreement*" (p.35, Chapter 11).

In doing so, the committee also acknowledged the potentially anti-competitive effects of an importation right but concluded that this, by itself, did not warrant a repeal of the import provisions. The potential detrimental effects of piracy on innovation and employment were thought to outweigh the possible benefits of lower prices induced by import competition. In the committees view, anti-competitive conduct might best be dealt with via the TPA. The efficacy of competition policy in this context is not, however, all that clear. International price discrimination requires the segmentation of the global market into national markets. This geographical segmentation is made possible by an importation right. While price discrimination of this sort is actionable within the Australian market, the TPA is ineffective in dealing with vertical restraints maintained by foreign copyright owners within the international marketplace. Domestic prices, at least partly, reflect overseas conduct. The actions of domestic licensees, which enjoy exclusive territorial licenses to distribute a catalogue of book titles, would not it itself be in breach of competition policy. Nonetheless, in recommending that parallel import restrictions be retained, the committee was mindful of the potential costs and recommended a review of this position in three years.

What is at issue is the strength and comprehensiveness of the exclusive rights. That is, which individual rights should be included in the bundle of rights bestowed on intellectual property rights owners? Too much power can create a by-product distortion that may outweigh the benefits of protection and produce a sub-optimal outcome. In particular, the monopoly power bestowed by an importation right may be in conflict

with competition policy. In other words, while copyright protection encourages R&D and creativity and, thereby, increases national welfare, the resulting monopoly power, and the ensuing imperfectly competitive market, reduces it. The challenge is to measure the strength of these two opposing effects, so as to determine the overall impact on national welfare.

4.1.4 Inquiry into the Prices of Sound Recordings

In response to concerns that Australians were paying higher prices for sound recordings than consumers in comparable countries, the (then) Labor Government commissioned the Prices Surveillance Authority (PSA) to investigate a range of issues relating to copyright law in relation to the market for sound recordings. Its brief was to examine issues of copyright, competition, efficiency, piracy, emerging technologies and the impact of industry structure and practices on the development of Australian repertoire. The Authority's report, *Inquiry into the Prices of Sound Recordings* (PSA, 1990), recommended that:

- The government remove parallel import restrictions from countries with comparable levels of copyright protection.
- Failing the adoption of the first recommendation and "only as a second-best solution", retailers be given the right to import copies of sound recordings not made available within 30 days of its first overseas publication
- Better targeted policies to protect against piracy and an increase in penalties
- The establishment of an industry council

This was the first comprehensive review of the Australian market for sound recordings, and the PSA (1990) was given the task of determining whether or not sound recording prices were too high and, if so, to determine the causes. Accordingly, a major focus of the inquiry was relative prices in Australia compared to those prevailing in overseas countries. Table 4.1 presents the ratio of Australian to foreign prices of both CD and LP (vinyl) records for the year 1989 (at which time the CD had not yet become the dominant format). This analysis revealed that Australians were paying between 14% and 64% more for the same titles than consumers in comparable overseas countries. International comparisons are, however, complicated by country variations in sales taxes, distribution costs and exchange rate volatility. However, after adjusting for

exchange rate movements, the PSA concluded that prices in Australia were substantially higher than those prevailing in the overseas countries included in the study.

These results suggested that MNE record companies were implementing a strategy of international price discrimination. If demand is relatively price inelastic in Australia as compared to say, the USA, then global profits can be maximised by charging higher prices in Australia and lower prices in the USA. However, to be successful, international price discrimination requires three conditions to be satisfied: demand dispersion, geographical market segmentation and an absence of price competition. As already stated, geographical market segmentation is made possible by the importation provisions of the *Copyright Act 1968*.

With respect to price competition, the PSA analysis of wholesale prices (PPD) revealed that these were uniform across the MNE record companies, with variation in some instances of less than 1% (PSA, 1990). ARIA, in defence of its members, argued that record companies faced essentially identical cost structures and demand conditions. It was these market realities, rather than collusive conduct, that resulted in the observed price uniformity. The PSA was of the view that an oligopolistic market structure, combined with price inelastic demand for sound recordings, caused record companies to avoid price competition and charge higher prices in Australia as a means of maximising global profits. International price differentials were only sustainable if there is an absence of arbitrage between countries. In the absence of an importation right, arbitrage would cause prices to converge. Accordingly, the PSA concluded that the importation provisions were the cause of relatively high prices for sound recordings. In relation to the economics of copyright with respect to sound recordings, the PSA concluded:

> *Whilst there is a strong case for copyright legislation to protect against copying at the production stage, once a record has been validly issued there appears to be no prima facie case for legislation which imposes restrictions on the domestic or multinational distribution of such validly issued records (PSA, 1990: 11).*

In its submission to the inquiry, ARIA argued that the economic justification for an importation right was to protect local copyright holders against pirate imports and from parallel traders who would free ride on marketing and promotion investments made by local record companies and authorised distributors.

The PSA concluded that the importation right embodied in the *Copyright Act 1968* extended copyright owner control from production into the sphere of distribution. This was thought to impede competition in the wholesale distribution market. The importation right enables the geographical segmentation of the global market into distinct national territories. The oligopolistic domestic market, in which a small number of large MNEs dominate, effectively eliminates price competition. Coupled with a relatively price inelastic demand for sound recordings, a statutory barrier to import competition, in the view of the PSA, was the cause of relatively high Australian prices. Accordingly, the PSA recommended a repeal of the importation provisions.

4.1.5 Senate Committee Review of Parallel Imports & Sound Recordings

In 1997, after years of debate, the Liberal government finally determined to adopt the PSA recommendation to amend the *Copyright Act* and remove the importation right. The *Copyright Amendment Bill (No. 2) 1997* was met with a hostile response in the Senate by both the Labor opposition and Australian Democrats. In December 1997 the Senate referred the Bill to the Senate Legal and Constitutional Legislative Committee (SLCLC) for inquiry and report. The scope of the inquiry was to consider the necessity of the proposed legislation and the likely costs and benefits that would ensue.

The SLCLC committee received around 200 submissions and held 7 public hearings within which to hear evidence. At the end of this process (March, 1998) the committee was divided on the issue, along political party lines. This resulted in three separate reports: the *Majority Report* (handed down by the Coalition majority Senators), the *Minority Report* (Labor), and the *Dissenting Report* (Australian Democrats). Each report is now considered in turn.

The majority report (SLCLC, 1998) concluded that the only segment in the music industry not subject to "full competition" was the wholesale distribution market. The impediment to effective competition was thought to be the importation provisions of the *Copyright Act 1968*. Higher prices for CDs in Australia, it concludes, were the result of international price discrimination practices employed by a handful of foreign owned MNEs that dominate the Australian market, distributing largely foreign music. The removal of the importation right was seen as the key to unlocking the competitive forces that would ultimately reduce this dominance and lower domestic prices. The major recommendations of the SLCLC majority report are here summarised:

- The *Copyright Amendment Bill (No.2) 1997* be passed.
- The government seek advice that there is no potential conflict between the proposed legislation and Australia's international obligations under the TRIPS agreement.
- The government examines the application of uniform laws to the importation of intellectual property
- The government examines the effect of the bill on Australian composers.

The Labor Senators *Minority Report (1998)* opposed the legislative changes because, in their view,

> *...(the legislation) proceeds from an entirely erroneous assumption that parallel importation is an issue about industry protection, free trade and monopoly privilege. The evidence overwhelmingly demonstrated that parallel importation is in fact an issue about the protection, development and enhancement of intellectual property rights, especially copyright in musical works and sound recordings. (SLCLC, 1998:69-70)*

On the latter point, the minority report is quite correct; the importation right is undoubtedly about protecting intellectual property. The important question, however, is whether or not this right is a fundamental right or a secondary right, and whether or not the benefits to the rights holder outweigh the costs to consumers and the nation. If not, then consumer and national welfare will be distributed to largely foreign copyright owners. Indeed, the minority report asserts that

> *...(the bill is) bad policy because it fails to strike the appropriate balance between potential damage to the music industry and potential savings to the consumer (SLCLC, 1998:70).*

This conclusion is reached, however, after a somewhat limited analysis of the costs and benefits as presented in a number of written and oral submissions to the committee. The limited empirical evidence submitted by a broad range of interested parties was inconclusive on the matter.

The suggestion that parallel importation is not an issue about free trade and monopoly power is erroneous. The importation right clearly provides monopoly distribution rights to local copyright owners or their licensees and, quite deliberately

impedes parallel imports and intra-title competition. It is undoubtedly an issue concerning trade and monopoly privilege. The critical issue is whether or not the monopoly power deliberately bestowed on the copyright owner is welfare enhancing for the nation. The Minority Report opposed the legislative changes because of a diminution in copyright and asserts that removal of the importation right will have

> *...the effect of abolishing private property rights – copyright – that protect intellectual property in sound recordings and musical works. (SLCLC, 1998:73)*

This is clearly incorrect. It is not copyright *per se* (which incorporates a bundle of rights) that is at risk but one component of that bundle, and some would argue an ancillary right, the importation right. What the Bill proposed was to permit the importation of legitimate copies of a sound recording released for distribution in an overseas territory by the copyright owner or its licensee. The abolition of copyright could only be argued if unauthorised (pirate) reproductions where allowed to be imported, and clearly they are not. The Minority Report ignores a significant international debate with respect to the importation right across a range of IPR products. Moreover, international conventions, while supporting the first-sale doctrine, leave the controversial question of national versus international exhaustion to individual nations. Australia, as a net-importer of copyright product, is not necessarily better served by over-protecting copyright owners. The economic rationale for an importation right with respect to sound recordings needs to be tested.

The Australian Democrat Dissenting Report (SLCLC, 1998) highlights the uncertainty surrounding the parallel imports debate on a whole range of important economic and legal issues. These are as follows:

- The importation right produces relatively high domestic prices and monopoly profits
- Parallel imports, by increasing competition, will cause prices of sound recording to fall
- The importation right is necessary to develop local repertoire
- Parallel imports will reduce Australian artist' income and music industry employment

- The removal of the importation right is in conflict with Australia's international obligations

After reviewing the evidence submitted to the committee, and despite the uncertainty surrounding these issues, the Dissenting Report concludes that

> *...the Bill in its present form will not, on balance, achieve the aims set out by Government – the impact on Australian artists of possible royalty reductions, piracy and job losses are significant. (Dissenting Report, SLCLC, 1998:5)*

This conclusion was based on largely anecdotal evidence provided to the committee in various written and oral submissions. Nonetheless, the Dissenting Report highlights a number of important issues surrounding the Australian parallel import debate. These issues include collusive or monopoly pricing, the development of local repertoire (A&R investment), local artist and songwriter income, and consumer and national welfare. These issues will be analysed in Sections 4.3 and 4.4 of this chapter.

4.1.6 The Copyright Amendment Bill (No. 2) 1998

The recommendations of the SLCLC Majority Report were adopted with the passing of the *Copyright Amendment Act (No. 2) 1998* which amended the *Copyright Act (1968)* to permit the parallel importation of non-pirated copies of sound recordings. The key elements of the amendments are sections 44D and 112D, which state that the importation of a "non-infringing copy" of a sound recording does not infringe copyright in the works recorded and the sound recording, respectively. *Section 10AA Non-Infringing copy of a sound recording,* defines a non-infringing copy as one that does not breach copyright law in the country of manufacture and/or has been made with the authority of the copyright owner. In addition, Section 130A reverses the onus of proof and now requires the defendant to prove that the imported sound recording is a non-infringing copy. Schedule 2 of the Act increases piracy penalties for the manufacture, importation, sale or trade in all pirated intellectual property products to a maximum of $60,500 for individuals and $302,500 for corporations or up to 5 years imprisonment.

In effect, Australia has adopted the principle of international exhaustion with respect to copyright in sound recordings. This now brings Australia into line with a number of other countries that permit parallel importing in one form or another. These

include Canada, Japan, Singapore, Malaysia and Korea. It is also noteworthy that the European Union allows parallel importation between member countries but retains restrictions to non-members. The Australian position vis-à-vis the importation right has been criticised for an inherent contradiction where it applies one set of rules to books, where the act allows conditional parallel imports, another set of rules to sound recordings, while parallel imports is prohibited for all other types of copyright products. However, this criticism is ill-founded since the Australian position complies with international law and follows the rule of reason principle as outlined by Donnelly (1999), by adopting a model of selective international exhaustion by product class.

4.1.7 *Towards the Universal Adoption of International Exhaustion.*

It is clear that the dominant view of the present Liberal government, and the majority of the regulatory bodies from which it takes advise, is in favour of adopting the principal of international exhaustion. A review of all remaining copyright related products in 2000 saw the drafting of the *Copyright Amendment Bill (2001)*. This bill proposed a removal of restrictions on the parallel importation of all copyright products, including books but exempting motion pictures. The House of Representatives passed the Bill in June 2000 but it lapsed with the November 2001 election. It has subsequently been re-introduced into the House of Representatives in March 2002 as the Copyright Amendment Bill (2002). Its passage through the Senate is uncertain since both the Labor opposition and Democrats have expressed their opposition to the Bill. For the moment, at least, it remains illegal to import business software, video games, periodicals etc. without the permission of the copyright owner or their domestic licensee.

The Australian government has adopted selective international exhaustion by product, in its approach to copyright law reform and parallel imports. It has undertaken a sequential review and economic cost-benefit analysis of each category of copyright product and amending copyright law accordingly. For example, the proposed exemption on motion pictures relates to the unique characteristics of that product and the prevailing dynamics of that market. Release timing is a critical dimension of competition and distribution in this market. The primary income earning activity is the public performance. A new motion picture is first released in movie theatres, and then in video rental stores, before ultimately being released on DVD and videocassette. Release

timing varies between territories and is a function of, among other things, seasonal factors. The removal of parallel import restrictions could see the importation of DVD and videocassette copies of films prior to their scheduled release in the domestic market, with obvious financial costs on both copyright owners and the movie theatre industry. It makes sense, therefore, to adopt the principle of national exhaustion with respect to this product class.

Not surprisingly, given the economic significance of copyright dependent industries and the income redistributive effects of changes to the nature and extent of exclusive commercial rights, copyright law reform has been very controversial. The response to the adoption of international exhaustion with respect to sound recordings by the dominant multinational (MNE) record companies provides an excellent case study of the complexities surrounding the relationship between copyright law, international trade and competition policy. Before proceeding to an economic analysis of parallel imports and sound recordings, a review of the somewhat limited Australian literature on the issue of international exhaustion is presented.

4.2 Review of Related Literature

Richardson (1996) argues that copyright protection in Australia has swung too far in favour of the creator and producer, to the detriment of consumers of copyright product. Critical of the Copyright Law Review Committee (CLRC) recommendation to not repeal the parallel import provisions of the *Copyright Act*, he argues that the regulatory environment fails to balance competing interests.

> *If copyright holders are allowed to be the sole producer of copyright protected product, but also control the distribution chain beyond the factory gate, opportunities are created for monopolistic exploitation. The (international) price differentials....show that this monopoly position has indeed been used by the copyright owners to charge excessive prices. (Richardson, 1996:13)*

This is particularly important for countries like Australia that are net-importers of intellectual property. This was highlighted in a Productivity Commission report (1997), which recommended that when engaging in international negotiations on intellectual property matters, Australian negotiators should emphasise the need to give adequate regard to the interest of consumers of copyright product. It notes:

> *Their interests should be incorporated into Australia's negotiating objectives with weight appropriate to Australia's position as a net importer of intellectual property (Productivity Commission, 1997:9)*

Given the absence of an international legal obligation requiring the establishment of an importation right, Australia's position on the issue of the exhaustion of the right of distribution should reflect our dependence on foreign IPR. Since it is impossible to precisely identify the optimal breadth and depth of IPR protection, the bundle of rights that we choose to bestow on IPR owners should reflect the fact that we are a net-importer of intellectual property. Over-protection, and the increased market power that ensues, will impose its greatest cost on consumers and on nations that are net-importers. As such, Australia, from a national welfare perspective, should not bestow rights beyond the minimum required to meet our international obligations.

In a review of the PSA report, Harris (1992) provides a critical analysis of the main arguments put forward in the sound recording pricing debate and provides a number of insights into the workings of the music industry. He concludes that the outcome of deregulation on the structure of the domestic industry, in particular investment in local repertoire, is uncertain but predicts that consumers are likely to benefit from lower prices. Harris highlights the importance of identifying and analysing the key elements of the "economics of the arts" as they apply to the record industry, which he characterises as having:

> *... an erratic and unpredictable demand side, an overpopulated supply side, a high percentage of unsuccessful releases, and a network of copyright rules designed to reduce free-riding. (p. 58)*

Capling (1996) reviews the political processes surrounding the debate over the parallel importation of sound recordings and the shifting position of the Australian government as it struggled with the politics of competing interests. The paper highlights the divide between the interests of Australian consumers and foreign copyright owners. It portrays the government's inability to implement the 1990 PSA recommendations in the context of Australia's international obligations under the GATT and TRIPS. Capling highlights the trade restraining effects of the *Copyright Act* and argues that the importation right has produced unintended social, economic and political outcomes.

> *In effect, the Act has created a highly restrictive import regime that allows an oligopoly of foreign multinational corporations to determine both the pricing and availability of music in Australia, and a local music industry whose structure and development is determined largely by this highly regulated and protectionist import regime (Capling, 1996:302)*

The principal criticism of the importation right is that, by facilitating the creation of monopoly control, it contradicts competition policy designed to limit anti-competitive behaviour. Capling goes on to express concern about cultural diversity claiming that the domination of the Australian music industry by foreign MNEs undermines Australia's ability to "*resist the emergence of a global and homogenised culture of mediocrity.*" (p.304).

Capling proposed the removal of the importation right in favour of more transparent and direct assistance to promote local manufacturing and to nurture local talent. While the paper provides a useful analysis of the political machinations surrounding the debate, there is no attempt to provide an economic analysis of the parallel import debate with respect to sound recordings and the impact of the regulatory environment on market structure, international trade in copyright product, and consumer and national welfare.

Breen (1996) investigates popular music policy development in Australia during the Labor Government years 1983-1996. The study focuses on the convergence of cultural and industrial policy from a political economy perspective. Breen concludes that the ALPs popular music policy initiatives

> *...where inconclusive, due to the lack of singular focus, resulting in too much power remaining with the existing industry (p.3)*

Breen (rather narrowly) defines "the industry" as the major record companies their music publishing and independent record label subsidiaries. His thesis clearly demonstrates the *ad hoc* nature with which music industry policies and programs were developed during this period. The study was inevitably drawn to the PSA inquiry and provides an informative analysis from a political policy formulation perspective. The study does not however attempt to analyse the difficult economic questions surrounding the debate over the exhaustion of copyright, competition policy and national welfare.

4.3 *Copyright, Parallel Imports and National Welfare*

Any judgement as to the merit of the importation provisions of the *Copyright Act 1968,* must balance the economic costs and benefits of its retention as compared with its removal. In this section I develop a model of the market for sound recordings to help illustrate the welfare consequences of an importation right and its subsequent removal. This will assist in the evaluation of the income redistribution effects of each alternate policy stance and the income and welfare implications, particularly for domestic consumers and copyright owners.

4.3.1 The Australian Market for Sound Recordings

A record company is a multi-product firm releasing numerous artist specific sound recordings per time period. Record companies compete to sign artists to exclusive sound recording contracts. The set of sound recording titles produced by each record company forms its music catalogue, over which it retains copyright ownership. The relative success of each record company's exclusively produced titles, determines its total sales and market share.

The sound recording industry is oligopolistic, with the largest four record companies controlling approximately 90% of all sound recording sales. These firms are wholly owned subsidiaries of MNE record companies that manufacture and distribute largely foreign repertoire sold under license. Exclusive territorial licenses provide each licensee with exclusive distribution rights to the music catalogue owned or controlled by the parent company. In this way, each firm is a monopoly supplier of these artist specific sound recording titles.

Since the catalogue of the four major record companies represents around 90% of total industry sales, music retailers are dependent on the majors for the supply of "hit-record" titles. Importantly, around 20% of titles account for approximately 80% of sales in any one period. This highlights the "hit-record" nature of the market, in which popular titles dominate sales. The sales success of individual titles is monitored by various sales charts, such as the Top 40 album chart. Demand for Top 40 titles is relatively price inelastic and for many avid fans an artist specific title is without substitute. For example, a consumer will not buy a Madonna title in preference to a Brittney Spears title because the former is sold at a lower price, but because they prefer the music embodied in that sound recording. However, the strength of demand for hit-records is relatively short-lived. Popular music displays the characteristics of a fad or

fashion product. When the market "reacts" to a specific title, record companies throw the full weight of their marketing and promotion strategies behind it. As the monopoly distributor of an artist specific hit-record, market share rises, as does the individual record companies share of industry profit.

This monopoly status is somewhat short-lived. Given the fickle nature of consumer tastes and preferences, demand quickly shifts to new title releases which gradually displace hit-records from their position (ranking) in the Top 40 chart. Because demand for a hit-record is highly inelastic, during a titles reign in the upper reaches of the charts, the record company can be thought of as enjoying a transitory monopoly for a hit-record. It is transitory in the sense that the relatively strong demand for the title is short-lived, wherein a sound recording's life-cycle can often be counted in weeks.

Shifting market shares between record companies reflects the relative success of sound recording titles exclusively distributed as part of its music catalogue. As in other concentrated markets, non-price competition is the dominant means of inter-firm rivalry. Analysis of the wholesale distribution market reveals that prices are fairly uniform across major record companies (PSA, 1990; ACCC 1998). Rather than compete on price, these dominant firms, that enjoy exclusive production and distribution rights to the vast majority of Top 40 titles, can set uniformly high prices so as to maximise industry profits. An individual record company's share of industry profit is determined by its corresponding share of exclusively distributed hit-records. While monopoly power has been described as transitory, it is important to remember that the majority of new title releases that displace high-selling chart titles, are themselves released by the major record companies. In other words, record companies enjoy a recurring transitory monopoly. Indeed, this transitory monopoly is so regular that there is rarely a time period in which all four of the majors do not have a hit-selling title in the charts.

Collusive pricing of this nature is akin to monopoly supply and pricing. However, collusive pricing between oligopolistic firms is only sustainable if there is a limited threat from smaller rivals within the domestic market or minimal risk of attracting new entrants, for example, from distributors located in foreign territories. In the context of international trade, a strategy of collusive pricing is only sustainable if there were a geographical impediment to free trade between low-price and high-price territories. Copyright owners seek to maximise the economic returns from their assets. For record companies, this copyright asset is the set of sound recording titles that constitutes its music catalogue. The maximisation of global profits, in the presence of

demand dispersion, requires the copyright owner to set prices in disparate territories according to the prevailing elasticity of demand. International price discrimination of this sort is only possible if the following conditions are satisfied.

- Territorial variation in price elasticity of demand
- Monopoly control over the distribution of a popular title
- Geographical segmentation of the market

The preceding depiction of the market for sound recordings would suggest that these three conditions are satisfied. Price elasticity of demand varies between nations as a function of varying income levels and other demand factors. While each record company has monopoly control over titles within its catalogue, these compete with titles that make up the catalogue of rival companies. Nonetheless, the oligopolistic market structure, both national and international, is conducive to collusive pricing. The third element, geographical segmentation, is facilitated by an importation right that eliminates intra-title import competition (parallel imports). In other words, the barrier to international trade that enables record companies to sustain international price discrimination is an importation right, that is one component of a bundle of exclusive commercial rights bestowed on copyright owners in many countries. In its absence, we would expect to observe arbitrage operations and an equalisation of international prices for Top 40 sound recording titles. The question to which we now turn is: what are the welfare consequences of the removal of the importation right for a small net-importer of sound recordings such as Australia?

4.3.2 International Price Discrimination & Reciprocal Importation Rights.

A hypothetical scenario is now developed to facilitate an analysis of the welfare consequences of price discrimination in the market for sound recordings. For ease of illustration, the following depiction incorporates a number of simplifying assumptions. A foreign MNE record company releases a new sound recording title, retaining manufacturing and distribution in its home territory and licensing copyright to subsidiary or affiliated record companies in all foreign territories. We assume for ease of illustration that the home territory is the U.S.A. and that there are only two foreign

territories, Australia and Malaysia.[1] These companies typically engage in reciprocal licensing whereby new sound recording titles developed in each territory is licensed to an affiliate company in each foreign market.[2] We now provide a brief description of the market environment in each of the three territories.

USA Market

This is assumed to be the home market of the parent company. It is characterised by a large, culturally diverse and geographically dispersed population. The music recording industry is highly concentrated with the four majors dominating sound recording sales. The market is characterised by numerous sub-markets in which particular genres flourish. These (sometimes regional) variations reflect a rich cultural and ethnic diversity that is often expressed through a range of musical forms. Large and geographically dispersed population centres, combine with a diversity of musical forms, to provide independent record companies with both the opportunity to develop local repertoire and a ready made market for new sound recording titles. From time to time, a new musical form (genre) develops and gains popular interest beyond its traditional listener base. This is referred to in the industry as "crossing-over"; a phenomenon which describes a genre specific hit-record (for example, a sound recording in the Country Music chart) which begins attracting consumers who would not normally purchase a sound recording from that particular genre or musical form. These titles often achieve national or even international success.

The result is a national market that is relatively less concentrated, as compared to Australia, and may partially account for the historically lower market price for hit-records in that territory. Like Australia, the U.S. is a technologically advanced high-income industrialised country. Music hardware penetration is high, as is music expenditure per capita.

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[1] Malaysia serves as a useful comparison as it is a relatively low-price market that has approximately the same population size as Australia.

[2] Reciprocal licensing is centrally coordinated and achieved, for example, by each company licensing all copyright to the parent company which then allocates exclusive territorial sub-licenses to affiliates located in specific territories.

Australia

Australia, like the U.S., is a technologically advanced high-income country in which per capita music expenditure is relatively low by comparison to many other developed countries, but higher than that observed in developing countries, such as Malaysia. Like the U.S., Australia also has a culturally diverse population but this is not generally reflected in either musical innovation nor, therefore, in sound recording sales. The development of popular music, as cultural expression, largely imitates musical forms (and sub-cultures) first introduced in foreign territories, especially the U.S. and U.K. Nonetheless, the quality of new titles developed in Australia is often very high, as is evidenced by the numerous Australian recording artists that have enjoyed international success.[3]

Likewise, musical taste, as expressed in purchasing behaviour, is more uniform and the mainstream genres dominate music sales. These relatively uniform musical tastes and innovations provide relatively fewer opportunities for independent record companies to compete with majors for market share. The result is a relatively more concentrated market and higher sound recording prices.

Malaysia

Malaysia is a middle-income developing country with relatively low hardware penetration and per capita music spend. However, a small number of highly concentrated population centres (for example, Kuala Lumpur and Johor Bahru) enjoy a relatively high concentration of middle-income households with a healthy appetite for western cultural products, including music. Music innovation and tastes reflect the ethnic diversity of its population and is a market in which Malay, Chinese and Indian popular and traditional musical forms compete alongside western music. Imitation of western musical forms predominantly takes the shape of a popularisation of ethnic based cultural themes. The relatively few export successes are predominantly to neighbouring countries that share a similar cultural and linguistic heritage (for example, "Canto-Pop" in Hong Kong and Malay language music in Indonesia).

Despite these significant differences to the Australian and U.S. markets, the major record companies play a dominant role in the distribution of foreign and local repertoire in Malaysia. Given the relatively low-income, small absolute market size and

[3] For example, Savage Garden, Little River Band and AC/DC to name a few.

diversity of musical tastes, sound recording prices are relatively low by international standards.

This depiction of our three national markets provides the contextual background within which to illustrate the application of international price discrimination that exploits national variations in price elasticity of demand in the absence of intra-title import competition. The market demand curves for Top 40 titles in each of the three markets may be represented as follows:

$$Q_A = \alpha_A - \beta_A P_A \tag{4.1}$$

$$Q_M = \alpha_M - \beta_M P_M \tag{4.2}$$

$$Q_A = \alpha_{US} - \beta_{US} P_{US} \tag{4.3}$$

where Q represents the quantity demanded in a country, α is the absolute size of the domestic market for Top 40 titles, β measures the responsiveness of quantity demanded to a change in market price, P, and subscripts *A, M and US* represent Australia, Malaysia and the U.S.A. respectively. Given the preceding depiction of these markets we can assume that $\alpha_{US} > \alpha_A > \alpha_M$, and that $\beta_A > \beta_{US} > \beta_M$.[4] That is, the absolute size of the U.S. market exceeds that of Australia, which is in turn larger than that of Malaysia. Given the inverse relationship between price elasticity of demand (η) and β, demand in Australia is relatively price inelastic as compared to demand in the U.S. market, while demand is relatively price elastic in the Malaysian market. These demand functions can be presented diagrammatically to help illustrate the implementation of a strategy of international price discrimination.

Recall equation 2.4 in Chapter 2, which depicts the marginal cost function ($MC^* = dTC/dQ$) facing a typical record company, reproduced here for convenience.

$$dTC/dQ = MPC + DIST + R_A + R_P \tag{4.4}$$

Given the nature of production technology, the physical cost of reproduction is insignificant and fairly uniform across countries. We assume therefore that MC^* is uniform across the three countries under examination. We further assume that foreign

repertoire is manufactured domestically in each market, under license from the parent (U.S.) company. Reciprocal importation rights for copyright owners are a consequence of importation provisions incorporated into each nation's copyright law which prohibit parallel imports. It is further assumed that affiliated record companies implement reciprocal territorial licenses so as to control the distribution of their respective music catalogues in each territory.

The profit maximising price for an artist specific Top 40 title will be a function of the price elasticity of demand and will vary between each territory. This is illustrated in Figure 4.1 where we depict the market for Top 40 titles in both Malaysia and Australia. The demand curves in each market can be thought of as representing a typical hit-record, exclusively distributed by the territorial license holder. The profit maximising price is identified by equating marginal revenue with marginal cost in each market. The result is a price of P_A and P_M and a quantity of Q_A and Q_M in Australia and Malaysia respectively. The price in the U.S. is assumed to lie somewhere in between these two levels, for example at, P_{US}.

The gross profit in the two territories depicted in Figure 4.1 is $\gamma + \delta + \omega + \varphi$. Importantly, profit maximisation requires a higher price in the Australian as compared to the Malaysian territory, $P_A > P_M$. Despite relatively similar population sizes (19 versus 23 million respectively) sound recording sales in Australia exceed those in Malaysia ($Q_A > Q_M$). Given uniform costs of production and divergent prices, gross profit levels in the Australian territory exceed those generated in the Malaysian territory $[(\gamma + \delta) < (\omega + \varphi)]$. Economic profit is obtained by subtracting establishment (or fixed) costs from gross profit. This means that a larger proportion of establishment costs (A&R, producing the master recording etc.) are recovered from the high-price market. In this way, consumers in a high-price territory, such as Australia, subsidise consumers in Malaysia.[5]

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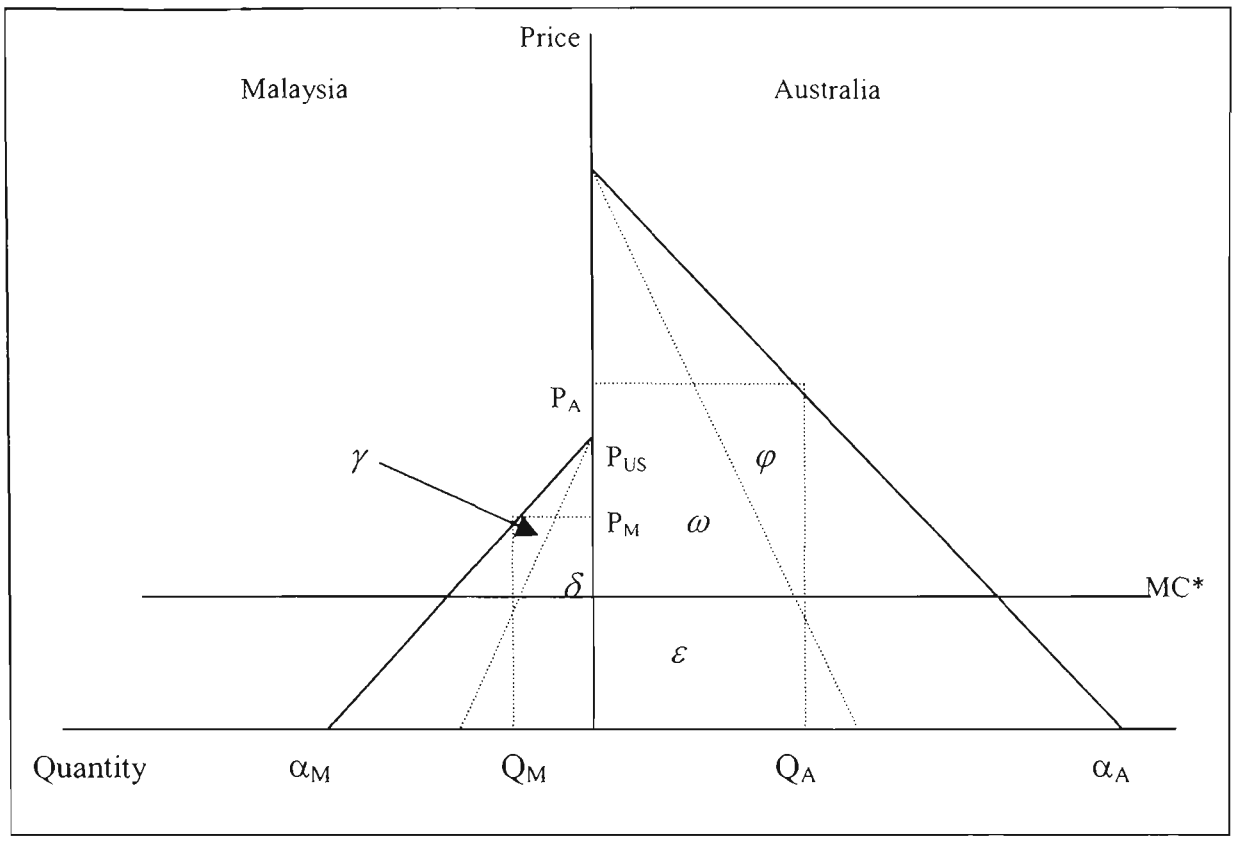
[4] The typical price point for a Top 40 title in the USA, Australia and Malaysia is $14, $17 and $12 (USD) respectively.

[5] In most cases, establishment costs for a foreign title release have already been recouped in the home market, since record companies typically focus on titles that have already proven successful in the home market. As part of the licensing arrangement a local subsidiary receives a "ready to market" package that includes the master tape, music videos etc. As a result, the establishment costs in the licensee's territory are limited to marketing and promotion. As such, the gross profit levels illustrated in Figure 4.1 approximate economic profit.

Figure 4. 1 International Price Discrimination



The bulk of this economic profit will be remitted overseas, while a small percentage may be retained by the local subsidiary to finance investment in local repertoire. However, this is not the limit of the income transfers to the overseas parent company. A proportion of marginal cost is comprised of royalty payments to both artists and songwriters (R_A + R_P). Since the vast majority of sound recordings sold in Australia is foreign repertoire, that proportion of total variable costs (depicted by the area ε in Figure 4.1) comprising royalty payments, represents an income payment to foreigners. In a free-trade environment, this payment will simply reflect the comparative advantage of foreign artists and songwriters relative to locals. However, some would argue that the domination of the local market by foreign MNEs somewhat stifles the development of local repertoire. It is for this reason that many countries, as diverse as Malaysia and France, impose local content requirements as a means of protecting a cultural heritage that is expressed through cultural products such as sound recordings and film. A larger share of sound recording sales for Australian artists and songwriters would mean an increase in income for Australians and a reduction in payments to foreigners.

Perhaps more relevant to the economic debate is the fact that Australian royalty rates are higher than those prevailing in markets such as the U.S. Sales in the Australian

territory can therefore represent something of a windfall or bonus for record companies, artists and songwriters alike. With competitive imports, the price differentials illustrated in this example would be unsustainable, as arbitrage between low-price and high-price territories would undermine this profit maximising price discrimination strategy. Reciprocal importation rights, combined with exclusive territorial licenses, provide monopoly control over artist specific titles within each territory that facilitates the necessary geographical segmentation to sustain these international price differentials. The important question is: what are the national and global welfare consequences of this?

4.3.3 The Welfare Consequences of National Exhaustion

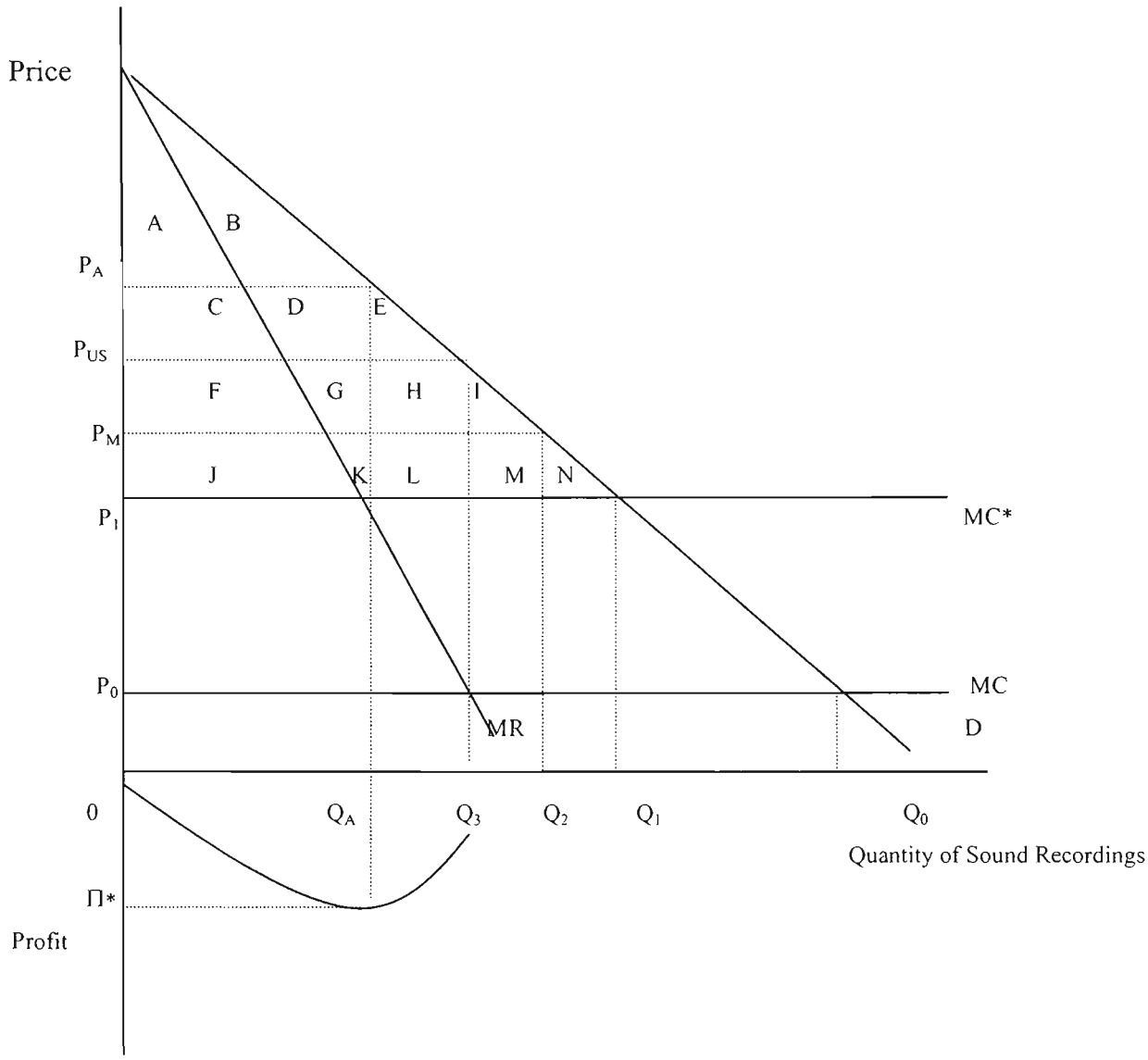
In this section we explore the likely welfare consequences of the adoption of an importation right, by examining the price and quantity effects of introducing intra-title competition. Figure 4.2 reproduces the Australian market for Top 40 sound recordings depicted in Figure 4.1. Before doing so, however, we first utilise the diagrammatic illustration of the market for sound recordings to demonstrate the economic rationale for the reproduction right as one of a bundle of rights bestowed by copyright law.

