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The Improbability Of Stable Capitalism

An essay to mark the 100th anniversary of the birth of Michal Kalecki

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Abstract

This paper discusses effective demand, the rate of profit and the profound contribution of Michal Kalecki to our understanding of capitalist economies. It argues that the Kaleckian position on the causal link between investment spending and profit and between the rate of profit and the stability of capitalism has not been surpassed. A model, using Australian national accounting concepts and data, is developed as a logical device to explore contentious issues in macroeconomics. Contrary to prevailing opinion it is demonstrated that, on their own account, neither increased nor falling wages affect the level of business profits, which are a direct function principally of the levels of investment spending, capitalists' and rentiers' consumption, the public sector borrowing requirement and net exports. The paper asks: what level of investment demand will ensure that rate of profit does not fall? What are the implications such a level for production and productivity? Is this realistic? It concludes by agreeing with Kalecki that, while 'capitalists, as a whole, determine their own profits by the extent of their investment and personal consumption', but how they do so is 'determined by objective factors, so that fluctuations of profits appear after all to be unavoidable' (Kalecki 1933, p. 13). Hence the idea of a stable capitalism over time is unlikely.

Introduction

This article discusses issues surrounding effective demand and the rate of profit. It will focus in particular on the causal link between investment spending and profit and between the rate of profit and the stability of capitalism. A theme throughout will be the questions raised in Michal Kalecki's short but significant 1967 article 'The Problem of Effective Demand with Tugan-Baranovski and Rosa Luxemburg' (Kalecki 1967). Actual Australian economic data will be used to illuminate the arguments and theories discussed. The article may therefore also be regarded an attempt to relate Kalecki's thinking directly to the Australian experience.

However, the article will be somewhat unusual because it will not employ the traditional demand-side concepts of over-capacity and over-production. The reasons for this relate to the focus on investment spending. If we say, as we must, that aggregate spending causally determines the level of aggregate production, then 'over-production' means simply that there is insufficient effective demand. Similarly, to say that there is 'excess capacity' is to say that more could be produced were aggregate spending to increase. The real problem is whether the level of effective demand is sufficient to yield a desired rate of profit and not whether the economy is operating at some level defined as 'full capacity'. Such a level, it will be argued, is rather open-ended and thus notoriously difficult to define.

Unless it is otherwise stated, all data will be for the Australian private business sector. The data will not be adjusted to account for changes in the level of self-employment income because it can be shown that these changes do not make a material difference to the specific issues discussed here. The reader should

[1] The author would like to thank John King, Dick Nichols, and Fernando Scarmozzino for their comments on earlier drafts and suggested improvements. The usual caveat applies.

also note that some theoretical and empirical corners have been cut to keep the exposition focused on the central arguments. Again, these simplifications will not make a material difference to the results.

1 Capitalists earn what they spend

Kalecki's profound contribution to economic thought has often been reduced to aphorisms. Perhaps the most well known is that capitalists earn what they (plus some others) spend (Kalecki 1969 (1954), pp. 45-58; 1971a (1933, 1954), pp. 78-92; see also, e.g., Laski 1987, p. 9). The point is blindingly simple. Yet unless its implications are fully absorbed, economic analysis will be likely to go astray. The notion that 'capitalists earn what they spend' sets a 'macro' frame of reference into which economic analysis *must* fit. This section will explore the issue using expenditure, production, and income categories and data recorded in the Australian national accounts.

The domestic production account of the Australian national accounts can be adapted to create the following identity to represent expenditure on gross domestic product (Y_e):

$$Y_e = C + C_d + I + I_d + G + NX + \alpha = \Pi + \Pi_d + \Pi_g + W + T_i \qquad 1.1$$

On the expenditure side, C is private consumption, C_d is imputed spending on rent by persons who own dwellings, I is private business fixed capital investment, I_d is private dwelling investment, G is all public sector spending, NX is net exports, and α is a term used to capture the statistical discrepancy and changes in stocks.[2] On the income side, Π is before-tax private business gross operating surplus less imputed bank service charges (profit), Π_d is the imputed gross operating surplus of persons who own dwellings (equal by definition to C_d), Π_g groups the gross operating surpluses of all public sector entities, W is wages, salaries, and supplements, and T_i is indirect tax less subsidies.

Now, the terms for imputed dwelling rent on both sides of equation 1.1 cancel. Moreover, if we subtract T_i *plus* Π_g from G, we are left by definition with taxes on workers and on private business profit *plus* the public sector borrowing requirement ($T_w + T_\Pi$ + PSBR).[3] Similarly, the term for wages is equal by definition to workers' consumption *plus* their saving *plus* their tax payments ($W = C_w + S_w + T_w$). Thus equation 1.1 may be simplified as:

$$C + I + I_d + T_w + T_\Pi + PSBR + NX + \alpha = \Pi + C_w + S_w + T_w \qquad 1.2$$

or:

$$(C - C_w) + I + I_d + PSBR + NX + (\alpha - S_w + T_\Pi) = \Pi \qquad 1.3$$

[2] Changes in stocks have not been included with investment here so that investment is limited strictly to fixed capital expenditure. The reason will become clear in section 2, and the effect is small.

[3] The public sector borrowing requirement is equal to total expenses *less* total revenue for the public sector as a whole. This includes federal, state, and local governments and all public sector business enterprises at these levels (see, e.g., Foster 1996, table 2.13 and definitions).

If we subtract workers' consumption from overall private consumption, we are left with consumption spending by those whose income is derived from private business profits (C_c)[4]:

$$I + I_d + PSBR + NX + (\alpha + C_c - S_w + T_\Pi) = \Pi \qquad 1.4$$

Now, the first four terms on the left-hand-side of this equation are familiar and can be obtained directly from the national accounts. The only terms that cannot be obtained without making arbitrary assumptions are C_c and S_w. However, so that we may concentrate on the level of before-tax profit and its relationship with the level of investment spending, α and T_Π can be combined with C_c and S_w for convenience (see the introduction). A term (β), which can be calculated as a residual, is thus introduced.

Simplifying, we obtain the following broadly Kaleckian equation for private business profit that will be used from now on (see, e.g., Kalecki 1969, pp. 48-49; 1971a, p. 82):

$$I + I_d + PSBR + NX + \beta = \Pi \qquad 1.5$$

The left-to-right direction of causality is also clearly meant to be Kaleckian (1969, pp. 45-46; 1971a, pp. 78-79; Laski 1987, p. 9). The equation says that before-tax profits of private businesses are determined by the levels of private business fixed capital investment spending *plus* spending on the construction of dwellings (to be) owned by persons *plus* the extent to which the public sector goes into debt each year to finance its spending *plus* exports minus imports *plus* the residual term (β) containing 'capitalists' consumption,' workers' saving, and business taxes.

To Kalecki, the contributions of net exports and the public sector deficit shown here comprise the merit in Rosa Luxemburg's discussion of the role of 'external markets' in expanded reproduction (Kalecki 1967, pp. 151-55). As he put it elsewhere:

> According to the formula…profits are equal to investment plus export surplus plus budget deficit minus workers' saving plus capitalists' consumption. It follows directly that an increase in the export surplus will raise profits *pro tanto* if other components are unchanged…
>
> A budget deficit has a similar effect…It also permits profits to increase above the level determined by private investment and capitalists' consumption [assuming zero workers' saving]. In a sense the budget deficit can be considered as an artificial export surplus…
>
> The above shows clearly the significance of "external markets" (including those created by budget deficits) for a capitalist economy. Without such markets profits are conditioned by the ability of capitalists to consume or undertake capital investment. It is the export surplus and the budget deficit which enable the capitalists to make profits over and above their own purchases of goods and services. (Kalecki 1969, pp. 50-52; 1971a, pp. 84-86; see also Laski 1987, p. 10)

It is therefore somewhat ironic to consider the unrelieved ranting against government deficits and debt by business organisations and think tanks. It is worth noting also that this *macroeconomic* approach in effect eliminates workers' wages

[4] Recall that no adjustment is made for trends in self-employment. Hence, according to the standard national accounting treatment, private business profits include the income of the self-employed.

and their spending on consumption goods as direct determinants of the level of aggregate profit (though an indirect effect remains via S_w[5]). Some small effort of mind also reveals that the orthodox (*microeconomic*) remedy to unemployment of wage cuts is in error, and it is wrong for the very same reason we can talk about a 'paradox of thrift': that is, because of a fallacy of composition (see Kalecki, e.g., 1971b).