The marginal physical cost of reproduction [$MC = MC^* - (R_A + R_P)$] lies below the royalty inclusive marginal cost curve. In the absence of copyright protection there would be unrestricted reproduction and distribution of the sound recording. The market outcome will occur where $P=MC$, with a price of Po and quantity traded of Qo. This is the price and quantity at which consumer surplus is maximised. However, at this price, both the record company and the artist/songwriter do not receive a return for the investment in the development and production of the master recording and the intellectual property embodied in the musical work. In the absence of copyright law, and the exclusive right to commercially exploit the musical work and sound recording, the market will "fail" to produce the product. The artist would have no economic incentive to compose the music. Likewise, the record company will have no economic incentive to invest in the production of the master recording and in the marketing and promotion of new sound recording titles. The commercial production of sound recordings would cease and the consumer surplus gains would disappear.

To avoid market failure, the record company and artist/songwriter must be financially rewarded for the physical and intellectual capital that is embodied in each copy of a sound recording. That is, the price must provide appropriate compensation for

the physical cost of the sound recording, a royalty payment to the artist and songwriter, as well as a providing a return to the record company commensurate with the risk undertaken. The socially optimal output is therefore achieved where $P = MC^*$, at a price of P_1 and a quantity traded of Q_1, and the firm makes a normal profit.[6] The triangular area below the demand curve and above the price line P_1 (area A to N inclusive) depicts consumer surplus. The reproduction right is an essential component of copyright and is necessary to provide the commercial incentive to engage in the production and distribution of sound recordings and to avoid market failure.

Figure 4. 2 The Market for Top 40 Sound Recording



[6] In a regulated market where R&D and risk is significant P>MC* may be required to sustain investment levels.

Having identified the socially optimal price and quantity traded, and established the economic rationale for the reproduction right, we are now in a position to analyse the welfare implications of international price discrimination, facilitated by the inclusion of an importation right as one of a bundle of rights bestowed on copyright owners. Exclusive territorial licenses backed by a copyright regime that includes an importation right would enable the firm to segment the global market and raise price from P_I (the socially optimal price) to P_A. At this price consumers would be willing to purchase a quantity of Q_A, and industry profits are maximised Π^*. As depicted in Figure 4.1, it is assumed that the U.S. price (P_{US}) lies below the Australian price and above the Malaysian price (P_M). The price in each international territory is a function of the respective price elasticities, and set so as to maximise territory and global profits.

The importation right prohibits parallel traders from engaging in profitable arbitrage operations, buying from the low-price market at P_M and on-selling it in the high-price Australian market at a price below P_A. The outcome of international market segmentation for Australia is a higher domestic price and lower quantity traded compared with the socially optimal outcome. The area above the MC* curve and below the price line P_A at a quantity of Q_A measures the economic profit generated on sales of an artist specific hit-record ($C+D+F+G+J+K$). As this area would form part of consumer surplus at the socially optimal price, price discrimination brings about a transfer of income from domestic consumers to the monopoly importer (territorial license holder). The triangular area ($E+H+I+L+M+N$) represents a deadweight loss of consumer surplus resulting from the lower quantity traded (Q_A) as compared to the socially optimal volume (Q_I). Some consumers are now excluded from the market because of the prohibitive price, relative to their marginal valuation. This represents a net national welfare loss and is a direct result of monopoly distribution and pricing for artist specific sound recording titles.

The national welfare loss is not, however, limited to area $E+H+I+L+M+N$. The income distribution effects of monopoly pricing on social welfare, area $C+D+F+G+J+K$, are normally ignored on the basis that the government tax-transfer system can bring about the appropriate compensation to the losers (consumers). That is, while monopoly pricing causes a redistribution of income, the redistributive effects do not normally affect national welfare. However, where the import license holder is a local subsidiary of a foreign owned multi-national company, these profits are remitted to the overseas parent company. This transfer, from domestic consumers to the

shareholders of the foreign firm, represents a further loss of national welfare. As a result, the total loss to the nation will be area $E+H+I+L+M+N$ (the deadweight loss) *plus* areas $C+D+F+G+J+K$ (less any company taxes paid). This analysis demonstrates that, in the presence of international price discrimination, nations that are net importers of intellectual property will, by restricting parallel imports, induce a reduction in both consumer and national welfare.

The inclusion of an importation right, as one of a bundle of exclusive commercial rights, can be welfare reducing for high-income countries like Australia that imports and consumes large volumes of foreign sound recordings. The Australian sound recording industry is dominated by a handful of foreign MNE record companies distributing largely foreign music. Together, these firms dominate the wholesale distribution market for Top 40 titles and, given the relatively price inelastic demand for these titles, are capable of extracting substantial profits from the Australian territory. International trade and IPR law do not obligate national governments to adopt the principle of national exhaustion, so there is no legal obligation to do so. In setting policy, national governments must weigh up the costs and benefits of the alternate positions on the issue of the exhaustion of the distribution right. In this context, the provision of an importation right with respect to sound recordings in Australian copyright law, would seem to have a detrimental impact on Australian national welfare, and is therefore contrary to the national interest. The model depicted by Figure 4.2 can now be utilised to examine the adoption of the principle of international exhaustion.

4.3.4 The Welfare Consequences of International Exhaustion

The *Copyright Amendment Act (No.2) 1998* amended the importation provisions of the *Copyright Act 1968* to allow the importation of non-infringing copies of a sound recording, thereby adopting the principle of international exhaustion with respect to sound recordings. With the removal of parallel import restrictions, parallel traders may now import sound recordings from a low-price territory, Malaysia in our example, at a price of P_M. Arbitrage operations will continue so long as there is a price differential between the two markets. However, the introduction of import competition will lower domestic price. Arbitrage continues until the Australian price falls from P_A to P_M and it is no longer profitable to divert product between the two markets. Consumer demand increases and quantity traded rises from Q_A to Q_2. The lower market price and higher

quantity traded will no doubt have important implications for industry profits and consumer welfare.

The removal of monopoly distribution rights for artist specific titles significantly lowers profits. Industry profit falls from its previous level (in a regime of national exhaustion and importation rights) of $C+D+F+G+J+K$ to $J+K$. Consumer surplus, on the other hand, rises from its previous level of $A+B$ to $A+B+C+D+E+F+G+H+I$, a net gain of $C+D+E+F+G+H+I$. In a regime of national exhaustion, area $C+D+F+G$ formed part of industry profits and now represents a transfer of income from producers to consumers; profit that was previously transferred to foreign citizens. Importantly, the adoption of international exhaustion, induces a net-increase in national welfare. Area $E+H+I$, formerly a deadweight loss as a consequence of market segmentation and price discrimination, now forms part of consumer surplus. As depicted, the introduction of parallel imports can be expected to lower domestic price, increase the volume of trade and move the market toward the socially optimal price and quantity traded. These gains and losses in welfare are summarised in Table 4.2, which clearly shows a net-increase in national welfare of $E+H+I$, and a transfer of income from copyright owners to local consumers of $C+D+F+G$.

The preceding depiction assumes that the Australian market is so small that the major record companies neither find it profitable to raise the joint Australian-Malaysian price nor to cease supplying Malaysia (a policy of exclusion), thereby cutting off Australia's supply of low-price sound recordings. As such, the implicit assumption is that these firms would simply accommodate parallel imports. That is, the reaction to the displacement effect, where low-price product is diverted to a high-price territory, is to adjust the Australian price downward in response to import competition. As depicted, the Australian price would fall until it equalled the price prevailing in the Malaysian territory. At this point, it is no longer profitable to parallel import and retailers could return to sourcing product from the local licensee. Local licensees will have numerous advantages over parallel traders, that relate to local production and distribution infrastructure, namely, timely and reliable supply. As such we can expect that licensee adjusted prices would ultimately eliminate parallel imports. Nonetheless, the welfare gains to the consumers and the nation will likely survive, as local licensees will need to employ entry limit pricing, since any significant price divergence between the Australian and overseas territories will encourage parallel trade.

4.3.5 Strategic Policy Options for Copyright Owners

The impact of the adoption of international exhaustion on both national and global welfare and industry profit, depends largely on the reaction of copyright owners and licensees to the new regulatory and competitive environment. In the preceding section it was assumed that foreign copyright owners would respond to intra-title import competition by implementing a strategy of entry-limit pricing. Another possibility is the outright exclusion of low-price territories. The model depicted in Figures 4.1 and 4.2 proves a useful tool for the analysis of the likely consequences of the alternate strategies of entry limit pricing and exclusion.

Entry Limit Pricing

Entry limit pricing results in an unambiguous fall in global profit. The displacement effect of parallel trade lowers the Australian price and increases quantity traded. Given the assumption of price inelastic demand, the lower domestic price will reduce total revenue and thereby industry profit. That is, area $C+D+F+G$ (the loss of industry profit) exceeds area $L+M$ (the increase in profit generated on additional sound recording sales) in the Australian market. Since profit levels in the other territories remain unchanged, the overall effect is a loss of global industry profit.

Australian consumers are unambiguously better off, with an increase in consumer welfare equal to the area $C+D+E+F+G+H+I$. A proportion of this increase in consumer surplus represents a transfer of income from producers to consumers, $(C+D+F+G)$ which formed part of industry profit in a regime of international price discrimination and national exhaustion. Australian national welfare unambiguously rises by $E+H+I$, previously a deadweight loss resulting from a domestic price (P_A) in excess of the socially optimal price (P_I). Since there is no change in national welfare in neither Malaysia nor the U.S., the unilateral adoption of international exhaustion by Australia, where firms respond by adopting a strategy of entry limit pricing, will increase global welfare. These results are summarised in Table 4.3.

Exclusion

If the MNE record companies respond to the adoption of international exhaustion in Australia by excluding the Malaysian market, the global welfare and industry profit outcomes are less clear. A policy of exclusion applied to Malaysia would divert parallel trade to the U.S. and the Australian domestic price would fall to P_{US}

rather than P_M. Industry profit in Australia increases by $(F+G+H-M)$ as compared to the entry-limit pricing strategy. Since $(F+G+H) > M$, this strategy produces an increase in Australian territory profit, which is offset by foregone profit in the Malaysian territory $(\gamma + \delta)$ in Figure 4.1. Whether global profits rise, fall or remain the same depends on the relative size of these gains and losses in the respective territories. The strategic reaction of exclusion, the cessation of supply to low-price territories, would mean that profits generated in Malaysia would be sacrificed in order to maximise profits in Australia. This policy would be profitable if the increase in profit in the Australian territory $(F+G+H-M)$, exceeded the foregone profits $(\gamma + \delta)$, resulting from a policy of exclusion applied to Malaysia. If $(\gamma + \delta)$ was less than or equal to $(F+G+H-M)$, this policy would be determinantal to global profits. The difference between these two profit values may not be sufficiently large enough to warrant such a radical response to intra-title import competition in Australia. Moreover, as Malaysia is a rapidly developing newly industrialised country, a policy of exclusion adopted by the major record companies would provide the opportunity for domestic and foreign independent record companies to establish themselves in what will one day become a more significant export market.

It may be useful, therefore to consider what factors influence the relative size of the gains and losses. For Malaysia, this is relatively straightforward, since we simply measure the value of foregone profit resulting from, what is effectively, a withdrawal by copyright owners from the market $(\gamma + \delta)$. In Australia, the larger (smaller) the divergence between the Malaysian and U.S. price, the larger (smaller) the increase in industry profit and thereby the more likely the net change in global profit will be positive (negative).

In reality, of course, the exclusion strategy would entail more than simply withdrawing from the Malaysian market, since parallel traders would simply switch to any one of numerous low-price territories. In practice, a policy of exclusion is not feasible and, given the large number of markets that would need to be excluded, would almost certainly result in a reduction in global profit for copyright owners. Moreover, a policy of exclusion of low and middle-income developing countries would provide the opportunity for competitors to establish themselves in countries that will one day become a significant export market for copyright product. Rather than applying a policy of exclusion, it is more likely that copyright owners would respond by raising the joint

Australian-Malaysian price as a means of discouraging parallel trade. This would require an increase in the joint price to that equal to P_{US}, which is, in effect the introduction of uniform global pricing, and the cessation of the international price discrimination strategy.

In conclusion, the unilateral adoption of international exhaustion by a small net-importer of copyright product, such as Australia, will increase consumer and national welfare. It is also likely to raise global welfare since copyright owners will almost certainly respond by adopting a strategy of entry-limit pricing in the Australian market to discourage parallel trade, rather than pursue a strategy of exclusion in low-price foreign territories. A more general adoption of international exhaustion by other nations will likely cause a convergence of prices and lower global profits.

4.4 Piracy and Smuggling

The key objection to parallel imports put by ARIA was that it would lead to an influx of pirated product. Intellectual property, once created, is often easy and relatively inexpensive to imitate. Pirated copies of such products are becoming increasingly difficult or impossible to detect. Digital technology enables the perfect reproduction of a CD. Pirated sound recordings are therefore perfect substitutes for legitimate product. For this reason it is argued, in some quarters, that the only effective way to address this market failure is to empower copyright owners to control the reproduction and the distribution of copyright product. In the recent Australian debate no topic elicited a more passionate response than that of piracy. According to ARIA, pirated sales of sound recordings in Australia represent about 5 percent of the market. It estimates that parallel imports will result in a 30 percent increase in piracy levels causing an annual loss in sales of between $150 to $200 million (HMV, 1997). This is presumably based on an expectation that an increase in the number of importers will make the task of border monitoring more difficult, reduce the probability (and therefore the risk) of detection, ultimately leading to an increase in the market penetration of pirated sound recordings. This outcome would indeed deprive record companies and artists of royalty income and has the potential of causing serious damage to the industry.

In Figure 4.3 we illustrate the economic incentives for smuggling pirated copies of sound recordings into a high-price national market in which parallel imports are prohibited. As long as there is a margin between the domestic price and the price of pirated product, there will be an incentive for risk takers to smuggle. The larger the

price differential, the greater the return to smuggling. However, the cost of importing pirated sound recordings to the smuggler is assumed to rise as the volume of illegal imports increase. This reflects the direct relationship between the volume and frequency of importing pirate product and the risk of detection (and the expected size of the penalty). The result is an upward sloping supply curve for illegal imports, PoZ, that measures the increasing cost of the smuggling activity. The slope of the smuggling supply curve is determined by:

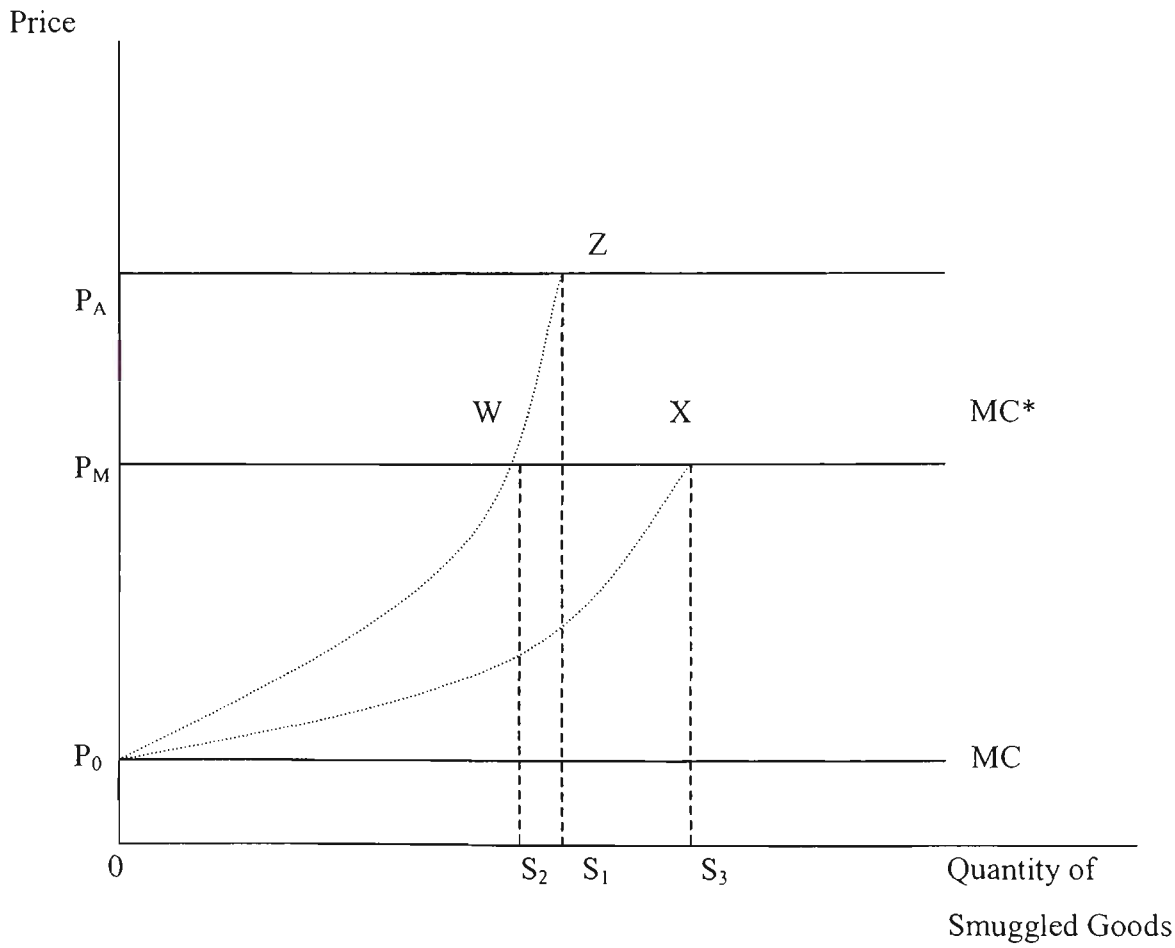
(i) The return to smuggling (the price-cost differential);

(ii) The probability of detection; and

(iii) The size and nature of the penalties.

The slope measures the ratio of the smuggler's estimation of the probability of detection to the expected returns to smuggling.

Figure 4.3 Piracy and Smuggling



The price differential between the marginal cost of pressing a CD (P_0) and the domestic price under a regime that prohibits parallel imports (P_A) provides the economic incentive for smuggling and compensates the risk taker for the cost of smuggling and the risk of detection (and subsequent penalties). With a domestic price of P_A, smuggling will be profitable up to point Z with a volume of S_1 pirated copies smuggled into the country. Smuggling, by lowering the domestic price, increases consumer welfare at the expense of the intellectual property owner, in this case the record company and artist/composer.

With the introduction of parallel imports, the differential between the domestic price (now P_M) and the marginal cost of production decreases. The expected cost of detection now exceeds the return and smuggling between points W and Z causing a movement along the smuggling supply curve down to point W. Parallel imports, by lowering the domestic price, would lower the volume of smuggling from S_1 to S_2.

In the pre-parallel import environment, detection of pirated copies at the border is relatively straight forward, since only territorial license holders have the authority to import. However, with parallel imports the number of importers and shipments will rise, as will monitoring cost at the boarder. The probability of detection, however, declines as the number of importers and the volume of imports rises. Coupled with random inspections by customs authorities, the risk of detection is expected to decline. In assessing the risk versus return to smuggling, the smuggler must weigh the likelihood of detection and the subsequent penalties against the expected economic profit. The lower risk to return ratio would shift the smuggling supply curve down and to the right, depicted by *PoX*. As drawn, this would cause the volume of pirated imports to increase, to a level even greater than the pre-parallel import environment, to S_3, and in so doing would partially offset the expected welfare gains derived from parallel imports. However, whether the profit maximising volume of smuggled goods increases, decreases or remains unchanged, depends on the strength of the shift in the smuggling supply curve.

As noted earlier, the *Copyright Amendment Act No. 2 1998* significantly increases penalties for smuggling and the government have pledged to improve monitoring at the boarder. These measures are designed to increase the risk and cost of detection and, if successful, will increase the risk to return ratio, thereby shifting the smuggling supply curve upward and to the left, bringing about a reduction in pirate imports. This combination of a lower return to smuggling, an increase in the probability

of detection and an increase in penalties for smugglers, is expected to lower the volume of pirate copies of sound recordings entering the domestic market. Given the countervailing forces at work on the slope of the smuggling supply curve, the outcome is theoretically ambiguous and remains an empirical question.

Piracy leaves no paper trail and is by its very nature difficult to measure. According to ARIA's anti-piracy unit, piracy has increased by 40 percent "with pirates from Southeast Asia setting up distribution centres in major cities (in Australia)" since deregulation (Eliezer, 1999:4). Despite claims to the contrary, it has been argued that large volumes of pirate product would be difficult to distribute because, unlike Southeast Asia, Australia does not have the informal markets through which the vast majority of pirate goods are sold. This of course assumes that retailers would be unwilling to stock pirate product and, given the severe penalties, most would be unlikely to knowingly do so. The difficulty is that, given the quality of reproduction technology, it has become increasingly difficult to differentiate between legitimate and illicit copies of sound recordings. This is highlighted by a recent and well publicised episode in which the Sanity music retail chain (which enjoys around 27% of the Australian music retail market) was found to have unknowingly stocked almost 30,000 pirate copies of four sound recording titles, sourced from a South East Asian supplier.[7]

Perhaps an even greater challenge for the music industry is the prevalence of "playground piracy": teenagers reproducing sound recordings and computer software on home CD burners. Reproduction of this kind led to the introduction of a "blank tape levy" (for home reproduction on audiocassette). In many countries this levy has been extended to include blank writable compact discs. Revenues from the levies are distributed to copyright owners to partially compensate for the loss of royalty income.

4.5 The Post-Reform Period

4.5.1 Parallel Imports, CD Prices And Artist Income

The Minority Report (Labor) and Dissenting Report (Democrats), and ARIA highlighted the negative impact parallel imports might have on Australian songwriter/composer incomes. Royalty payments on copyright music product is payable

[7] Technically, these sound recordings are not pirate but counterfeit. As defined in Chapter 5, counterfeits are passed off as legitimate product with a view to deceive the consumer and defraud the producer (and on this occasion the retailer).

at rates applicable in the country of manufacture, and royalty rates vary significantly from one territory to the next. Australia is a high royalty rate country, and the introduction of parallel imports threatens to shift CD manufacture from local to foreign duplication plants. The likely consequence, it was argued, is a reduction in royalty payments to Australian composers and a shift in the physical and financial trade balance with respect to music.

Concerns raised by opponents to parallel imports included the possibility of a reduction in Australian artist royalties, substantially lowering their income, and a reduction of investment in local repertoire (due to lower record company profits). These two contentions are now briefly considered. When an importer purchases a legitimate copy of a sound recording pressed overseas by an authorised manufacturer, the artist and the record company receive their respective royalties. However, because royalty rates vary between territories this could result in lower income for songwriters if royalty rates in the country of manufacture are lower than those in Australia[8]. Furthermore, infrastructure for the collection and distribution of this income is relatively poor in developing countries resulting in a possible loss of income.

From a national welfare perspective, these income redistribution effects are likely to be relatively small and in Australia's favour. As noted earlier, around 85 percent of sound recording sales in Australia is foreign repertoire. To the extent that lower domestic prices reflect lower royalty payments to foreign songwriters, this represents a redistribution of income from foreigners to domestic consumers and is therefore welfare enhancing for the nation. Low price countries typically have a limited catalogue of mostly international hit-records. Only a minority of Australian songwriters produce international hits and, as a result, the impact on total Australian royalty income is expected to be insignificant. Furthermore, as Australia represents only two percent of global sales, any loss of income in the Australian territory for a minority of songwriters is unlikely to outweigh the benefits derived from a lower domestic price.

On the issue of the development of local repertoire, there is little evidence that investment in Australia by the majors is a function of profits generated from the sale of foreign titles. Indeed, the major record companies reneged on a deal struck with the

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[8] The parent record company will continue to receive a "full royalty" because most record companies have an intergrid matrix payment system which requires subsidiaries (that manufacture under license) to return royalties to the parent company (as copyright owner) (in Eliezer, 1999)

former Labor Government in the early 1990s, to invest $240 million over 3 years. For its part, the government agreed not to proceed with legislation that would allow parallel imports. The investment was not forthcoming because Labor lost the subsequent election and the industry assumed that the new government would not proceed with the issue. They were wrong.

As a result of parallel imports, CD prices in Australia have fallen from a retail price of $29.95 prior to deregulation, to $19.95 for many Top 40 titles. Indeed, a retail chain in Melbourne advertised Top 40 titles for as little as $15.95 in May 1999. The lower price observed for Australia in 1999 was a direct result of retailers importing sound recordings from low-price countries, like Indonesia. Indeed, one retailer (HMV) was noted for placing two displays of the same title at the front of their stores with a sign saying "You Choose". The locally pressed CD retailed for $29.95 while the imported CD retailed for $19.95. Consumers have clearly benefited from deregulation and the ensuing competition. What impact these changes will have on the structure of the local music industry more generally have yet to be seen. The relatively low Australian currency between 1998 and 2002, has effectively reduced the international price differential for sound recordings rendering it unprofitable to parallel import from countries such as the U.S.A. and U.K. Industry sources suggest that parallel imports have not significantly impacted upon the music industry for this reason, but are fearful of the consequences as the Australian Dollar appreciates to, what is considered in some quarters, a more realistic value.

Prior to the introduction of parallel imports, 95% of CDs sold in Australia were manufactured (pressed) locally. However, around 85% of music sold is foreign, with a consequential outflow of income in the form of foreign royalty payments. If parallel imports resulted in a shift in production from high to low royalty rate countries this would help to reduce the net outflow of royalty income paid to foreign copyright owners. The precise impact on royalty incomes for Australian and foreign songwriters and performers is an empirical question and beyond the scope of this research. Of greater relevance is the impact of the new regulatory environment on the behaviour of copyright owners and/or their licensees.

4.5.2 Anti-Competitive Conduct: Breaches of the Trade Practices Act

A recent Federal Court Ruling in a case brought by the Australian Competition and Consumer Commission (ACCC) against a number of record companies, alleging

breaches of the *Trade Practices Act 1974* (TPA), highlights the interconnection between international trade in copyright product, copyright law and competition policy. The breaches were symptomatic of an unwillingness on the part of foreign copyright owners (acting through their respective territorial licensees) to accept intra-title competition brought about by the *Copyright Amendment Act (No 2) 1998* that permitted the parallel importation of non-infringing copies of sound recordings. Strategies to retain copyright owner control over the vertical distribution included attempts to block both parallel exports and parallel imports.

In 1999 the ACCC initiated legal action against Universal Music Australia, Warner Music Australia and Sony Music Entertainment (Australia) alleging conduct that breached Sections 45, 46 and 47 of the TPA.[9] The removal of the importation right provided the opportunity for the establishment of competing unauthorised distribution channels for sound recordings that divert sound recordings from relatively low-price markets into Australia. These competing distribution channels provide music retailers with alternative sources of supply and introduce intra-title competition and place downward pressure on prices.

Record companies responded by adopting strategies, both domestic and international, that would impede parallel imports. The domestic conduct included the withdrawal of trading terms to music retailers, and in some cases the outright cessation of supply, for those deemed to be buying parallel imports from competing distributors or directly engaging in parallel imports themselves.[10] In the view of the ACCC, this adverse treatment was a form of *signalling* to other music retailers as a deterrent to dealing with competitors. The international dimension to the actions undertaken by the major record companies included attempts to impede parallel exports from relatively low-price markets, such as Indonesia. This was achieved by putting pressure on Indonesian distributors, via affiliate record companies and distributors in that territory, to not supply Australian retailers or independent wholesale distributors. Indeed, a

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[9] The ACCC reached a settlement with Sony prior to the commencement of the trial, whereby Sony gave an undertaking to refrain from conduct designed to impede parallel imports and parallel exports.

[10] Trading terms typically offered to retailers included bulk discounts, credit terms, sale-or-return policy and cooperative advertising.

strategic response of this kind was foreshadowed by Richardson (2002)[11] who states that:

> *...one might anticipate that the monopolist manufacturer would desire to take steps to prohibit parallel trade, perhaps through greater integration into or control over distribution channels...or through explicit controls over re-exports. (p.243)*

Justice J. Hill found that both Universal and Warner were in breach of Sections 46 and 47 of the TPA (Federal Court of Australia, 2001). Section 46 prohibits the use of market power that has the effect of eliminating competition or impeding entry into a market. The removal of the importation right provided the opportunity for new entrants into the wholesale distribution market and for local retailers to source product from distribution channels located in foreign territories. The actions undertaken by the record companies were designed to prevent parallel importation of sound recordings by competing distributors and/or retailers. While the record companies did not have any direct control or influence over competing distributors, the removal of trading terms and, in some cases, the closure of accounts (cessation of supply) for retailers that stocked parallel imports, discouraged retailers from buying relatively low-price substitutes from a competitor. Both record companies were found to have breached section 46, having used their market power to prevent entry into the wholesale distribution market.

Section 47 (exclusive dealing) prohibits the imposition of conditions on customers that prevents them from dealing with competitors. By threatening to impose sanctions on retailers found to be directly importing or sourcing parallel imports from a domestic competitor, the record companies attempted to force retailers to deal exclusively with them. Accordingly, they were judged to have breached section 47 of the TPA. In addition, a number of senior record company executives were also judged to be guilty of accessorial liability by knowingly engaging in conduct that was in breach of Sections 46 and 47.

The ACCC also brought charges against the record companies in relation to the overseas conduct in which they attempted to impede parallel exports to Australia. Section 45 of the TPA prohibits arrangements or understandings that impede or substantially lessen competition. This action failed because, while there was

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[11] Paper was first submitted in 1999.

documentary evidence relating to correspondence between the Australian and Indonesian affiliates, it could not be proved that the arrangement to refuse supply to Australian competitors was entered into by the Australian companies rather than their Indonesian counterparts.

There remains considerable disagreement over the economic rationale for copyright owner control over the international distribution of copyright product and parallel imports. The recent Federal Court decision demonstrates that former statutory monopoly distributors of copyright product cannot pursue anti-competitive strategies to maintain their monopoly control in an environment of international exhaustion and parallel imports. Foreign copyright owners need be aware of potential competition policy violations of actions by their domestic subsidiaries. The judgment will no doubt have a signalling effect to monopoly distributors of other copyright products should the Government's reform agenda continue, with the reintroduction of the Bill to remove parallel import restrictions on all remaining copyright products (except motion pictures).

4.6 Conclusion

Exclusive territorial licenses, combined with an importation right, increases the market power of the copyright owner. This market power can be used to control the distribution of artist specific sound recordings and, via a strategy of international market segmentation, extract monopoly profits within specific territorial jurisdictions. While copyright is essential to protecting intellectual property rights, the inclusion of an importation right, where the rights owner or their territorial licensee can monopolise distribution within a specific territorial jurisdiction, is not necessary to protect the fundamental right of exclusive commercial exploitation.

The *Copyright Amendment Act (No.2) 1998*, adopts the principle of universal exhaustion, where rights are extinguished after the first authorised sale of the copyright product. The removal of the importation right provides the opportunity for competitive supply by dismantling the artificial barrier to the cross-boarder flow of legitimate copyright product. For a country that is a net-importer of intellectual product, this can be welfare enhancing.

On the issue of piracy, parallel imports, by increasing the number of importers and consignments, may lower the probability of boarder detection and thereby reduces the risk to return ratio for smuggling pirated product. On the other hand, the increase in

penalties for smuggling incorporated into the Act is designed to increase the risk to return ratio. The impact of these two competing influences on the shape of the smuggling supply curve is ambiguous. Whether smuggling rises, falls or remains unchanged is an empirical question. To the extent that the new regulatory environment produces an increase in the penetration of pirated product, this will be welfare reducing for copyright owners. However, this will be offset by the rise in consumer welfare resulting from the impact of parallel imports on the domestic price. As a solution to piracy, parallel import restrictions is a second best policy that produces a by-product distortion, the cost of which is larger than the distortion that it attempts to address.

We demonstrate that, for a small net-importer of intellectual property, the removal of parallel import restrictions will be welfare enhancing for the nation. The welfare gain is at the expense of largely foreign copyright owners. The extension of basic copyright beyond the protection of intellectual property embodied in the musical work and the sound recording to include a restriction on parallel imports produces an unjustifiable increase in the market power of the copyright holder. It is unjustifiable because it reduces national welfare and brings about a redirection of consumer surplus to foreign citizens in the form of economic rents, without commensurate benefits. Parallel import prohibition does not directly target a market failure related to the protection of intellectual property. If the distortion we wish to address is piracy, the first best policy is one that addresses that particular distortion directly.

A key objection to parallel imports advanced by sections of the Australian music industry was that it would lead to rampant piracy. In the next chapter we review the literature on the international dimensions of piracy and develop a new model of sound recording piracy. This theoretical model will provide the foundation upon which to build an empirical model of sound recording piracy, with a view to testing the empirical validity of the relationship between parallel imports (and copyright law enforcement more generally) and piracy.

Table 4. 1 Ratio of Australian to Overseas Prices

	Canada	France	Germany	Netherlands	U.K.	U.S.A.	N.Z.
LP	1.64	1.35	1.71	1.14	1.21	1.44	1.22
CD	1.04	1.14	1.56	1.13	1.08	1.42	1.06

Source: Table 6.1 (PSA, 1990:83)

Table 4. 2 Welfare Consequences of Intra-Title Import Competition

Price	Consumer Welfare	Producer Welfare	Total
P_A	A+B	C+D+F+G+J+K	A+B+C+D+F+G
P_M	A+B+C+D+E+F+G+H+I	J+K	A+B+C+D+E+F+G+H+I+J+K
Net Change	C+D+E+F+G+H+I	- C+D+F+G	E+H+I

Table 4. 3 Copyright Regime and Global Profits

Copyright Regime	Industry Profit				
	Malaysia	Australia	Gain	Loss	Net Change
National Exhaustion	$\gamma+\delta$	C+D+F+G+J+K			
International Exhaustion • Entry Limit Pricing	$\gamma+\delta$	J+K+L+M	(L+M)	(C+D+F+G)	-ve
• Exclusion		F+G+H+J+K+L	(F+G+H)	(M+γ+δ)	?

5 International Sound Recording Piracy

This chapter begins with an investigation of the nature of sound recording piracy and efforts at the international level to combat the phenomenon. This is followed by a review of literature on smuggling and piracy with a view to developing a theoretical model of international sound recording piracy. A general and partial equilibrium model is presented, each highlighting different aspects of the phenomenon. A model of the smuggling firm's decision-making process is presented with a view to identifying variables that might influence the firm's expected profit across a range of countries. This is followed by an analysis of the demand for pirate product to determine whether there are any significant demand-side variables that might influence the level of sound recording piracy. The Chapter concludes with the presentation of a theoretical model of international sound recording piracy.

5.1 The Nature of the Problem

5.1.1 Definitions

The majority of copyright infringing sound recordings may be classified into two groups: counterfeit and pirate product. The term counterfeit is often used to describe a product designed to imitate a genuine product, typically those associated with a particular brand name. Counterfeit product is made to resemble, as closely as possible, the authentic product, with the objective of deceiving the consumer and defrauding the producer. In the case of sound recordings, duplication technology is so advanced that it is often impossible to distinguish between legitimate and counterfeit product, which in many cases are clones of the original. In the case of high quality counterfeits, neither the packagings, nor the quality of the sound recording, provide any clues as to the products authenticity.

Because counterfeits are being passed off as legitimate product, they are often sold at the full-price. Given the relatively small reproduction cost, large economic rents accrue to the manufacturer, distributor and/or retailer of these copyright infringing products. The point at which these rents are captured depends on the stage along the distribution channel at which the deception is carried out. For example, when retailers unknowingly purchase counterfeit product at the regular wholesale price, the economic rents accrue to the wholesaler. If, however, all parties at each stage of the distribution

channel knowingly trade in counterfeit product, the economic rents will be distributed accordingly. The ultimate deception in this case is committed against the consumer, who unknowingly purchases a counterfeit product.