Another intellectual victim of the Kaleckian analysis, which in this regard leans in the direction of Tugan-Baranovski's (see section 3), is the traditional 'under-consumption' theory of economic crisis. If, in general, we can detach workers' wages from profit at the aggregate level, then profit can be self-sustained by investment when wages are declining (relatively and/or absolutely). Armstrong, Glyn, and Harrison make this point in similar terms:

> Regardless of their importance in sustaining accumulation by providing a growing market for consumer goods, wages must be regarded as a basically passive element in the process of realization. The development of wages is largely a product of accumulation itself.
>
> A capitalist boom requires potential profits to be realized. Workers' spending as a whole provides the demand which realizes the profits of capitalists producing consumer goods. But the pay of their employees is an expense which reduces profits, not a source of demand which realizes them. Only the spending of workers employed elsewhere realizes profits in the consumer goods industries. These workers will only be employed if there is demand for the products they make – for export, from the government or from the employers themselves. So the realization of all the potential profits ultimately depends on sufficient spending by the employers (on investment or consumption), the government or by those purchasing exports [in net terms for the latter]. (1991, p. 124; see also 1984, p. 177)

However, if the analysis in this section undermines the under-consumption case, what is the fate of the obverse 'profit-squeeze' viewpoint? *Prima facie* it is another victim. If aggregate profit is determined fundamentally by capitalists' spending, then capitalists can sustain their profit levels (and rates) by spending more, no matter how strongly wages growth outstrips that of labour productivity. Reduced profits (and profits rates) can be due only to reduced spending.

This formal argument concerning the role of wages holds regardless of whether there are multiplier and accelerator effects on aggregate income. It is worth commenting briefly on the relationship of wages to the multiplier and accelerator so as to avoid possible misunderstanding of the logic of the argument that will be developed in later sections. The multiplier operates to increase spending on consumer goods and thereby the size of consumer-goods industries and, thereby, national output and income overall. In aggregate, however, any increased demand resulting from an increase in total wage income will be matched exactly by increased wage costs. There can be no net effect on profits from this source, as demonstrated above. The only multiplier effects on profits derive from the multiplier on capitalists' consumption (see the straightforward summary by Laski 1987, pp. 9-10; see also Kalecki 1971, chapter 8) and any effects on the level of workers' saving, as also noted above.

The accelerator, in contrast, describes any *derived* increase in the level of investment due to income growth (Sherman 1991, Chapter 7). Income growth may be due to the growth in aggregate spending facilitated by growth in aggregate

[5] Recent anecdotal evidence suggests that the effect may have been quite significant in Japan recently. See also Glyn's remarks on Sweden (Glyn 1995, p. 50-51).

wages. It should be noted that Kalecki himself thought that the accelerator was neither an adequate theoretical nor empirical explanation of investment decisions. He preferred to base an explanation on the health or otherwise of firms' past profits, or internal finance or saving, rather 'than to deduce it from the necessity of expanding capacity in order to increase output'. One the one hand, 'large reserve capacities exist' that enable production to grow without new investment. On the other, 'whatever the basis of the "acceleration principle" may be, it is inadequate not only because it does not taken into consideration the other determinants of investment decisions … but also because it does not agree with the facts' (Kalecki 1971, pp. 114-15; referring to 1971, p. 111). Moreover, past profitability itself depends on past decisions by capitalists to invest and consume (Kalecki 1971, p. 88; see also Laski 1987, p. 10). Therefore, even if a role exists for a mechanism such as the accelerator, it still must operate through investment spending, over which capitalists have a reasonable degree of decision-making discretion. As such the accelerator properly falls under the Kaleckian heading of 'the theory of investment decisions'. We thus return to the point that the level and rate of profit are determined by capitalists' decisions to spend and that wages, except in so far as they influence capitalists' spending decisions, essentially are a passive element in the process.

Economic mechanisms are, of course, far more involved than I have suggested in this first section. Hence later sections will take up again the issues raised in the foregoing paragraph (see esp. section 5). Readers should also note some other limitations. Inflationary consequences, for example, have not yet been considered, and I will not in this paper delve far into the 'piece de resistance' of investment decision-making (Kalecki 1968, p. 165; 1967, p. 148). Moreover, I have declined to discuss the practical complexities of 'investment' in dwellings. However, what this paper will do is to step carefully through the following questions implicit in Kalecki's 1967 article on Luxemburg and Tugan-Baranovski: What level of investment demand will ensure that rate of profit does not fall (section 3)? What are the implications such a level for production and productivity (section 4)? Is this realistic (section 5)? However, to help to clarify some of the problems that will emerge in answering these questions, we will first explore some of the relevant Australian data.

2 The data on profits, capitalists' spending, and external markets

This section will fit the Australian data into equation 1.5. Table 1 presents the current-price Australian components of equation 1.5 from 1967 to 1994, while table 2 shows their average proportions to total private business profit (see also the source table given in the appendix 'Data source table').[6] The following points stand out. First, private business investment and dwelling construction demand have been the largest and most consistent contributors to profits over the period shown. Of the two, the former has been more significant, as we would suspect. For Kalecki, '…investment is the main factor determining effective demand' (Laski 1987, p. 10).

[6] The starting year for the data corresponds with the transition from persons to labour hours in Australian Bureau of Statistics labour data series. This will become important in later sections. Readers may wish to track the data in the text sequentially across the columns of the source table. Notes will be provided below to make this easier.

[TABLES 1 & 2 GO ABOUT HERE]

Second, net exports have been small and mostly negative, while the public sector contribution was crucial to sustaining the level of profits during the 1970s, early 1980s, and early 1990s. These contributions correspond with Australia's three most damaging postwar crises and their aftermaths. Third, the residual term β cannot be dismissed as a sizeable influence, but it is variable and will need to be explained elsewhere.[7]

It will be useful now to try to estimate a simple linear relationship between investment spending and business profit. Econometric sophistication is not my concern. Rather, the relationship is estimated merely to give more realistic orders of magnitude to illustrate generally in section 3 the process by which the rate of profit is formed. Thus I will use the simplest linear equation for the investment-profit relationship:

$$a + b\,I + \varepsilon = \Pi \qquad 2.1$$

First, however, it is necessary to convert the current-price profit and investment data given in table 1 above into constant prices.[8]

Ordinary least squares regression then gives the following estimated linear equation:

$$16038 + 1.9736\,I = \Pi \qquad 2.2$$

Chart 1 illustrates the relationship, which has a reasonably high R-square figure of 0.9061 and an adjusted R-square of 0.9025.[9] Again, this is as much as we might have expected. First, investment is the biggest component of profit, and thus we know from equation 1.5 that any increase in investment will, at a minimum, deliver an equivalent increase in profit (i.e., $b \geq 1$). Second, we can explain how an increase in investment will likely have reasonable flow-on effects to dwelling construction, 'capitalists' consumption,' and business tax. Indeed Kalecki spent some space establishing the functional dependence of capitalists' consumption on past profits (see, e.g., 1969, pp. 61-63; 1971a, pp. 86-88). The case for business tax is obvious, and the relationship between business and dwelling investment obtains an R-square of 0.9320 under simple linear OLS regression.

[CHART 1 GOES ABOUT HERE]

Doubtless complex lags will be involved, and these are not explicit in equations 1.6 and 1.7. Moreover, the data contain their own biases. For example, were investment stronger we might reasonably expect that 'offsets' against profit

[7] Influences to consider include the reduction of self-employment income and its effect on 'capitalists' consumption' (see note 2; see also Doughney 1997, Appendices). A large proportion of the variation in β is due to variation in $(C_c - S_w)$, though it should be remembered that tax on profits is also included.

[8] See columns 9-15 of the source table in the data appendix.

[9] If current prices are used, a = 744, b = 2.3640, R-square is 0.9730, adjusted R-square is 0.9719, and the standard error is 5787. Again using current prices, if the sum of I and Id is used, a = -76, b = 1.6507, R-square is 0.9887, adjusted R-square is 0.9883. This is clearly a tighter fit. In each case the confidence level is 95%.

would also be stronger. That is, net exports may be lower, due to the propensity to import capital goods, and the PSBR may 'automatically' be smaller, due to a commensurately higher rate of economic growth. To anticipate such effects, it is therefore reasonable to model the data just for the years in which the rate of investment growth exceeded, say, 5 per cent per annum. Nevertheless, even in this case, the regression results are similar (a = 14845, b = 1.9720, R-square = .9038, and adjusted R-square = .8941).

It is unwise to read too much into regression results, which are necessarily *ex post* and cannot possibly do justice to the complex causality prevailing in open systems. Yet equation 2.2 does give a rough tool to work with, so long as it is interpreted in a way such as: 'what would be the broad relationship between the levels of profit and business investment if the levels of spending were to expand as in the past?' Posing the question in this form also leads directly to the next problem: the effect of increased investment on the rate of profit.

3 Was the Australian postwar rate of profit destined to fall?

The aphorism that capitalists earn what they spend captures part of Kalecki's argument. Another part refers to the role of investment spending in relation to the stock of productive capital. Here we can re-engage with Kalecki's comments on Tugan-Baranovski. Again Kalecki's case is disarmingly straightforward:

> The theory of Tugan-Baranovski is in fact very simple: the author maintains that with "appropriate proportions" of use made of the national product the problem of effective demand does not arise. This argument, illustrated numerically by means of Marxian schemes of reproduction, is in fact tantamount to the statement that at any level of consumption of workers and capitalists the national product may be sold provided investment is sufficiently large…Thus the fundamental idea of Tugan rests on an error that what *may* happen actually is happening, because he does not show at all why capitalists in the long-run are to invest to the extent necessary to contribute to full utilization of productive equipment. (1967, p. 147)

It should be noted that Kalecki's critique of Tugan-Baranovski addresses the problem of whether 'expanded reproduction' can be sustained. He uses a numerical example to show how the 'problem of effective demand' arises once capitalists reduce their rate of investment (expressed as a proportion of the capital stock). A process of successive decline then sets in, and he concludes that the 'economy may as well settle to a state of simple reproduction with cyclical fluctuations around it' (1967, pp. 149-50).

However, capitalists are less interested in the level of aggregate output or consumption than they are in profit. 'As a result there is nothing absurd', Kalecki maintained, 'in basing the development of the system on expansion of … production of "coal and steel" which serves to develop the production of these commodities'. He added that, by exposing such an absurdity, this part of Tugan-Baranovski's argument was a 'lasting contribution to the analysis of [the] functioning of capitalism in its various phases' (1967, pp. 147-48). Moreover, while the level of profit is undoubtedly significant to capitalists, the rate of profit, or profit measured as a proportion of the stock of capital 'invested' in productive assets, is even more important. Hence it is appropriate to rephrase the essence of Tugan-Baranovski's argument about 'expanded reproduction' in terms of the rate of profit, as does Kalecki in effect in 'Trend and the business cycle' (1971a, pp. 165-83). This also allows us to consider the real case in which there is expanded

reproduction (accumulation and growth) *and* a declining rate of profit. Australia's three serious post-war crises, 1974-75, 1982-83, and 1990-92, have occurred precisely in these circumstances (Doughney 1999).

The rate of profit, which will be central to the investigation below, may be defined either gross or net of capital stock depreciation:

$$\Pi' = \Pi_c/K_c \qquad 3.1$$

The symbol Π' will be used for the rate of profit, K_c represents the fixed capital stock of private businesses valued at current prices and replacement cost,[10] and Π_c is the same as the current-price level of private business profit used in table 1. Equation 3.2 takes a step further and uses price indices applicable to profit (P_y) and the fixed capital stock (P_k) to introduce the constant-price measures used in section 2. Thus changes in the rate of profit can be regarded as functions of changes in relative prices and real variables:

$$\Pi' = (P_y/P_k)\,(\Pi/K) \qquad 3.2$$

Now, the conundrum is that a real increase in investment spending, *ceteris paribus*, will not only act to raise the rate of profit (via its profit numerator) but simultaneously act to reduce it (via its capital stock denominator). The question is whether capitalists will *continue* to be willing to invest to such an extent that the profit rate is maintained. While 'on paper' it may be 'possible', this outcome 'is by no means obvious' (Kalecki, 1967, pp. 147-48). One reason it may not is that increased investment delivers new equipment with the potential capacity to satisfy increased demand for output. This is the meaning of another of Kalecki's regularly quoted passages-cum-aphorisms:

> The tragedy of investment is that it causes crisis because it is useful. Doubtless many people will consider this paradoxical. But it is not the theory which is paradoxical, but its subject – the capitalist economy. (1939, p. 149)

Another reason investment may not be high enough in each successive period is that 'rentiers' savings' may increase. In contrast, investment may be spurred on by a 'supporting factor' such as 'innovations', such that profits do not have to rely on 'external markets' alone (Kalecki 1967, p. 148; see also 1969, pp. 157-61). Following Crotty (1993), we may add the nature of the competitive regime facing capitalists as another key 'supporting factor'.

All of this raises the interesting question of what the level of investment would have to be, *ceteris paribus*, for the rate of profit to remain stable or to rise. This section will employ the simple linear relationship between actual investment and the level of profit estimated above (see equation 2.2) to help to propose an answer. In turn, using actual data to estimate an answer to the above question will help to tease out whether the level of investment required to sustain Tugan-Baranovski's argument is potentially sustainable in reality.

First, it is worth looking in more detail at the rate of profit. The relevant private business capital stock data are provided by the Australian national accounts capital stock series and are shown in columns 7-15 of the source table in the appendix. Note that, for convenience, only the gross profit rate is used here.

[10] In principle this is the same as proposed by Kalecki (1971, p. 112).

Chart 2 illustrates that the actual rate has declined clearly over the years presented, from about 24 per cent in 1966-67 to an average of about 16 per cent in the early 1990s.

[CHART 2 GOES ABOUT HERE]

Second, it is necessary to introduce another variable before it is possible to estimate the level of investment needed for the rate of profit to remain stable. Actual data for this variable (c) are presented in column 16 of the source table in the appendix. This variable represents the proportion of new investment spending by which the capital stock at constant prices grows. That is, using the subscripts 1 and 0 to represent the year-on-year change in the capital stock:

$$K_1 = K_0 + cI \qquad 3.3$$

Thus, while new investment will add to the capital stock, c takes account of the extent to which existing, plant, equipment, and buildings will be retired each year, thereby reducing its growth.[11]

If we now combine equations 2.1, 3.2, and 3.3 it is possible to get an equation for the rate of profit in terms of investment. (In case there is any misunderstanding that I am trying to do more than suggest broad influences and orders of magnitude, it is also worth recalling the caveats concerning equation 2.2 made in section 2.) Thus:

$$\Pi' = (P_y/P_k)\,[(a + bI) / (K_0 + cI)] \qquad 3.3$$

This may be rewritten to solve for I, with the term $P_{\Pi'}$ being used for (P_y/P_k):

$$I = [(\Pi'/P_{\Pi'})K_0 - a] / [b - (\Pi'/P_{\Pi'})c] \qquad 3.4$$

So what would investment have to be for the rate of profit not to fall and for Tugan-Baranovski's argument to be sustainable? Given that we 'know' a and b, and that we have a data set to describe how c and the relative price ratio $P_{\Pi'}$ actually behaved, it is possible to set Π' at its 1966-67 level of 24.59 per cent and solve for the hypothetical level of private business fixed capital expenditure required each year.