If the counterfeit is a perfect reproduction of the legitimate product, are there any real consequences for the consumer? Regardless of the quality of the reproduction, consumers would, having paid the full price, undoubtedly feel cheated. A consumer's marginal valuation for a counterfeit product would be lower than that for a legitimate product. Consumer deception is just one of the two economic consequences of counterfeiting. The second is to defraud the IPR holder(s) of their economic rights. In the case of a sound recording, a number of copyrights coexist in a single copy. The result is that infringing product defrauds a number of rights holders. Firstly, the record company, having made an investment in the production of the master recording, is deprived of a return on this investment. In recognition of this investment, copyright in the master recording, from which multiple copies are produced, typically resides with the record company. Secondly, the featured artist owns a copyright in the performance and is defrauded of the artist royalty. Lastly, the songwriter owns the copyright in the musical work itself, for which s/he receives a publishing royalty. Both artist and publishing royalties can be shared among two or more members of a band or writing team. Licensing (contractual) agreements normally require the payment of a royalty for each and every copy of the sound recording to each of the rights holders. Moreover, affiliated businesses such as artist managers and music publishers, earn their living from commissions on artist and songwriting royalties. Counterfeit and piracy also defrauds these business entities of income.

Piracy, like counterfeiting, involves the unauthorised duplication or reproduction of a copyright or patented product. Piracy, while defrauding rights holders in the same way as counterfeit product, does not include the act of deception. That is, pirate product is typically marketed as an unauthorised reproduction of a copyright or patented product. In this case, price sensitive consumers choose to purchase the pirate product in preference to the relatively higher priced legitimate product. In many cases, manufacturers of pirate product make only piecemeal attempts at imitating the packaging of legitimate product. For example, pirate video games and sound recordings have relatively poor colour reproduction of the packaging. However, the product itself is often a close, and sometimes perfects, duplication.

In the case of video games, sound recordings, computer software and movies, pirate and counterfeit products are often mass produced at optical disc manufacturing plants located in specific countries and exported around the world. As such, the distribution of infringing product often entails the act of smuggling. Smuggling refers to the secret exporting or importation of products across national borders, principally to avoid various forms of government regulation. These regulations include quantitative restrictions (requiring licences or permits), taxes (tariffs) and outright prohibition (for example, narcotic drugs).

It is important to draw a distinction between smuggled goods that are authentic or legitimate product and those that, in addition to violating certain border controls, also infringe IPR, namely pirate and counterfeit products. These products are hereafter referred to as infringing product. In contrast, smuggled legitimate product, imported by traders who attempt to circumvent quantitative restrictions or taxes, are "illegal" in that they enter a country in some clandestine fashion. These products are not "infringing" in the context of IPR. The motives for smuggling legitimate product are often quite distinct from those behind the smuggling of copyright infringing product.

Consignments of counterfeit and/or pirate product will require these goods to be smuggled across national borders. The cloaking techniques employed by smugglers vary from the simple to the sophisticated and depend, in part, on the level of IPR enforcement encountered at the border in specific countries. The distinction made here between trade in legitimate and infringing product is complicated somewhat by the continued controversy over the exhaustion of IPR. In those countries that adopt the principle of national exhaustion, the parallel importation of a legitimate product manufactured with the authority of the foreign IPR holder, becomes an infringing product upon importation. However, in countries where the principle of international exhaustion applies, these products are non-infringing and can be legally imported in competition with products marketed by the local rights holder or licensee. For the purposes of the analysis presented in this chapter, the term "infringing product" shall be used to refer to either pirate or counterfeit product and not authorised reproductions of a product manufactured in another country.

5.1.2 Music Piracy Format

Music piracy refers to the unauthorised reproduction and fixation of a sound recording to a sound carrier. These sound carriers come in a variety of formats and

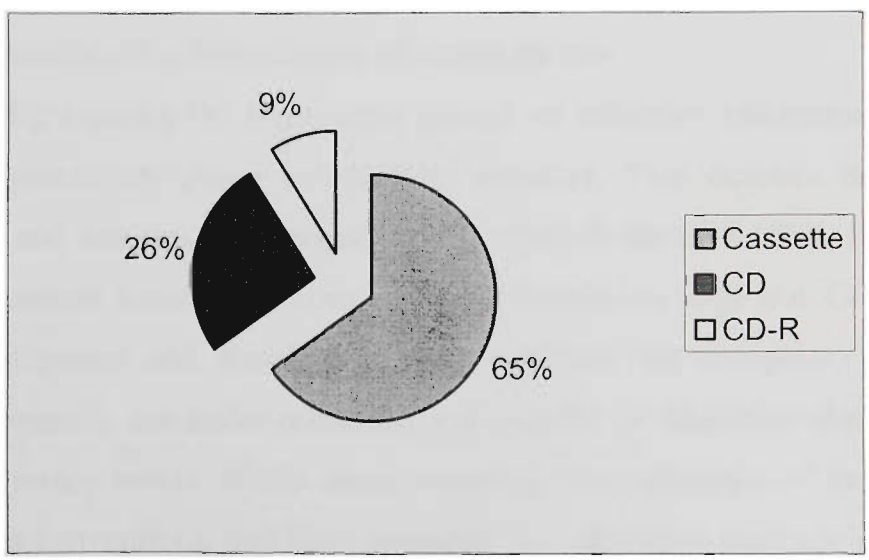
change as rapidly as advances in technology facilitate. Recent technological advances have increased the range of formats and now include:

- Audiocassette
- Compact disc
- CD-R
- Digital Audio Files (MP3)

Advances in the home computer and the introduction of the CD-Writer (CD-R) enable the home user to store large amounts of data and other files (including audio) onto a CD. Unfortunately for music copyright owners, this technology also enables the digital reproduction of sound recordings. Another threat to music copyright arising via the home computer is the increasing use of the Internet. Digital audio files can now be transferred at close to zero marginal cost from one home computer to another, located anywhere in the world. This diversification of music piracy forms has not only increased the level of piracy, it has also made it more difficult to monitor and deter.

Distribution channels for pirate sound recordings range from the *playground*, where CD-R copies are made on the home computer and sold to school friends, to the digital distribution of sound recording files over the Internet. While it is recognized that domestic pirate activities, particularly CD-R piracy, is becoming increasingly prevalent (at around 9 percent of total piracy in 2000), the impact on copyright owners, national welfare and international trade are essentially the same.

Figure 5. 1 Sound Recording Piracy Format



Source: IFPI Music Piracy Report, 2000

Inspecting Figure 5.1 we can see that audiocassette remains the dominant format for pirated sound recordings. This reflects the fact that in many developing countries, CD players have not yet been widely adopted. Noteworthy, is the significant size of the CD-R piracy share. Research in Germany indicates that more than 100 million CD-R copies were produced in 2000 (IFPI, 2001). This phenomenon is being observed in most countries throughout the EU and elsewhere. This form of piracy, sometimes referred to as *playground piracy*, will increase as home computer (including CD – read/write drive) ownership and Internet access increases. This paints a rather stark picture for the future of the music industry. One survey estimates that 20 million Europeans downloaded music and that 45% of these were burnt onto a CD-R (MORI 2000, in IFPI Fighting Piracy, 20001:4). In 2000, there were an estimated 1.8 billion pirate sound recordings representing around 36% of global sales. The focus of the present research will be the mass production of sound recordings (both CD and cassette formats), which are then distributed internationally via informal distribution channels.

5.1.3 International Initiatives to Combat Piracy

The International Federation of the Phonographic Industry (IFPI) represents around 1,700 members in over 70 countries. Membership includes the major record labels and many independent record producers which, when combined, account for 80 to 90 per cent of world sound recording sales.

One of the key objectives of the IFPI is to coordinate the fight against sound recording piracy. This strategy includes lobbying governments to enact legislation to protect copyright and to allocate sufficient resources to the monitoring of copyright infringement and the enforcement of copyright law.

Highlighting the importance placed on effective enforcement, the IFPI put in place a global anti-piracy enforcement structure. This structure incorporates over 50 regional and domestic investigators. According to the IFPI (IFPI, 2000:5) the majority of enforcement success has been at the manufacturing stage (i.e. CD plants) rather than during shipment and distribution. This suggests that anti-piracy measures, such as border controls, are under-resourced and may be an important determinant of country specific piracy levels. While many countries are signatories of the main international copyright conventions, and have amended their domestic laws accordingly, compliance with enforcement obligations is often lagging.

International piracy is not limited to sound recordings, and includes software, movies, books and video games. This common threat has galvanised support for a coordinated international initiative to combat piracy. The International Intellectual Property Alliance (IIPA) is a coalition of trade associations each representing a significant component of the U.S.A copyright industry. Members include the American Film Marketing Association (AFMA), The Record Industry Association of America (RIAA), the Association of American Publishers (AAP), The Business Software Alliance (BSA), the Interactive Digital Software Alliance (IDSA), the Motion Picture Association of America (MPAA) and the National Music Publishers Association (NMPA). Together these associations represent almost 1500 companies.

The goal of the IIPA is to improve IPR protection in the global market place via the application of various bilateral and multilateral trade tools available to the U.S. and other governments. The IIPA claims that improved treaty adherence and enforcement has delivered billions of dollars of increased revenues to the US copyright industries in the 15 years to 2000 (IIPA, 2001:3). In the IIPA's annual *Special 301 Report* there are six key initiatives identified in the fight against international piracy:

- Implementation of the TRIPS agreement
- Regulation of optical media production (CD plants)
- Fighting organised crime
- Ratification and implementation of the WIPO treaties of 1996
- Piracy on the Internet
- Combating end-user piracy in business and government

These initiatives are now briefly considered.

The IIPA perceives TRIPS as the minimum standard to be applied globally for the protection of IPR and as the key tool via which individual and national compliance can be enforced. Another approach to fighting piracy is at its source. The vast majority of pirate sound recordings are mass-produced in factories such as optical media plants. The IIPA has been pushing for legislation that will require the adoption of licensing controls for the operation of such plants and for the implementation of identification technologies to pin point the plant at which infringing product has been manufactured.

These regimes have already been implemented in China, Bulgaria, Honk Kong and Macau (IIPA: 2001:6).

Given the magnitude of economic profits available, it is not surprising that trade in pirate product has attracted organised criminals. Organised crime syndicates are reported to be involved in the production and international distribution of pirate product. (IIPA, 2001; IFPI, 2001). There have been reports of threats of violence against company officials and representatives to inhibit enforcement procedures. Clearly, organised crime of this nature requires the concerted efforts of governments and international organisations. Indeed, Interpol recently identified the investigation of organised criminal activity in piracy as a priority activity.

The WIPO treaties of 1996 (WCT and WPPT) outline a basic framework for the legitimate digital transfer of copyright material over the Internet. Adoption of the two treaties is believed to be a critical step in raising minimum global standards. The digital distribution of copyright product via the Internet presents a significant threat to copyright based industries. File swapping software, such as Napster, enables digital downloads and provides "free" access to audio files. Napster generates revenue from advertising, which it sells on the basis of the large number of visitors to its web page. Interestingly, Internet piracy also threatens the economic viability of those engaged in the manufacture and distribution of (physical) pirate product.

End-user piracy refers to the unauthorised use and reproduction of computer software applications by end-users in both private and public enterprises. According to the BSA, business software piracy was estimated to cost US companies a staggering US$2.5 billion in 2000. This and other copyright related trade losses for U.S. based copyright industries are presented in Table 5.1. The figures suggest some success in the fight against piracy with total trade losses falling from approximately US$9.3 billion to US$7.9 billion from 1999 to 2000.

As noted earlier, regulation of CD plants is seen as a key component of the fight against international piracy. One method of estimating the potential size of the music piracy market is to compare the size of the legitimate market for sound recording to world production capacity. Table 5.2 presents estimated pressing capacity for optical disc manufacturing in selected countries and compares this production capacity to legitimate demand in those countries. While excess capacity is a common feature of most manufacturing sectors, the table highlights the gross over-investment in optical disc manufacturing capacity relative to domestic demand. According to the IFPI, the

countries identified in the table are those that are responsible for a high proportion of pirate and counterfeit music production (IFPI, 2000). What the table ignores, however, is the potentially large export demand from these countries. While local demand for legitimate optical disc based products might be low relative to production capacity, export demand may in fact represent a significant proportion of the remaining production capacity. To gauge the true level of demand for optical disc output, the analysis needs to be extended to incorporate each nation's legitimate export of optical discs. Optical disc manufacture includes audio CD, CD-ROM, Video CDs and DVD. Optical disc piracy therefore impacts upon the music industry, business software applications, movie industry, and the video games industry alike.

The excess capacity depicted happens to be located in countries where there is believed to be inadequate law and enforcement of IPR (Edwards, 1999:3). Excess capacity is by itself not a determinant of piracy but simply a measure of the potential size of the illegitimate market for optical disc based products. Moreover, the existence of excess capacity does not help to explain the varying levels of piracy observed in specific countries. Instead, it simply helps to identify the possible origin of infringing product. Nonetheless, identifying the location of excess capacity assists in directing resources to lobbying governments to implement regulations, such as SID, that assist in identifying the plants from which infringing product originated. Unfortunately, history demonstrates that wherever the opportunity for generating economic profits exists, new and often more creative means of manufacturing and distributing illicit product evolve.

The development of effective strategies in the fight against international piracy necessitates a clear identification of the causes of the phenomenon. In 1999 the EU Commission on Intellectual and Industrial Property produced a Green Paper on combating counterfeiting and piracy. In this paper the commission sought responses to a series of questions relating to the economic, legal and administrative issues surrounding international trade in IPR infringing product. In its response, the International Chamber of Commerce (ICC) cites the following as the main causes of counterfeiting and piracy (1999:1):

- Huge profits
- Low risk of detection
- Weak deterrent (fines and prison sentences are minimal)

- Advances in technology (tools for reproduction of copyright product)
- Public perception that piracy is socially acceptable
- Courts view of IPR infringement as a "low grade" or soft crime

Our analysis of the Australian parallel imports debate presented in Chapter 4, revealed a belief, in sound quarters, that the adoption of the principle of international exhaustion would result in an increase in sound recording piracy. After a review of literature relating to the smuggling and piracy, we develop theoretical models within which to evaluate these and other perceived causes of international sound recording piracy.

5.2 A Review of Related Literature

5.2.1 Theoretical Models of Smuggling

Early studies of the phenomenon of smuggling investigate the welfare effects of smuggling in the presence of a trade distortion (Bhagwati and Hansen 1973; Krueger 1974; Sheikh 1974; Bhagwati, Brecher et al. 1984). Typically, smuggling is depicted as a response to an import tariff or quota. The price differential between the tariff inclusive domestic price and the world price provide an opportunity for rent seeking behaviour (such as seeking preferential access to import licenses). These studies focus on smuggling legitimate product which is illegal in that they circumvent border controls. They are not illegal in the sense of infringing IPR. Nonetheless, these studies are instructive as to the modelling approach to the phenomenon of smuggling more generally.

The first important theoretical contribution to the welfare economics of smuggling was provided by Bhagwati and Hansen (1973). This model provides a formal investigation of smuggling within a trade theoretic approach and challenges the proposition that smuggling improves economic welfare by partially removing the production and consumption distortion associated with a trade policy (tariff or quota). Smuggling can raise national welfare because the price of smuggled goods is more favourable to the importing country, as compared to the tariff inclusive price. Bhagwati and Hansen demonstrate that smuggling, in the presence of increasing cost to smuggling, is not uniquely welfare enhancing. Scenarios are constructed in which smuggling replaces legal trade and alternatively, where smuggling and legal trade coexist. The paper does not explicitly deal with the issue of risk in the presence of

government enforcement measures. Indeed, by proposing a scenario where smuggling totally replaces legal trade, it is implied that smuggling is riskless.

Sheik (1974) extends the Bhagwati-Hansen model of smuggling by recognising that smuggling activities deplete domestic resources. This takes the form of government enforcement measures, the resource cost of which is assumed to be fixed. Smugglers are assumed to be domestic citizens who purchase the importable product at the world price. Smugglers face both a resource cost and, in the presence of enforcement measures, a cost associated with the risk of detection. The latter includes the possible confiscation of goods and fines. The resource cost is defined in terms of a "transportation commodity" and is additional to the costs associated with legal trade. The enforcement and smuggling costs combine to shrink the production possibility frontier: production in the presence of smuggling and enforcement moves a nation inside its production possibility frontier. Furthermore, these assumptions result in a worsening of the smuggling terms of trade, which now includes a resource cost. As in the Bhagwati-Hansen model, it is assumed that domestic consumers pay the same price for the smuggled and legal product. This is a reasonable assumption given that the two products are identical.

Sheikh assumes that the cost of smuggling is given but increasing due to inter-firm diseconomies. These diseconomies are the result of increasing risk if all firms attempt to increase the level of smuggling. The result is that smuggling continues until the resource inclusive (smuggled product) price equals the tariff inclusive (legal product) price. At this point economic profits from smuggling have been exhausted and legal imports will satisfy any residual demand for the importable good. The model thus produces a coexistence of smuggling and legal trade, with the potential for smuggling to increase national welfare.

Pitt (1981) also provides a model in which a price disparity between the domestic price and the tariff-inclusive price results in the coexistence of legal and illegal trade. In the Pitt model, smuggling and legal trade are undertaken by the same firm, whereby a consignment of legal product is used to camouflage smuggled goods. Pitt's model has been criticised for not considering the firm's decision-making process in deciding whether or not to engage in smuggling. In addition, there is no explicit treatment of risk in the model. Martin and Panagariya (1984), on the other hand, explicitly recognises risk in the firm's decision-making process, which takes the form of a probability of detection (P). P is presented as an increasing function of the ratio of

smuggled imports to legal imports. However, like Pitt, there is no explanation of why some firms engage in smuggling while others do not.

In an investigation of intra-European Community smuggling of agricultural product Norton (1987) develops a model of smuggling that incorporates both risk and transportation costs. Smuggling arises as a result of border taxes and the cost of smuggling is depicted as a function of distance to the border. At prevailing taxes, smuggling will be profitable up to a certain distance from the border. Following Martin and Panagariya (1984) risk is included in the model and takes the form of a probability of non-detection (μ) which is a function of the ratio of legal to smuggled goods per consignment. The higher (lower) the ratio of legal to illegal goods, the greater (smaller) the camouflage effect and the higher (lower) the probability of non-detection. With a risk of confiscation and fines (α) the smuggler's expected loss is:

$$\alpha(1-\mu)(1-S)pq^s \qquad (5.1)$$

where S is the fraction of goods allocated to smuggling, p is the price in the origin country and q^s is the quantity of smuggled goods. The trader will engage in smuggling as long as the marginal profit is positive and where the marginal unit smuggled brings no change in total expected rents. The model predicts that increases in border taxes will induce an increase in smuggling. This model produces the unrealistic outcome that all firms within a certain distance to the border engage in smuggling.

In an extension of the Bhagwati-Hansen type model Fausti (1992) presents a theoretical analysis of the impact of enforcement on smuggling and national welfare. The motivation for smuggling is once again the price differential between the domestic and foreign price of the importable and is the result of a border tax. A firm's decision to engage in smuggling is based on its level of risk aversion and the level of government enforcement. The latter is assumed to have two components: the probability of detection and the monetary penalty. Unlike Pitt (1981), Martin and Panganya (1984) and Norton (1987), Fausti's model allows for the coexistence of firms engaged in legal or illegal trade, what he describes as a parallel model. As such, smuggled goods can enter a country as a separate consignment or camouflaged within a consignment of legal goods. The latter enter via under-invoicing, false export declarations, or under-assessment of border tax, while the former enter via more covert methods.

The possibility of a parallel market makes it conceivable for a domestic price divergence between legal and smuggled product. The conditions conducive to the development of a parallel market include a government monopsony and ineffective tax law enforcement. The model predicts that there is a threshold tax above which the government will induce some firms to engage in smuggling. A significant innovation on previous models is the potential for an individual firm to influence the probability of detection by using "cloaking services". Cloaking is an attempt by the smuggler to evade enforcement measures and escape detection. As such, cloaking services represent a real resource cost to the smuggler and may take the form of special packaging or additional transport costs associated with importing goods via non-traditional ports. The profit for the firm engaged in legal and illegal trade is:

$$Max\ Y = P^f .\ G(L,S) + P^f .(1\text{-}t).\ L - C(X,\ P^I) \qquad (5.2)$$

where Y is profit, P^f is the foreign price, t is the trade tax, $G(S,L)$ is the quantity of product X smuggled, S is the quantity of X input into smuggling activity, L is the quantity of product X legally traded, C is the cost of X produced and P^I is a vector of input prices. The firm is faced with an indeterminate profit, comprising a guaranteed component (legal trade) and a random component (illegal trade). The firm's decision to engage in smuggling is based on a comparison of these profit streams and the firm's attitude toward risk. The expected value of profit from smuggling for each individual firm will be positive, negative or zero if the firm prefers, averts or is neutral toward risk, respectively. The variance of individual firms attitude to risk, for a given level of enforcement and probability of detection, explains why some engage in smuggling while others do not.

In an examination of the welfare effects of smuggling Lovely and Nelson (1995) find that smuggling is welfare enhancing if the reduction in the price distortion resulting from a trade tax outweighs the domestic resource cost of smuggling activities. As in the Fausti (1992) model, the probability of detection and the level of enforcement play an integral part in the firm's decision-making process. Increasing levels of enforcement lowers the ratio of illegal to legal imports. The smuggler is depicted as facing a probability of detection (q), which it can influence by varying the ratio of illegal to legal trade (μ) and by the use of smuggling services (R):

$$q = q(\mu, R) \tag{5.3}$$

It is assumed that the probability of detection is increasing in μ and reflects reduced camouflaging of illegal by legal imports. R measures the quantity of smuggling services (S) per unit of smuggled product (M_S): that is $R = S/M_S$. The probability of detection (q) is, on the other hand, inversely related to the quantity of smuggling services purchased (S). The total cost of smuggling services is simply a product of the price of smuggling services (p_s) and the quantity of services purchased (S). Denoting world and domestic prices as p and p^* respectively, profits with successful smuggling (π_1) and unsuccessful smuggling (π_2) are:

$$\pi_1 = p(M_L + M_S) - [p^*(M_L + M_S) + tp^*M_L] - (p_sS) \tag{5.4}$$

$$\pi_2 = pM_L - [p^*(M_L + M_S) + tp^*M_L] - (p_sS) \tag{5.5}$$

where t is the import tax. Incorporating the probability of detection into the model we derive the expected profit function:

$$E(\pi)_1 = (1 - q)\pi_1 + q\pi_2 \tag{5.6}$$

Firms are expected to chose optimal levels of legal and illegal imports and the level of smuggling services for given levels of p_s, p and p^*. The authors consider the effect of a (costless) increase in enforcement on the level of smuggling and conclude that this may induce an increase in demand for smuggling services. This may cause a reduction in national welfare as resources are shifted into this directly unproductive activity (DUP).

The theoretical models reviewed thus far have made an important contribution to our understanding of the welfare effects of smuggling and the decision making process of firms engaged in smuggling. In most cases it has been assumed that smuggling and legal trade coexist in a single consignment and that all firms smuggle. However, none of the studies reviewed in this section deal with the important issue of smuggling copyright infringing product. In section 5.3 we develop a theoretical model of smuggling pirate sound recordings. Prior to this, however, we investigate other factors not considered in the literature revue thus far, that might be incorporated in our theoretical model.

5.2.2 Smuggling, Corruption and Informal Markets

The alleged involvement of organised criminals in international piracy and the role of corruption in determining risk levels, suggests a review of literature on corruption might be instructive as to the development of a theoretical model of international music piracy.

Danet (2001) distinguishes between two forms of corruption: casual (or sporadic) and systematic (and criminal). Casual corruption has been described as a payment required to "grease the wheels" of bureaucracy to avoid delays resulting from organisational inefficiencies. For example, one way of dealing with an inefficient customs authority is for a trader to bribe the customs officer to hasten the processing of documentation for the release of a consignment of goods. This form of corruption has little to do with organised crime and smuggling. Systematic corruption, on the other hand, has been described as "sanding the wheels" of bureaucracy. Rather than making it more efficient, it produces a misallocation of resources. For example, a trader may bribe a customs officer to facilitate the evasion of border controls and the payment of duties and taxes. Another example, is the corruption of officials by organised criminals engaged in smuggling illicit product, such as drugs, weapons, human beings and IPR infringing product such as pirate sound recordings.

Because the bribes paid to customs officers are infinitesimal compared with the profits generated by criminal organisations, Danet suggests that the often touted solution of increasing customs officer's wages is destined to fail to reduce smuggled consignments of pirate product. This follows from the huge profits made by engaging in illicit trade and by the power of money to corrupt. If so, then it also follows that simply increasing the human resources of the customs service will not necessarily improve the rate of detection, and thereby, lower smuggling and piracy levels.

This proposition is supported by empirical evidence. In a study of the relationship between corruption and civil service wages, Van Rijckeghem and Weder (1997) conclude that

(i) an increase in the ratio of civil service to manufacturing pay from 1 to 2 is associated with an improvement in the corruption index; and

(ii) civil service wages are highly correlated with measures of the rule of law and the quality of the bureaucracy

(iii) more effective internal and external controls are associated with lower corruption across countries

In theory, a better-resourced customs authority should result in lower levels of smuggling. In practice, corruption can more than offset this and render ineffectual the expected benefits of increased resources to border monitoring.

The traditional models reviewed above, portray smuggling as a response to a price divergence arising from a range of trade barriers. It follows that trade liberalisation policies, by lowering the price differential between smuggled and legal imports, should lower the level of smuggling and shrink the size of the informal sector. On the contrary, Gillespie and McBride (1996) propose that trade liberalisation in developing countries forces smugglers (organised criminals) to "employ violence to bolster a diminishing competitive advantage and may seek new illegal sources, both local and international, for consumer products they distribute" (p.41).

The authors examine the evolution of smuggling in the presence of trade liberalisation and the challenges faced by MNEs in terms of global branding and pricing in markets where organised crime competes alongside formal MNE distribution channels. This competition takes the form of the distribution of smuggled goods via an informal sector, in which street-vendors provide the point of sale for these illegal imports. The study examines the evolution of smuggling prior to and after a period of trade liberalisation in Mexico. The study does not, however, deal with the phenomenon of IPR infringing imports. The study reveals that smugglers continue to trade at significant levels despite trade liberalisation by relying on other savings, such as sales and income tax avoidance. Moreover, the author suggests that pricing practices, where many MNEs continue to charge high prices for products despite lower tariffs, provide an opportunity for the informal market to continue to flourish. To assist in our understanding of the development of informal markets and the role these play in distributing smuggled goods, Gillespie and McBride (1996) look to *channels development* and *criminal organisation theory*.

Within channels development theory there are two separate approaches, one economic and the other cultural. The economic development approach focuses on progressive stages of channel distribution as a function of economic and social development. In this model, distribution channels in developing countries are expected to mirror those observed in developed countries, as retail and wholesale institutions become more sophisticated and expand the range of product offerings. The cultural development approach focuses on cultural differences that exist among countries with

similar levels of economic development. In this model we would not expect the standardisation predicted by the economic development model.

Applying these models to the phenomenon of smuggling, the economic development approach would predict a decrease in smuggling activity, while the outcome is ambiguous in the cultural development approach. If the cultural development approach proves correct and informal channels do not follow the evolutionary path observed in developing countries, then Gillespie and McBride suggest that the evolution of smuggling may be partially explained by theories of criminal organisation. In contrast to the economic development approach, which predicts a decline in smuggling and the informal sector, the synthesis of the cultural development approach and criminal organisation theory suggests that smuggling channels will become increasingly organised and aggressive, utilising both corruption and violence to protect a lucrative economic interest.

The foregoing suggests that a measure of corruption may be instructive as to the development and growth of trade in pirate product. Lambsdorff (1999) undertook a review of empirical research into the phenomenon of corruption which has largely focussed on the impact of corruption on economic development. Data used in many of these studies are largely subjective assessments of the levels of corruption in various countries. As Lambsdorff points out, objective data, such as conviction rates, may be misleading. Countries with high levels of corruption will have a higher incidence of related crime. It follows that conviction rates provide an objective measure of the level of corruption. However, for a given level of corruption, the higher the incidence of detection, the higher the expected conviction rate. If a government increases resources to the police and judiciary, this may lead to higher rates of conviction. Rather than suggesting a more corrupt bureaucracy, higher conviction rates are a measure of the quality of enforcement. For this reason subjective estimates of corruption are thought to be more useful measures of the level of corruption in specific countries.

5.2.3 Summary

The literature review reveals that there has been limited theoretical work on the determinants of international music piracy, or illicit trade in copyright product more generally. The main focus of the research reviewed herein is the motivation for smuggling legitimate product where, for example, regulatory controls such as import and/or sales taxes introduce a price divergence between national markets for the same

product. Smuggling of this kind has little, if anything, to do with trade in copyright product. Nonetheless, while not focusing on smuggling and trade in pirate product, these models are helpful in that they identify factors (such as the probability of detection and the nature and size of penalties) that will also be important in influencing the behaviour of smugglers and distributors of pirate product. In the next section we develop a theoretical model of international sound recording piracy, drawing in part on the literature reviewed thus far.

5.3 A Model of International Sound Recording Piracy

This section presents a theoretical model of international sound recording piracy which draws on the literature reviewed in section 5.1 and 5.2. Firstly, we evaluate the phenomenon of trade in copyright infringing product utilising the Baghwatti-Hansen type trade-theoretic general equilibrium model. This model provides an analysis of the national welfare implications of trade in the presence of smuggling copyright infringing product. Secondly, we develop a partial equilibrium model of smuggling copyright infringing product to investigate the dynamics at the market level. This investigation of the relationship between legitimate supply, illicit trade and market demand provides insights into the relative price and market share of legitimate and pirate product respectively. Thirdly, we examine the decision making process of the smuggling firm. This analysis investigates the key factors that determine the smuggling firms estimation of expected profits in various countries. The model proposes that smuggling firms rank countries with respect to expected profits, and focus their illicit trade activities accordingly. Lastly, we turn to the behaviour of the consumer and how individual preferences, relative prices, household income and ethics might impact upon the choice between legitimate and infringing product.

5.3.1 Welfare Economics of Smuggling Copyright Infringing Product

In the welfare economics literature, smuggling is depicted as a form of rent seeking behaviour, a response by traders to a divergence between the domestic and foreign price. This price divergence was typically the result of a trade distortion, such as a tariff or quota. The smuggled products are described as illegal in the sense that they enter a national market in a clandestine fashion to avoid the import tax or quantitative restriction. In the case of copyright infringing product, the opportunity to capture economic rents is not the avoidance of border taxes, though this may be a consequential

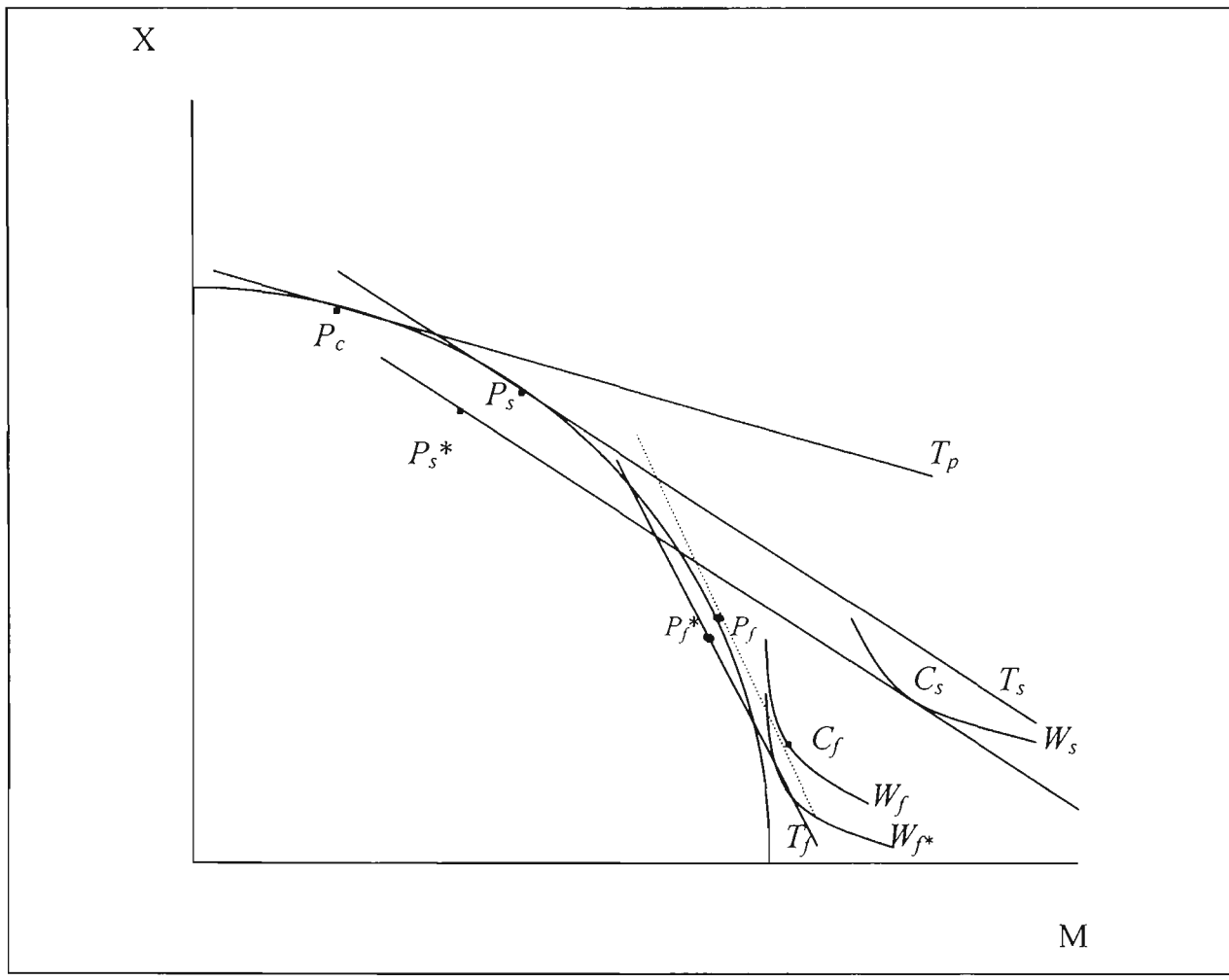
benefit. Instead, the motivation for smuggling copyright infringing product is the divergence between the price of legitimate product and the price of pirate and/or counterfeit copies of the product. We now consider the welfare implications of smuggling copyright infringing product using the Bhagwatti-Hansen type trade-theoretic model.

For ease of illustration we take the traditional approach of a two country (A & B), two product (X & M) general equilibrium model in which a small country imports a copyright product at the (given) international terms of trade (T_f). Alternatively, importers can choose to import copyright infringing copies of the importable good sourced via a parallel and illegal distribution channel. We assume for the moment that firms engage in either legitimate or illicit product trade, not both. The copyright infringing product is offered at significantly superior terms of trade (T_S). We further assume that smuggling is undertaken by domestic nationals and that its presence depletes domestic resources. Resource depletion takes the form of government enforcement measures for the protection of copyright. In addition, we assume that smugglers expend income on smuggling services. The latter may take the form of additional transportation costs, such as processing a consignment of pirate product via a clandestine port or the payment of a bribe to a customs officer when processed through a legal port. These smuggling services result in a deterioration in the pirate product terms of trade. The enforcement cost (incurred by the nation) is assumed to be independent of the level of smuggling and moves the importing country inside the production possibility frontier.

Figure 5.2 presents a general equilibrium trade model with alternate transformation curves facing a country that imports copyright product, M. In the absence of copyright infringement and enforcement measures, the nation would produce at P_f. In the absence of smuggling, trade would take place along the transformation curve T_f until we reach the national welfare curve at W_f at the consumption point, C_f. However, enforcement depletes domestic resources and moves the nation inside the production possibilities frontier to P_f*. In the presence of enforcement, national welfare is maximised at the consumption point C_f* and W_f*. In the presence of copyright infringement and smuggling, the copyright product may be imported via the unauthorised channel at the terms of trade T_p. Adding to T_p the cost of smuggling

services, we obtain the smuggling terms of trade, T_s.[1] The existence of enforcement measures means that the nation produces inside its production possibility frontier at P_s* (rather than P_s). Trade proceeds along the transformation curve T_s and national welfare is maximised at W_s and the consumption point C_s. Smuggling pirate product is welfare enhancing ($W_S > W_f$*) for a small nation that has a comparative disadvantage in the production of copyright product. As depicted, the illegal distribution channel completely replaces the legitimate distribution channel and the nation imports only copyright infringing product.[2]

Figure 5. 2 Pirate and Smuggling Terms of Trade



[1] $T_s = T_p$ - cM_s , where c is the price of smuggling services per unit of smuggled copyright infringing product, M_s.

[2] Border taxes have been ignored in this analysis. If included, and on the assumption that smuggled pirate product avoids this impost, the result would be an even greater divergence between the legitimate and illicit product terms of trade.

In reality, however, authorised and pirate product typically coexist. The results obtained in Figure 5.2 arise because we have ignored the potential impact of enforcement on the cost structure facing the importer of pirate product. Rather than constant costs, as depicted by T_s, the smuggler is more likely to face increasing costs. Increasing costs arise because, as the volume of smuggled consignments increase, so too will the probability of detection (and thereby confiscation and penalties). This will require the smuggler to increase expenditure on smuggling services and may take the form of more creative means of evading border controls and/or increased bribes to enforcement officers (customs agents). It is noteworthy that (unlike the enforcement cost which is a resource cost) smuggling services is a financial cost. Smuggling copyright infringing product via an illicit distribution channel in the presence of increasing cost is presented in Figure 5.3. As before the nation produces at P_s*. Trade takes place along the dotted line T_s, which represents the rate of transformation in the presence of increasing costs. The rate at which the smuggling terms of trade deteriorate will depend upon the level and quality of enforcement measures (E). The smuggling terms of trade in the presence of enforcement can be depicted as:

$$T_s = T_p - cM_s^e \tag{5.7}$$

where c is the price of smuggling services per unit and e (the exponent) is a variable directly related to the level of enforcement, E. That is, the higher the level of E the higher the value of the exponent e. Substituting for T_p we obtain[3]:

$$T_s = a - bM_s - cM_s^e \tag{5.8}$$

Differentiating equation (4.8) with respect to smuggled imports we obtain:

$$dT_s/\mathrm{d}M_s - b - ecM_s^{e-1} \tag{5.9}$$

where dT_s/dM_s is the slope of the smuggling transformation curve in the presence of enforcement and increasing costs, and represents the slope of the dotted line T_s in Figure 5.3.

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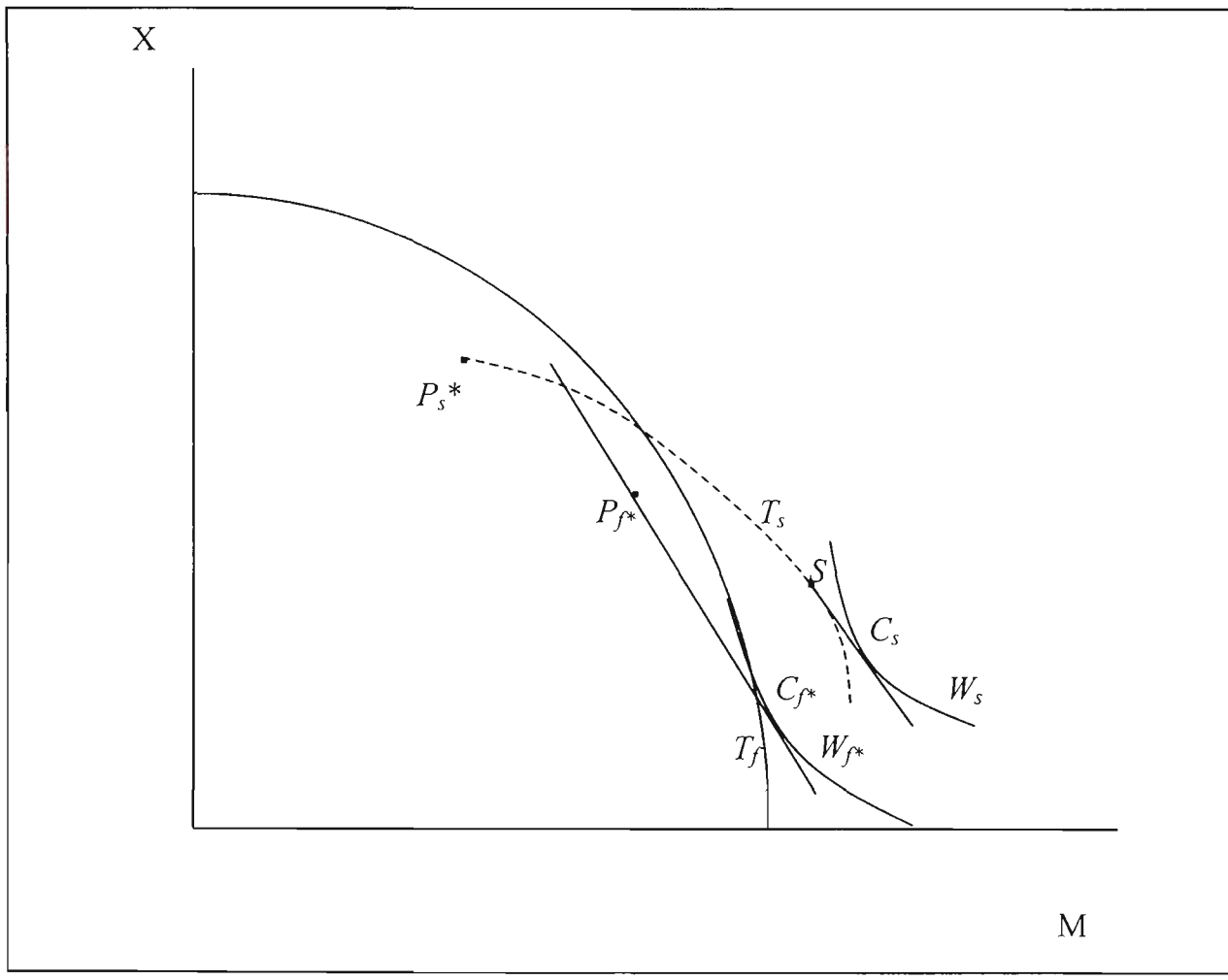
[3] $T_p = \mathrm{a} - \mathrm{b}M_s$

Smuggling copyright infringing product commences at P_s* and is profitable up to point S, that is, until the rate of transformation T_s is equal to the foreign price of legitimate copyright product, T_f. Thereafter, importation of legitimate product replaces pirate product and continues until we reach C_s on the national welfare curve, W_s. As depicted smuggling is welfare enhancing for the small nation that has a comparative disadvantage in copyright product. Importantly, the model with increasing costs provides the more realistic prediction of the co-existence of legitimate and illicit trade in copyright product.

Figure 5. 3 Smuggling Terms of Trade with Increasing Costs

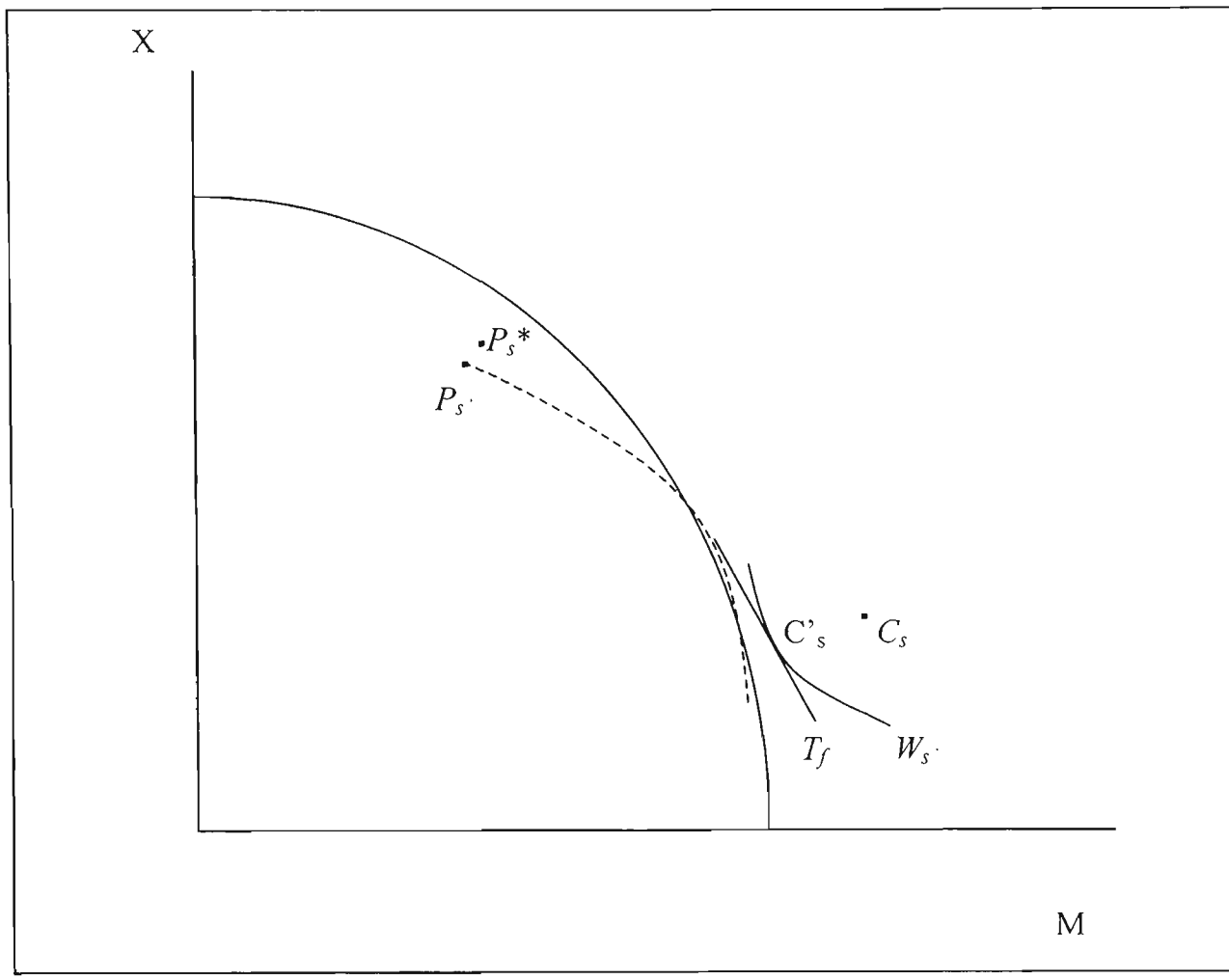


International conventions such as TRIPS, WCT and WPPT set out minimum standards for the protection of IPR. In the late 1990s there was a concerted effort, utilising both unilateral and multilateral approaches, to encourage the national adoption of these standards. We now consider the impact of increased enforcement on national welfare for the net-importer of copyright product, depicted in Figure 5.4. The

implementation of TRIPS and/or WPPT/WCT will require many countries (particularly developing countries) to update national laws and, to be effective, requires an increase in resources to the enforcement of IPR. Increased enforcement depletes resources and thereby decreases production of other goods. Diagrammatically, this will shift the importing country further inside its production possibility frontier from P_s* to P_s'. As before, trade continues along the increasing cost transformation curve until $T_s = T_f$, at which point legal imports replace smuggled imports and consumption settles at C_s'. Recall from equation 5.9 that an increase in enforcement will raise the value of the exponent *e*. This will cause the cost of smuggling to increase more quickly, and the smuggling terms of trade increase more quickly than depicted in Figure 5.4. This will lower national welfare even further. As depicted, C_s' is inferior to both C_s and C_f*. Increased enforcement is welfare-wise inferior for a net-importer of copyright product in the presence of piracy. On the assumption that a government sets policy so as to maximise the welfare of its citizens, increasing enforcement would seem an irrational choice. However, in the context of an increasingly integrated global market, domestic policy settings cannot be determined in a vacuum. Membership to international conventions and organization such as the WTO obligates minimum standards of protection for IPR.

The model presented in this section may help to explain why piracy levels, in some countries, are relatively high despite the fact that these same countries are signatories to one or more international IPR convention. Membership, by itself, is not sufficient to bring about a reduction in piracy. This requires increased resourcing to the enforcement of IPR. For developing countries (where scarcity is more pressing relative to developed countries) enforcement of IPR may be ranked relatively low on a list of government socio-economic priorities. Particularly when increased enforcement effectively transfers income from locals to foreign copyright owners, and thereby lowers national welfare.

Figure 5. 4 Smuggling Terms of Trade With Increasing Enforcement



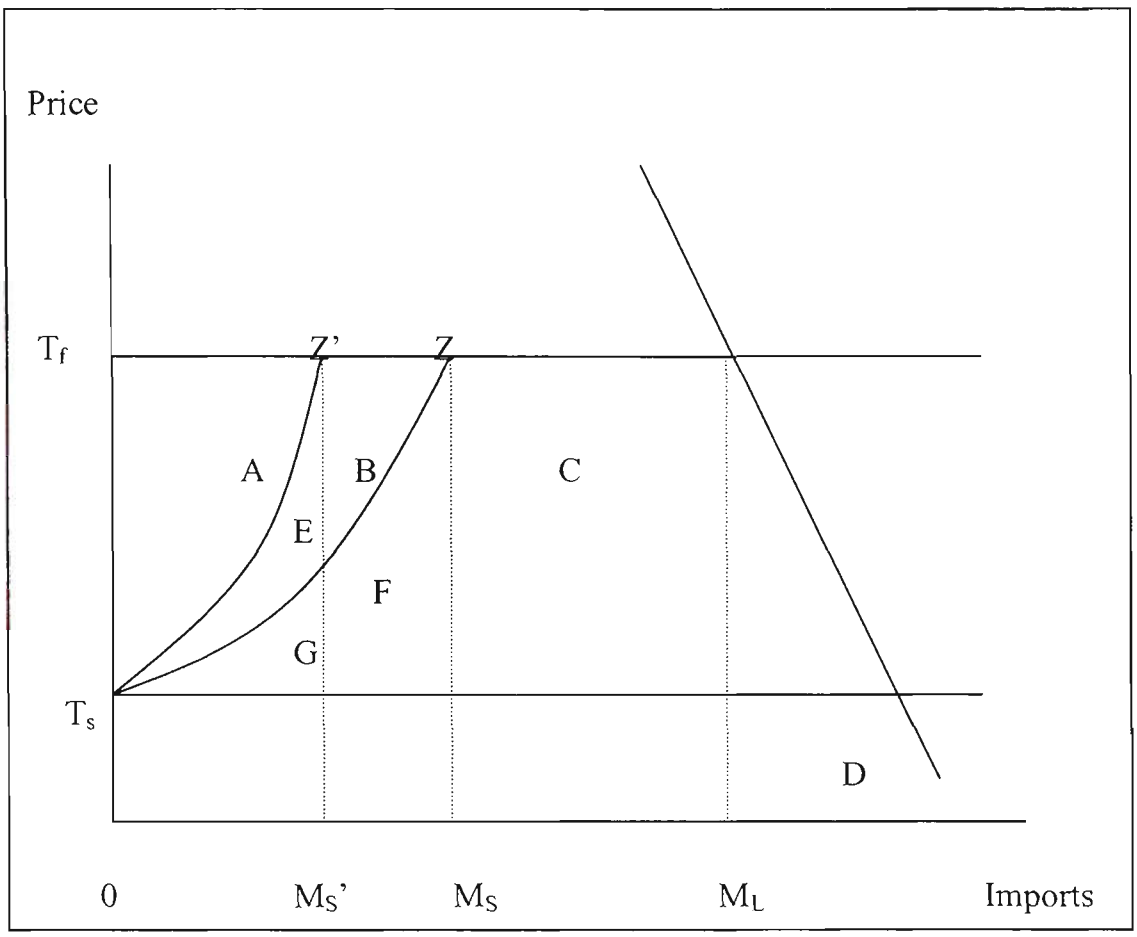
5.3.2 A Partial Equilibrium Analysis of Smuggling Copyright Infringing Product

While the general equilibrium model presented in section 5.3.1 provides some important insights into welfare economics at the national level, a partial equilibrium analysis of smuggling copyright infringing product provides additional insights into the dynamics of the domestic market for copyright product. In particular, we can more closely examine the inter-relationships between the price of legitimate and pirate product, the elasticity of demand, the risk:return ratio and the copyright owners profit level in the presence of smuggling and piracy.

The dynamics presented in Figures 5.3 and 5.4 can be illustrated using a partial equilibrium model of the demand and supply of legitimate and copyright infringing product. In Figure 5.5 the foreign price T_f is the rate of transformation of legitimate copyright product. T_s is the price of smuggled copyright infringing product, which

incorporates the cost of smuggling services, such as bribes to customs agents. The smuggling supply curve is depicted by T_s-Z. This curve displays increasing costs, the slope of which represents the risk:return ratio to smuggling copyright infringing product.

Figure 5. 5 Partial Equilibrium Model of Smuggling Copyright Infringing Product



For a given level of import demand (D), the total quantity of copyright imports is M_L, consisting of M_S smuggled infringing product and M_L–M_S legitimate product imports. Piracy market share is given by the ratio of smuggled imports to total sales (M_S/M_L). As in Figure 5.3, smuggling and legitimate trade co-exist. In the absence of smuggling, the gross profit for copyright owners is equal to the areas $A+B+C+E+F+G$[4]. In the presence of smuggling, this profit decreases to area C; a loss of $A+B+E+F+G$. The

[4] We use the term "gross" rather than "economic" profit because the latter will be net of copyright royalty income: a return for creative endeavour. The rate of transformation indicated by T_s does not incorporate this critical economic cost. T_s does, however, include the cost of smuggling services and therefore exceeds marginal (physical) cost. So as not to clutter the diagram we use T_s as the reference point for calculating copyright owner gross profit.

economic profit captured by the smuggler is represented by the area $A+B+E$. Area $G+F$ is the resource costs associated with government enforcement measures and the anti-detection (or cloaking) activities of the smuggler. As depicted there exists a uniform price for the importable good, regardless of whether it is infringing or legitimate. While we might expect the price of counterfeit product (produced to deceive the consumer) and legitimate product to be uniform, pirate product is typically sold at prices well below the price of legitimate product.[5] Figure 5.5 is illustrative of the dynamics in the market for counterfeit product.[6] A model more representative of pirate product is presented in section 5.3.4.

Figure 5.5 illustrates that the losses incurred by copyright owners can be significant and that they have much to gain in pursuing the implementation of anti-smuggling measures. This model assists in the analysis of a range of strategic responses by copyright owners to the phenomenon of international piracy, and the impact of such measures on gross profit, the risk:return ratio and piracy market shares. Strategic responses by copyright owners include:

- lowering the domestic price of legitimate product
- lobbying government to increase the level and quality of enforcement measures, and
- product differentiation strategies

These strategic responses will now be considered in turn.

Improved IPR law enforcement will increase the probability of detection and thereby raise the risk:return ratio to smuggling activities. Increased risk will result in a relatively more inelastic smuggling supply curve, represented diagrammatically by T_S-Z' in Figure 5.5. At the international rate of transformation (T_f) this will result in a lowering of smuggling from M_S to M_S'. Legitimate imports rise to M_L- M_S', as does gross profit, which now encompasses the area $C+B+F$; an increase of $B+F$. That is, an

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[5] In 2001 a major Australian music retailer admitted that around 30,000 copies of a top selling sound recording were in fact counterfeit.

[6] The price of pirate product would lie below T_f but above T_s. As a result, the economic profit per unit would be lower as would the overall level of smuggling, depicted as M_s in Figure 5.5. The lower

increase in enforcement lowers the level of counterfeit and piracy, increases the market share of legitimate product and transfers income back to copyright owners.

As depicted, copyright owners can expend resources up to the value of B+F (net of any royalty or licensing payments) on lobbying government to more rigorously enforce copyright law, leaving the original value of gross profit (C) unchanged. Indeed, this strategy will be profitable as long as the cost of lobbying is less than the gain in gross profit ($B+F$) and profit neutral when equal to $B+F$. This strategy can take any of the following forms:

- Direct lobbying of government in countries with high piracy market shares
- Indirect pressure achieved by encouraging governments in countries that have a comparative advantage in copyright product to pursue bilateral and multilateral avenues to pressure governments in countries with high piracy market shares
- Undertaking private enforcement measures, via domestic and international industry associations

Another possible strategic response by copyright owners is to lower the domestic price of legitimate product. This has been suggested as a strategy to establish a market for legitimate product in countries where average household incomes are low and piracy market share is high. Coupled with a longer-term strategy of increased enforcement, this strategy could facilitate a gradual but steady increase in legitimate product market share. Considered as a stand-alone strategy, a price discount will lower the price differential between legitimate and illicit product and thereby lower piracy market share. An increase in legitimate product market share can potentially increase gross profit for copyright owners. Inspecting Figure 5.6 we can see that a reduction in price from T_f to T_d will, for a given level of enforcement and risk:return (T_s-Z), increase legitimate imports from M_L-M_S to $M_L^{\#}$-$M_S^{\#}$. The net effect on copyright owner's gross profit is ambiguous and is equal to the difference between the loss of gross profits resulting from the price reduction on existing sales and the increase in gross profit on induced sales. Diagrammatically, these opposing effects can be measured by the areas

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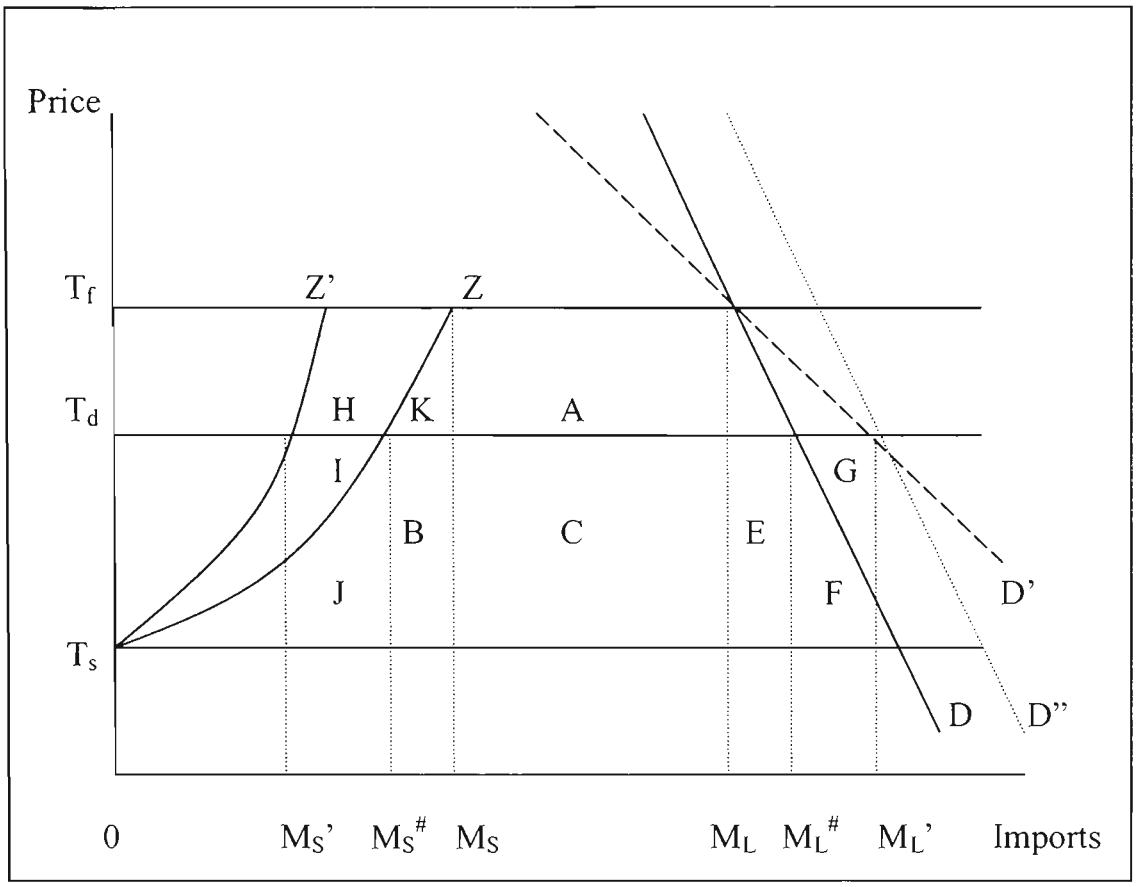
price in the case of pirate product represents a redistribution of income from copyright owners to consumers (larger consumer surplus).

A–(B+E). Whether gross profit rises, falls or remains unchanged depends on the relative size of the gains (B+E) and losses (A). The size of the gains and losses are, in turn, a function of the elasticity of demand and the risk:return ratio. If demand is more price elastic, as depicted by D', the net-gain in gross profit is somewhat larger; A-(B+E+F+G). In other words, the more elastic the demand for copyright product, the greater the likelihood that a price discount will result in higher gross profits in the presence of smuggling and piracy, and visa versa for more inelastic demand.

This suggests that a lowering of domestic price, as a strategic response to smuggling and piracy, should be supported by product differentiation strategies designed to make demand for legitimate product more responsive to a price reduction. This may include value-adding strategies such as improved after-sales service (in the case of business software) and/or enhanced product features in products released into domestic markets where high piracy market shares prevail. An example of the latter is the inclusion of additional songs (tracks) and/or CD-ROM music video clips on sound recordings. These "add-ons" are not present on sound recording releases in other territories from which infringing copies are replicated. These strategies would shift the demand curve to the right as depicted by D". Regardless of the short-term impact on overall gross profit, lowering domestic price can help to increase legitimate sales and, combined with pressure on government officials to improve IPR law enforcement, may be used as part of a longer-term strategy in the fight against piracy. We can now consider the combined impact of an increase in enforcement and a price discount.

Figure 5. 6 Lowering Domestic Price in Response to Smuggling Infringing Product



For a given price discount, T_d, a higher risk:return ratio ($T_s - Z'$) following an improvement in enforcement measures, results in a larger fall in smuggled copyright infringing imports and thereby, a relatively larger market share for legitimate product. That is, the more inelastic the smuggling supply curve the greater the net increase in gross profit, as the relatively larger fall in smuggled imports raises the increase in gross profit from $(B+E+F+G)$ to $(I+J+B+E+F+G)$, a net increase of $(I+J)$. Recall that copyright owner profit depends on the relative size of the foregone profit (A) and the gain in profit, which rises from $(B+E)$ to $(B+E+I+J+F+G)$. Rather than being perceived as mutually exclusive strategies, this analysis demonstrates the complementarity of a reduction in the price of legitimate product and resources allocated to lobbying activities. Anti-piracy measures can be more effective when applied as a multi-pronged attack on international piracy. We now turn our attention to the behaviour of the firm engaged in smuggling copyright infringing product, to more closely investigate the impact of the risk-return ratio on decision-making.

5.3.3 The Smuggling Firm's Decision Making Process

For the purposes of this analysis we continue our assumption that copyright infringing product is manufactured overseas. We further assume that the local importer is a separate but affiliated member of an international organised crime syndicate. This relationship may take the form of purchasing rights from the international criminal organisation for a particular country. This relationship may be thought of as analogous to a subsidiary or licensee of a MNE.

Copyright infringing product can enter a country in one of two physical locations; a customs port or a clandestine port. Goods smuggled via a customs port may be either camouflaged among legitimate product within a single consignment, or when shipped separately, must have accompanying import/export documentation purporting to be authorised copies of the copyright product. This documentation is necessary to comply with customs regulations and will include a description of the goods as per the international harmonised commodity classification. This classification alerts customs officers as to the precise nature of the product, which (where applicable) is used to calculate import duty. Documentation also includes details of country of origin (geographic indication) and weights and measurements. Customs authorities typically have a number of inspectors at each port that routinely inspect a proportion of all consignments. In Australia, for example, around two percent of all consignments are inspected. Thereafter, only consignments suspected of infringing a wide range of import regulations are inspected.[7]

Consignments of smuggled copyright infringing product passing at non-customs border points of entry (whether via land, sea or inland waterways) may incur additional transportation and/or camouflaging costs. For example, one particular boat (loaded with a consignment of pirate sound recordings) was towing a small, submerged vessel (akin to a submarine) in which the infringing product was concealed. This vessel was raised and lowered via a sophisticated system incorporating air tanks stored atop the boat. This is instructive as to the creativeness of smugglers and the covert measures undertaken to circumvent border controls.

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[7] Under-invoicing, for example, involves falsifying documents as to the true quantity contained within a particular consignment. This enables the importer to avoid import taxes and/or sales (or value added) taxes.

The importer of copyright infringing product faces considerable risk, including the confiscation of goods, financial penalties and imprisonment. The level of risk encountered will vary between countries and will be a function of the efficacy of enforcement measures (E), the level of smuggling as a proportion of total imports (relative to the number of inspections), and the extent of corruption in the customs authority, police and judiciary. The existence of corruption in the civil service enables smugglers to bribe officials in exchange for preferential treatment and reduces the dependency on camouflaging techniques.

Traders in pirate product maximise a stream of expected profit from engaging in the manufacture and distribution of infringing product. In doing so, they balance the benefits derived from engaging in illicit trade against the potential penalties if detected, prosecuted and convicted. Penalties may include a prison term and/or a financial penalty. Copyright infringing product can enter a country in one of three methods:

- via a customs port
- via a non-customs port, or
- via a customs port when mixed with legitimate product

The latter method is used as a means of camouflaging infringing product with legitimate product. For comparative purposes we first consider the profit function of the trader in legitimate product. To highlight the physical and intellectual components of a firm's costs, we separate royalty payments from other variable costs. The profit function of the firm producing legitimate product is:

$$\Pi_L = (Q_L.P_L) - [(Q_L.MC) + (R.Q_L) - (F')] \qquad (5.10)$$

or $$\Pi_L = (TR) - [(TC_1) + (TC_2)] - (F') \qquad (5.11)$$

where Q_L is the quantity of legitimate product, P_L is the price of legitimate product, MC is the marginal cost of production, R is a royalty payment to the copyright owners[8], F' is

[8] As previously mentioned, a sound recording typically encompasses a bundle of copyrights. A record company pays both an artist royalty and a publishing royalty for each and every reproduction of the sound recording sold. For simplicity, we assume that there is a single royalty payment (R).

sunk costs[9], TR is total revenue, TC_1 is total physical cost and TC_2 is total royalty cost. Differentiating equation 5.10 with respect to Q_L we obtain:

$$d\Pi_L/dQ_L = P_L - (MC + R) \tag{5.12}$$

or $$d\Pi_L/dQ_L = dTR/dQ_L - [dTC_1/dQ_L + dTC_2/dQ_L] \tag{5.13}$$

which represents the marginal profit, or gross profit contribution per unit sold (π_c). That is, π_c is equal to the selling price less the marginal physical cost (MC) less the royalty paid to copyright owner(s) for the IPR embodied in the product. Re-arranging we obtain the following profit maximising condition:

$$dTR/dQ_L = dTC_1/dQ_L + dTC_2/dQ_L \tag{5.14}$$

That is, for profit maximization marginal revenue must be equal to marginal physical cost plus the royalty rate.

We now turn to the profit function faced by the smuggler of copyright infringing product. For simplicity it is assume that smugglers import infringing product only, via either a customs port or a clandestine port. The expected profit function is depicted in the model presented by equation 5.15.

$$\Pi_e = [1 - \mu] [S (P_s . Q_s)] - [S (MC . Q_s)] - [\mu (S)(F)(C)] - (P_c . C(S,Q_s) \tag{5.15}$$

where Π_e is the expected profit, μ is the probability of detection, S is a continuous variable that measures the number of smuggled consignments of infringing product per time period, P_s is the price of infringing product, Q_s is the quantity of pirate product per smuggled consignment, MC is the marginal physical cost of reproducing the copyright infringing product, F is the financial penalty and/or prison term imposed upon detection, P_c is the price of services rendered by corrupt officials and C is the quantity of services of corrupt officials purchased per time period. The value of F will comprise the financial penalty plus the opportunity cost of incarceration resulting from the

[9] Sunk costs represent the investment made by the record company in the production of the master recording (from which duplicates are made) and marketing and promotion costs.

imposition of a jail term (J). The opportunity cost can be measured by the foregone profit from smuggling activities while in prison [$F = (f + (J(O))$] where f is the value of the fine, J is the term of imprisonment measured in years and O is the opportunity cost measured as foregone profit per annum. As depicted in equation 5.15, expected profit is a weighted average of profit when smuggling goes undetected and when it is detected.

Comparing this expected profit function to that of the trader in legitimate product, we find that both the royalty cost and sunk costs are absent. This follows from the fact that the trader in copyright infringing product neither pays royalties to copyright owners, nor do they make a contribution (and therefore incur the risk of) investing in the production of the master recording and the marketing and promotion expenditure necessary to successfully launch a sound recording internationally. It is precisely this free riding that inflicts the greatest financial loss on songwriters, artists and record companies alike.

While smugglers do not incur these costs, they do however, encounter other costs and risks associated with smuggling and distributing infringing product. These include the cost of smuggling services and potential costs associated with the risk of detection; namely, the cost of bribes, the confiscation of infringing goods and fines. These costs and risks will vary from country to country and are a function of economic, cultural and institutional factors. Empirical studies reviewed in section 5.2.3 revealed a strong correlation between the level of corruption and economic development (and relative wages). We can therefore expect corruption, and thereby the supply of smuggling services, to be higher in some countries as compared to others. We might also expect the price of smuggling services to be higher in high-income countries relative to low-income countries. It is therefore hypothesised that the probability of detection (μ) and the cost of smuggling services (P_c) will be higher (lower) in developed (developing) countries.

Considered as a continuing activity with S consignments per time period, Π_e represents a profit stream. Differentiating equation 15.5 with respect to quantity we obtain:

$$d\Pi_s/dQ_s = (1- \mu)\, dTR/dQ_s - dTC_s/dQ_s + d(P_c.C)/dQ_s \qquad (5.16)$$

and rearranging for a maximum:

$$(1 - \mu)\, dTR/dQ_s = dTC_s/dQ_s + d(P_c.C)/dQ_s \qquad (5.17)$$

There are essentially two differences between this profit maximizing condition and that faced by the producer of legitimate product, represented by equation (5.12). Firstly, on the right hand side we note the absence of the royalty rate R. This is no surprise as copyright owners are not paid royalties on illegal copies of products that embody their IP. However, an additional cost element appears; namely, the cost of corruption services. Expenditure on this element will lower the probability of detection, thereby increasing the probability of generating a profit. Secondly, on the left hand side we have the term $(1 - \mu)$, which is the probability that a consignment of infringing products will go undetected. Since μ is a fraction, marginal revenue is lower than it would be in the absence of risk (that is, when $\mu = 0$). As the level of risk and the probability of detection (μ) rise, marginal revenue falls. This is equivalent to a leftward shift in the marginal revenue curve, where the profit maximizing condition is satisfied at increasingly lower levels of smuggling. The profit maximizing level of smuggling is therefore inversely related to the probability of detection.

In summary, a number of important implications can be drawn from the profit maximization condition depicted equation (5.17). For given export prices and costs:

- the value of expected profit is inversely related to the probability of detection (μ)
- country variations in μ will result in a range of expected profit functions, with higher expected profits in countries with a relatively lower probability of detection, and visa-versa
- for a given country, the higher the value of μ, the lower the expected profit and, thereby, the quantity of smuggled copyright infringing product

To illustrate, consider the shipment of a single consignment of infringing product. If detected at the border, the expected profit (loss) will be equal to the cost of manufacture ($Q_s . MC$) plus the size of the financial penalty and the foregone profit if a prison term is applied (F). That is;

$$\Pi_e = - (Q_s . MC) + F \qquad (5.18)$$

If, however, the smuggler is successful in circumventing border controls and the infringing products are imported undetected, the smuggler will receive a return equal to:

$$\Pi_e = (P_s \,.\, Q_s) - (MC \,.\, Q_s) \qquad (5.19)$$

or

$$\Pi_e = Q_s \,.\, \pi_c \qquad (5.20)$$

Considered as a series of transactions over a period (say one year), this model postulates that the higher the penalty (F) the lower the expected profit. Low profit expectations will discourage individuals from engaging in illicit trade. However, this potential financial loss will be offset by the expectation of a profitable return from engaging in illicit trade. Π_e will be positive as long as $(Q_s \,.\, \pi_c) > F$.

If we assume a single export price for copyright infringing product, expected profit will vary from country to country depending on the probability of detection and the nature and size of the penalties. The probability of detection is therefore a critical element of the estimation of expected profit and is a function of, among other things, a nation's commitment to IPR law enforcement. This commitment will be evidenced by the rigorous enforcement of IPR law and a commitment of resources to the monitoring and prosecution of IPR infringements. The probability of detection (μ) thus enters the expected profit function as an exogenous variable. However, μ will also be influenced by the level of corruption in the civil service (the propensity for customs authority staff and police to take a bribe). The more profitable the trade in infringing product, the higher the bribe affordable by the illicit trader, and the greater the potential for corrupting officials. We can generalise this relationship as follows:

$$\mu = f[E, C(B), \lambda] \qquad (5.21)$$

where E is the standard of law enforcement, C the level of corruption, B the size of the bribe and λ is the ratio of illicit product consignments to the total number of consignments ($\lambda = S/S+L$), and L is the volume of legitimate product consignments. E is a function of the comprehensiveness of a nation's copyright law and the resources

allocated by the government to monitoring and enforcing those laws. Differentiating equation 5.21 we obtain the following expected partial derivatives:

$$d\mu / dE > 0$$

$$d\mu / dC < 0$$

$$d\mu / d\lambda > 0$$

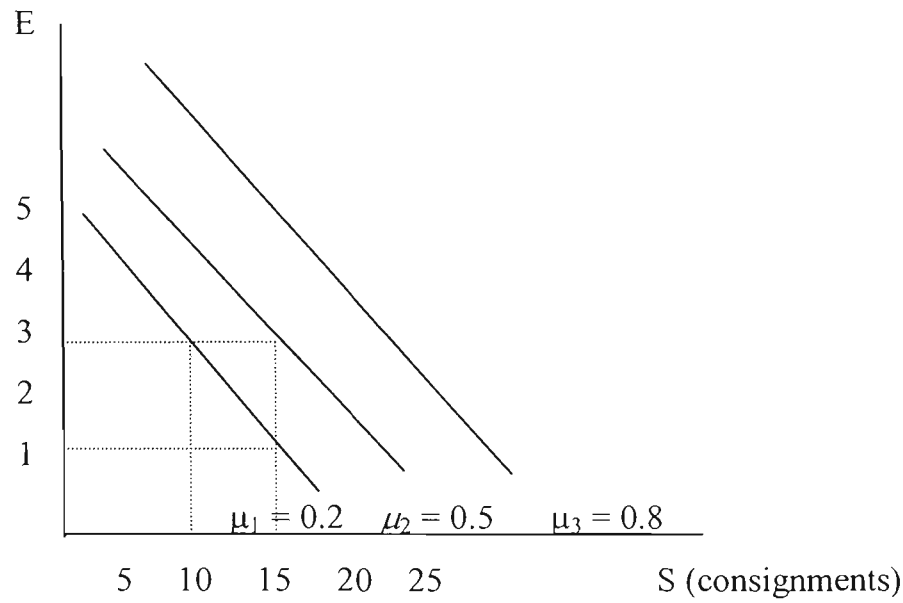
The probability of detection at a customs port is given by:

$$\mu = [\lambda .(I/S+L)] + \Theta \qquad (5.22)$$

where I is the number of routine inspections carried out by customs inspectors and Θ is a fraction representing an increase in the probability of detection resulting from non-routine inspections. Equation (5.22) depicts the probability of detection (μ) at a specific customs port as the proportion of total consignments inspected (I) at that port to the total number of consignments passing through that port in any one period ($S+L$), multiplied by the ratio of infringing to legitimate consignments (λ). In addition to routine inspections, customs inspectors also monitor suspect consignments that may be inspected on arrival. This method of detection is becoming increasingly important in the fight against piracy as collaboration and information sharing between various customs authorities increases. Given the existence of discretionary inspections of suspect consignments the probability of detection will increase by a factor of Θ.

The relationship between smuggling, enforcement and the probability of detection can be illustrated diagrammatically using a contour map as depicted in Figure 5.7. The level of enforcement is represented by an index and reflects the quality and quantity of resources allocated to the monitoring and enforcement of IPR. The higher the index number (E) the better resourced and the more effective are the enforcement measures employed within a country. The model can be used to identify the relationship between smuggling and the probability of detection for a country with a given level of enforcement. For example, for a country with an enforcement index of 3 (and assuming C is constant), the hypothetical probability of detection is 20% for a volume of 10 consignments per time period. This probability rises to 50% for a volume of 15 consignments per time period. That is, for a given level of enforcement the probability of detection rises as the level of smuggling rises.