The source table in the appendix[12] contains the results of the calculations for this hypothetical level of investment (hI). It also gives the recalculated (hypothetical) data for capital stock (hK) and total profit (hΠ). By themselves, the raw figures are not especially enlightening. They become more meaningful when recast as average annual percentage growth rates. This is accomplished performing ordinary least squares regression on logarithms of the data to account for compounded percentage growth. The results are presented in the second data column of table 3, immediately to the right of the actual average annual percentage rates. The significant result is that investment would have had to grow

[11] If net data were used, I and Π would have been net of annual depreciation provisions and K net of accumulated depreciation. Similarly, the word 'retired' in the sentence to which this note refers would be replaced with 'depreciated' were net variables used. See Doughney (1997, Appendices) for a discussion of such issues.

[12] See columns 19-22.

annually in real terms at 7.60 per cent for the profit rate to have remained at its 1966-67 level. It actually grew at less than half this rate, averaging 3.22 per cent for the period.[13]

[TABLE 3 GOES ABOUT HERE]

Now, if we set the 'desired' rate of profit at 20 per cent, investment would still have had to grow at 6.02 per cent annually. With the profit rate at 18 per cent, the required average annual investment growth rate is 5.34 per cent. Both are still well above the actual average. The results for these 'desired' profit rates are shown in the third and fourth data columns of table 3.

A better understanding of what this implies can be obtained if we now translate the hypothetical investment growth rates into average annual per cent growth rates for private business output (Y). The results are presented in the final row of table 3. Private business output growth is a good proxy for economic growth in general. The translation can be made by dividing the hypothetical profit data (hΠ) by the actual profit shares for the period (Π/Y) to get hypothetical output (h1Y). The growth rates are determined by OLS regression as above.[14]

The average annual rates of output growth corresponding to the three profit rates are 6.46, 4.63, and 3.82 per cent, respectively, while the actual average annual growth rate for the period was 2.76 per cent. In short, the calculations in this section show just how difficult the task of maintaining a stable rate of profit would be *even if* capitalists were willing to expand their investments.

4 A foray into production

Now the growth rates calculated in section 3 give cause to think that Kalecki was right to question if Tugan-Baranovski's 'paper' argument was practical. However, there are additional grounds for believing that it is difficult for capitalism to sustain a reasonably high or even moderate rate of profit. These grounds take us back to one of the issues in the introduction: the notion of 'full capacity'. First, it will be useful to decompose the rate of profit further before embarking on the foray into production that is necessary to explore this problem.

To begin with, the rate of profit can be broken into the familiar constant-price profit share and output-capital ratios:

$$\Pi' = (P_{\Pi'})\,(\Pi/K) = (P_{\Pi'})\,(Y/K)\,(\Pi/Y) \qquad 4.1$$

In turn the output-capital ratio can be decomposed to reveal the influences of constant-price labour productivity (Y/L) and the capital-labour ratio (K/L), where the variable L in each case is measured in labour hours. That is:

$$(Y/K) = (Y/L) / (K/L) \qquad 4.2$$

[13] In anticipation of the (understandable) objection that the longer the period over which the exponential regression occurs the smaller is the average annual growth rate, I offer the defence of conservatism. Moreover, the differences involved are not large.

[14] See also columns 23 and 31-32 of the source table in the appendix.

Similarly, the profit share may be expressed in terms of the constant-price product wage (w), which is defined as aggregate wages, salaries and supplements per labour hour (W/L), and labour productivity. That is:

$$(\Pi/Y) = (1 - W/Y) = [1 - (W/L) / (Y/L)] = [1 - w / (Y/L)] \quad 4.3$$

Combining the above equations gives:

$$\Pi' = (P_{\Pi'}) (\Pi/K) = (P_{\Pi'}) [(Y/L) / (K/L)] [1 - w / (Y/L)] \quad 4.4$$

Actual data for each of these terms are given in the source table in the appendix (columns 23-27). It should be recalled that measures gross of capital stock depreciation are used. While the choice of gross or net measures may be important in other circumstances, it does not affect the theoretical argument I am illustrating with the data here. Table 4 presents the production data recast as average annual percentage growth rates. It is evident from the actual rates in the first data column that the output-capital ratio has declined considerably on average over the period average (-1.52 per cent per annum). This is due to the greater average annual per cent increase in the capital-labour ratio (3.23 per cent) than in labour productivity (1.66 per cent). The profit share has also declined (-0.07), as the average annual per cent increase in the product wage (1.72 per cent) was greater than that in labour productivity.

How then may these production variables be related to the hypothetical aggregate spending data calculated at the end of section 3? It can be shown that the higher is the rate of economic growth the higher is the rate of profit. This can be rephrased as a question about the rate of profit: 'how is it possible for production to expand to satisfy the increase in effective demand needed to maintain the rate of profit at, say, its 1966-67 level?' For convenience the actual 1966-67 profit rate of 24.59 per cent will be used from now on. The answer can be found in equations 4.1 and 4.2. If the actual relative price and profit share data are used, the answer must be that the output-capital ratio has to adjust. Indeed its decline must be reduced to –0.18 per cent per annum on average, as shown in the second data column (H1) of table 4. This approach challenges the implicit notion that the output-capital ratio is fundamentally technologically determined or, at least, is determined in production[15]. It counter poses to it the view that this ratio is determined in most part by the level and rate of growth of effective demand. As chart 3 illustrates, the strong demonstrable relationship between the rate of output growth and that of the output-capital ratio is hard to deny (see Doughney 1999, part 2 section 5).

[CHART 3 GOES ABOUT HERE]

The output-capital ratio responds to the level of effective demand, but this begs the practical question of 'how?' To answer, permit me to make two

[15] For example, the orthodox 'production-function' approach regards the output-capital ratio as capital productivity and as being completely specified by the implicit technology of the production function. Some Marxist theorists see a downward trend in this ratio as the inevitable consequence of increasingly labour-saving technological change, basing their arguments of Marx's admittedly one-sided illustration in the third volume of *Capital* of the 'tendency of the rate of profit to fall' (see Doughney 1999).

assumptions for the moment that I will later relax. These are that labour productivity average weekly working hours remain at their actual levels. Now the only way in these circumstances that the output-capital ratio can respond to the increase in spending is if the growth in the capital-labour ratio declines to 1.84 per cent per annum on average (as is also shown in the second data column of table 4). How, in turn, is this possible? The answer is by using the capacity of the capital stock more *extensively*: hiring more labour (denominator) to set to work on idle machines (already counted in the numerator) and, which amounts to the same thing, putting on additional shifts. Both of these things actually occur when economies experience strong growth (see the Australian data in Doughney 1999, part 2 sections 2 & 5), so the argument here is not entirely fanciful.

What are unrealistic are the assumptions that labour productivity and weekly working hours will remain the same. In fact, when economies experience strong growth labour productivity generally increases (more *intensive* capital stock use), as does overtime and the usual number of hours worked by part-timers and casuals (further *extensive* use).[16] We are not constrained to operate in the stylised textbook production-function world dominated by diminishing marginal productivity (see, e.g., Lavoie 1996-97). The latter may occur in various situations, but the data show it to be swamped by the effects of the world according to Kalecki (and others): a world *prima facie* defined by the potential to expand capital stock use.

Unfortunately, once we introduce notions of capital stock extensity that go beyond the simple case of hiring more labour to set to work on idle machines (coupled with associated labour productivity effects), the whole concept of the capital stock having 'a capacity' loses its appeal. The actual experience of massively expanded wartime production and the potential of shift work suggest strongly that the capacity of the capital stock is quite open-ended, at least in a technical sense. Moreover, most measures of 'capacity utilisation' are *ex post* data fits that link output peaks, with the 'peaks' assumed to represent 'capacity'. None of this is very satisfactory, which is why I have preferred to state the problem as one of effective demand rather than of an implied technical or 'capacity' constraint. This argument is clearly commensurate with the idea that the output-capital ratio is also fundamentally demand-driven.

Some obvious questions arise next. To keep the rate of profit at 24.59 per cent we know that investment *must* grow at the average annual rate of 7.60 per cent. However, what happens to output growth if labour productivity is assumed to grow with stronger investment and output? Also, what if we allow the working week to lengthen? (The latter is quite a realistic question given what has occurred anyway in the OECD economies during the 1990s.) Two additional hypothetical cases are thus generated. One (H2), which is shown in the third data column of table 4, assumes a 3 per cent average annual growth rate for labour productivity but uses actual average weekly working hours. The other (H3), which is presented in the fourth column, uses the 3 per cent average annual growth rate for labour productivity and a 40-hour average working week. While the hypothetical rate of labour productivity growth of 3 per cent is almost double the actual rate (1.66 per cent), chart 4 shows us that it is not entirely unrealistic. In the late 1960s and early 1970s, before the relatively stagnant lower growth of the later 1970s and early-to-mid 1980s set in, productivity growth averaged in this range. Moreover, whenever output has grown strongly, productivity growth has exceeded this level. The

[16] The approach in this and the preceding paragraph is confirmed in RBA (1999).

argument that growth in labour productivity and output are linked may not be as strong as that for growth in output and the output-capital ratio, but it is strong enough. Note also that actual product wages and relative prices are used in both cases, as they were earlier.[17]

[CHART 4 GOES ABOUT HERE]

In both of the new hypothetical cases the output-capital ratio is able to decline at an average annual rate of –1.42 per cent because the profit share increases by an average 1.17 per cent per annum. This, of course, is because the assumed productivity growth of 3 per cent exceeds the actual growth in product wages. Now what such labour productivity growth means is that any given output can be produced with fewer workers and hence a smaller wage bill. In turn this means that the output of consumer goods will also be proportionately smaller than with the first hypothetical data (H1). Average annual output growth will also be correspondingly smaller: 5.14 per cent compared with 6.46 per cent. Recall also that the actual rate was 2.76 per cent for the period.

We can find out how the 5.14 per cent average annual growth rate may be possible by examining the output-capital ratio. With labour productivity growth set at 3 per cent per annum, the capital-labour ratio can grow at an average annual rate of 4.48 per cent per annum, compared with an actual rate of 3.23 per cent and a rate of 1.84 per cent for H1. In other words, the rate of profit can be sustained more capital-intensively: that is, more in the 'absurd' way supposed in Kalecki's 'coal and steel' discussion of Tugan-Baranovski (1967, p. 148).

It will have been noticed that most of the data for cases H2 and H3 are the same, despite the extension of working hours in the latter. The reason for this is simple. The level of effective demand, driven by the rate of investment growth, ultimately determines the aggregate number of labour hours required, once parameters such as labour productivity growth are set. It does not matter at this level how long on average each of us works each week. Rather the average number of weekly working hours determines the aggregate number of workers required. Thus, while columns 34-36 of the source table in the appendix record the number of labour hours required (L), columns 39-43 translate these into the number of workers (N). Note that the number of labour hours and workers required are greater than the actual level in all three hypothetical cases, even where accumulation has been capital-intensive and *relatively* labour-saving (i.e., labour-saving in stock terms at a point in time if not extensively in annual labour hours). The final row of table 3 shows the average annual growth rates in private business employment in each case. This will become a significant issue in the next two sections.

5 Labour demand: a profit expansion causing a profit squeeze?

Sections 3 and 4 have answered the questions as they were posed. To ensure that the rate of profit remained at its 1966-67 level the rate of investment growth 'on paper' (recall Kalecki, 1967, pp. 147-48) would have needed to average approximately 7.5 per cent each year for the period. Private business output growth would similarly have needed to be between 5 and 6.5 per cent, depending

[17] The data for this table 4 are derived from columns 23-44 of the source table in the appendix.

on the assumed rate of labour productivity growth. These are large and unlikely figures. However, we have yet to consider the investment-spending incentive to which Kalecki referred: that is, an increase in the rate of innovation. As noted in section 3, we may add the spur of inter-capitalist competition as an additional incentive.

One of the variables used already captures the 'innovation/competition effect'. This is the variable c, which measures the growth of the capital stock as a proportion of the annual level of investment. If this figure is high the rate of retirement (and depreciation) is low, and *vice versa*. A high rate of innovation/competition therefore implies a low value for c. Chart 5 shows how this figure has behaved over the years of this study.[18] Clearly it has declined, from the 0.55-0.70 range in the early years to an average in the 0.40-0.55 range more recently. Its average for the 1967-94 is approximately 0.55. Part of the decline is attributable to the destruction of capital that occurs through bankruptcy and closures during crises (three of which occurred during these years), but it is reasonable to think that increased competition since the 1980s (with more scrapping of older-generation plant, equipment, and buildings) has also been influential (see, e.g., Crotty 1993; Doughney 1999, section 8).

[CHART 5 GOES ABOUT HERE]

What then if the rate of innovation/competition[19] had been higher all along? What then, to repeat the question at the start of section 3, would the level of investment have had to be, *ceteris paribus*, for the rate of profit to have remained stable or to have risen? Table 5 sets out the results in the same form as in table 4, but here the variable c has been set at the relatively low figure of 0.45 and labour productivity growth at 2.5 per cent per annum. Table 6 follows, with one change: labour productivity growth has been set at 3 per cent per annum.[20] Since the interpretation of the data has been explained in the previous section I will not over-extemporise here. However, certain key points stand out. The first is that the investment and growth rates are starting to appear more 'realistic' and possible, though they are certainly large and based on substantially stronger productivity growth than Australia has achieved on average and, even more so, recently.

[TABLES 5 & 6 GO ABOUT HERE]

Although the figures are now starting to appear more realistic, it is time to take stock of where the argument has taken us. First, exceptionally strong investment and output growth are needed to stop a secular decline in the rate of profit. Second, the technical productive capacity of the capital stock is not in itself an obstacle to stronger output growth, either in theory or practice. The issue rather

[18] See also column 18 of the source table in the appendix.

[19] I think it is reasonable to distinguish these two aspects. Increased competition can force firms to invest more at any given trend level of innovation. However, a jump in the level of innovation (e.g., due to scientific breakthrough) can see investment and competition rise without other changes having occurred in the various structures and forces contributing to the degree of competition (or monopoly).

[20] All of the data behind tables 5 and 6 are contained in two additional source tables, which differ from the source table in the appendix only in so far as a different and constant value (0.45) for the variable c is used. These have not been reproduced for the sake of brevity, but they are available from the author on request.

is the level of effective demand, which determines how much of the technical productive capacity will be used. Third, an increase in labour productivity[21] does not affect the required level of investment spending, but it does mean that output growth will be lower for any level of the profit rate. The reason is that productivity growth raises the profit share and lowers the wages share (see equation 4.4). This is the same as saying that the size of the aggregate income corresponding to aggregate profit will be lower, aggregate profit having been determined by aggregate investment.[22] Fourth, increased labour productivity and working hours per person, while not directly affecting required investment and, in the case of working hours, the level of output, do reduce the number of workers needed.[23] It is this last conclusion that we have not even considered, yet it is *the most important part of the analysis*.