Figure 5. 7 Smuggling, Enforcement and Detection Contour Map



This allows us to make inter-country comparisons of relationship between enforcement, smuggling and the probability of detection. As the level of enforcement increases, the probability of detection increases for a given level of smuggling. For example, a smuggler shipping 15 consignments of infringing product per time period has a 20% probability of detection in a country with an enforcement index of 1, while the same level of smuggling has a 50% probability of detection in a country where the enforcement index is 3.

In this way we can construct an array of probability functions that represents the probability of detection in a range of countries, each with a different level of commitment to IPR law enforcement. The implication is that smugglers will concentrate their illicit activities in countries where the probability of detection is lower. As depicted in Figure 5.7, this is associated with the level of enforcement in the destination country.

To illustrate let us examine the decision-making process of an illicit trader evaluating the relative profitability of engaging in the smuggling and distribution of copyright infringing product across a range of countries. It is assumed that each country employs different IPR law enforcement regimes, ranging from comprehensive to limited. As a result there is a range of probabilities of detection which reflects this divergence in cross-country IPR regimes. Countries that rank IPR protection highly will allocate sufficient resources to the enforcement of IPR laws and impose relatively larger

financial (and other) penalties upon perpetrators of IPR infringements. The result is a relatively higher probability of detection of illicit trade and a greater deterrent effect upon would be smugglers and distributors of infringing product. Conversely, countries that rank IPR as a low priority, will allocate relatively limited resources to IPR protection and impose relatively smaller financial (and other) penalties. For smugglers of illicit product, these countries represent a relatively low-risk high-return market.

These dynamics can be illustrated by way of an expected profit matrix, as depicted in Table 5.3. In choosing which country the illicit trader (firm) will focus its activities, it must estimate and compare the expected profit function for each country. To simplify the illustration we have assumed that no jail term is imposed on the illicit trader if detected, the penalty being limited to a monetary fine. We also assumed that there are 12 consignments of smuggled pirate product per year; the wholesale price received by the smuggler is the same in each country ($3); and that the marginal cost of manufacture (duplication) is constant ($1). These assumptions enable us to focus on the role played by enforcement, the probability of detection and penalties on the smuggler's expected profit.

Inspecting Table 5.3 we see that the probability of detection ranges from 10% to 90% (i.e. 0.1 to 0.9), while fines range from $50,000 to $300,000 per infringement. Each cell in the matrix quantifies the expected profit for a given level of fines and probability of detection. This enables the illicit trader to make cross-country comparisons of expected profit and rank individual countries accordingly. For example, with a probability of detection (μ) equal to 0.3 and fines (F) of $300,000, the expected profit (Π_e) is $600,000. This is less profitable as compared to a country in which there is a higher probability of detection, say 50% (μ=0.5), but a lower fine, say $50,000, in which case expected profit is $900,000. Clearly, the lower the value of μ and F, the higher the expected profit and visa versa, with a minimum and maximum of -$3 million and $2.1 million respectively for the range of hypothetical countries presented. Profit maximizing smugglers will avoid countries in which expected profits are zero or negative, preferring instead to focus their efforts in countries that promise the greatest return on their investment.

As hypothesised, the expected profit matrix illustrates that enforcement measures backed by stringent financial penalties (or prison terms) provide an effective deterrent to smuggling and piracy. For example, a country with a relatively high

probability of detection, say 70%, and a relatively small penalty, say $50,000, offers an expected profit of $300,000. By comparison, a country with μ=0.4 and F=$300,000 promises an expected profit of zero. This demonstrates that enforcement measures employed to detect IPR infringement must be supported by rigorous penalties that are imposed by the judiciary. Only in this way will enforcement prove an effective deterrent to IPR infringement.

Generalising this result for many countries, organised criminals operating in the global market and engaging in international distribution of copyright infringing product will rank countries with respect to the expected profit for a given level of investment. Countries like Australia, that represent an insignificant proportion of the world market and with a high probability of detection, will not figure highly in their operations. We can hypothesise that the higher the level of expected profit, the higher the level of smuggled copyright infringing product.

There is, however, another dimension to the issue of enforcement and the probability of detection not depicted in the expected profit matrix; that is, corruption. If corruption exists within enforcement agencies, smugglers can pay bribes to obtain favourable treatment by corrupt officials and circumvent IPR laws with greater certainty. This will lead to a revision of the probability of detection in countries with relatively high levels of corruption. Bribes will be paid to officials as long as the increase in expected profits exceeds the cost of obtaining the services of corrupt officials.

To illustrate consider a country in which μ=0.8 and F=$300,000. Inspecting Table 5.3 we find that, in the absence of corruption, expected profit is -$2.4 million. Assume also that enforcement officers are susceptible to bribery and that a $10,000 bribe per consignment, by co-opting the services of customs officers, will lower the probability of detection to 30%. Retaining the assumptions underlying construction of the profit matrix, we substitute this information into the expected profit function to obtain:

$$\Pi_e = [1 - 0.30][(12)100{,}000(\$3\text{-}\$1)] + [0.30\ (12)(-\$300{,}000)] - (\$10{,}000(12))$$

$$\Pi_e = [0.7][\$2{,}400{,}000)] + 0.30\ (-\$3{,}600{,}000) - (\$120{,}000)$$

$$\Pi_e = \$1{,}680{,}000 - \$1{,}080{,}000 - \$120{,}000 = \$480{,}000$$

Rather than expecting a loss of $2.4 million, the smuggler can expect to make a profit of $480,000. Corruption in the civil service will therefore have a significant impact on the level of expected profit, and thereby the level of smuggling and IPR infringement. As illustrated, bribery and corruption can change a loss making market into one that offers profits to smugglers of infringing products. This analysis suggests that, even in countries where significant government resourcing of border controls and other enforcement measures are in place, the existence of corruption within government enforcement agencies, such as customs authorities and the police force, can more than offset these deterrence measures. Having investigated the decision making process of the smuggling firm, we now turn our attention to the distribution channels through which illicit product is sold and the factors that influence the choice between legitimate and illicit product.

Viewed from the perspective of national regulators, the smugglers expected profit function and the determining variables identified therein provide some clues as to the optimal level of enforcement. Specifically, the probability of detection μ increases with increased monitoring and enforcement. Since μ is an increasing function of S, there may in fact be increasing returns to enforcement with marginal increases in E causing increasingly larger falls in S. The optimal level of enforcement is that which corresponds with an acceptable level of smuggling and piracy, and this will vary from one country to the next as reflected in the variation in cross-country piracy market shares.

5.3.4 Consumer Behaviour and the Development of Informal Markets

Thus far, our analysis of copyright infringing product has focussed on the supply side of the market, while little has been said about the demand side of the market. In this section we investigate consumer behaviour and what attracts them to informal markets in which illicit products are sold.

In an empirical investigation of why people buy illicit goods, Alber-Miller (1999) focuses on four behavioural determining factors: product type, buying situation, perceived criminal risk and price. Illicit goods are defined as either illegally produced (such as counterfeit products) or illegally acquired (that is, stolen goods). Alber-Miller conducts a survey of MBA graduate student consumption behaviour which explores willingness to buy a described product in various settings. The self-report data thus derived was used to estimate a regression model, with the resulting F-statistic

significant at the 1% level. The interaction between counterfeit demand and price, and stolen goods demand and price, were significant at the 1% level (p.281). The results support the hypothesis that consumers buy illicit product because of a relatively low price. The survey results also support the hypothesis that consumers are more willing to buy illicit goods when others are present and buying such goods. There was, however, no support for the hypothesis that willingness to buy was inversely related to perceived criminal risk. The author cites two other studies of consumer behaviour and the demand for counterfeit product (Wee, 1995 and Bloch, 1993) both of which conclude that price is the key determinant of consumers choosing counterfeit over genuine product. These findings, while not surprising, provide some support for the theoretical model of consumer behaviour and copyright infringing product developed hereafter.

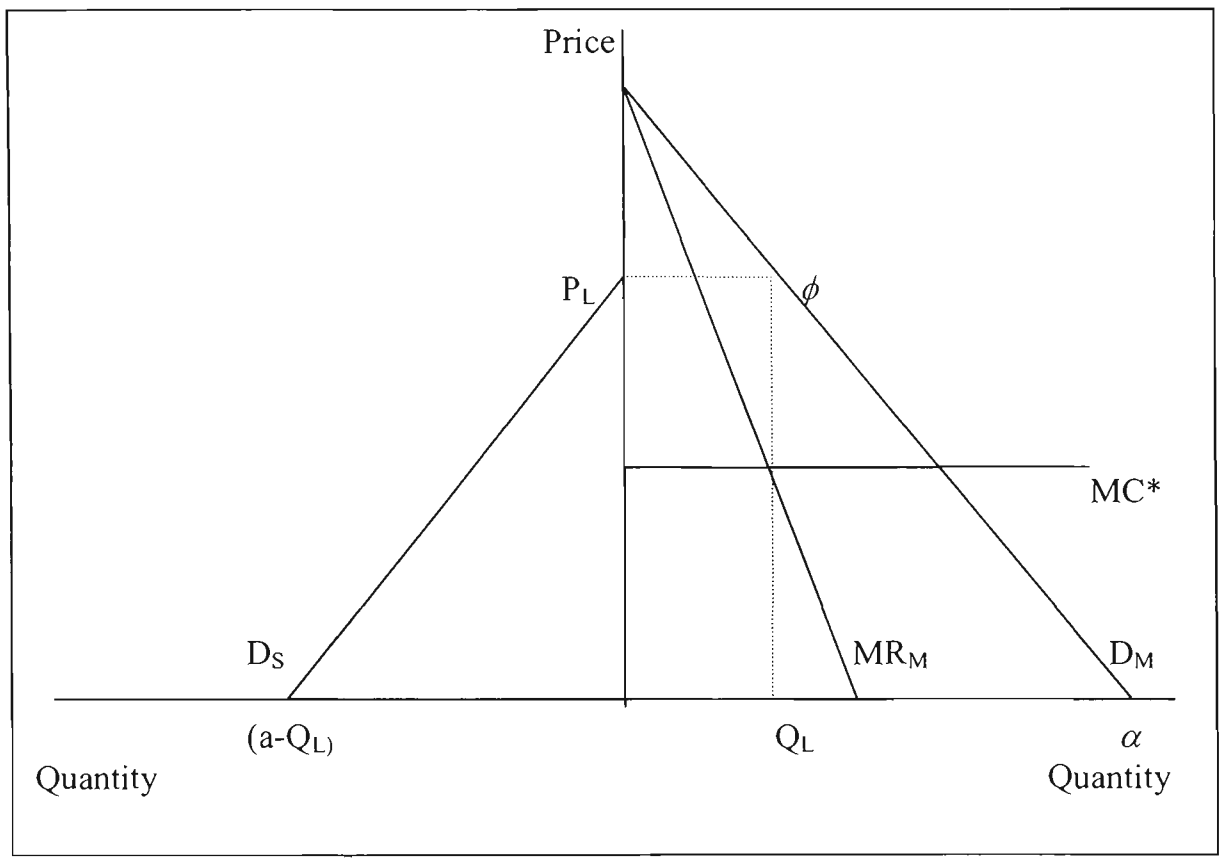
Let us begin the analysis by assuming an absence of smuggling and an informal distribution channel/market. A MNE record company, as copyright owner of the master recording, has monopoly control over the supply of an artist specific sound recording. For profit maximisation, the MNE will equate marginal revenue with marginal cost (inclusive of the artist and publishing royalty) as demonstrated by equation 5.14. This was illustrated diagrammatically in Figure 2.6, where the expected demand function, $Q_i = \alpha - \beta P_i$ is presented. The profit maximising price (P_i) and quantity traded (Q_i) derived by equating marginal revenue with the royalty inclusive marginal cost, is illustrated in Figure 5.8.

To maximise profits the record company sets a price of P_L, at which consumers are willing to purchase a quantity of Q_L. The market demand curve (D_M) represents the aggregate demand curve for an artist specific sound recording title and the consumer's marginal valuation of that product. At a price of P_L, those consumers depicted by the segment of the demand curve ϕ to α, will not purchase the product because their individual marginal valuations (based on preferences and income levels) are lower than the price at which the product is being offered for sale. As such, the proportion of the market excluded from participating in the consumption of this artist's sound recording can be measured by the ratio $(\alpha - Q_L)/ \alpha$.

This unsatisfied demand is depicted in segment (b) as the residual demand curve (D_S), derived by taking the horizontal difference between the market demand curve D_M and the vertical line ϕ-Q_L at each price below P_L. For the smuggler of copyright infringing product, D_S represents a market opportunity presently unserved by the

territorial copyright owner or licensee. The copyright owner, unable to segment the domestic market, cannot exploit this market opportunity. If the copyright owner offered a cheaper substitute, this will likely undermine sales in the full-price segment and lower profits. The smuggler seizes this opportunity by setting up an illegal (informal) distribution channel for the supply of copyright infringing product.

Figure 5. 8 The Market For Legitimate Copyright Product



The existence of an informal market sector, in which low-price high-quality copyright infringing duplicates are sold, will partially displace legitimate sales. The extent of this *crowing-out* or *displacement* effect will depend upon, among other things, consumer preferences and incomes. Despite the existence of high-quality low-priced duplicates, some consumers will choose to purchase the relatively more expensive legitimate product. This may be partly explained by the snob effect, where conspicuous consumption of luxury brand products is a symbol of social status and financial success. For others, the criminal risk element may be a deterring factor.

To examine these dynamics we need a model that will capture the interrelationship between a formal and informal sector, operating within a domestic market, in which legitimate and copyright infringing product co-exist. We need to

modify the market demand function depicted by equation 2.7 to capture two effects: the movement of price sensitive consumers between the formal and informal sectors, and the impact of IPR enforcement measures on supply in the informal sector and on consumer choices. The demand function for a copyright product that can be readily imitated is presented by equation 5.23.

$$Q = [P, BM(E)] \tag{5.23}$$

where Q is the demand for legitimate product, P is legitimate product price, BM is the size and efficiency of distribution channels within the informal sector (black market), which in turn is a function of the level of IP enforcement, E. It follows that the demand curve is:

$$Q_i = \alpha_i - \beta P_i - \lambda_i P_i \tag{5.24}$$

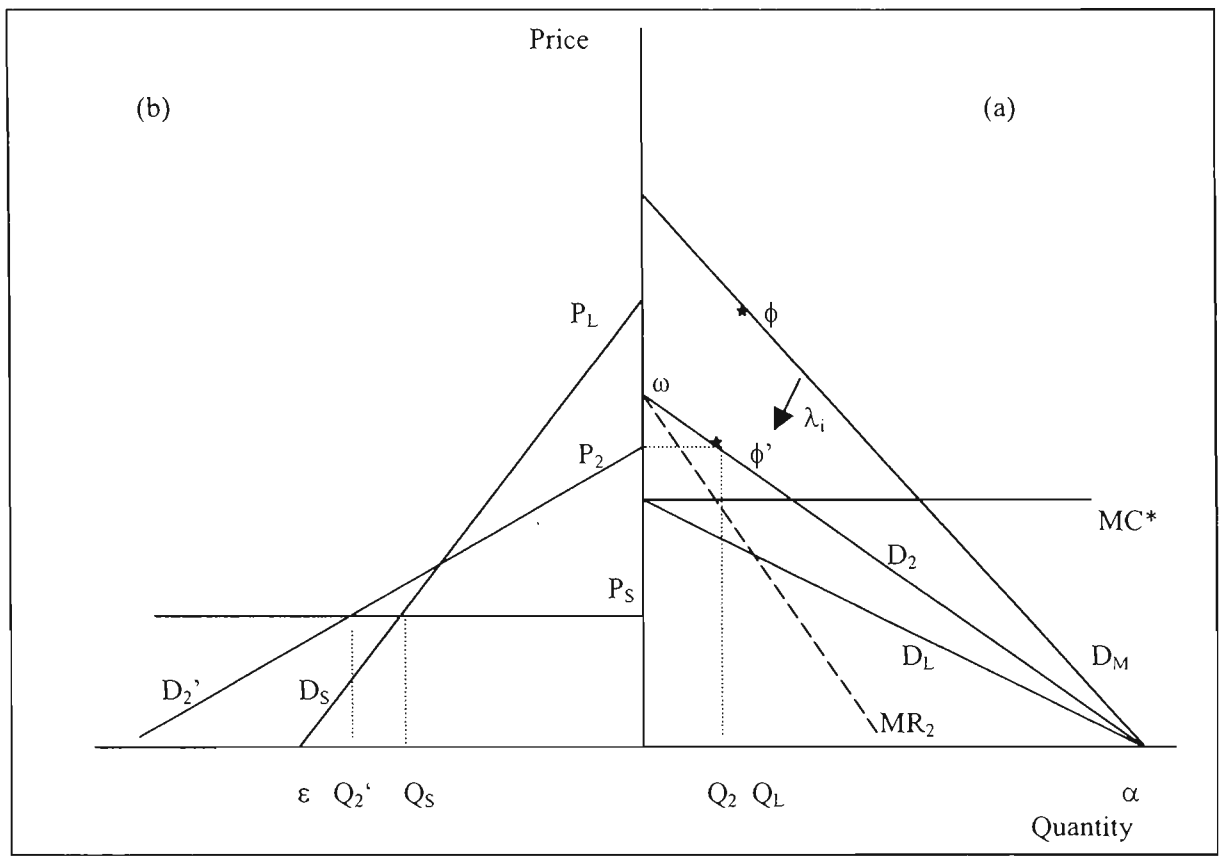
where β measures the response of quantity demanded to a change in legitimate product price, λ_i measures the substitution effect resulting from the supply of copyright infringing product in the informal sector. At low levels of enforcement ($\kappa_i \rightarrow 0$)[10], we can expect the emergence of an informal sector in which copyright infringing distribution channels are established. In the informal sector, the demand curve faced by smugglers of copyright infringing product can be represented by the following equation:

$$Q_S = \varepsilon - \beta' P + \lambda_i P \tag{5.25}$$

where ε is the horizontal intercept of the demand curve for infringing product ($\alpha - Q_L$). The demand curve D_S in panel (b) represents the residual demand for copyright infringing product, which would lead to sales of Q_S at a black market price of P_S. However, the presence of an informal sector will depend the level and effectiveness of copyright enforcement measures and these vary significantly between countries. Residual demand is not realised where effective enforcement disrupts the efficient distribution of pirate product. The model proposes that low levels of enforcement

encourage the development of informal distribution channels for pirate product. The larger and more efficient the informal sector, providing increased consumer access to infringing product, the higher the value of λ_i. This is represented diagrammatically in Figure 5.9 where increasing values of λ_i cause the demand curve for legitimate product D_M to pivot leftward (as indicated by the arrow) to D_2.

Figure 5. 9 Formal and Informal Markets



In the presence of smuggling and piracy, the record company (as the monopoly supplier of an artist specific sound recording) now faces the demand curve D_2 and the marginal revenue curve MR_2. Profit maximisation is achieved at a lower price (P_2) and quantity traded (Q_2) as compared to a smuggling and piracy free market (P_L and Q_L). In the informal sector, the smuggler faces the demand curve D_2', which has a different vertical and horizontal intercept as compared with D_s. We assume that smuggled copyright infringing product is sold at a uniform price (P_S) at which a quantity of Q_2' copyright

[10] κ_i measures the deterrent effect of different levels of enforcement on both distributors and consumers of copyright infringing product.

infringing products are sold.[11] While the presence of an informal sector lowers the price of legitimate product from P_L to P_2, a significant proportion of the market (ϕ' to α) on demand curve D_2, remains excluded from the formal sector. This residual demand is satisfied in the informal sector.

The displacement effect of piracy can be measured by subtracting legitimate sales in the presence of piracy (Q_2) from legitimate sales in the absence of piracy (Q_L); that is, Q_L-Q_2. It is noteworthy that the quantity of copyright infringing product sold in the informal sector exceeds the volume of displaced legitimate product; that is, $Q_2' > (Q_L\text{-}Q_2)$. This means that infringing products do not displace legitimate products on a one for one basis. In other words, low-price duplicates induce sales beyond the volume of displaced product. For this reason, estimates of trade losses based on the volume of infringing product sales (such as those presented in Table 5.1) will likely over-estimate actual losses to copyright owners.

In the absence of effective enforcement (κ_i=0), increasing values of λ_i cause the demand curve for legitimate product D_M to pivot leftward until it settles at D_L. As depicted the demand curve D_L intercepts the price axis at the royalty inclusive marginal cost of production (MC^*). Producers of legitimate product would face prices below the shutdown point, resulting in market failure. This is the economic rational for IPR law discussed in Chapter 3. A focus of the analysis presented in sections 5.3.1 to 5.3.2 was the relationship between varying levels of enforcement and the level of smuggling and copyright infringement, which we found to be inversely related. The lower price in the legitimate market is necessary to offset the substitution effect of λ_i, which represents a migration of consumers to the informal sector. Piracy does not therefore displace legitimate product sales for these consumers since their marginal valuations and ability to pay are below the adjusted market price (P_2). The segment of the demand curve ω to ϕ' on D_2 represents consumers who remain in the formal sector for any one of three possible reasons:

- Ethical behaviour (consumer respect for a copyright owner's IPR)
- risk aversion (fear of criminal prosecution) and/or

[11] We assume a small country model and that the level of domestic demand for copyright infringing product does not influence the foreign price of infringing product.

- the snob effect (conspicuous consumption as a symbol of prestige and/or financial success)

This model proves useful in examining the dynamic relationship between the formal and informal sectors. Let us consider once again the strategies of price discounting and increased enforcement as a strategic response to smuggling and piracy. Consider firstly, an increase in enforcement brought about by concerted lobbying of government by copyright owners. Increased enforcement will raise the risk of detection and the probability of incurring a penalty.[12] This is depicted in Figure 5.9 as an upward sloping pirate product supply curve, S_s'. The slope of S_s' will reflect the value of the financial penalty which is increasing in the volume of pirate trade. This has the effect of raising the price of pirate product while lowering the quantity traded. By comparison to the equilibrium solution in the presence of an elastic pirate product supply curve (S_s) price rises from P_s to P_s' and quantity traded falls from Q_s to Q_s'.

In addition to lobbying for increased enforcement, copyright owners may consider a price discount, which will cause a movement along the existing demand curve D_L'. While quantity traded rises in the legitimate sector, the lower price will result in a lower profit for the producer. Nonetheless, the price discount is effective in bringing about a lower piracy market share, the effectiveness of which will depend on the strength of the substitution effect as consumers migrate from the informal to the formal market.[13] The optimisation strategy for copyright owners will include lobbying government to increase enforcement and price reductions to reduce the price differential between legitimate and pirate product. The effectiveness of these strategies will vary from country to country and depend on the elasticity of smuggling supply to enforcement and on the price elasticity of demand for legitimate product.

The preceding analysis demonstrates that pricing strategies employed by copyright owners that leave a significant portion of the market unserved, provide an opportunity to establish a black market for copyright infringing duplicates. We can

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[12] To simplify the illustration we ignore the prospect of imprisonment (and foregone earnings) and assume that pirate traders pay a copyright infringement fine upon detection, which increases with the volume of smuggling.

[13] The lower legitimate product price will result in a leftward shift in the residual demand curve toward the origin and lower price and quantity traded in the informal sector.

hypothesis that the higher the price of copyright product, the larger the number of consumers who will be excluded from the market, and thereby, the larger the potential strength of demand for infringing product. However, given variations in real incomes across developed and developing countries, the absolute price of copyright product will not provide a good comparative measure of product affordability. Moreover, any international comparison would need to account for variations in exchange rates, where periodic devaluations and revaluations would further distort price comparisons.

One method of developing a measure of affordability for cross-country comparisons, that avoids the aforementioned problems and provides a unit free measure, is to take the ratio of legitimate product price in a specific country to average weekly earnings. That is:

$$PE = (P_L / W_A)100 \qquad (5.25)$$

where PE is the price-earnings ratio, P_L is the price of legitimate product and W_A is the average hourly wage. This PE ratio provides a cross-country affordability index for copyright product. A relatively low PE ratio would indicate that the copyright product is relatively affordable as compared with the same product in a country where the PE ratio is higher. A high PE ratio, ceterus paribus, would provide fertile ground for the establishment and development of an informal market for infringing product. We can hypothesise that the higher the PE ratio, the higher the infringing product market share.

5.4 Determinants of Smuggling and Piracy

We now turn to identifying specific factors thought to influence the level of smuggling and piracy. In identifying these determinants we draw on the theoretical models presented in section 5.3 and on the literature reviewed in section 5.2.

5.4.1 International Copyright Convention Membership

The theoretical analysis presented in Chapter 3 illustrated that, in the absence of effective IPR regulation, free riding would result in an underproduction of IP related products and may result in market failure. A number of international conventions have been developed to create standards for a legal and institutional framework to be implemented at the national level to protect and encourage the development of IP.

The first of these conventions, the Berne Convention, was instituted in 1886 and provides guidelines for the protection of literary and artistic works, including sound recordings. This convention sets out minimum standards for the protection of copyright owner's economic or commercial rights. Membership to this convention requires each country (contracting party) to update domestic IPR law to comply with the minimum standards set out in the convention.

There is little doubt that effective protection of copyright requires comprehensive domestic IPR laws. Without it, the economic rights of domestic and foreign IPR owners will be of little commercial value as pirate and counterfeit product would circulate unabated, displacing legitimate product sales. We can hypothesise that membership to the Berne convention, and the obligations that this imposes on the contracting party, will result in a lowering of IPR infringement. We would therefore expect to see lower levels of piracy in countries that are members of the Berne convention.

Creating an environment in which individuals identify, understand and respect IPR is a challenging task for regulators, particularly in countries where IPR law is at a relative infancy stage. Regulators will need to oversee a transition period in which individual behaviour is modified to comply with the new legal and economic environment: one in which the commercial rights of IPR owners are protected. We would therefore expect to observe higher levels of IPR infringement during the transition period to a more comprehensive and effective IPR regulatory regime. This suggests that an individual nation's length of membership to the Berne convention may impact upon the nature and comprehensiveness of domestic IPR protection, and thereby, the level of piracy. We can hypothesise that the longer a country has been a member of the Berne convention, the lower will be the level of piracy.

The Rome Convention, established in 1961 and initiated by the IFPI, was specific to the protection of copyright in musical works. Given this specificity we would expect that the protection of IPR with respect to sound recordings would be more comprehensive in countries that are members of the Rome Convention. We can hypothesise that membership to the Rome Convention will result in a lowering of copyright infringement and thereby the level of sound recording piracy. We further hypothesise that the longer the length of membership to the Rome Convention, the lower will be the level of piracy.

The Geneva Convention (1971), again initiated by the IFPI, was specifically designed to address the growing problem of the international trade and distribution of pirate sound recordings. We can hypothesise that membership and duration of membership will result in lower levels of sound recording piracy.

The Berne, Rome and Geneva Conventions are administered by WIPO, an international organisation that has been criticised for lacking enforcement measures. One of the key aims of the TRIPS agreement (which has the full title of *The Agreement of Trade Related Aspects of Intellectual Property Rights, including Trade in Counterfeit Goods*) is to extend IPR convention membership to countries not already members of the WIPO conventions. As a WTO convention, TRIPS has the backing of WTO enforcement measures, including the imposition of trade sanctions. For this reason TRIPS has the potential to be a potent weapon in the fight against international piracy. We can hypothesise that membership to TRIPS will result in a lower level of piracy.

The breadth and depth of the international IPR conventions are comprehensive and should provide adequate protection for copyright owners. Member nations are obliged to amend and update their respective national copyright laws to incorporate the main provisions of the convention to which they have committed. However, it is clear that adequate enforcement is a necessary condition to successfully combat piracy. Two possible reasons for inadequate enforcement are (i) insufficient resources allocated to the monitoring and enforcement; and (ii) governments in countries that are net-importers of copyright product turning a blind eye to infringement because it improves the balance of trade. Clearly, domestic enforcement measures will have an important deterrent effect on the importation of copyright infringing product.

5.4.2 Domestic Law Enforcement

Section 5.3.1 presents the welfare effects of smuggling in the presence of enforcement within a general equilibrium framework. In Figure 5.4 we demonstrate that, for a nation that has a comparative disadvantage in copyright product, increased enforcement may lead to a lowering of national welfare. In a policy statement response to the European Unions (EU) Green Paper on combating counterfeiting and piracy, the International Chamber of Commerce (ICC) cites law enforcement as one of the key ingredients to the effective control of illicit trade.

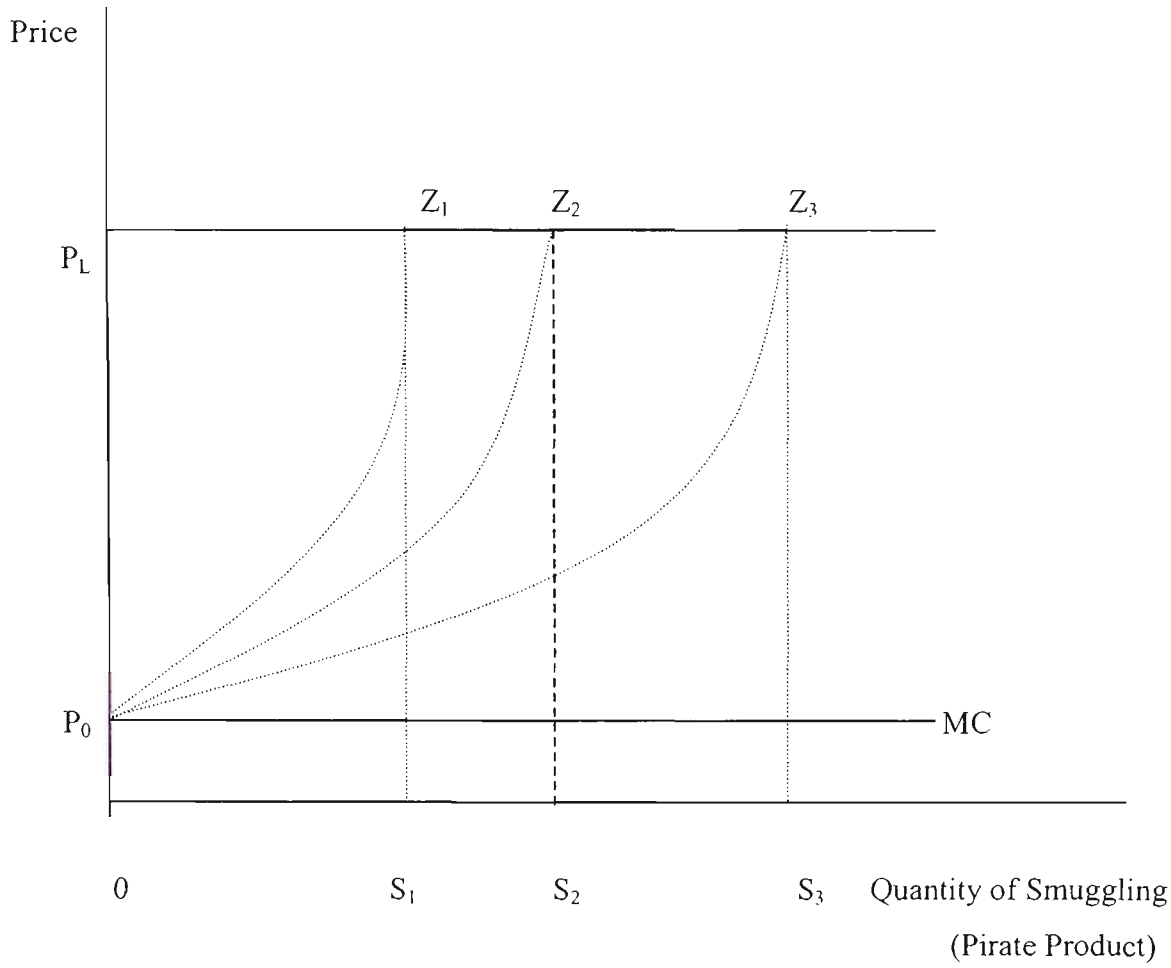
"While substantive intellectual property laws have become more comprehensive and widespread, enforcement still remains the weak link to effective intellectual property enforcement." (ICC: 1999)

The ICC cites the following legal obstacles to combating illicit trade:

- Slow, ineffective and cumbersome enforcement procedures in some EU countries
- Inadequate resources to carry out effective enforcement
- The perception of IPR infringement as a "soft crime" rendering it a low priority, the result of which is a lack of will to enforce laws
- Sanctions are too weak to be a deterrent

Our theoretical analysis of the decision making process of the smuggling firm posits that an important determinant of the level of smuggling and piracy is the risk of detection and the severity of the ensuing penalties. The probability of detection at the border and/or at the distribution stage will impact upon the expected profits derived from smuggling copyright infringing product. Detection will most certainly result in the confiscation and destruction of the infringing product, financial penalties (fines) and a possible jail term. A key determinant of the probability of detection is the enforcement of IPR law. Cross-country variation in piracy levels may be, in part, explained by the commitment of various governments to the enforcement of these laws. This relationship is illustrated diagrammatically in Figure 5.11 where we consider three hypothetical countries (A, B and C), each with varying levels of commitment to the enforcement of IPR laws. The smuggling risk-return ratio for country A, B and C is depicted by P_0-Z_1, P_0-Z_2 and P_0-Z_3 respectively. These countries have high, medium and low levels of copyright enforcement respectively, reflecting varying levels of resources allocated to the monitoring and enforcement of copyright law within each of the hypothetical countries. To highlight the impact of varying levels of enforcement we assume that the marginal physical cost and selling price are uniform across each country. The model illustrates that the expected level of piracy in each country depends on the risk of detection and the size of the ensuing penalties. The higher risk:return ratio depicted by P_0-Z_1, results in a lower level of smuggling (S_1) relative to countries B and C, where the risk of detection and the size of the penalties result in levels of piracy equal to S_2 and S_3 respectively.

Figure 5. 10 Piracy and Enforcement



The critical points at which authorities can detect smuggled pirate product are:

- At the manufacturing stage in the source country
- At the time and point where the pirate product crosses a national border
- At the point of sale in the destination country

Authorities in the destination country have only an indirect influence over the nature and rigour of law enforcement in the source country. Indeed, it is typically the copyright exporting countries, with combined losses in the billions of dollars, that allocate resources to actively lobby governments in countries where infringing product is thought to be mass produced.

Governments in destination countries have a more direct influence over the control of copyright infringing product at the remaining two critical points; border control and point of sale. "Once consignments are split, it is expensive and usually impossible to trace all goods as they filter through the distribution system" (O'Flaherty, 1995:3). This suggests that resources allocated to customs control may be more effective per dollar expended than internal monitoring and enforcement. We would expect that the volume of resources allocated to customs control will have a significant impact upon the number of border detections, and thereby the penetration of pirate product into the destination market. We can hypothesise that there is an inverse relationship between the size and sophistication of border controls and the level of piracy.

Piracy levels cannot reach levels of up to 95% of total sales in a specific territory without a sophisticated distribution network that includes point of sale. In many countries retailers knowingly sell infringing product in broad daylight and in clear contravention of local IPR laws. Like the smugglers and distributors that supply them, retailers will be attracted to pirate product because lower costs and prices can translate into higher profits. A lower wholesale price relative to legitimate product enables retailers to achieve higher sales volumes and, despite a lower profit margin, higher total profit. The propensity for a retailer to stock pirate product will be a function of the probability of detection and the nature and severity of the ensuing penalties. We can hypothesise that in countries where governments place little importance, and therefore allocate few resources, to the enforcement of domestic IPR laws, we will observe a higher level of piracy.

5.4.3 The Nature and Size of the Penalties

While the risk of detection is an important determinant of the level of piracy, it will not, by itself, be an effective deterrent. Enforcement needs to be backed by penalties commensurate with the nature of the crime. Stealing a physical copy of a legitimate sound recording will almost certainly lead to a criminal charge and possible jail sentence, with the latter more likely if vast quantities of product were stolen from a distribution warehouse. By displacing large volumes of legitimate sales, piracy and counterfeiting is akin to stealing large volumes of legitimate product from the copyright owner or territorial licensee's warehouse. Like the smuggler, the retailer will estimate

the risk and return when deciding whether or not to engage in distributing infringing product.

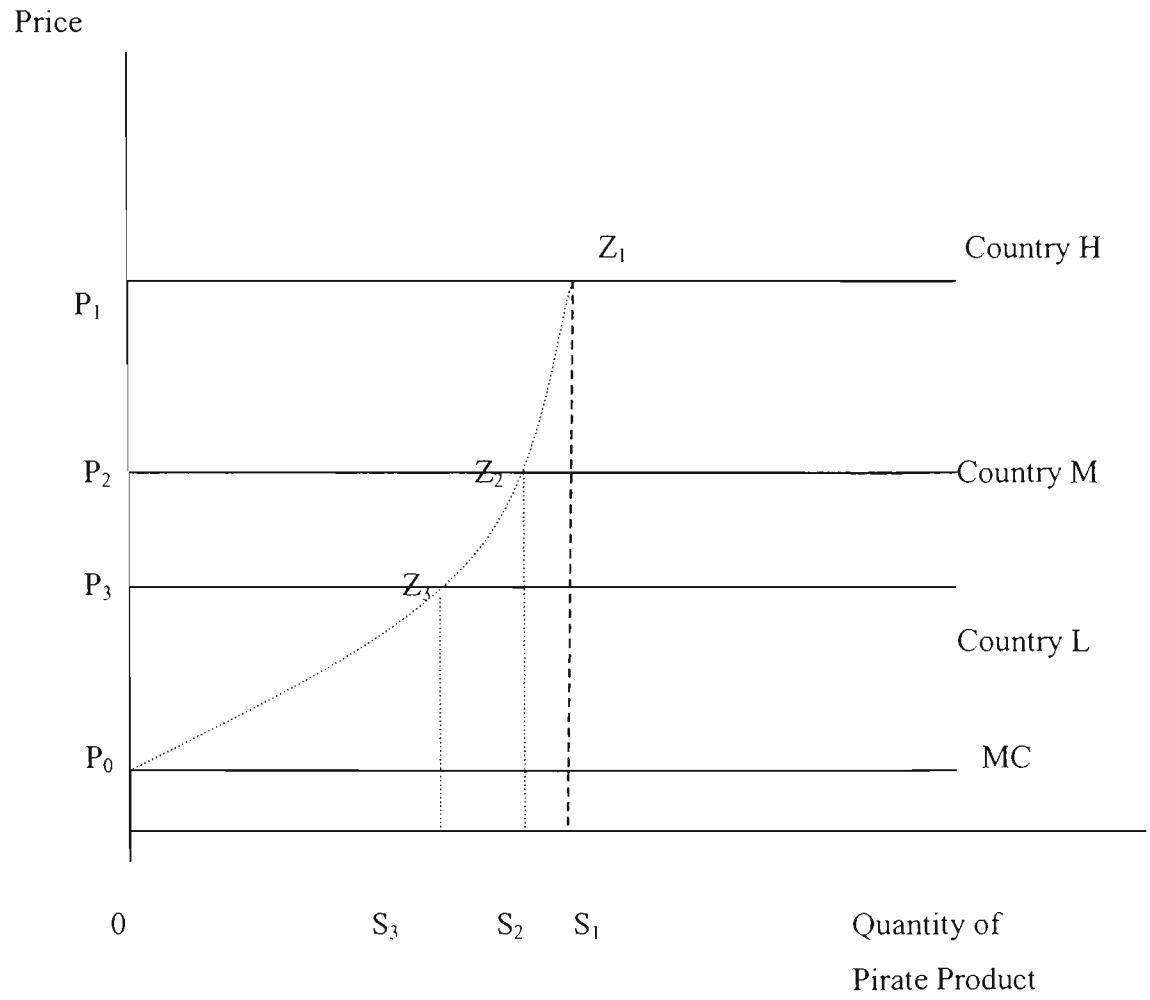
The Australian government incorporated increases in financial penalties and prison terms for importation of infringing copies of sound recordings when it passed the *Copyright Amendment Bill No. 2* (1998). The onus of proof was also reversed, where the seller of the product (and not the copyright owner) had to demonstrate that the product was legitimate. These steps where clearly designed to increase the risk:return ratio, lower the expected profit of smuggling of infringing sound recordings, and reduce piracy levels. We can hypothesise that the more severe the penalties (years of incarceration and the size of the monetary fine), the lower the level of piracy.