Tables 4, 5, and 6 contain a final row showing actual (1.40 per cent) and hypothetical average annual rates of growth in the number of private employees (N). Let us first look at the cases in which we have assumed the rate of innovation/competition to equal the actual levels prevailing between 1967 and 1994. The hypothetical rates of employment growth corresponding to cases H1-H3 are 5.04, 2.39, and 2.08, respectively. What do these imply? Quite simply they imply that the rate of growth expected is *impossible*. Why? Because, even if we add all of Australia's actual unemployment[24] (U) to the actual data for N, we would fast run out of labour: from 1968, 1970, and 1972 onwards, respectively! That is, N becomes too big, and the capital-labour and output-capital ratios cannot behave as they must for the constant profit rate to be possible.[25] The 'inverted L-shaped short-period cost-curve' (Dobb 1973, pp. 223) attributed to Kalecki may be invested with this meaning: that is, the capacity constraint that sees the curve rise vertically is set in the labour market.

The six hypothetical cases associated with innovation/competition tell a similar story. When the rate of productivity growth is set at 2.5 per cent (table 4) the average annual growth rates of employment are 3.60, 1.84, and 1.52, respectively. All are above the actual rate, and the spending-driven demand for labour exceeds supply in 1971, 1972, and 1975, respectively (though it reverses as we enter the 1990s in the latter two cases). Only when labour productivity growth is increased to 3 per cent (table 6) do the average annual growth rates of employment fall below the actual rate, and only when we extend average working hours to 40 per week does labour demand remain lower than labour supply for the period as a whole. However, even in this seemingly attenuated case, the hypothesised level of unemployment is lower than the actual level in 1975-76, 1978-79, and 1982-83.[26]

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[21] This argument holds with equal force to a fall in the real product wage. See equation 4.4.

[22] Following from the previous note, this argument illustrates the case presented discursively at the end of section 1 that wages essentially are a passive element in determining the level of profits and the profit rate. It does not say, however, that wages will not influence capitalists' decisions to spend (see below).

[23] Of course, bearing in mind the remarks concerning wages in the previous two notes, this conclusion is perverse for the way such issues are discussed in orthodox theory.

[24] I have not attempted to estimate 'hidden unemployment' in addition to the 'official' level. Though hidden unemployment is a significant concern in other contexts, I do not think to omit it here alters the line of argument. For example, even if we double the level of unemployment, basically similar results are obtained.

[25] See columns 40-47 of the source table in the appendix.

[26] These are given in columns 40-47 of two additional source tables mentioned in note 20.

It is necessary to make this point because it is, at least, arguable that some variant of the 'profit-squeeze' explanation of economic crisis and reduced growth applied in Australia. This explanation hinges, on the one hand, on the cost of labour rising, due to labour supplies running down as accumulation and effective demand generally increase. On the other hand, the domestic and/or international context must be such that firms are unable to pass on their increased costs as price rises. The arguments are set out *inter alia* in Doughney (1999, part I section 2, part II section 3), Glyn and Sutcliffe (1972), and Armstrong, Glyn, & Harrison (1991, 1984). Kalecki also made comments on related themes (e.g., 1971b; 1968, p. 169; 1943, pp. 140-41), and Dobb elaborated some of the arguments in remarks on Kalecki:

> …Kalecki developed (and quite early, in 1939) an analogous answer to that of Keynes concerning the effect of wage-reductions on unemployment. Since prices were determined…as a mark-up on prime costs according to the prevailing degree of monopoly, prices would always fall in the same proportion as wages…This conclusion stood in contradiction to the classical contention (e.g. of Ricardo – and repeated by Marx in his well-known defence of trade-union action to raise wages in his *Value, Price and Profit*) that if wages rose profits would fall, the average level of prices remaining the same. This was, of course, because they were assuming a commodity-money standard, i.e. a gold standard… In Keynesian language it *was* possible in these circumstances for workers by bargaining over money wages to determine, or influence, their real wages. Once a commodity-money system is abandoned, however, the price-level is no longer dictated by (and pegged down to) the value of gold relatively to that of commodities other than gold: it is free to vary according to a number of factors, including monetary or credit policy and the price-policies of monopolists. When money-wages rise, monopolist firms are in a position (at least, if demand is favourable) to pass this on in higher monopoly prices. (1973, pp. 223-24)

Before discussing the data again, therefore, an associated theoretical impasse, first posed in section 1, must be reckoned with. It is this: If aggregate profit is determined fundamentally by capitalists' spending, then capitalists can sustain their profit levels (and rates) by spending more, no matter how much higher wages rise than does labour productivity. How can there be a 'profit squeeze' from higher wages or flaccid productivity if reduced profits (and profits rates) can be due only to reduced spending by capitalists themselves? To construct the argument we can assume that one of the fundamental profit squeeze conditions has been met, namely that product prices are constrained from rising *pari passu* with product wages. In other words, the profit share has been 'squeezed', or falls. This is entirely possible and does not contradict the argument in quotation marks above.

Nevertheless it is *not* possible to escape the argument that, 'on paper', there is nothing to stop capitalists spending their way out of the problem. Recall that, irrespective of the different profit share levels in the above tables, the level and rate of growth of investment spending required to keep the profit rate constant were determined solely by the estimated parameters of equation 2.1 and the 'innovation/competition' parameter discussed earlier in this section. Of course, the rate of output growth would increase were the profit share to fall, and this would need to be accomplished by an increase in the output-capital ratio (assuming zero relative price effects). However, compensatory increases in the rate of growth of the output-capital ratio would have to rely on a combination of labour productivity growth and more extensive use of the capital stock (i.e., a fall in the trend rate of

growth of the capital-labour ratio). These, in all likelihood, would merely exacerbate the inherent tension of the process by increasing the demand for labour and further squeezing the profit share.

Now it was shown above that all of this is untenable. At a certain point the required levels of investment spending growth mean that labour supplies run out. Therefore this conclusion is not a real one: it, too, exists merely 'on paper'. In fact the 'Actual Data 1967-94' column that was kept in each of tables 3-6 as an antidote to arithmetical fantasy, together with the actual profit rate and investment columns of the appended source table, demonstrate that the actual spending growth rate and profit rate fell. This happened along with falling labour demand and rising unemployment on average across the period. The conundrum therefore remains, and the challenge for theory is to offer a credible explanation of 'why?' An attempt at such an explanation follows.

Firms certainly depend for their collective profits on their collective spending. However, they must also produce and sell goods and services. When spending is strong this may increase nominal costs and prices. If prices are able to rise proportionately with costs then real spending will not have changed. Alternatively, if prices cannot rise proportionately with costs, real spending will have fallen. At one extreme, if investment decision-making is based on a nominal money target and complete 'money illusion' prevails, this decision to reduce real spending occurs behind the backs of the participants, as it were. At the other extreme, of course, capitalists as a class would be conscious of this and could raise their real spending by increasing nominal investment spending accordingly. However, as Kalecki noted:

> In her consideration of the taking of investment decisions by capitalists…[Rosa Luxemburg] somehow implies that they are being taken by the capitalist class as a whole. And this class is frustrated by the knowledge that there is no final market for the surplus of goods corresponding to accumulation: so why invest?
>
> 'No capitalists do many things as a class but they certainly do not invest as a class. And if that *were* the case they might do it in just the way prescribed by Tugan-Baranovski. (1967, pp. 151-52)

The point of departure here is that rising costs of production and rising prices are also faced by capitalist firms individually. They do not necessarily know whether these are real or nominal. They do not know for sure whether prices of investment goods are really higher relative to their own existing profit levels. If anything in between the two extreme cases above exists they will be likely to think conservatively: that is, fear that nominal cost and investment price rises will indeed translate in some proportion into real ones. In addition they are likely also to face higher interest rates, which are consistent with rising prices, increased borrowing of working capital to accommodate increasing costs, and policy-driven responses aimed at undermining working-class self-confidence (as suggested by Kalecki in his 1943 'Political aspects of full employment').

Now, if capitalists think that that nominal cost and investment price rises will translate in some proportion into real increases, they will most likely respond accordingly. After all, they may have a certain degree of control over the production phase of their operations, but the circulation (selling) phase is one further step removed. Individually they encounter the problem of effective demand directly, and actual realisation of the profits they anticipate *is* uncertain. All of this points to a 'micro' explanation of capitalists' activity that can account

for investment decisions being shelved temporarily and investment spending being reduced relatively.

Individual capitalists are dependent on other capitalists' spending for their profits to be realised. Therefore, once it has started, a process of reduced spending can become contagious. When this happens the process necessarily is translated macroeconomically. To begin with firms anticipate or expect squeezed profits from cost and price increases *and* reduce their spending (or the rate of growth of that spending) in the aggregate. The result is that the many individual decisions to reduce the actual level or the rate of growth of investment spending act in concert to create squeezed profits. In other words, they bring it about!

Conclusion

As Kalecki observed, the capitalist system can be 'paradoxical'. It can also be perverse, and it is in only a very constrained way that capitalists can take the Tugan-Baranovski option.

> Thus capitalists, as a whole, determine their own profits by the extent of their investment and personal consumption. In a way they are 'masters of their fate'; but how they 'master' it is determined by objective factors, so that fluctuations of profits appear after all to be unavoidable. (Kalecki 1933, p. 13)

Equally unavoidable is the conclusion that the conditions necessary for a stable rate of profit are far from easy to come by. Once problems start to emerge, and the profit rate begins to fall, a cumulative process takes hold. Reduced investment leads to reduced profit rates and firms' internal saving (sources). This leads to reduced investment and capitalists' consumption, which further reduces profit rates. Thus it would also appear that the conditions needed for stable capitalism, as reflected in Australia's mid-1960s halcyon days, were destined to fade. The economic instability of the past three decades seems, after all, to have been inevitable. Also inevitable are questions over whether the process operates cyclically and/or in longer waves and about the conditions necessary for an upswing. These, alas, are beyond the scope of this paper and must remain subjects for further study.

Appendix

Data source table

YEAR	1 PRIVATE BUSINESS FIXED CAPITAL INVEST-MENT	2 PRIVATE DWELL. INVEST-MENT	3 PUBLIC SECTOR BORROW-ING REQUIRE-MENT	4 NET EXPORTS (EXPORTS LESS IMPORTS)	5 RESIDUAL (INC. CONSUM-PTION FROM PROFIT)	6 PRIVATE BUSINESS GROSS PROFIT	7 PRIVATE BUSINESS GROSS FIXED CAPITAL STOCK	8 PRIVATE BUSINESS GROSS RATE OF PROFIT	9 PRIVATE BUSINESS GROSS OUTPUT PRICE INDEX
ABS No. /source	5204.0	5204.0	5204.0 Foster 2.13	5203/4.0 Foster 1.10		5204.0	5221.0		5204.0
	$m current	$m current	$m current	$m current	6-Sum(1:4) $m current	$m current	$m current	6/7 $m current	Index
1967	2872	1145	756	-201	2719	7428	30203	0.2459	15.1
1968	3052	1290	767	-556	2803	7517	33018	0.2277	15.5
1969	3487	1481	488	-368	3468	8777	36483	0.2406	16.1
1970	3701	1698	277	21	3566	9507	40594	0.2342	16.9
1971	4267	1785	383	-17	3053	9760	46125	0.2116	17.8
1972	4517	2089	457	441	3030	10822	51715	0.2093	19.0
1973	4788	2497	710	1625	3014	12855	58217	0.2208	20.9
1974	5539	3071	984	-3	5014	14994	72052	0.2081	23.8
1975	6087	3043	2852	-272	3362	15990	89992	0.1777	28.3
1976	7223	4240	3478	296	2806	18765	106179	0.1767	32.5
1977	8295	5348	3455	-532	4435	21933	122620	0.1789	36.1
1978	9360	5235	4323	-943	3855	23197	139812	0.1659	38.9
1979	11637	5533	6274	-1085	5200	28885	160187	0.1803	41.9
1980	12620	6508	4230	888	7565	33286	182680	0.1822	46.5
1981	16104	8199	4095	-2536	8759	36686	209058	0.1755	51.3
1982	19257	9041	6027	-5392	6921	38936	242257	0.1607	56.6
1983	18595	7717	9206	-3522	3274	38447	269897	0.1425	62.5
1984	19629	8707	12956	-2531	8494	50519	290008	0.1742	66.8
1985	22909	10413	10755	-4084	11839	56811	326474	0.1740	70.6
1986	27092	11239	11083	-7339	15298	62980	378805	0.1663	75.3
1987	31395	10734	8840	-4108	15974	68539	425481	0.1611	80.7
1988	37484	12468	441	-1323	23981	78796	463972	0.1698	86.8
1989	42665	17595	-5070	-5796	37114	91735	505530	0.1815	94.4
1990	44021	18633	2515	-6571	33147	98635	546545	0.1805	100.0
1991	38614	17357	5054	356	26720	94194	569976	0.1653	103.1
1992	34586	17510	15510	1898	19952	95238	589606	0.1615	105.0
1993	37356	20074	17972	-1597	24100	101472	615706	0.1648	106.3
1994	40682	23062	14122	-1549	29238	108314	633182	0.1711	107.5

Data source table continued

YEAR	10 PRIVATE BUSINESS GROSS FIXED CAPITAL STOCK PRICE INDEX	11 PRIVATE BUSINESS RELATIVE PRICE RATIO	12 PRIVATE BUSINESS FIXED CAPITAL INVEST-MENT PRICE INDEX	13 PRIVATE BUSINESS FIXED CAPITAL INVEST-MENT	14 PRIVATE BUSINESS GROSS PROFIT	15 PRIVATE BUSINESS GROSS FIXED CAPITAL STOCK	16 *a*	17 *b*	18 *c* RATIO OF INVEST-MENT TO CAPITAL STOCK GROWTH
ABS No. /source	5221.0		5204.0						
		9/10		2/12	6/9	7/10	Eqn. 2.2	Eqn. 2.2	Δ15/13 = actual
	Index		Index	$m constant	$m constant	$m constant	$m constant		
1967	16.3	0.9248	17.0	16896	49192	184970	16038	1.9736	0.6757
1968	16.8	0.9247	17.2	17754	48497	196969	16038	1.9736	0.6758
1969	17.3	0.9301	17.5	19963	54516	210763	16038	1.9736	0.6910
1970	18.1	0.9346	18.1	20412	56254	224490	16038	1.9736	0.6725
1971	19.2	0.9264	18.8	22668	54831	240047	16038	1.9736	0.6863
1972	20.3	0.9350	20.5	22021	56958	254485	16038	1.9736	0.6556
1973	21.7	0.9623	22.1	21694	61507	268045	16038	1.9736	0.6251
1974	25.5	0.9323	24.2	22906	63000	282248	16038	1.9736	0.6201
1975	30.6	0.9246	29.0	20995	56502	294004	16038	1.9736	0.5599
1976	34.8	0.9350	34.0	21269	57738	305462	16038	1.9736	0.5387
1977	38.7	0.9327	38.2	21728	60756	316813	16038	1.9736	0.5224
1978	42.6	0.9128	42.1	22245	59632	328068	16038	1.9736	0.5060
1979	46.8	0.8946	45.6	25533	68938	342005	16038	1.9736	0.5458
1980	51.5	0.9025	51.3	24622	71583	354547	16038	1.9736	0.5094
1981	56.4	0.9088	55.7	28904	71513	370368	16038	1.9736	0.5474
1982	62.3	0.9081	59.6	32314	68792	388679	16038	1.9736	0.5667
1983	66.8	0.9358	65.9	28224	61515	404092	16038	1.9736	0.5461
1984	69.5	0.9608	70.1	27990	75627	417125	16038	1.9736	0.4656
1985	75.3	0.9371	71.6	32003	80469	433327	16038	1.9736	0.5063
1986	84.1	0.8959	80.4	33692	83639	450690	16038	1.9736	0.5153
1987	90.8	0.8888	90.1	34852	84931	468602	16038	1.9736	0.5139
1988	94.6	0.9177	94.5	39657	90779	490516	16038	1.9736	0.5526
1989	97.9	0.9640	96.5	44198	97177	516215	16038	1.9736	0.5815
1990	101.0	0.9897	100.0	44021	98635	540917	16038	1.9736	0.5611
1991	102.0	1.0107	101.8	37924	91362	558731	16038	1.9736	0.4697
1992	103.1	1.0183	101.9	33929	90703	571817	16038	1.9736	0.3857
1993	105.2	1.0106	105.7	35327	95458	585352	16038	1.9736	0.3831
1994	105.4	1.0198	107.6	37803	100757	600660	16038	1.9736	0.4049