5.4.4 Domestic Price

The partial equilibrium model presented in section 5.3.2 was utilised to illustrate that a price discount on legitimate product was one possible strategic response to a high piracy market share within a specific country. This model can be extended to incorporate a range of countries, each with varying (legitimate product) price levels, to illustrate the effect of price on smuggling and piracy levels. With a reproduction cost as low as US$0.90 and a retail price of up to US$15 (Edwards, 1995:5), the potential profit margin from the sale of pirate product is substantial. The relative size of the profit margin among territories will depend in part on the market price for legitimate product in that territory.

In Figure 5.12 we depict three hypothetical countries (H, M and L) with high (P_1), medium (P_2) and low (P_3) legitimate product prices respectively. To highlight the influence of product price it is assumed for illustration purposes that the risk factor (probability of detection) is equal in each country and that the risk:return to smuggling infringing product in each of the three countries can be traced along the smuggling supply curve P_0-Z_1. The figure illustrates that the level of smuggling is a function of the domestic price, with pirate product volumes of S_1, S_2 and S_3 for the high, medium and low priced countries respectively. We can hypothesise that, ceterus paribus, the higher the domestic price of legitimate product, the higher the level of smuggling and piracy market share.

Figure 5. 11 Price Divergence and Smuggling Supply Curve



A cursory investigation of the relationship between piracy and domestic price levels casts some doubt over this theoretical proposition. Pirate sound recordings sell at prices well below the legitimate market price. The significant divergence between the market price of a legitimate sound recording and the (physical) marginal cost of production provides an attractive profit margin for smugglers of pirate product. However, the evidence suggests that, as a generalisation, piracy levels are lower in higher priced territories and high in low priced territories (IFPI, 2001(b)). A possible explanation of this empirical phenomenon is that legitimate product price discounting may be a response to the competitive pressures brought to bear on copyright owners in countries with high levels of piracy. Discounted prices, relative to those charged in other countries, may be the only way for copyright owners to establish a legitimate market that can be used as a base upon which to build a viable local business. Indeed, in section 5.3.2 it was argued that price discounting was one of three strategic responses that could be employed by copyright owners facing rampant piracy. Figure 5.12 might

better reflect the market for counterfeit product rather than pirate product. Legitimate product price provides the benchmark price at which counterfeit products can be sold.

This suggests that the price of legitimate product in the destination market is unrelated to expected profit and thereby, the level of piracy. Alternatively, illicit traders simply compare the absolute return to piracy (the price of pirate product in the destination market) relative to the marginal cost of production. That is, the illicit trader will consider the absolute return on their investment rather than the absolute price of legitimate product relative to the marginal cost of re-production. Once a certain percentage threshold return is achieved, the illicit trader may be willing to supply an unlimited quantity at that price. For example, a return of 100% on the investment may only require an export price of US$2 to induce supply of pirate product. This was the scenario portrayed in Table 5.6 where we present the expected profit matrix as part of the model of the firms' decision-making process. It was assumed that the price of infringing product and the marginal cost of reproduction was uniform across all countries. Expected profit was portrayed as a function of variations in the probability of detection and penalties, rather than legitimate or pirate product price.

The supply of pirate product can therefore be depicted as perfectly elastic with the ultimate quantity traded being determined by the level of demand in each country as illustrated in panel (b) of Figure 5.10. Indeed, in a typical export transaction the manufacturer distributes a price list to all prospective buyers irrespective of the country of importation. In an international black market, marketing and information dissemination may take a more covert form. Nonetheless, we can assume that the same principle is applied and that a single export price prevails. Alternatively, we can depict trade in pirate product as an internal transaction between affiliated entities – organised crime units – where a uniform price is charged to all affiliates. The result is two parallel markets, one for legitimate and the other for infringing product. These second markets have been described, among other things, as informal or black markets. The existence of demand for legitimate product, in the presence of informal markets and piracy, reflects discerning consumers that perceive both quality and other non-price differences between pirate and legitimate product.

5.4.5 Institutional Corruption and Black Markets

According to the IFPI (2000), sound recording piracy is linked to organised crime syndicates with distribution networks spanning countries and continents,

particularly prevalent between South East Asia and Latin America, and between Eastern Europe and Western Europe. (IFPI, 2001:1).

The involvement of organised criminals was inevitable given the size of the economic rents available and the ease with which sound recordings could be replicated. The marginal cost of reproduction (either CD or cassette) is around US$1 while prices for legitimate product can be as high as US$15. The international distribution of pirate sound recordings is quite sophisticated and often involves the transshipment of consignments of infringing product via numerous ports prior to reaching the final destination.

> *"...we have actual examples of pirate CDs being manufactured in Malaysia, shipped through Singapore where new shipping documents disguised the actual origin where they originated. The illicit cargo was then trans-shipped through Brussels en route to Paraguay for final distribution in Brazil and Argentina" (Edwards, 1999:3).*

This provides regulators with new challenges for the enforcement of music copyright in the various territories. Moreover, it demands a coordinated international effort to combat the growing international trade in pirate music product.

The existence of black markets and the proliferation of contra-ban goods, such as pirate sound recordings, has been linked to corruption in the civil service. Organised criminals, armed with huge profits from illegal trade, have the capacity to offer significant bribes to government officials and civil servants to ignore the former's illegal activities. For example, pirates may offer bribes to customs agents to turn a blind eye to the importation of infringing product. For the customs official, the income from bribery must be balanced against the risk of detection and possible job loss. Our model of the smuggling firm's decision-making process proposed that bribes, in the presence of corruption, lower the probability of detection, and thereby, increase the expected profit from a consignment of smuggled infringing product. We can hypothesise that there is a direct relationship between the level of institutional corruption and the level of smuggling and piracy.

5.4.6 The Balance of Trade in Copyright Product

The general equilibrium model presented in section 5.3.1 revealed that smuggling of copyright infringing product could be welfare enhancing for a nation with

a comparative disadvantage in copyright product. In practical terms this means that a country that is a net-importer of copyright product can increase national welfare by substituting legitimate imports with lower priced infringing product. This would have significant and beneficial effects on the balance of trade in copyright product for the recalcitrant government.

The importation of copyright infringing product displaces legitimate imports and, given the more favourable terms of trade for infringing product, lowers a nation's copyright related import payments. For a given level of copyright export receipts, this will result in an improvement in the copyright balance of trade. This may be represented as follows:

$$BOT_L = X - M \tag{5.26}$$

$$BOT_S = X - (M - S) \tag{5.27}$$

where BOT_L is the balance of trade in legitimate copyright product in the absence of smuggling, BOT_S is the balance of trade with smuggling, X is copyright export receipts, M is copyright import payments and S is the value of copyright imports displaced by smuggled infringing product.[14] For a net-importer of copyright product, smuggling will lead to an improvement in the balance of trade with respect to copyright product since $BOT_S > BOT_L$.

For a net-exporter of copyright product the balance of trade would have a deleterious effect on export revenue for a given level of import payments. This would lead to a lowering of export receipts as follows:

$$BOT_S = (X - S) - M \tag{5.28}$$

and

$$BOT_S < BOT_L \tag{5.29}$$

Given the nature of international diplomacy and responsibilities with respect to conventions, such as TRIPS and the like, it would not be possible for a government to explicitly condone a policy of displacing legitimate with infringing product to improve

[14] It is noteworthy that whether an infringing product is imported or copied locally (e.g. CD-R) the impact on the balance of trade is essentially the same.

the balance of trade. However, this outcome can be covertly attained where a government fails to vigorously enforce IPR law as per its international obligations. In this way a government can implicitly adopt a policy of substituting legitimate with infringing product imports by officially outlawing piracy but unofficially condoning it. The outcome for a nation that adopts this approach is a reduction in the trade deficit with respect to copyright product. This would appear as a reduction in both merchandise trade imports and royalty and license payments in the services section of the current account.

This analysis suggests that a nation that is a net-importer of copyright product can reduce a deficit in the copyright balance of trade by implicitly condoning the substitution of infringing for legitimate product. We can therefore hypothesise that the larger the balance of trade deficit in copyright product, the higher the level of piracy.

5.4.7 Parallel Imports

The theoretical model outlined in Chapter 4 suggested that countries that are net-importers of copyright product might increase national welfare by adopting the principle of international exhaustion and allowing parallel imports. This was made possible by exploiting the price differential for legitimate product that existed between various territories in the global market. That is, the importation of legitimate sound recordings from low priced countries (say, Malaysia) into high priced countries (such as Australia) may be welfare enhancing for local consumers and the nation. This outcome was possible where a nation was a net-importer of copyright product and where the domestic welfare gains were at the expense of largely foreign copyright owners.

In the Australian debate over the adoption of international exhaustion with respect to sound recordings, it was argued that parallel imports would result in an increase in piracy levels. The task of border monitoring would be more difficult because there would be a significant increase in the number of importers and consignments. This was expected to result in higher penetration levels for infringing product. Moreover, the sophistication of duplication technologies makes it difficult to distinguish between infringing and legitimate product, thereby increasing the camouflaging effect in consignments of mixed products. This increased quality of counterfeit product would mean that retailers could unknowingly import and distribute infringing product.

It has been argued that parallel imports enable smugglers to better camouflage infringing product when mixed into a single consignment with legitimate product.

Moreover, an increase in the number of importers and consignments, for a given number of customs inspections, lowers the probability of detection. In other words, parallel imports is expected to make it easier for pirates to circumvent anti-piracy measures at the border and avoid detection. This reduces the risk of detection and raises the return to smuggling. We can hypothesise that countries that have adopted the principle of international exhaustion and allow parallel imports will experience higher levels of piracy.

5.5 Towards a Testable Model

The theoretical contribution of the models presented in this chapter has included both a macroeconomic and microeconomic approach to the modelling of smuggling copyright infringing product. In the macroeconomic approach we developed a general equilibrium trade-theoretic model to investigate the welfare implications of smuggling and piracy. We demonstrated that the smuggling of copyright infringing product can be welfare enhancing for a nation with a comparative disadvantage in the production of copyright product. Increasing enforcement, by moving the importing country further inside its production possibility frontier was inferior, welfare wise, to lower levels of enforcement. This may help explain the seeming indifference displayed by some governments in countries where piracy market shares are significant.

The partial equilibrium model provided additional insights into the market for copyright product in the presence of smuggling and piracy. This analysis revealed that increased levels of enforcement, by raising the risk:return ratio faced by the smuggler, will lower piracy market share for a given level of domestic demand and price. We also investigated the likely impact of a lowering of legitimate product price as a strategic response by copyright owners to high piracy market shares. This analysis revealed that legitimate product market share and profit would be higher, the stronger and more elastic the demand for copyright product. Moreover, a multi-pronged strategy incorporating a price discount, domestic and international efforts to improve IPR law enforcement and value adding strategies, would increase legitimate product market share and profitability.

Our microeconomic analysis then shifted from the level of the market to the decision making process of the firm engaged in smuggling copyright infringing product. This cost-benefit approach to investigating the firm's expected profit function was instructive as to the key incentives and deterrents faced by the firm. The model proposes

that piracy occurs where the net benefit to smuggling exceeds the potential costs (fines and imprisonment) for a given probability of detection. We showed that criminal organisations operating at an international level can rank each export market with respect to expected profit and focus activities in high-return low-risk countries. This analysis revealed that the probability of detection, which is a function of enforcement and corruption levels, will be a key determinant of expected profit and piracy market share.

The theoretical analysis presented in this chapter suggests a model of sound recording piracy of the form:

$$PMS = f(A, IC, E, COR, BOT, PI, \Pi e, PEN) \qquad (5.30)$$

where *PMS* is piracy market share in the market for sound recordings, *A* is legitimate product affordability, *IC* is international copyright convention membership, *E* is enforcement measures, *COR* is the level of corruption in government enforcement agencies, *BOT* is the balance of trade with respect to sound recordings, *PI* is parallel imports (the adoption of the principle of international exhaustion), Πe is the expected profit from smuggling copyright infringing sound recordings; *PEN* measures the nature and size of the penalties for engaging in the smuggling and distribution of pirate product.

In this model piracy refers to the importation and distribution of copyright infringing sound recordings. While it is recognised that significant quantities of infringing product are manufactured and distributed locally (for example, using CD writers) the majority of pirate sound recordings are mass produced in optical disc manufacturing plants and cassette duplication plants in a small number of countries and then exported all over the world. More recently, the phenomenon of Internet piracy has evolved and grown to become a significant source of copyright infringing product, particularly sound recordings. In legal terms, the act of piracy is identical in each case. However, in economic terms, there is an entirely different set of motivating factors at play. Importantly, in the case of Internet piracy, there is often no price charged for the digital copy of the pirate sound recording distributed on-line via peer-to peer networks. Internet piracy is not considered in the present model as it has a distinctive set of causes and channel of distribution, thus warranting a separate study altogether.

The illicit trader will attempt to maximise global profits by ranking countries on the basis of expected profit, focusing attention on high profit countries while avoiding countries that promise insignificant profits, and perhaps losses. In estimating expected profit the illicit trader will consider a number of economic, institutional and cultural variables. The economic variables include the cost of manufacture and selling price, which combined represent the profit contribution per unit sold. Another potentially significant economic cost is the financial penalty and forgone income (profit) if detected and prosecuted for illicit trade. The probability of detection is a function of a number of institutional variables. Membership to the numerous international IPR conventions should translate into more rigorous and comprehensive domestic IPR law. Ultimately, the effectiveness of these laws depends upon the economic resources committed by individual governments to monitoring and enforcement. Illicit traders can nonetheless influence the probability of detection by using bribes to corrupt enforcement officials.

The model proposes that piracy occurs when the expected profit to the illicit trader is positive, as depicted in equation (5.16). As for the ultimate level of piracy within individual countries, this will vary according to the level of consumer demand for illicit product, the efficiency of the distribution channels and the government's commitment to the monitoring and enforcement of IPR law. These relationships are summarised in Table 5.4 which presents a summary of the theoretical model and the *a priori* signs of the coefficients of the independent variables.

5.6 *Summary and Conclusions*

A review of the smuggling and piracy literature highlights the critical role played by national enforcement institutions and the threat posed by institutional corruption, particularly in customs control, policing and the judiciary. The profitable distribution of pirate product, requires effective and efficient distribution channels and a ready market. Our analysis reveals that the prevalence of informal markets can be important to accessing consumers with a preference for low-price pirate product.

The important theoretical contribution of our model of international sound recording piracy is the inclusion of economic variables, specifically, the affordability index and the balance of trade with respect to sound recordings. The affordability index provides a measure of consumer purchasing power and a means of gauging the potential size of the informal market within which pirate and counterfeit products are sold. At the national level, the balance of trade with respect to sound recordings, and copyright

product more generally, might help to explain a national government's complacency regarding IPR enforcement. Our model also proposes that the risk-return ratio faced by the smuggling firm in specific countries, is critical to determining the expected profit from the distribution of pirate product in each nation, and is the basis upon which firms rank individual nations and concentrate their limited resources accordingly.

In Chapter 6 we construct an empirical model of international sound recording piracy, and seek to identify the most suitably available variables and/or proxies for those specified in the theoretical model. The empirical model is then tested using a number of estimation techniques to determine how effectively our theoretical model helps to explain the observed variation in cross-country piracy market shares.

Table 5. 1 Estimated Trade Losses Due to Piracy

Industry	1999	2000
Motion Pictures	1268	1242.5
Records & Music	1723.5	1835.6
Business Software	2761.9	2490.9[a]
Entertainment Software	2906.8	1658.4[a]
Books	658.4	675.1
Total	9345.6	7902.5

IIPA (2001) Special 301 Report, Appendix A
[a] Preliminary estimates

Table 5. 2 Estimated Optical Disc Manufacturing Capacity.

Country	Estimated Capacity – all formats (millions)	Total Legitimate Demand (millions)
Taiwan	3,900	190
Hong Kong	2,800	140
China	680	620
Singapore	490	50
Macau	340	Negligible
Malaysia	280	50
Czech Republic	90	25
Russia	90	30
Israel	90	9
Ukraine	70	5

Source: IFPI, Music Piracy Report 2000.

Table 5. 3 Expected Profit Matrix

	Fines			
μ	$50,000	$100,000	$200,000	$300,000
0.1	$2,100,000	$2,040,000	$1,920,000	$1,800,000
0.2	$1,800,000	$1,680,000	$1,440,000	$1,200,000
0.3	$1,500,000	$1,320,000	$960,000	$600,000
0.4	$1,200,000	$960,000	$480,000	$0
0.5	$900,000	$600,000	$0	-$600,000
0.6	$600,000	$240,000	-$480,000	-$1,200,000
0.7	$300,000	-$120,000	-$960,000	-$1,800,000
0.8	$0	-$480,000	-$1,440,000	-$2,400,000
0.9	-$300,000	-$840,000	-$1,920,000	-$3,000,000

Table 5. 4 Theoretical Model of Sound Recording Piracy

Independent Variables	Symbol	A Priori Signs
Economic		
Affordability	A	-
Expected Profit	Π_e	+
Balance of Trade	BOT	-
Penalties	PEN	-
Institutional		
Enforcement Measures	E	-
Corruption	COR	+
Parallel Imports	PI	+
International Convention Membership	IC	-

6 An Empirical Model of International Sound Recording Piracy

6.1 Introduction

A key objection to the adoption of the principle of international exhaustion with respect to sound recordings was the contention that parallel imports would result in higher levels of piracy. In Chapter 4 we develop a model of the market for sound recordings within which we investigate the likely welfare consequences of parallel imports. We extend this model to evaluate the phenomenon of smuggling pirate sound recordings and the relationship between the return to smuggling, the probability of detection and the nature and size of the ensuing penalties. Our theoretical analysis suggests that the impact of parallel imports on the level of sound recording piracy is ambiguous. In Chapter 5, we extend our analysis of piracy to the international arena. We develop a theoretical model of international sound recording piracy of which parallel imports is one of a number of independent variables.

In this chapter we utilise the theoretical framework developed in Chapter 5 to construct an empirical model of cross-country variations in sound recording piracy; or piracy market share (PMS). We will operationalise and test the model depicted in equation 5.29 by choosing a set of proxy variables and estimating a cross-section regression equation. This regression model allocates a central role to the affordability index (price:earnings ratio) and to the balance of trade with respect to copyright product. Another important determinant in the model is the strength of IPR law enforcement and the level of corruption in the civil service. The model also tests other hypotheses identified in the literature such as GDP per capita and membership (including membership duration) to the key international copyright conventions. For comparative purposes we estimate the model using a Multinomial Logit Estimation technique following Burke (1996). A range of diagnostic tests are then conducted to validate the inferences drawn from the estimated model.

6.2 Empirical Models of Piracy

The phenomenon of international trade in copyright infringing product has, until very recently, attracted little attention by economists. We are unaware of any theoretical work that examines the welfare consequences of piracy. The few studies that we have

been able to identify are empirical in nature and focus on the determinants of cross-country variations in piracy levels. Only one of these studies focuses on music piracy, while the others investigate business software piracy. It is to these studies that we now turn.

6.2.1 The Burke Model

In an investigation of the relationship between international copyright conventions and piracy, Burke (1996) investigates the empirical validity of the contention that international copyright conventions were an effective means of curtailing sound recording piracy. Since the 1930s record companies around the world have coordinated the fight against piracy via the International Federation of the Phonographic Industry (IFPI). One of the key objectives of the IFPI is to protect and extend the rights of members by, among other things, promoting the adoption and enforcement of music copyright legislation.

> *Creating an international organisation such as the IFPI was seen as a means of establishing specific audio copyright legislation where it did not exist, and at the same time harmonizing legislation so that piracy and parallel imports were illegal (Burke, 1996:54)*

To achieve this the IFPI encouraged the development of two industry specific international conventions for the protection of record company and artist/songwriter rights; namely the Rome and Geneva conventions. These rights were being undermined by technological developments, such as the audiocassette recorder, that facilitated an increase in piracy.

Despite these efforts, Burke noted a persistent and considerable variation in cross-country piracy levels. More than a decade after the time period investigated by Burke, these variations remain. Burke sought to investigate the following question: is there any empirical evidence that a nation's convention membership lowers piracy levels? To assess convention membership fairly, Burke thought it necessary to allow membership duration of five years for the convention to take effect in the signatory country. Presumably, this was to allow for a time lag between convention membership and updating national laws (drafting and passing new legislation) and enforcing these new laws. Burke argues that piracy is a function of international copyright convention

membership and enforcement of these conventions by national governments. Burke's model can be represented as follows:

$$P = f(GDP, B, R, G, Yb, Yr, Yg, Yb^2, Yr^2, Yg^2) \qquad (6.1)$$

where P is piracy market share, GDP measures GDP per capita, B, R and G are dummy variables that denote membership to the Berne, Rome and Geneva (Phono) conventions respectively, Yb, Yr and Yg are the years of membership to the Berne, Rome and Geneva conventions, and Yb^2 Yr^2 and Yg^2 are the years of membership squared. The underlying theoretical model and proxies are presented in Table 6.1. The dependent variable, piracy market share, is an estimate of the proportion of a nation's domestic market accounted for by pirate sound recordings, derived by taking the ratio of pirate sales to total sales.[1] Each of the independent variables are expected to be inversely related to piracy market share.

GDP per capita was included in the model to control for economic development. Economic development was expected to indicate "judicial and policing maturity" and be a reasonable proxy for institutional support for IPR enforcement (Burke, 1996:63). The membership dummy variable indicates the convention membership status of each country with respect to the three international copyright conventions. Membership length measures years of membership to the respective conventions, while years of membership squared was included to capture possible non-linear effects on the assumption that the longer a country had been a member of a convention, then each subsequent year's membership would have an increasingly important impact on enforcement.

Having grouped countries into low (0-10%), medium (10-30%) and high (>30%) levels of piracy market share, Burke estimates a Multinomial Logit from the grouped data. The estimates thus derived indicate the probability of an individual country being located in one group relative to the other. Countries with high piracy market shares were taken as the control group for the purpose of estimation. This produces two equations in which we alternately estimate the probability of being located in the low (relative to a high) PMS category (low/high category) and the medium (relative to a high) PMS

[1] Burke utilised IFPI sound recording piracy estimates for his study, which included 49 observations (countries). Methodology utilised for deriving estimates was not presented.

category (medium/high category). Burke utilised a general to specific approach and both results are presented in Table 6.2.

In Burke's general model for low/high countries, GDP is the only significant variable and indicates a direct relationship between GDP and the probability of being located in the low piracy category. That is, the higher is GDP per capita, the more likely it is that a country will be located in the low piracy cohort. In the specific model we observe a strengthening of the GDP variable with the level of significance shifting from 5% to 1%. The Pseudo-R^2 of 0.55 suggests that the model explains around 55% of the variation in cross-country piracy levels. In the moderate/high category, the Berne and Rome dummy variables are significant at the 10% level, and the positive coefficients suggesting that membership to these international conventions increases the probability of a country being located in the moderate relative to the high piracy cohort. That is, convention membership increases the probability of a country having moderate as compared with high piracy market shares. Of concern is the positive sign observed for the *YR* coefficient, which is contrary to expectations. The negative coefficient for the YR^2 variable is significant at the 10% level but the contrary indication of the Rome convention membership duration variable suggests the existence of multicollinearity. It is not possible to comment on this further since diagnostic tests were not presented in the Burke paper. Tests for multicollinearity between the duration variables are presented in section 5.3 where we present a re-estimation of the Burke model using a more recent data set.

Burke concludes that economic development (GDP per capita) rather than membership to the international conventions is the most important factor distinguishing nations with low versus high piracy market shares. However, this result is reversed when comparing nations with medium and high piracy market shares. In this case it is the Berne dummy and not GDP per capita that is positive and significant. While the international conventions play a role in reducing piracy from high to moderate levels, it is economic factors (economic development) that are important in reducing piracy from moderate to low levels. The policy implications being that efforts at the international level to curtail piracy will have only minor benefits, and is secondary to the economic environment in which these laws are to be implemented.

The theoretical analysis presented in chapters 4 and 5 suggest a range of economic, institutional and perhaps even cultural factors that might influence the level of piracy market share within a specific country. While Burke's model focuses on only

two variables, convention membership and GDP per capita, it is an important first step in developing a more comprehensive model of international sound recording piracy. As Burke acknowledges, convention membership is of little consequence if not backed by the support of national enforcement agencies. The enactment of domestic legislation and, more importantly, the allocation of resources for the enforcement of IPR laws is a necessary condition for the effective protection of IPR. This is perhaps a more important determinant of piracy market share, and will be one aspect of the new empirical model of cross-country variations in sound recording piracy presented in section 6.4.

6.2.2 The Marron and Steel Model

In a study of cross-country software piracy Marron and Steel (2000) investigate the relationship between software piracy rates (the ratio of illegally copied units to total units) and a range of economic, institutional and cultural factors. Estimates of software piracy are obtained from the Business Software Alliance, which calculates piracy rates by

> *...comparing an estimate of new software installations to an estimate of legitimate software sales. They estimate new installations based on the installed base of computers, shipments of new computers, and estimates of the average number of applications per computer. They estimate legitimate sales from industry shipment statistics. The difference between installations and legitimate sales is then assumed to be pirated. (Marron and Steel, 2000:162)*

While subject to estimation error, this methodology should produce reasonably accurate measures of relative piracy market shares across a range of countries.

The debate surrounding the pricing and distribution of business software and patented products/technologies differs somewhat to that pertaining to sound recordings. The former group of products are inputs into the production process and as such, impact upon the economic development of a nation. The debate over the dynamic gains from protecting IPR versus the static gains of diffusion, and the subsequent breadth and depth of protection, was discussed in some detail in chapter 3. As a consumption good, the pricing and distribution of sound recordings, and branded consumer products more generally, does not directly impact upon an importing country's economic development. Motivational forces that result in IPR infringement may therefore be different between these two groups of products. Nonetheless, empirical studies of other copyright product

might be instructive as to the theoretical and empirical modelling of sound recording piracy. The underlying theoretical model can be depicted as follows:

$$SP = f(ED, C, INST, RD, EDU) \quad (6.2)$$

where *SP* is average software piracy rates, *ED* is economic development, *C* is culture, *INST* is the strength of economic institutions, *RD* is research and development intensity, and *EDU* is the average number of school years for individuals over 25 years of age.

Marron and Steel hypothesise that developed nations, which are more likely to create IP, will prefer stronger IPR laws as compared to developing countries. The development proxy variable used in the empirical model is income per capita. Citing various commentators Marron and Steel argue that western nations, which emphasise individual rights, will have stronger IPR protection as compared to non-western countries which emphasise collective rights. To illustrate this point, the South Korean ambassador to the U.S.A. argued that historically, Koreans have not considered IP as the private property of creators or inventors. Instead, IP was considered a public good for all citizens to share freely. "Cultural esteem rather than material gain was the incentive for creativity" (New York Times: 1986, in Marron and Steel, 2000). To test the hypothesis Marron and Steel use Hofstede's Index of individualism. This index, which ranges from 0 to 10, attempts to develop a national measure of individual and collective tendencies (Hofstede,1980). The higher the index, the greater the individualism, and thereby the stronger the level of IPR protection.

Marron and Steel further hypothesise that the existence of stronger economic institutions that protect traditional private property will also provide strong IPR protection. Following previous studies on the protection of patents, they develop a composite of five variables that they describe as the "institutions" variable. This variable is the sum of a number of indices published by the International Country Risk Guide, designed to assist international investors in evaluating country risk. These indices include the rule of law, the quality of the bureaucracy, a government's propensity to repudiate contracts, corruption in government and risk of expropriation.

Expenditure on research and development (R&D) is a key determinant of the quality and quantity of innovation and creative activity. Marron and Steel hypothesise that nations with high R&D investment will have stronger IPR protection. The proxy variable included in the empirical model is R&D expenditure as a percentage of GDP.

Following studies of patent infringement, Marron and Steel include an education variable to see if higher levels of education increase the demand for IPR. Scalise (1997) finds evidence of a u-shaped relationship between patent protection and education. He argues that education has two opposing effects; beginning at relatively low levels an increase in the general level of education facilitates imitation. At this point the demand for IPR protection is relatively low. Beyond some threshold level, education results in creation of IP and thereby an increase on the demand for IPR laws. By comparison, it cannot be argued that education is a prerequisite for the creation of popular music. Indeed, many popular styles of music originate in regions with relatively low levels of education. One only needs to look at the origin and evolution of rock and roll for evidence of this.

The theoretical model is presented in the summary Table 6.1. The authors employ a simple linear regression model in which the dependent variable *SP* is average software piracy rates for individual countries between 1994 and 1997. Estimates of software piracy are provided by the Business Software Alliance (BSA) and the Software Publishers Alliance (SPA). These associations estimated that around 45% of new software was pirated with a total cost to the software industry of nearly $50 billion US dollars (in Marron and Steel: 2000, p. 163). The Marron-Steel model can be depicted by the following equation:

$$SP_i = a + b\,Y_i + c\,IND_i + d\,INS_i + e\,RD_i + f\,EDU_i + \varepsilon_i \qquad (6.3)$$

where Y is GPD per capita. The hypothesised signs of the coefficients are $b, d, e < 0$, while $a > 0$ and f is uncertain. Marron and Steel characterise GPD per capita as a "control variable" that is correlated with numerous economic and social variables not included in the model. To illustrate the need for using multiple regression, the authors report a number of regressions in which the income variable is paired with each of the other explanatory variables. Not unexpectedly, the magnitude of the coefficient of each of the other variables declines relative to the bivariate regressions. This procedure was unnecessary and the results are not here reported. Moreover, Marron and Steel do not use a general to specific modelling approach, instead choosing to initially omit both education variables, before adding (sequentially), the linear and quadratic forms of the education variable.

The results, presented in columns (1) – (3) of Table 6.3, reveal that the coefficients for the income and R&D variables are statistically insignificant, displaying no independent effect on software piracy. The coefficients for individualism/collectivism and institutions where significant at the 1% level. Education, when entered linearly, was insignificant but when entered quadratically, revealed relatively weak evidence of a u-shaped relationship. Marron and Steel conclude that the results provide support for the argument that IP is a cultural as well as economic phenomenon. There is a strong link between economic institutions and IP protection, revealing that countries that protect traditional forms of property also provide stronger support for IPR.

While income is included to measure the strength of the relationship between development and IPR protection, the authors acknowledge that the income variable will proxy a number of economic factors omitted from the model. As a result the interpretation of this relationship is ambiguous. Marron and Steel provide little, if any, theoretical analysis of the relationship between software piracy and the economic and institutional variables included in the econometric analysis. Instead, the selection of the independent variables is largely based on their inclusion in previous studies investigating patent protection.

6.2.3 The Ronkainen and Guerrero-Cusumano Model

In a more recent study of software piracy, Ronkainen and Guerrero-Cusumano (2001) investigate the correlation between intellectual property violation and a number of variables categorised by the authors as *market factors* or *involvement factors*. Market factors are defined as economic development, the business environment and cultural traits. Involvement factors measure the extent of a nation's engagement with the global market, both in terms of the volume of trade and membership to international conventions. Unfortunately, the paper is relatively brief and only a cursory description of the theoretical and empirical model is provided. The underlying theoretical model may be depicted as follows:

$$IPV = f(Y, E, C, T) \tag{6.4}$$

where IPV is intellectual property violation (software piracy rates), Y is ability and willingness to pay, E is enforcement of IPR laws, C is a range of cultural factors and T

is trade dependency. The theoretical model and proxy variables are presented in the summary Table 6.1.

The authors perform bivariate and multiple regression analysis of software piracy rates (1997) in 50 countries, against nine independent variables. However, little if any theoretical justification is provided for the inclusion of the independent variables. The method used for variable selection is therefore unclear. For example, GNP per capita is included "to capture the ability and willingness to pay for authentic product." (p.60). In contrast, GDP per capita was included in the Burke model to capture institutional support for the protection of IPR, while in the Marron and Steel model, it was included as a proxy for economic development. The selection of other proxy variables in the Ronkainen and Guerrero-Cusumano model was also somewhat arbitrary. For example, to test the hypothesis that the higher the level of trade dependence, the lower the level of software piracy, the authors select as the proxy variable, imports as a percentage of GNP. Not surprisingly, the bivariate regression showed an unexpected sign (positive and insignificant). With these problems in mind, we now consider the author's preferred model.

$$IPV = 109.6 - 0.0008PPP - 2.45CPI - 0.219IND - 0.172MASC$$
$$(0.000) \quad (0.019) \quad (0.027) \quad (0.005) \quad (0.032)^2$$

where IPV is intellectual property violation measured by estimated software piracy market shares, PPP is GPD per capita (in purchasing power parity terms), CPI is the 1998 Corruption Perceptions Index, IND is the Hofstede Index of individualism (to proxy respect for individual rights) and MASC is the Hofstede masculinity index (included to proxy the emphasis on the acquisition of wealth). All the determining variables enter with the expected signs and the model explains around 80% of the variation in cross-country software piracy rates ($R^2 = 0.79$).

6.3 Re-estimation of the Burke Model

In this section we re-estimate the Burke model using 1998 piracy market share data, to determine the extent to which cross-country sound recording piracy market shares are explained by the model and to compare these results with Burke's earlier

[2] *p*-values are in brackets

estimation. The data set is that used to estimate the model we discuss in section 6.4, namely, estimated piracy market shares in 84 countries. A detailed description of this data is presented in section 6.4 and data sources are summarised in Table 6.4. Following Burke, we begin with an estimation of a multinomial logit model for low, medium and high piracy country cohorts. Burke provides no explanation for the use of the MLE procedure in preference to other estimation techniques, such as ordinary least squares. This technique is common when the dependent variable is categorical. Since the dependent variable is an estimate, rather than an observation, of piracy rates there will be some degree of inaccuracy with respect to actual PMS in one or more countries. The use of a categorical dependent variable, will reduce the error associated with the estimation of PMS in individual countries. However, the selection of categories can be somewhat arbitrary, and in the case of Burke's analysis would seem to have been determined on the basis of categories identified by the provider of the PMS estimates. Notwithstanding the above, preliminary estimates of our model using OLS (using the absolute value of PMS as the dependent variable) reveals that the model performs satisfactorily with respect to a range of diagnostic tests. For comparative purposes we estimate Burke's model using OLS.

6.3.1 Multinomial Logit Estimation

The dependent variable in this procedure is a polytomous categorical variable, with countries grouped into low (0-10%), medium (11-30%) and high (>30%) PMS cohorts. The MLE technique estimates an equation in which the dependent variable is the natural log of the odds of a country being located in a low or medium PMS cohort, relative to the high PMS cohort. MLE attempts to maximise the log-likelihood (or odds) that the observed values of the dependent variable can be predicted from observed values of the independent variable.[3] The MLE procedure estimates all outcomes simultaneously, using one category as the base or reference group (Garson, 2002). Following Burke, the high PMS category is assigned as the baseline category.

The results of the MLE are presented in Table 6.5 which presents general and specific equations of the log-likelihood estimates. We obtain the specific equations by

[3] Since the effects must sum to zero, the baseline category (high PMS) is not estimated and can be reproduced from the estimated parameters of the other categories.

sequentially removing variables from the general equation found to be insignificant on the basis of Wald variable addition and removal tests.[4]

In contrast to Burke's MLE, which finds only GDP per capita significant in differentiating the low from high PMS cohort, our model finds both GDP per capita and the Berne convention membership dummy significant at the 1% level, and that years of membership to the Berne convention (*YB*) is significant at the 10% level. A positive *B* coefficient (for example, 1.038 for *GDP* in the general model) signifies that the probability of being located in the low (relative to the high) PMS cohort increases. In other words, the higher is GDP per capita, the higher the odds of being located in the low PMS cohort. The relationship between the *YB* variable and the dependent variable is also direct. The negative coefficient for the Berne membership variable indicates that *not* being a member of the convention decreases the probability of being located in the low PMS cohort. Stated another way, membership to the Berne convention increases the probability of being located in the low PMS category.

Logits are not intuitively easy to interpret, however, SPSS automatically re-transforms the logit back to an odds ratio (*Exp* β in Table 6.5). An odds ratio of 1.663 corresponding to the GDP coefficient indicates that the odds of being in the low (relative to the high) PMS cohort is multiplied by 1.66, which is an increase of 66%. By comparison, the odds ratio for *YB* indicates the odds of being in the low PMS cohort increase by a relatively small 3.8%. The odds ratio for the Berne membership dummy is less than 1 (4.485E-10), which corresponds to a decrease in the odds of being in the low PMS cohort where a country is not a member of the Berne convention.[5]

Inspecting the second specific equation, we find that our results differ considerably from those of Burke's MLE in that GDP per capita is significant in distinguishing medium from high PMS countries. In our re-estimated model the *GDP* regressor is significant at the 1% level and the odds of being in the medium (relative to the high) PMS cohort increases by 21.9% with respect to this regressor. It is noteworthy that this is a significantly smaller impact on the odds ratio that the *GDP* regressor had on the odds of being located in the low PMS cohort (66%). Nonetheless, GDP per capita is inversely related to PMS and is the most significant regressor in distinguishing

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[4] Significance levels presented in Table 6.5 relate to the Wald test of the null-hypothesis that an individual logit is zero.

[5] Note that the *B* and *R* coefficients refer to *B*=0 and *R*=0 (or non-membership).

medium from high PMS countries. Like Burke, we find that the Rome membership dummy is significant (at the 10% level in our model) in distinguishing medium from high PMS countries. However, our results differ in that we find that the variables associated with Berne membership and membership duration (YR *and* YR^2) are not significantly different from zero.

In conclusion, our re-estimation of Burke's model using the MLE procedure on the 1998 data set indicates that both the *GDP* and *B* regressors are significant in effecting the odds of being located in the low relative to the high PMS cohort, while *GDP* and *R* regressors are significant in affecting the odds of being located in the medium relative to the high PMS cohort.

6.3.2 Linear Regression Model

In estimating the ordinary least squares version of Burke's model we are primarily interested in seeing if the relationships between PMS and those variables found to be significant in the earlier estimation of the model, remain significant. Preliminary regressions reveal severe multicollinearity between the membership duration variables and the associated square root of the respective duration variables. An inspection of Pearson correlation coefficients presented in Table 6.6 reveals high correlation between the duration variable pairs YG and YG^2, YR and YR^2, YB and YB^2, each greater than 0.96.[6] This will likely affect the estimated coefficients and t-statistics, and may be responsible for the perverse signs observed for the Geneva and Berne convention membership coefficients.

To deal with the problem of multicollinearity the model is estimated, alternately using years of membership and years of membership squared. These two models were then examined for multicollinearity, using both VIF and conditional indices associated with eigen values. These diagnostic tests suggest that neither model is compromised by multicollinearity. As the alternate specifications produce no significant difference in either the estimated coefficients or t-statistics, and there is no *a priori* reason for expecting other than a linear relationship between membership duration and piracy

[6] Other diagnostic tests associated with these same regressors reveal significant levels of multicollinearity. The variance inflation factors (VIF) for all duration variables exceed 10 (ranging from 20 to 93), while conditional indices associated with eigen values are well in excess of 30.

market share, we estimate the specific model using years of membership. The re-estimated Burke model is:

$$P_i = \alpha_0 + \alpha_1 B_i + \alpha_2 YB_i + \alpha_3 G_i + \alpha_4 YG + \alpha_5 R_i + \alpha_6 YR_i + \alpha_7 GDP_i + \varepsilon_i \quad (6.5)$$

We estimate this linear model using the OLS procedure, the results of which are presented in Table 6.7. Both the general and specific models are presented, the latter derived by sequentially removing variables with the weakest *t* statistic. The general model reveals that neither the Rome nor Geneva membership dummy variables, nor the respective membership duration variables associated with these conventions, are significant. Inspecting the parsimonious model we find that GDP per capita is the most significant determinant of PMS, and that the coefficient of the Berne convention membership dummy variable is significantly different from zero[7]. However, interpretation of the GDP coefficient (-0.00245) suggests that relatively high levels of economic growth (and thereby, income per capita) would be required to reduce PMS to, what would be considered by copyright owners, relatively acceptable levels.[8]

In contrast, the specific model suggests that there is a significant relationship between PMS and membership to the Berne convention. In the model, membership is associated with a 15.33 percentage point reduction in PMS, ceteris paribus. This indicates that efforts at the international level to improve the protection of IPR are relatively effective in reducing PMS. However, while the Berne membership duration regressor *YB* is statistically significant at the 10% per cent level, the duration of membership seems to have a relatively modest impact on levels of PMS, where an increase in membership duration of 10 years reduces PMS by a modest 1.4 percentage point.

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[7] The parameter estimates of the variables *GDP* and *B* are statistically different from zero at acceptable decision levels. Both had the hypothesised negative signs with a 1% and 5% level of significance respectively.

[8] On average, GDP per capita would need to rise by $10,000USD to bring about a reduction in PMS by 24.6%. In a country such as Indonesia, for example, this would require a rise in GDP per capita from $2,615 to $12,615 to induce a reduction in PMS from 40% to 15%. Clearly, it would take some decades for developing countries to achieve these levels of income and does not hold out much hope for copyright owners concerned with the protection of their commercial rights.

Burke's estimation of piracy market share found that the coefficients of the YR and YR^2 variables were significant in distinguishing moderate from low piracy countries. By comparison, our linear regression model reveals that all coefficients related to the Rome and Geneva conventions were found to be insignificant while years of membership to the Berne convention (YB) was significant at the 10% level. The linear model explains around 64% (Adjusted R^2) of the variation in cross-country piracy market shares.

Recall that the inclusion of GDP per capita in Burke's model was to capture "judicial and policing maturity". This variable was also thought to proxy institutional support for property right enforcement (Burke, 1996). It is difficult to interpret the significance of the GDP per capita variable since it can proxy a wide range of institutional and economic variables. Our model replaces GDP per capita with more direct measures of property rights enforcement and includes other economic variables believed to be important in explaining cross-country variations in sound recording piracy market shares. We replace GDP with a range of institutional and economic variables with a view to obtaining a clearer picture of these variables in influencing sound recording piracy market shares. It is to this model that we now turn.

6.4 A Model of Cross-Country Variations in Sound Recording Piracy

6.4.1 Modelling Issues

The theoretical analysis developed in Chapter 5 suggests an empirical model of the form

$$PMS_i = a_0 + a_1 A_i + a_2 IC_i + a_3 E_i + a_4 BOT_i + a_5 COR_i + a_6 PI_i + a_7 \Pi_{ei} + a_8 PEN_i + \varepsilon_i \quad (6.6)$$

where PMS measures the percentage of the national market accounted for by pirate sound recordings (or piracy market share), A_i is an affordability index measured by the ratio of legitimate sound recording price to hourly wages, IC_i is a measure of international copyright convention membership and membership duration, E_i is a measure of the effectiveness of domestic IPR law enforcement, BOT_i is a measure of a nation's balance of trade with respect to sound recordings, COR_i is a measure of the extent of corruption in government law enforcement agencies, PI_i is a dummy variable

indicated a nation's adoption of the principle of international exhaustion of copyright, Π_{ei} is a measure of the expected profit derived from smuggling and distributing pirate sound recordings and PEN_i is a measure of the size of both financial and imprisonment penalties imposed for copyright infringement. In the proceeding sections we will construct our empirical model and identify suitable variables and/or proxies to test this model.

6.4.2 The Dependent Variable: Sound Recoding Piracy Market Share

We define sound recording piracy market share as the proportion of the domestic market accounted for by pirate product. This is obtained by taking the ratio of pirate sound recording sales to total sound recording sales (that is, pirate plus legitimate sound recording sales). Piracy, by its very nature, leaves no paper trail and is therefore impossible to measure precisely. We must therefore rely on estimates of sound recording piracy, of which there are two sources. The most comprehensive estimates of copyright piracy are published by the IIPA. The annual *Special 301 Report* submitted to the USTR contains estimates of motion picture, sound recording, business software and book piracy levels for around 50 countries. These estimates are obtained from IIPA member associations. Sound recordings piracy data is obtained from the RIAA, which are derived from local surveys conducted in various countries. Estimates of trade revenue losses are then generated using the value of pirate product rather than the value of displaced legitimate product. However, in some instances projected unit displacement is multiplied by the wholesale price of legitimate product rather than the retail price of pirate product. The IIPA believes that the reported trade loss estimates actually underestimate the losses due to piracy (IIPA, 2001).

The second source of sound recording piracy market share estimates is the IFPI. These estimates are not publicly available and it is argued that they are more accurate than those published by the IIPA. The reason is that the IIPA data and trade loss estimates relate principally to U.S. copyright industries. The correlation coefficient for the two estimates of piracy market share is 0.92, indicating that the two estimates are highly correlated. The similarity of the piracy estimates from two alternate sources provides greater confidence in the accuracy of the data and the methodology used by each organisation to estimate PMS across a range of divergent countries. We have elected to use the IFPI data set for the estimation of our model. However, to increase the sample size we have included piracy market share estimates from the IIPA data set not

included in the IFPI data. This produces a sample size of 84 countries. The IIPA estimates of piracy market share are presented in Table 6.9.[9] Clearly, there is great variation in sound recording piracy market share between nations ranging from a low of 5% to as high as 95%.

The dependent variable for the empirical model is the absolute value of the percentage of the domestic market for sound recordings (excluding CD-Rs) accounted for by pirate product. That is, sales of pirate audio CDs and cassettes divided by total sales. This amounts to an estimate of piracy market share in each country. In this we follow the approach of Burke (1996) who used sound recording piracy rates to examine the empirical validity of the contention that international copyright conventions were an effective means of eradicating piracy. Our model has a broader objective in that it attempts to identify the influence of a range of economic and institutional factors on cross-country variations in piracy market shares.

6.4.3 The Explanatory Variables

We now consider a range of variables suggested by the literature review and by our theoretical models, that are likely to influence the level of cross-country piracy market shares. A list of variables, definitions and sources of data are presented in Table 6.4.

6.4.3.1 Membership to International Conventions

Our theoretical analysis proposes that international IPR convention membership and membership duration will influence the level of smuggling and distribution of pirate product. Membership to an international copyright convention requires the signatory country to update domestic copyright laws to incorporate the minimum standards outlined in the convention. As such, convention membership is a proxy for the comprehensiveness of domestic IPR laws and is expected to have a negative association with piracy market shares. Following Burke (1996) we propose that membership to the Berne, Rome and Geneva conventions respectively will result in lower levels of piracy market shares. The model hypothesises that membership to an international copyright conventions will have an inverse association with the level of sound recording piracy market shares.

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[9] The IFPI data cannot be presented due to a confidentiality agreement.

Membership to these conventions can be ascertained by inspecting the register of each convention. A register of contracting parties (countries) to these treaties is maintained by WIPO. Data on membership and membership duration can be extracted from the register, which lists contracting parties and the year in which membership commenced. Membership by itself does not instantaneously result in a more effective domestic IPR regime. Indeed, we can identify three time lags relating to compliance with international convention obligations. These are:

- Legislative lag
- Implementation lag
- Enforcement lag

The legislative lag is the time it takes to draft and pass new legislation. The duration of this lag will vary from country to country, in some cases taking a number of years, and will partly reflect the efficiency of parliamentary and legislative institutions. The implementation lag refers to the time from the enactment of the new IPR laws to its implementation within the various enforcement agencies empowered with the responsibility of developing strategies to operationalise these new laws. Thirdly, the enforcement lag refers to the time it will take for the new IPR law and enforcement regime to impact upon the behaviour of all participants in the market for pirate product. Only at this last stage will we expect to observe a reduction in piracy market shares as a direct result of convention membership. Burke (1996) thought that in order to assess convention effectiveness fairly, a period of five years be allowed for it to take effect. Burke therefore excluded countries who joined within five years of 1989 (the year considered in the study).

It is not possible to put an exact time frame on these lags and they will vary from country to country. Nonetheless, it is clear for example that membership to the Berne Convention in December 1998 (in the case of Singapore) could not possibly effect piracy market shares in that same year, regardless of the length of the aforementioned lags. Likewise, membership by the Dominican Republic and Belarus, signing in December 1997, is not expected to impact upon 1998 piracy market shares in those countries.

For the purpose of estimating the regression model we assume a time lag of 5 years before convention membership will translate into a behavioural response at the

market level that translates into lower piracy rates. While the assumed duration of the time lags is somewhat arbitrary it should be noted that developing countries were given five years to comply with the TRIPS Agreement in recognition of such lags. Accordingly, countries that contracted to join an international copyright convention between 1993 and 1998 will be assigned a membership duration equal to zero. Clearly, the longer a nation has been a member of an international copyright convention, the more established domestic IPR laws are expected to be. The model hypothesises that membership duration is inversely related to sound recording piracy market shares. Membership duration is calculated by subtracting the year in which a country became a signatory, from the year 1998 (the year under examination). We then subtract 5 years to adjust for legislation, implementation and enforcement lags.

TRIPS, backed by the enforcement measures of the WTO, promises to be the most effective international IPR convention in the fight against international piracy. However, while TRIPS came into effect in 1995, the compliance deadline for many developing countries was extended to 2000. As a result, we do not expect TRIPS membership to produce any discernible effects on piracy levels for the period under consideration. TRIPS membership is therefore excluded from the present model.

Burke (1996) predicts the strongest negative correlation between piracy and convention membership is expected from the Rome convention, followed by the Geneva and then the Berne convention. This was based on the observation that the Rome convention is specific to musical works while the Berne convention relates to copyright more generally. This proposition is somewhat contestable because Rome was perceived as somewhat of a failure in achieving its stated objectives. Moreover, it was the Geneva Convention that was specifically formulated to deal with the problem of international piracy. If we were to expect any of the three variables to outperform the others, we would expect the strongest negative correlation with the Geneva membership variable.

A comprehensive copyright act is a necessary but not sufficient condition for the eradication of piracy. The assumption underlying our hypothesis is that governments in convention member countries will allocate the necessary resources to monitor the commercial importation and distribution of copyright infringing sound recordings. A further assumption is that these laws are enforced by customs officers, the police and the judiciary, and that the appropriate penalties are imposed so as to provide an effective deterrent to this illegal trade.

6.4.3.2 Enforcement

Our theoretical model proposes that higher levels of enforcement of IPR law led to an increase in the probability of detection faced by smugglers of pirate product. This, in turn, increases the potential losses arising from the confiscation of infringing product and the imposition of financial penalties and/or a prison term. In this way, higher levels of enforcement resulted in a lowering of expected profit. The model hypothesised that the smuggling firm would rank countries according to expected profit, and focus their illicit activities accordingly. We can therefore hypothesise a negative relationship between the level of enforcement and piracy market share.

The challenge is to find an appropriate proxy variable that measures the level and effectiveness of IPR enforcement for the numerous countries included in our study. Marron and Steel (2000) did not explicitly discuss the level of enforcement as a determining variable in their study of the determinants of computer software piracy. Instead, they hypothesise that the existence of strong economic institutions that protect traditional forms of property and contracts will also provide strong support for IPR. The proxy variable utilised to measure institutional strength was a composite index of variables related to the security of property and contracts. The composite index included indices that measured a tradition for law and order, the government's propensity to repudiate contracts, the quality of the bureaucracy, the extent of corruption and the risk of expropriation.

In our model of sound recording piracy, the two critical points identified in the enforcement of IPR laws relating to smuggling and piracy where at the point of importation (border controls) and at the point of sale (domestic retail distribution). The model proposes that more efficient and frequent border monitoring (the ratio of import consignments inspected by customs officers to total consignments imported) will be inversely related to sound recording piracy market shares. The larger the number of inspections, the higher will be the probability of detection. This in turn raises the risk of detection (and the imposition of penalties) and lowers expected profits.

Data on the number of customs inspections (officers relative to total consignments imported) carried out at every port of entry for each country is unavailable. A reasonable proxy for the number of border inspections would be provided by government expenditure on customs control. However, the absolute value

of government expenditure on customs control in various countries will be sensitive to population size and the volume of trade. To deal with this problem we could take the ratio of government expenditure on customs control to the value of imports. With respect to the domestic distribution of copyright infringing sound recordings, the expenditure on the police force and judiciary may provide a reasonable proxy for the enforcement of copyright law at the retail distribution stage. Once again, to adjust for varying population and market sizes, we could take the ratio of government expenditure on law enforcement to total government expenditure. However, our review of literature on corruption in the civil service revealed that it was not necessarily the volume of resources allocated to the civil service, but perhaps more importantly, the pervasiveness of corruption in determining the efficiency and effectiveness of enforcement procedures. Data on customs control expenditure and expenditure on the police and judiciary is unavailable for the numerous countries in this study.

An alternative proxy variable for the enforcement of IPR is an index of property rights. The cornerstone of the market economy is private property. Indeed, its accumulation is one of the markets key driving forces. The protection of copyright is a key element of economic freedom and the right to commercially exploit individual IPR. A government's commitment to the protection of physical property should provide a reasonable approximation of the likely level of protection of IPR. We can hypothesis that there is an inverse relationship between an index of private property rights and piracy market shares.

The Heritage Foundation produces indices of economic freedom, which it defines as:

> *"...the absence of government coercion or constraint on the production, distribution or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself" (Beach and O'Driscoll, 2001: 43-44)*

A number of "economic freedom" indices are computed utilising 50 independent economic variables including: corruption, fiscal burden, the rule of law, regulatory burden, restriction on banks, labour market regulations, property rights and black market activities.

The property rights index measures the degree to which private property is protected and the degree to which a government enforces laws as they relate to private property. The index also incorporates a measure of the independence of the judiciary

and the ability of individuals and businesses to enforce contracts. Other variables included in the construction of the property rights index are government influence over the judiciary, commercial codes defining contracts, government expropriation of property, corruption in the judiciary, legally granted and protected private property (Beach and O'Driscoll, 2001:57). The better the level of protection the lower the index value (1 = very high protection) while a higher index number represents inferior protection (5 = very low protection).

The empirical model proposes that there is a direct relationship between the property rights index and the level of sound recording piracy market share. That is, the higher the level of protection (low index value) the lower the estimated piracy market share.

6.4.3.3 Corruption

Corruption of government officials in the civil service takes many forms. Arguably, no country is free of corruption. Corruption strikes at the very heart of quality governance and the rule of law. The theoretical model of the smuggling firm's decision making process proposes that corruption in the customs authority, police and/or judiciary will result in a lower probability of detection and thereby, an increase in expected profit. That is, our theoretical analysis proposes that there is a direct relationship between the level of corruption in the civil service and the level of piracy market shares.

In an investigation of intellectual property violation with respect to software piracy, Ronkainen and Guerrero-Cusumano (2001) utilise the Corruption Perceptions Index (CPI) as a proxy for the enforcement of IPR. As noted above, our model proposes a different proxy variable for enforcement as dictated by our theoretical model, namely, a property rights index. Ronkainen and Guerrero-Cusumano fail to provide any theoretical justification for the use of the CPI in their empirical model. In contrast, our theoretical model allocates a key role to the phenomenon of corruption and its impact on the probability of detection, the risk:return ratio and the expected profit of the smuggling firm. These relationships where depicted by equation 5.18, the smuggling firm's expected profit function.

In a paper investigating the quality of governance, Kaufmann (et. al, 1999) construct a number of governance quality indicators. These indicators reflect the

compilation of perceptions of the quality of governance derived from a survey of respondents on developing and industrialised countries alike, and includes responses from non-government organisations, commercial risk rating agencies and think tanks.

The data generated from these surveys are used to construct six governance indicators, including governance effectiveness, the rule of law and graft/corruption control. The resulting index values range in value from –2.5 to 2.5, with higher values corresponding to better governance. To be consistent with other indices in the data set we convert these values to a range of 0 to 5, with higher values corresponding to higher levels of corruption. This is intuitively appealing in that it enables us to use the expression that piracy is directly related to the level of corruption. The graft/corruption index will be used as a proxy for the level of corruption in the civil service, including custom agents (armed with the responsibility of border controls) and the judiciary (police and prosecutors). Our empirical model proposes that the higher the level of corruption, the higher the piracy market share.

6.4.3.4 Expected Profit

Our theoretical model proposes that traders in infringing product will seek to maximise economic profit by ranking countries according to expected profit. For a given marginal cost of production and export price, expected profit will primarily depend upon the probability of detection, the nature and size of penalties and the quantity sold, which in turn, will be a function of the strength of demand for pirate sound recordings.

The strength of demand for pirate sound recordings depends on a number of factors, including legitimate product price, consumer preferences and the price and quality of pirate product. Our theoretical analysis suggests that the higher the legitimate product price, the larger the proportion of the market that is excluded from participating in the consumption of legitimate product. In turn, the larger the number of consumers excluded from participating in the formal market, the larger the potential size of the informal market. Once established, the informal market will also attract consumers from the formal sector. The size of the informal sector, and the level of economic activity therein, will partly determine the level of expected profit.

This suggests that the existing size of the informal market within which pirate sound recordings are distributed, might be a suitable proxy for the strength of demand

for pirate product and thereby, the level of expected profit. As mentioned in Section 6.4.4, estimates of black market activity is provided by the Heritage Foundation, *Index of Economic Freedom*. The higher the level of black market activity, the higher the index score and the lower the level of economic freedom. The methodology for compiling the black market index is the compilation of information on the extent of agricultural goods, manufactured products, services, transportation and labour services supplied on the black market, as well as smuggling and piracy activities. Our empirical model proposes that the higher the black market index (BM), the higher the piracy market share.

A cautionary note is required at this point. We have identified separate proxy variables for enforcement and the probability of detection (property rights index), the pervasiveness of corruption in the civil service (index of corruption) and expected profit (black market index). The expected profit function depicted by equation 5.18 suggests that product price, the probability of detection, the volume of smuggled pirate product, the size of penalties upon detection, and the price and availability of corruption services simultaneously influence the smuggling firm's decision-making. As such we anticipate a potential multicollinearity problem between these three independent variables. Preliminary analysis confirms the existence of multicollinearity between the relevant proxy variables. In section 6.5.3 we discuss solutions to this problem, including the construction of a composite index of the strength of property rights, black market activity and corruption.

6.4.3.5 Balance of Trade in Sound Recording Product

The general equilibrium model presented in Chapter 5 demonstrated that for a nation that is a net-importer of copyright product, smuggling of copyright infringing product can be welfare enhancing. By displacing relatively high priced legitimate product, pirate sound recordings can help improve the balance of trade with respect to copyright product. This was thought to partially explain why some governments officially oppose piracy but seemingly tolerate it unofficially.

Trade in copyright product manifests itself in two areas on the current account. Firstly, in the case of the physical importation of sound recordings, there would be an entry in the merchandise trade account. However, it is quite common for the major record companies to licence copyright to a local company, typically a subsidiary of the

MNE parent. In exchange for this license the local rights holder pays a licence fee to the foreign owner of the master recording. A royalty fee is also payable to the rights owner of the musical work (songwriter) for each reproduction of the sound recording. The licensing arrangement therefore translates into a transaction on the services section of the current account.

Ideally, the most direct measure of the balance of trade with respect to sound recordings is the combined balance of the merchandise trade and services trade balances with respect to sound recordings. As this data is not available for the large number of countries examined in this study, we must rely on a related proxy variable. In this model we choose to focus on the services component of trade in sound recordings. The rationale for this choice is based on the fact that, in the vast majority of cases, the major record companies (which combined share approximately 80 percent of world sound recording sales) use licensing agreements with a local subsidiary or independent record company to manage product promotion and distribution. Rather than generating merchandise imports, this results in the payment of licenses and royalties to foreign copyright owners for reproductions of sound recordings manufactured locally. As not all titles in the parent company's music catalogue are manufactured locally, merchandise trade in sound recordings remains significant.

Data on royalty and license payments with respect to sound recordings is not available. The proxy variable chosen in this study is total royalty and license fees recorded in the services account. This represents payments and receipts for the authorised use of intangible assets and property rights, such as copyright, trademarks and brand names. The data is obtained from the IMF *Balance of Payments Statistics Yearbook* (2000).

There is however, a potential problem with using reported data on royalty and license payments. Our theoretical model proposed that piracy displaces legitimate sales. This displacement effect will lower the value of import payments reported in the current account. For a net-importer of copyright product, high levels of piracy will have a significant beneficial effect on the balance of trade in copyright (lowering the deficit). Official data will therefore understate the true level of dependence of foreign copyright product. For net-exporters of copyright product, significant levels of piracy and counterfeit will lower export receipts. As predicted by our theoretical model in Chapter 5, this translates into a redistribution of income (and welfare) from exporting to importing countries.

To obtain a more accurate measure of a nation's dependence on foreign IP, we apply a weight to the value of royalty and license fee payments (imports). The weight attempts to account for the value of import payments that have been displaced by pirate product. For example, royalty and license payments to foreigners would be approximately halved in a country where piracy market share was equal to 50%. The weight applied to import payments is:

$$\omega = 1 / (1 - PMS) \tag{6.7}$$

where ω is the weight and PMS is the piracy market share. This means that a country with a piracy market share of 90% will have a weight of 10, while a 10% piracy market share would produce a weight of 1. The balance of trade with respect to royalty and license payments is:

$$BOT = X - M \tag{6.8}$$

and

$$BOT_{\omega} = X - M_{\omega} \tag{6.9}$$

where M and X are royalty and licence payments and receipts respectively, and M_{ω} is weighted royalty and license payments ($M_{\omega} = M(\omega)$). To be even handed we should also apply a weight to the export income of copyright exporting countries. This is problematic as we have no measure of the loss of royalty and license payments for individual copyright exporting countries. We therefore limit ourselves to applying a weight to copyright imports.

The absolute value of the balance of trade with respect to royalty and license payments disguises the relative size of a nation's trade surplus/deficit vis-à-vis other countries. For this reason, rather than using net royalty exports, (license and royalties exports (X) less (weighted) license and royalty imports (M_{ω})) we instead use the ratio of net royalty trade to total royalty trade (export income plus import payments). That is:

$$TSI = (X-M_{\omega})/(X+ M_{\omega}) \tag{6.10}$$

where *TSI* is the trade specialisation index with respect to royalty and license payments and receipts. This index value can vary from –1 to +1, a negative index value indicates a deficit with respect to copyright trade, while a positive index value indicates a surplus. This intra-industry copyright trade index will be used to proxy the balance of trade in sound recordings. The decision to use the ratio rather than the absolute trade surplus/deficit was taken because the absolute value would be misleading as to the relative strength or weakness of a country's IP sector. To illustrate let us consider Australia and Cuba.

Australia: X - M = 275 – 1010 = -735
Cuba: X – M = 113 – 601 = -488

The larger absolute deficit suggests that Australia is relatively more dependent of foreign IP than Cuba. However, if we inspect the ratio of net exports to total copyright trade, a different picture emerges.

Australia: (X-M/X+M) = (275 – 1010)/(275+1010) = -0.57
Cuba: (X – M)/(X+M) = (113 – 601)/(113+601) = -0.68

While Australia has a larger absolute trade deficit with respect to royalty and license fees, as a proportion of the value of trade, Australia has a relatively smaller deficit compared with Cuba. It can be concluded that Australia is less dependent on foreign IP relative to Cuba. Because it is intuitively more appealing to describe a higher trade deficit is associated with a higher level of piracy, we reverse the sign of the *TSI*. Accordingly, the empirical model proposes that there is a direct relationship between the *TSI* with respect to royalty and license income and sound recording piracy market share.

The collection of trade data with respect to copyright trade proved problematic. Data on royalty and licence payments provided by the IMF included numerous omitted, incomplete or missing values. As a result, the inclusion of this variable in the estimated model reduced the sample size from 84 to 52 observations. The vast majority of missing values relate to countries with moderate or high PMS. Because the distribution of missing values is not random, the restricted sample may be biased and thereby produce biased regression results. However, it should be noted that there are a relatively even

number of low, medium and high PMS observations in the restricted sample, a requirement of the MLE procedure. For this reason, the model estimations of the reduced sample may not be biased.[10] Numerous techniques were applied to replace missing values, but none proved satisfactory.[11]

6.4.3.6 Affordability

Our analysis of MNE pricing strategies and consumer behaviour suggested that consumers, particularly those in low-income countries, might be priced out of the market for sound recordings. That is, legitimate product price will be set above the marginal valuation placed on sound recordings by many consumers. Marginal valuation is a function of both preferences and income. The model proposes that the higher the product price relative to income, the higher the level of piracy. We propose to measure affordability by taking the ratio of legitimate product price to average hourly earnings (the PE ratio) as illustrated in equation 6.11.

In reality, there is rarely a single price for any product. This is further complicated in the market for sound recordings by the fact that there are typically three pricing points in the market for sound recordings; budget, mid-price and full-price. Nonetheless, it is well known that traders in pirate product focus on the most successful (Top 40) sound recording titles (hit records), as these are the highest selling recordings by volume and command the highest price. Prices for Top 40 sound recordings in the numerous countries included in the study are unavailable. The proxy used is the average sound recording price in each country. Data on sales volumes (units) and retail sales revenue is obtained from the IFPI publication *The Record Industry in Numbers* (1999). Average price is obtained by dividing total sales revenue by total sales volume for each country.

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[10] It should be noted that the specific model discussed in section 6.5.3 utilises the full sample (i.e., N=84). The backward stepwise removal OLS procedure used to estimate the model uses the reduced sample (N=52) while the *BOT* regressor remains in the model and the full sample (N=84) when this same regressor is dropped as a result of a weak *t* statistic.

[11] For example, regressing the *BOT* variable on other variables, including PMS, and then estimating the value of missing values from this linear equation, proved ineffective. The R^2 was only around 0.2.

The second component of the PE ratio is hourly earnings. Earnings vary greatly from one individual to the next. This earnings disparity is universal. To avoid this problem we use average hourly wage rates in manufacturing as our proxy variable for hourly earnings. Average hourly manufacturing wage rates are obtained from the International Labour Office (ILO), *Bulletin of Labour Statistics* (2000). Our proxy variable for affordability is the PE index:

$$PE = \frac{AverageSound\,\mathrm{Re}cording\,\mathrm{Pr}ice}{AverageHourlyManufacturingWage}(100) \tag{6.11}$$

The empirical model proposes that there is a direct relationship between the PE ratio and sound recording piracy market share. For estimation purposes we chose to use the square root of the price:earnings ratio. The rationale for this is that demand is expected to be more elastic the higher the price of the product relative to income. For low wage countries we expect the demand for pirate product to increase more than proportionately to an increase in the price-earnings ratio and visa versa.

A number of missing values for the *PE* variable were estimated by using a regional average *PE* ratio. For example, the missing value for Costa Rica was obtained by taking the Central American regional average *PE* ratio. The rationale for this procedure is that the use of regional averages (rather than the sample mean) provides a more accurate measure of affordability. These countries are at similar stages of economic development, have similar standard of living and wages, and relatively uniform sound recording prices (according to anecdotal evidence from various industry sources).

6.4.3.7 Parallel Imports

Parallel imports provide an alternative distribution channel from which to source legitimate product. Local wholesalers and/or retailers can bypass the local copyright owner or licensee and purchase authorised product manufactured in another country. Clearly, parallel importation will only occur if price in at least one foreign territory is lower than that prevailing in the local market. Our theoretical model of parallel imports developed in Chapter 4 demonstrated that parallel imports, by providing low price

sources of legitimate product, is welfare enhancing for a net-importer of sound recordings.

Parallel importation does not involve trade in pirate product because, by definition, these imports are authorised reproductions, albeit intended for sale in another territory. In addition to undermining MNE global pricing and distribution strategies, parallel imports are perceived, in some quarters, as a means of facilitating the importation of infringing product. An increase in the number importers and import consignments, for a given level of enforcement, is expected to lower the probability of detection, and thereby, increase the level of piracy. Moreover, the parallel importation of sound recordings might also be used as a cloaking device whereby infringing copies are camouflaged by legitimate copies within the one consignment. Unfortunately, data on parallel import laws in the 84 countries included in this study are unavailable, so we are unable to test this hypothesis.

6.4.3.8 GDP per capita

Each of the empirical models of piracy reviewed in Section 6.2 include GDP per capita as one of the independent variables. In the Burke (1996) model it is used to proxy the level of IPR enforcement. In our model of sound recording piracy market share the poxy variable for IPR enforcement is a property rights index. In the Marron and Steel (2000) model of software piracy, GDP per capita is used to proxy economic development, and enters the model to test the hypothesis that more developed countries, as the largest producers of IP, will prefer stronger IPR laws. While the production of business software and other technology dependent IP products, such as industrial designs and patents, are reliant on the level of economic development, it does not follow that this applies to the creation of musical works and sound recordings.

In the Rokainen andGuerrero-Cusumano (2001) empirical model of software piracy, GDP per capita enters as a proxy for ability and willingness to pay. While GDP per capita is often used as the basis for international comparisons of living standards, it may not be an appropriate proxy for ability to pay. Ability to pay is a function of both prices and income. This is a fundamental principle of demand analysis. Utilising the affordability index developed in our theoretical model in Chapter 5, our empirical model uses the PE ratio as a proxy for sound recording affordability.

Preliminary analysis reveals a high degree of correlation between GDP per capita and the Property Right, Corruption and Black Market indices respectively. For this reason we choose to omit the GDP variable from the estimation of our model. While there is no theoretical basis for the inclusion of GDP per capita in our empirical model, we re-estimate our model to include the GDP variable.[12]

6.5 The Empirical Model

We assume that the true model is nested within a general model which we specify as:

$$PMS_i = \alpha + \beta B_i + \gamma YB_i + \lambda R_i + \varpi YR_i + \nu G_i + \psi YG_i + \delta PR_i + \eta COR_i + \mu BM_i + \phi BOT_i + \kappa PE_i + \varepsilon_i \qquad (6.12)$$

where

PMS_i	=	piracy market share: the proportion of the market for sound recordings accounted for by pirate product
B_i	=	Berne convention membership dummy, i = 1, 0
YB_i	=	years of membership to the Berne convention
R_i	=	Rome Convention membership dummy, i = 1, 0
YR_i	=	years of membership to the Rome Convention
G_i	=	Geneva convention membership dummy, i = 1, 0
YG_i	=	years of membership to the Geneva convention
PR	=	Property rights index
COR_i	=	index of corruption
BOT_i	=	trade specialisation index
BM_i	=	index of black market activity
PE^2_i	=	ratio of the average price of legitimate product to average hourly manufacturing wages (squared)

The hypothesised signs of the coefficients are $\beta, \gamma, \lambda, \omega, \nu, \psi, \delta < 0$, while $\eta, \phi, \mu, \kappa > 0$. The empirical model and the hypothesised signs of the coefficients are summarised in Table 6.8. Sources of data for each of the proxy variables used to estimate the empirical model are presented in Table 6.4.

[12] These results are presented as Specific Model (4) in Summary Table 6.12.

6.5.1 The Sample

We estimate the empirical model using 1998 cross-section data on estimated sound recording piracy market shares in 84 countries. IFPI data have been supplemented by IIPA data on sound recording piracy market shares, increasing the sample size by 17 countries. Piracy market shares are presented in Table 6.9. For confidentiality reasons only IIPA estimates are presented.

6.5.2 Procedures Used to Estimate the Model

Our view is that linear models should be used in preference to other functional forms, except where there is a clear justification for the alternative. Preliminary work reveals that both the linear and logarithmic versions of the model presented in Equation 6.12 behave satisfactorily with respect to a range of diagnostic tests. For this reason we have chosen to present the linear version of the model.

6.5.3 The Linear Model: From the General to Specific Model

In Table 6.10 we present the estimated coefficients of the general model together with the regression diagnostics. Inspecting Table 6.10 we find that the t statistics for the general model are mixed and range from relatively weak, in the case of the Berne membership regressor (B), to significant, in the case of the property rights index (PR) and the Geneva convention membership dummy (G). In estimating the specific model we apply a backward stepwise removal method, deleting at each step the variable with the weakest t statistic. The specific model generated from this procedure is presented in Table 6.11, along with diagnostic tests. The Property Rights index and Geneva Convention membership dummy are significant at the 1 percent level. Years of membership to the Berne convention is significant at the 5 percent level, while the Price-Earnings ratio is significant at the 10 percent level.

Prior to discussing the preferred parsimonious model in greater detail we return to the issue of suspected multicollinearity between the Corruption, Black Market and Property Rights indices. Pearson correlations coefficients for these variables range from 0.78 and 0.91. Other diagnostic tests for multicollinearity presented in Table 6.10 also suggest the existence of multicollinearity between these regressors. In the absence of significant tests for multicollinearity we use a rule of thumb or cut-off to determine if there is "excessive" multicollinearity between the regressors and conclude that it is a

problem.[13] The existence of multicollinearity between independent variables can be dealt with by either dropping one or more of the "offending' variables or by constructing a composite index of the related variables. For completeness, we utilise each of these procedures, the results of which are presented in Table 6.12.[14] A comparative analysis of these alternate model specifications follows.

Specific Model (1) reproduces the estimated parsimonious model from Table 6.11. Model (2) is estimated after dropping the *PR* regressor (which is highly correlated to both *BM* and *COR*) from the general model in an attempt to address the observed multicollinearity. Not unexpectedly, the *BM* regressor now enters the model and is significant at the 1% level. This specification of the model also has other noteworthy consequences. The *BOT* regressor now enters the specific model and is significant at the 5% level.[15] In Model (1) the *BOT* regressor is the last variable to be dropped from the specific model with a *t* statistic of 1.511 and could therefore be retained in the parsimonious model on theoretical grounds. We also find that the *R* regressor (membership to the Rome convention) rather than the *G* regressor (membership to the Geneva convention) enters the specific model and is significant at the 5% level.[16] The PE^2 regressor enters Model (2) with a 5% level of significance, slightly stronger as compared with Model (1) where this regressor has a 10% level of significance.

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[13] Studenmund (1992) suggests that a useful rule of thumb is to suspect multicollinearity if VIF exceeds 10. However, this would seem to be somewhat lenient since the standard error doubles when VIF is 4.0. For this reason a VIF > or = 4 is often used as a cut-off criterion for excessive multicollinearity. Belsley *et al* (1980) suggests that eigen value conditional indices of greater than 30 are symptomatic of severe multicollinearity. A conditional index of 15 would be suggestive of a multicollinearity problem.

[14] Table 6.12 presents a number of specific models relating to alternate specifications of the empirical model, as described in the legend. These specific models are derived by applying a backward stepwise removal method, deleting at each step the variable with the weakest *t* statistic. An estimation of the specific model after including the GDP variable in the general model is also presented in the summary table (Model 4).

[15] A note of caution is required here. The *BOT* variable has a large number of missing values, most of which are concentrated in moderate and high PMS countries. As a result, N=52 in Model (2). However, the model may not be biased since there remains a reasonable spread of low, medium and high PMS countries in the restricted sample.

[16] The Pearson correlation coefficient for this pair of convention membership dummies is 0.64, which is suggestive of multicollinearity. This may help explain the switch of regressors in the restricted sample used to estimate Model (2).

The alternative to dropping a correlated regressor is to construct a composite index of *COR, BM* and *PR*. Indeed, this was the approach taken by Marron and Steel (2000) discussed in section 6.2 where the *Institutions* variable was a composite of 5 different indices. Specific Model (3) replaces the *COR, BM* and *PR* indices with a composite of these variables, *INST*. The individual indices had to be adjusted so that an increase in the *INST* index value corresponded to lower levels of IPR protection and higher levels of corruption and black market operations. Not surprisingly, the *INST* regressor enters the Specific Model (3) as the most significant variable. Relative to Model (1), the PE^2 and *G* regressors remain relatively unchanged and are significant at the 5% and 10% level respectively. However, *YB* has now been dropped from the specific model because of a relatively weak *t* statistic.[17] In conclusion, the alternate approaches of dropping a highly correlated independent variable versus constructing a composite variable is of little consequence. The proceeding analysis focuses on Model (1), the preferred parsimonious model, which is presented in Table 6.11. We do, however, make references to the other specific models when interpreting the results in section 6.6 below.

6.5.4 Regression Diagnostics

Diagnostic tests for normality and multicollinearity are satisfactory. Table 6.11 also presents multicollinearity diagnostics, including Pearson correlation coefficients, eigen value conditional indices and variance inflation factors (VIF). In the absence of a critical value tests for hypotheses regarding multicollinearity, we rely on rules of thumb, which suggest the parsimonious model is not compromised by multicollinearity.

The regression standardised residuals (presented in Figures 6.1 and 6.2) behave normally, with a standard deviation of 1.04 and a mean of –0.02. The Adjusted R^2 reveals that the specific model explains approximately 69 percent of the variation in cross-country sound recording piracy market shares.

[17] Indeed, the last regressor to be removed from Model (3) is *BOT* with a *t* statistic of 1.315, which could be retained in the model on theoretical grounds.

6.6 Interpretation of the Estimated Coefficients

In this section we interpret the regression coefficients of the parsimonious model presented in Table 6.11, including references to the alternate models presented in the summary Table 6.12.

6.6.1 Property Rights, Black Markets and Corruption

The specific model reveals that an increase in the Property Rights index of 1 unit (signifying a deterioration in the level of protection) results in an 18 point increase in piracy market share.[18] With a t statistic of 5.955, the Property Rights index is the most significant variable in the model. This is consistent with our theoretical model which proposes that the higher levels of IPR enforcement (low index value) are associated with the lower levels of piracy market share.

The multicollinearity observed between the *BM, PR* and *COR* variables was dealt with by first removing the *PR* regressor (which saw the *BM* regressor become significant) and then constructing a composite index of all three indices, as presented in Model (3) in Table 6.12. This reveals that an increase in the composite index by one unit produces an increase in PMS by an average of 20.5 point. This provides support for our theoretical model which predicts that corruption in the civil service (customs control, judiciary and policing) would have a significant impact on the probability of detection, the risk:return ratio and the expected profit of the smuggling firm. The strength of the composite index regressor also provides support for the proposition that the size of black market operations in a country also impact directly with the level of observed piracy market shares.

6.6.2 Geneva Convention Membership

The coefficient G_i is a dummy variable signifying whether or not a country is a member of the Geneva Convention. Our model suggests that membership to this convention lowers piracy market share by 16.8 points. This is consistent with our theoretical model which proposes that membership to an international copyright

[18] Recall that the dependent variable is the absolute value of PMS: the percentage of the market accounted for by pirate sound recordings.

convention will result in improved copyright protection in member country national markets and, thereby, lower piracy market share.

6.6.3 Years of Membership to the Berne Convention

As hypothesised we observe an inverse relationship between years of membership to the Berne convention and piracy market share. An increase in membership by 10 years lowers piracy market share by 1.6 points. While statistically significant at the 5 percent level, the size of the coefficient suggests that membership duration brings relatively modest improvements in domestic IPR protection. Considered together with the Geneva convention membership dummy, these results suggest that membership to an international copyright convention provide sizable short-term reductions in PMS (approximately 17 points) as national governments upgrade institutional support for IPR. Thereafter, relatively modest improvements in IPR protection can be expected as membership duration increases.

6.6.4 Price-Earnings Ratio

We observe a direct relationship between the Price-Earning ratio and piracy market share. This provides evidence for the hypothesis in our theoretical model that the higher the price of legitimate sound recordings relative to income, the larger the level of residual (or unsatisfied) demand. This residual demand represents a market opportunity for distributors of pirate sound recordings. Consumers with marginal valuations below the legitimate price (reflecting, in part, low relative wage rates) can satisfy this unmet demand by purchasing relatively low priced pirate product.

6.6.5 Sound Recording Balance of Trade

As hypothesised we observe a direct relationship between the size of the trade deficit in copyright product (license and royalty payments) and sound recording piracy market shares. In specific Model (2) the *BOT* regressor is significant at the 5% level. While the *BOT* regressor was not included in our preferred parsimonious model (Table 6.11) the t-ratio for this regressor was greater than one and could have been retained on theoretical grounds. These results are consistent with our theoretical model, which proposes that governments in countries that are net-importers of sound recordings may exhibit a higher level of tolerance toward piracy.

6.6.6 Comparison with other Models

We compare our model to the Burke model (1996) and the re-estimated version of Burke's model presented in Table 6.7.

In the re-estimated Burke model, we find that years of membership to the Berne convention is significant in explaining cross-country variation in piracy market shares. By comparison our model finds that membership to the Geneva convention rather than the Berne convention, is the most significant membership dummy variable. Our result is intuitively more appealing since the Geneva convention is specific to sound recordings and had the explicit objective of addressing international sound recording piracy. This is consistent with our expectation that membership to the Geneva convention would have the strongest negative association with piracy market share. However, the significance of the *YB* regressor in both models suggests that Berne convention membership duration is important in helping to explain cross-country variations in piracy market share. By comparison, Burke's Model found that membership to the Berne and Rome conventions were significant in distinguishing moderate from low piracy countries but not important in distinguishing high from low piracy countries. Instead, the most significant variable for this latter group was GDP per capita. This was supported by our re-estimation of the Burke model (section 6.3.1) using our more recent and comprehensive data set.

The most significant difference between the Burke model and our model is the role of the *GDP per capita* variable. For Burke, GDP was included to proxy institutional factors, including the effectiveness of the police and judiciary in protecting intellectual property rights. This role assigned to GDP per capita was only partly correct, since this variable can also proxy a range of economic factors. Specific Model (4), presented in Table 6.12, is estimated after including GDP per capita in our general model. Two consequences of its inclusion are noteworthy. Firstly, the *PR* regressor remains the most significant variable, while the *GDP* regressor is significant at the 10% level. Secondly, the *PE* regressor drops from the specific model, suggesting that GDP is perhaps a better proxy for economic rather than institutional factors.

The substitution of institutional and economic variables for GDP in our model, is theoretically more satisfactory and the significance of these variables in the parsimonious model supports this view. Burke found that GDP per capita was important in distinguishing low from high PMS countries, while convention membership variables were all found to be insignificant. In our model, both the Geneva membership dummy and years of membership to the Berne convention are significant. More importantly

perhaps, domestic institutional support for property rights, the prevalence of corruption and black markets, and affordability (the price- earning ratio) are found to be key variables in helping to explain cross-country variations in sound recording piracy market shares.

6.7 Concluding Remarks

Our estimated regression equation is consistent with the predictions of our theoretical model. The positive relationship between the price-earnings ratio and piracy market share supports the hypothesis that as sound recordings become less affordable for music enthusiasts, piracy levels increase. The higher the price-earnings ratio, the higher the residual demand for sound recordings. This residual demand represents a black market opportunity and raises expected profit for smugglers and distributors of pirate sound recordings. The model therefore lends support to our hypothesis that the higher the level of expected profit, the higher is piracy market share. Affordability, it would seem, is an important determinant of the relative level of estimated piracy market shares.

Our model also predicted that the higher the level of corruption and black market activity, the higher the level of sound recording piracy. The significance of the composite index provides strong support for this hypothesis.[19] Our model also supports the hypothesis that the better the level of protection of private property rights and the degree to which government enforces these laws, the lower the level of sound recording piracy. Our model also supports the hypothesis of a direct (but relatively weak) relationship between foreign copyright dependence and PMS.

In conclusion, our model supports the proposition that both domestic and international institutions are important in influencing the level of sound recording piracy market share. A major contribution of our model is the inclusion of economic factors, specifically a measure of affordability and a nation's dependence on foreign copyright product. The regression model of cross country variations in piracy market share is supportive of our theoretical model developed in Chapter 5. It is more complete than the

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[19] The logarithmic version of the estimated regression equation (not presented) provides strong support for this hypothesis, with the *BM* and *COR* regressors both significant at the 1% level in the parsimonious model.

Burke Model of international sound recording piracy in that it replaces GDP per capita with more direct measures of property rights, corruption and black markets. In addition, our model allocates a central role to economic variables not included in the Burke model or more recent studies of software piracy.

Table 6. 1 Summary of Empirical Piracy Models

Theoretical model	Hypothesised Relationship	Proxy Variable
Burke Model		
Music Piracy*		Music Piracy Market Share
IPR laws	-	International copyright convention membership and membership duration
Enforcement	-	GDP per capita
Marron-Steel Model		
Software Piracy*		Software piracy market share
Economic Development	-	GDP per capita
Culture	?	Individualism/Collectivism index
Education	-	Average years of schooling
Economic Institutions	-	Composite governance indicator
Ronkainen and Guerrero-Cusumano Model		
Intellectual Property Violation*		Software piracy market share
Ability and Willingness to pay	-	GDP per capita (PPP)
Enforcement	+	Corruption index
Culture	-	Hofstede's indices of power, distance, masculinity and individualism
IPR Institutions	-	Berne convention membership duration
Trade Dependency	+	Imports as a proportion of GDP

*Dependent Variable

Table 6. 2 Model No. 1: Burke's Multinomial Logit Model

Independent Variables	Low/High		Moderate/High	
	General	Specific	General	Specific
Constant	-4.307 (-2.02) ***	-4.533 (-2.80) *	-0.740 (-0.87)	-1.463 (-1.79)
GDP per capita	0.0005 (2.07) **	0.0005 (2.88) *	-0.0001 (-0.61)	0.0001 (0.62)
Berne dummy	7.780 (1.49)	1.230 (0.76)	8.587 (1.69) ***	1.704 (1.79) ***
Rome dummy	-13.224 (-1.36)	-3.518 (-0.71)	-13.818 (-1.95) ***	-8.463 (-1.79) ***
Phono dummy	4.717 (0.75)		-6.490 (-0.71)	
Years in Berne	-0.312 (-1.17)		-0.338 (-1.31)	
Years in Rome	2.718 (-1.62)	0.806 (1.09)	3.320 (2.09) b	1.880 (1.95) ***
Years in Phono	-2.758 (-1.22)		-0.100 (-0.06)	
(Years in Berne)^2	0.003 (1.09)		0.0004 (1.26)	
(Years in Rome)^2	-0.091 (-1.63)	-0.027 (-1.14)	-0.136 (-2.00) ***	-0.079 (-1.83) ***
(Years in Phono)^2	0.157 (1.26)		0.029 (0.38)	
Pseudo R^2	0.61	0.55	0.61	0.55
Chi-Sq	66.42*	58.88*	66.42*	58.88*

* Statistically significant at the 1% level
** Statistically significant at the 5% level
*** Statistically significant at the 10% level
(t-stats in parenthesis)
Source: (Burke, 1996:63)

Table 6. 3 Model No. 2: Marron and Steel (2000)

Regressor	(1)	(2)	(3)
Constant	111.0*	112.1*	101.2*
	(6.1)	(7.6)	(8.1)
Income	-0.39	-0.45	-0.46
	(0.33)	(0.43)	(0.40)
Individualism	-2.26*	-1.92*	-1.62**
	(0.65)	(0.72)	(0.79)
Institutions	-4.2*	3.58**	-3.89**
	(1.32)	(1.7)	(1.62)
Education		0.96	2.99
		(0.92)	(2.5)
Education^2			-0.29***
			(0.15)
Number of Observations	53	49	49
R^2	0.78	0.80	0.81

* Statistically significant at the 1% level
** Statistically significant at the 5% level
*** Statistically significant at the 10% level

(t-stats in parenthesis)

Source: Marron and Steel (2000)

Table 6. 4 Source of Data in the Empirical Sound Recording Piracy Model

Variable	Definition	Source
PMS	Piracy Market Share	IFPI, 1998
B	Berne Convention Membership Dummy	Berne Convention for the Protection of Literary and Artistic Works, WIPO.
YB	Berne membership duration	*Ibid*
R	Rome convention membership duration	International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations (1961), WIPO
YR	Rome membership duration	*Ibid*
G	Geneva convention membership dummy	Convention for the Protection of Producers of Phonograms Against Unauthorised Duplication of their Phonograms (1971), WIPO.
YG	Geneva membership duration	*Ibid*
PR	Property Rights index	Index of Economic Freedom: Heritage Foundation
BM	Black Market index	Index of Economic Freedom: Heritage Foundation
COR	Corruption index	World Bank, Governance Indicators
BOT	Net royalty and license fees	Balance of Payments Statistics Yearbook, IMF
PE	Price-Earnings ratio	Price data: "The Record Industry in Numbers", IFPI (1999). Wage Data: ILO
GDP	Gross Domestic Product per capita	UNESCO, Human Development Index

Expected signs are presented in Table 6.8

Table 6. 5 Re-Estimation of Burke's MLE Model

Dependent Variable	Piracy Market Share				
Estimation Method	Multinomial Logit				
Category	**General Model (B)**	Sig.[a]	**Specific Model (B)**	Sig.[a]	Exp (B)[b]
Low/High					
Intercept	-9.025	.112	-8.225	0.001	
YG	-1.905	.055			
YG^2	0.08699	.044			
YR	-.863	.360			
YR^2	.02487	.436			
YB	.09143	.339	0.0328	0.10	1.038
YB^2	.00062	.493			
GPD	1.038	.060	0.508	0.00	1.663
G	-1.820	.685			
R	-5.910	.254	-1.489	0.28	0.226
B	-27.033	.00	-21.525	0.00	4.485E-10
Moderate/High					
Intercept	-.706	.741	-2.513	0.02	
YG	-1.551	.035			
YG^2	.07187	.042			
YR	.284	.370			
YR^2	-.0142	.202			
YB	.128	.100	0.025	0.119	1.026
YB^2	-.0011	.151			
GPD	.252	.005	0.198	0.002	1.219
G	-2.632	.242			
R	-2.513	.309	-1.691	0.071	0.184
B	.756	.705	0.065	0.958	1.068
Pseudo R^2					
Cox and Snell	0.713		0.649		
Nagelkerke	0.834		0.758		
McFadden	0.646		0.541		

a. Significance levels are based on the Wald Statistic (probabilities)
b. Transformation of the logit back to an odds ratio

Table 6. 6 Multicollinearity Diagnostics - Pearson Correlation Coefficients of Burke Regressors

Regressors	G	YG	YG^2	R	YR	YR^2	B	YB	YB^2	GDP
G	1.000									
YG	.847	1.000								
YG^2	.787	.987	1.000							
R	.636	.515	.490	1.000						
YR	.507	.557	.543	.745	1.000					
YR^2	.448	.525	.521	.611	.966	1.000				
B	.578	.492	.455	.484	.352	.296	1.000			
YB	.357	.383	.390	.376	.298	.256	.576	1.000		
YB^2	.327	.348	.362	.378	.303	.270	.458	.964	1.000	
GDP	.248	.239	.247	.255	.152	.115	.197	.538	.575	1.000

Table 6. 7 OLS Estimation of Burke's Model (excluding squared variables)

Dependent Variable: Piracy Market Share

Estimation Method: Ordinary Least Squares

General Model

Regressor	Coefficient	Std. Error	t-ratio (Prob)	VIF
Intercept	85.376	4.849	17.608 (.000)	
G	-6.504	10.041	-.648 (.519)	5.238
YG	.106	.506	.209 (.835)	4.426
R	-2.377	8.089	-.294 (.770)	3.323
YR	.008945	.367	.024 (.981)	2.747
B	-11.053	6.927	-1.596 (.115)	2.114
YB	-.150	.083	-1.802 (.076)	2.179
GDP	2.373	.000	-7.278 (.000)	1.512
R^2	0.663			
Adj R^2	0.632			
S.E.	19.96			
F-Statistic	21.395 (0.00)			

Parsimonious Model

Regressor	Coefficient	St. Error	t-Ratio (Prob)	VIF	Eigen Values	Conditional Index
Intercept	85.913	4.735	18.145 (0.00)		3.299	1.00
B	-15.329	5.811	-2.638 (0.01)	1.537	0.341	3.11
YB	-0.144	0.080	-1.793 (0.077)	0.341	0.268	3.51
GDP	-0.00245	0.000	-7.804 (0.00)	0.268	0.0928	5.962
Adj R^2	0.644					
S.E.	19.64					
F- Stat	51.09 (0.00)					

Table 6. 8 Expected Sign of the Model Coefficients

Symbol	Regressor	Sign
B	Membership to Berne Convention	_
R	Membership to the Rome Convention	_
G	Membership to the Geneva Convention	_
YB	Years of Membership to the Berne Convention	_
YR	Years of Membership to the Rome Convention	_
YG	Years of Membership to the Geneva Convention	_
PR	Property Rights Index	_
COR	Corruption Index	+
BM	Black Market Index	+
BOT	Trade Specialisation Index	+
PE	Price Earnings Ratio	+

Table 6. 9 International Piracy Rates: 1998

Country	Piracy Market Share	Country	Piracy Market Share
Austria	5	Thailand	35
Belgium	5	Venezuela	35
Canada	5	Slovenia	37
Denmark	5	Israel	40
France	5	Poland	40
Germany	5	South Africa	40
Ireland	5	Saudi Arabia	45
Japan	5	Egypt	50
Netherlands	5	Kuwait	50
New Zealand	5	Latvia	50
Norway	5	Lithuania	50
Portugal	5	Mexico	50
Slovakia	5	China	56
Spain	5	Bulgaria	60
Sweden	5	Colombia	60
Switzerland	5	Hong Kong	60
UK	5	Malaysia	70
Czech Republic	6	Russia	75
Australia	7	Ukraine	75
USA	7	Bolivia	85
Indonesia	12	Estonia	85
Chile	17	Jordan	85
Finland	17	Peru	85
Hungary	17	Azerbaijan	90
South Korea	17	Romania	90
Singapore	19	Turkmenistan	90
Italy	20	Belarus	95
Philippines	20	Brazil	95
Greece	25	Kazakhstan	95
India	30	Pakistan	95
Turkey	30	Vietnam	99
Argentina	35		

Source: IIPA (1999)

NB: IFPI piracy data are not presented due to a confidentiality agreement.

Table 6. 10 Sound Recording Piracy Model

Dependent Variable Piracy Market Share

Estimation Method Ordinary Least Squares

General Model	Coefficient	Std. Error	t-Ratio (Prob)	VIF
Intercept	3.415	13.687	.249 (.804)	
G	-21.194	11.371	-1.864 (.070)	4.944
YG	.483	.511	.944 (.351)	3.828
R	-5.116	8.958	-.571 (.571)	3.198
YR	.182	.374	.487 (.629)	2.405
B	1.696	10.771	.157 (.876)	1.629
YB	-.157	.097	-1.614 (.114)	2.301
PE^2	.295	.204	1.448 (.155)	2.021
COR	-2.008	5.895	-.341 (.735)	4.537
BM	1.682	4.105	.410 (.684)	4.530
PR	16.042	5.014	3.200 (.003)	3.809
BOT	0.001328	.001	1.366 (.180)	1.931
R^2	0.739			
Adj R^2	0.667			
F-stat	10.296 (0.00)			
S.E.	17.95			

N = 52

Table 6. 11 Parsimonious Model

Dependent Variable Piracy Market Share

Estimation Method Ordinary Least Squares

Regressor	Coefficient	S.E.	t-Ratio (Prob)	Eigen-value	Cond. Index	VIF
Intercept	8.844	8.647	1.023 (.312)	3.653	1.000	
G	-16.812	5.218	-3.222 (.002)	.815	2.117	1.105
YB	-.158	.075	-2.094 (.042)	.300	3.487	1.459
PE^2	.336	.179	1.878 (.067)	.182	4.479	1.652
PR	18.084	3.037	5.955 (.000)	.0491	8.625	1.483
R^2	0.711					
Adj R^2	0.687					
F-stat	28.923 (.000)					
SE	17.41					

N = 84

Table 6. 12 Summary Table: Specific Models

Dependent Variable Piracy Market Share

Estimation Method Ordinary Least Squares

Regressor	(1) [a]	(2) [a]	(3) [a]	(4) [a]
Intercept	8.844	-2.882	-7.468	29.437
	(1.023)	(-0.349)	(-0.931)	(2.142)
G	-16.82*		-14.314**	-11.838**
	(-3.222)		(-2.607)	(-2.30)
R		-13.005**		
		(-2.156)		
YB	-0.158**			-0.151***
	(-2.094)			(-1.978)
PE^2	0.336***	0.432**	0.347***	
	(1.878)	(2.071)	(1.851)	
BM		9.729*		
		(3.291)		
PR	18.084*			14.992*
	(5.955)			(3.793)
BOT		0.00231**		
		(2.526)		
COMP			20.524*	
			(6.243)	
GDP				-1.043***
				(-1.904)
N =	84	52	84	84
R^2	0.739	0.636	0.674	0.711
Adj R^2	0.667	0.605	0.654	0.687
SE	17.94	19.56	18.29	17.41
F (Sig)	28.923	20.491	33.127	28.923
	(.000)	(.000)	(.000)	(.000)

a. t-Ratios in brackets
* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

(1) Specific Model, as presented in Table 6.11
(2) Specific Model: after removing the *PR* regressor
(3) Specific Model: substituting the composite index (*COMP*) for *PR*, *BM* and *COR*
(4) Specific Model: having included *GDP* as a regressor

Figure 6. 1

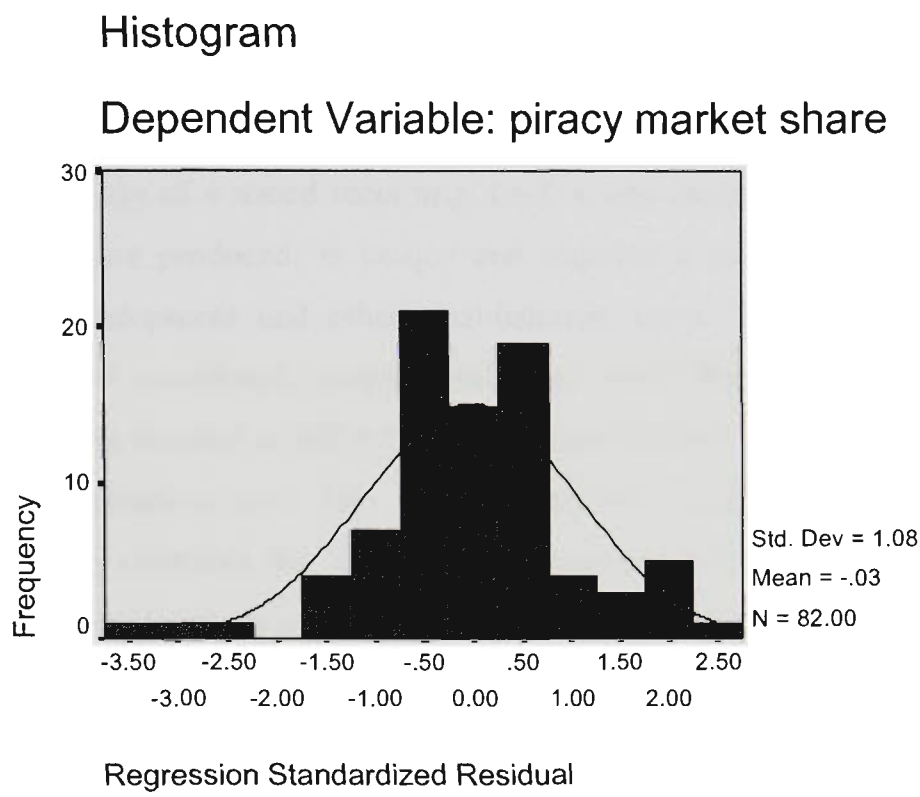
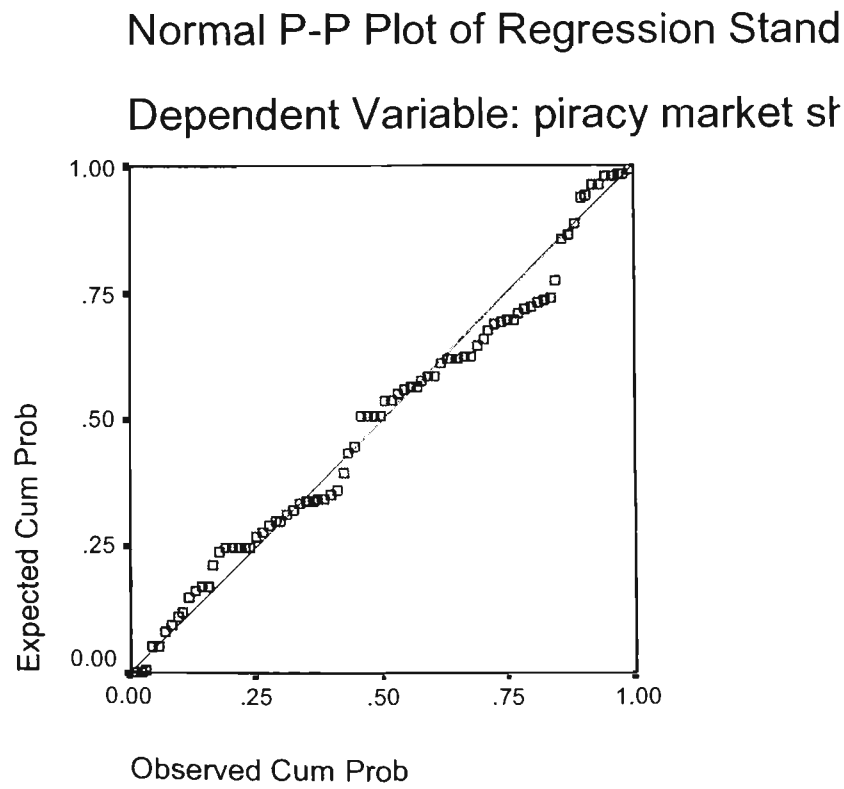


Figure 6. 2



7. Conclusion

The thesis begins with an investigation into the production process, cost structure and nature of demand for sound recordings. We found that a record company's cost structure is complicated by the existence of multiple copyrights that co-exist in each and every copy of a sound recording. Each sound recording master, from which these duplicates are produced, is unique and requires a considerable investment in research and development and other establishment costs. The stochastic nature of demand for sound recordings, coupled with high establishment costs for new titles, means that picking winners is difficult. This exposes a record company to considerable uncertainty and financial risk. This risk is minimised via the use of strategies that include recording contracts that enable record companies to recoup a portion of the establishment costs (such as recording and marketing expenses) from artist royalties. Despite these strategies the majority of new sound recording title releases are financial failures. This means that profits from successful titles effectively cross-subsidise speculative investments in new title releases. It is argued that parallel imports, by focussing on successful titles, can cannibalise these profits and potentially undermine the viability of record company operations, particularly local territorial license holders that make title specific investments in marketing and promotion.

Our analysis reveals that, in the presence of stochastic demand, record companies will likely set the profit maximising price on the basis of expected demand. As profit maximisers, record companies will not invest in the establishment of a new sound recording title unless it is expected to sell a minimum volume of output. Assuming all titles face a uniform expected demand function, uniform pricing prevails. Where realised demand falls below expectations, losses ensue. Where realised demand exceeds expectations, as in the case of an international hit record, supernormal profits can be generated. This pricing behaviour may help explain the relative price uniformity observed for new sound recording title releases. Supernormal profits on international hit titles cross-subsidise speculative investments on new, often unsuccessful, titles. Stochastic demand and an oligopolistic market help to explain the price rigidity observed in the market for hit records.

An investigation of market structure reveals that, despite declining technological barriers to entry, the large multinational record companies continue to dominate both

the Australian and international market for sound recordings. These record companies form part of larger global media and entertainment conglomerates, with commercial interests spanning newspapers, motion pictures, video games, publishing and the like. The ensuing market power and control over the distribution of artist specific sound recording titles, provides the wherewithal to partition the global market into national segments and apply a strategy of profit maximising price discrimination. In this context, parallel trade represents a destabilising element to an otherwise orderly international distribution network.

Chapter 3 presented an investigation into the economics of copyright and the competing principles of national versus international exhaustion. It is demonstrated that, despite claims to the contrary, there is nothing in international law that mandates the adoption of national exhaustion. Each national government is free to determine its own position vis-à-vis parallel imports. After reviewing the economic case for copyright owner control over parallel imports, we conclude that this argument does not hold across all product categories. Any decision as to the desirability of parallel imports, on economic grounds, should only be reached after a cost-benefit analysis of the specific product class to which it is to be applied. It is argued that market power arises as a result of exclusive territorial licenses for the distribution of artist specific titles. These hit-records, over which territorial distributors enjoy a temporary monopoly, face a relatively inelastic demand curve. It is demonstrated that that the parallel importation of sound recordings can have pro-competitive effects where it undermines monopoly pricing applied by oligopolistic producers. Notwithstanding the above, parallel imports nonetheless represent a potentially damaging phenomenon for territorial licensees that make substantial (territory specific) investments in the marketing and promotion of new sound recording titles. Nonetheless, it is demonstrated that parallel import restrictions, in an environment of exclusive territorial licenses and monopoly control over artist specific sound recordings, provide MNEs with the wherewithal to partition the global market into national segments and apply a strategy of international price discrimination.

Chapter 4 develops a model of the market for sound recordings in which we investigate the income redistributive effects and national welfare consequences of the adoption of international exhaustion. It is demonstrated that parallel imports can undermine a strategy of international price discrimination sustained via a global oligopoly in which copyright owners enjoy reciprocal importation rights between specific national markets. For a small net-importer of sound recordings, like Australia,

we demonstrate that the introduction of parallel imports is welfare enhancing for the nation. We find no empirical evidence to suggest that MNE record companies have responded by ceasing to supply low-priced territories from which parallel imports are sourced. As such, the contention that parallel imports will reduce global welfare, resulting from the cessation of supply to low-income countries, is refuted. Indeed, record companies have instead responded by accommodating parallel imports, lowering prices and providing a range of value added services to retailers and consumers alike. Domestic and international strategies employed by local subsidiaries of MNE record companies to impede parallel imports have been deemed anti-competitive by the Federal Court of Australia and in contravention of the Trade Practices Act.

The model of the market for sound recordings was extended to analyse the phenomenon of sound recording piracy. A major contention of those opposing the introduction of parallel importation of sound recordings was that it would give rise to significant increases in piracy. Our theoretical model of smuggling behaviour suggests that the relationship between sound recording piracy and parallel imports is unclear. While the introduction of parallel imports reduces the risk-return ratio to smuggling pirate sound recordings into Australia, the increase in penalties that underpinned the copyright reform, increases the risk-return ratio. As such, the net impact of the introduction of parallel imports on piracy market share is ambiguous.

In Chapter 5 we develop a model of sound recording piracy and the decision-making process of the smuggling firm. This analysis reveals that a range of economic and institutional factors influence the firm's and consumer's decision-making, and ultimately the level of sound recording piracy. We make a number of important contributions to theory, which may be summarised as follows.

Firstly, we extend the traditional trade-theoretic general equilibrium model to incorporate trade in copyright infringing product. This model proposes that, in a nation with a comparative disadvantage in copyright product, and in the presence of IPR enforcement and increasing costs to smuggling, smuggling will continue until the smuggling terms of trade equal the legitimate product terms of trade. In our model trade in legitimate and illicit product can co-exist, and is superior (welfare wise) as compared to a nation that is a net-importer of copyright product that more aggressively enforces IPR law as per international convention obligations.

Secondly, our partial equilibrium model of trade in copyright infringing product introduces the risk-return ratio to smuggling as a key determinant of the level of

smuggling and piracy market share. The risk-return ratio is depicted as an increasing cost function that represents the smuggling supply curve. The slope of the smuggling supply curve is a function of expected profits, the probability of detection and the nature and size of penalties associated with detection and conviction. The market dynamics presented in this model assist in identifying the relative market share of legitimate and illicit product (or piracy market share). The model also facilitates an analysis of the efficacy of a range of strategic responses by copyright owners to the phenomenon of sound recording piracy.

Thirdly, smugglers and distributors of pirate sound recordings rank individual nations according to the level of expected profit from each market. The level of expected profit in each national territory is in turn influenced by a range of factors, including: the probability of detection, the size and nature of the ensuing penalties, the level of corruption in the civil service, the size and efficiency of informal distribution channels and informal markets.

Fourthly, we develop a model of the demand for pirate sound recordings in which the price of legitimate product in the formal market determines the size of residual demand. This residual demand, in turn, represents the potential demand for illicit product in the informal market. Consumers of pirate product seek to maximise utility, and many choose to substitute high quality low-priced (often perfect) substitutes for legitimate product. Our model postulates that the higher the domestic price of legitimate sound recordings, the larger the residual demand, which represents a market opportunity for pirates. The dynamic relationship between the formal and informal market depicted in this model leads to the development of the affordability index or price-earnings ratio as a key determinant of sound recording piracy.

Fifthly, our theoretical model hypothesises that, governments in countries that are dependent on foreign IP, with a resultant trade deficit with respect to copyright product, may be less rigorous in enforcing domestic IPR laws. Net-importers of sound recordings are expected to have higher levels of sound recording piracy. The foregoing theoretical models facilitate the development of a theoretical model of the determinants of cross-country variations in sound recording piracy market shares.

Finally, in Chapter 6 we produce an empirical model of international sound recording piracy, derived from the theoretical model presented in Chapter 5. We find that the estimated regression equation is consistent with the predictions of our

theoretical model. The model demonstrates that economic, as well as institutional factors, are important in differentiating low, medium and high piracy market countries.

The empirical model provides considerable support for our hypothesis that piracy market share is directly related to the price-earnings ratio. That is, the higher the price of legitimate sound recordings and the lower the average hourly earnings, the higher will be the level of sound recording piracy market share. The empirical model also supports our hypothesis that piracy market share is inversely related to the strength of property rights, and directly related to corruption in the civil service and the prevalence of informal markets. That is, the stronger are institutional arrangements for the protection of private property, the lower is the level of sound recording piracy market share. A key determinant of piracy is the level of law enforcement. The empirical model supports the hypothesis that the higher the level of corruption in customs control and policing, the higher the level of sound recording piracy market share. Our model hypothesised that black market activity would be an important channel through which large volumes of pirate product can be distributed. The direct relationship between the black market index and sound recording piracy market share provides support for this hypothesis.

Our theoretical model of smuggling and piracy predicts that copyright dependent nations that increase enforcement and thereby lower piracy will induce a reduction in national welfare. This suggests that copyright dependent countries may not allocate adequate resources to rigorously and effectively enforce IPR law. The empirical model also provides some support for the hypothesis that sound recording piracy levels are higher in countries with a dependence on foreign copyright product.

Given the size of the trade losses incurred by music and other copyright industries more generally, there is considerable interest in the determinants of piracy market share and strategies that will reduce piracy to more "acceptable' levels. Our empirical model suggests that strategies adopted at the international level, by copyright owners and/or their representative associations, to expand country membership to international copyright conventions is an important first step in the fight against piracy. While less significant, the model also supports the hypothesis that the higher is convention membership duration, the lower is sound recording piracy market share. This augurs well for copyright owners given the relatively recent cessation of the grace period for developing countries to become TRIPS compliant by 2000. Nonetheless, the significance of the corruption and black market indices in our empirical model suggest

that convention membership might be a necessary but not sufficient condition. At the national level, governments need to demonstrate a willingness to allocate adequate resources to monitor smuggling and piracy, and to enforce IPR law. Copyright owners have only indirect influence over these factors. Institutional reform to counter corruption in the civil service, and the evolution of more formal distribution channels in developing countries, will be a relatively slow process. This will likely frustrate copyright owner efforts to lower sound recording piracy.

Copyright owners have a more direct influence over the affordability index, via their international pricing strategies. While sound recording prices are, on average, lower in low-income as compared with high-income countries, consumers in the former often have to work three or four times longer in order to earn the income required to purchase a legitimate sound recording. It should be no surprise then that demand for pirate sound recordings is higher in countries where the price-earnings ratio is relatively high. A high price-earnings ratio excludes many consumers from participating in the legitimate market, while the residual demand may be deflected into the informal market through which pirate product is distributed. While the supply of low-price pirate product will itself induce demand, the level of this demand is directly related to the price-earnings ratio.

While lowering the price of legitimate sound recordings will lower the price-earnings ratio and the price differential with respect to pirate sound recordings, this strategy may prove ineffective if the demand for legitimate product in low-income countries is inelastic. Furthermore, such a strategy would further increase the differential between low-price and high-price countries, thereby increasing the returns to parallel trade in sound recordings. The lowering of price in a country with a relatively high piracy market share (and inelastic demand) will be unprofitable. Moreover, this strategy will further erode global profits by stimulating parallel trade and displacing sales in high-price territories.

No doubt the development of digital technology and the distribution of audiovisual products in an online environment provides new challenges for all copyright dependent industries. For the music recording industry, online distribution challenges the international distribution systems developed over the last 50 years. It has the potential to undermine territory specific pricing strategies designed to maximise global profits. At this point in time, a relatively small proportion of households throughout the world have access to a computer and the Internet. While online retailing is growing in

many countries, it represents a relatively insignificant proportion of total retail sales. Indeed, rather than expanding sales of sound recordings, online distribution threatens to reduce them. Internet music piracy, using peer-to-peer file swapping software, is a growing phenomenon and most prevalent in developed countries, where revenues are greatest. Music recording companies have been slow to embrace the new distribution technology, perceiving it perhaps as more of a threat than an opportunity.

Notwithstanding the above, traditional forms of distribution will continue to dominate revenues in the foreseeable future. For record companies, there are great financial rewards for the continued control of the physical distribution of sound recordings. Moreover, the vast majority of pirate activity remains in more traditional formats such as audiocassette and compact discs, and will continue to do so in the foreseeable future. For this reason we will continue to observe a great deal of energy and resources expended in retaining copyright owner control over parallel imports, as well as a continued vigilance in the fight against piracy.

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