Data source table continued

YEAR	19 HYPOTHE-TICAL PRIVATE BUSINESS FIXED CAPITAL INVEST-MENT	20 HYPOTHE-TICAL PRIVATE BUSINESS GROSS PROFIT	21 HYPOTHE-TICAL PRIVATE BUSINESS GROSS FIXED CAPITAL STOCK	22 HYPOTHE-TICAL PRIVATE BUSINESS GROSS RATE OF PROFIT	23 PRIVATE BUSINESS GROSS PROFIT SHARE	24 PRIVATE BUSINESS GROSS OUTPUT TO CAPITAL RATIO	25 PRIVATE BUSINESS GROSS LABOUR PRODUCT PER HOUR	27 PRIVATE BUSINESS PRODUCT WAGE PER HOUR	27 PRIVATE BUSINESS CAPITAL TO LABOUR HOURS RATIO
ABS No. /source					*5204.0 Doughney (1997)*	*5204.0 Doughney (1997)*	*5204.0 6203/4.0 6248.0 Doughney (1997)*	*5204.0 6203/4.0 6248.0 Doughney (1997)*	*5221.0 6203/4.0 6248.0 Doughney (1997)*
	Eqn. 3.4 $m constant	*Eqn. 2.2 $m constant*	*Eqn. 3.3 $m constant*	*11x20/21 Current*	*Either*	*$ constant*	*$ constant*	*$ constant*	*$ constant*
1967	16789	49173	184898	0.2459	0.4675	0.5689	16.82	8.95	29.56
1968	18474	52499	197384	0.2459	0.4490	0.5483	16.84	9.28	30.71
1969	20188	55880	211333	0.2459	0.4619	0.5600	18.04	9.71	32.22
1970	22027	59510	226146	0.2459	0.4519	0.5545	18.35	10.06	33.10
1971	24562	64514	243002	0.2459	0.4266	0.5355	18.50	10.61	34.55
1972	26584	68504	260432	0.2459	0.4282	0.5227	19.25	11.01	36.83
1973	27853	71009	277842	0.2459	0.4454	0.5177	19.87	11.02	38.38
1974	31631	78466	297455	0.2459	0.4346	0.5136	20.64	11.67	40.18
1975	34574	84274	316815	0.2459	0.3951	0.4864	21.10	12.76	43.38
1976	36736	88540	336605	0.2459	0.4019	0.4703	21.83	13.06	46.42
1977	39609	94211	357297	0.2459	0.4239	0.4524	21.93	12.63	48.47
1978	43668	102221	379391	0.2459	0.4065	0.4472	22.42	13.31	50.14
1979	48402	111565	405811	0.2459	0.4428	0.4553	23.57	13.13	51.77
1980	51532	117742	432061	0.2459	0.4512	0.4475	23.66	12.98	52.87
1981	55262	125104	462309	0.2459	0.4368	0.4420	23.80	13.40	53.84
1982	59978	134410	496296	0.2459	0.4131	0.4285	24.06	14.12	56.16
1983	62510	139409	530433	0.2459	0.3899	0.3904	23.64	14.42	60.56
1984	64568	143471	560498	0.2459	0.4443	0.4081	25.55	14.20	62.62
1985	71203	156565	596545	0.2459	0.4473	0.4158	26.12	14.44	62.83
1986	80628	175167	638097	0.2459	0.4464	0.4152	26.36	14.60	63.49
1987	87654	189033	683146	0.2459	0.4433	0.4083	25.90	14.42	63.42
1988	91508	196638	733712	0.2459	0.4503	0.4110	25.81	14.19	62.80
1989	93771	201105	788236	0.2459	0.4552	0.4136	25.28	13.77	61.12
1990	98047	209544	843254	0.2459	0.4399	0.4145	25.36	14.20	61.19
1991	101738	216828	891043	0.2459	0.4211	0.3883	25.09	14.52	64.62
1992	105910	225062	931891	0.2459	0.4236	0.3744	25.32	14.59	67.62
1993	112077	237233	974832	0.2459	0.4300	0.3792	26.01	14.83	68.60
1994	116771	246498	1022117	0.2459	0.4309	0.3892	26.21	14.91	67.33

Data source table continued

YEAR	28 HYPOTHE-TICAL PRIVATE BUSINESS GROSS LABOUR PRODUCT PER HOUR	29 HYPOTHE-TICAL PRIVATE BUSINESS GROSS OUTPUT TO CAPITAL RATIO 1	30 HYPOTHE-TICAL PRIVATE BUSINESS GROSS OUTPUT TO CAPITAL RATIO 2	31 PRIVATE BUSINESS GROSS OUTPUT	32 HYPOTHE-TICAL PRIVATE BUSINESS GROSS OUTPUT 1	33 HYPOTHE-TICAL PRIVATE BUSINESS GROSS OUTPUT 2	34 TOTAL HOURS WORKED BY PRIVATE EMPLOY-EES	35 HYPOTHE-TICAL TOTAL HOURS WORKED BY PRIVATE EMPLOY-EES 1	36 HYPOTHE-TICAL TOTAL HOURS WORKED BY PRIVATE EMPLOY-EES 2
ABS No. /source				*5204.0*			*6203/4.0 6248.0*		
	Assume 3% growth p.a. $ constant	*22/(11x23) $ constant*	*See 29 and Eqn. 4.4 $ constant*	*14/23 $m constant*	*21x29 $m constant*	*21x30 $m constant*	*Million*	*32/25 Million*	*33/28 Million*
1967	17.04	0.5689	0.5606	105232	105191	103655	6258	6256	6084
1968	17.55	0.5924	0.5645	108006	116921	111419	6413	6942	6350
1969	18.07	0.5725	0.5713	118025	120980	120734	6541	6705	6680
1970	18.62	0.5823	0.5724	124479	131683	129456	6783	7175	6954
1971	19.17	0.6224	0.5944	128545	151244	144428	6948	8175	7532
1972	19.75	0.6143	0.5941	133011	159974	154714	6911	8312	7834
1973	20.34	0.5738	0.5577	138091	159424	154940	6983	8023	7617
1974	20.95	0.6070	0.5953	144971	180560	177071	7025	8750	8451
1975	21.58	0.6732	0.6511	143004	213293	206269	6777	10108	9558
1976	22.23	0.6544	0.6374	143649	220282	214560	6580	10091	9652
1977	22.90	0.6220	0.5882	143327	222249	210167	6536	10136	9179
1978	23.58	0.6629	0.6184	146710	251487	234601	6544	11217	9948
1979	24.29	0.6209	0.5985	155699	251974	242874	6607	10692	9999
1980	25.02	0.6040	0.5665	158652	260956	244781	6706	11030	9784
1981	25.77	0.6195	0.5638	163702	286379	260667	6879	12034	10115
1982	26.54	0.6557	0.5788	166542	325403	287279	6921	13523	10823
1983	27.34	0.6740	0.5564	157765	357534	295115	6673	15122	10795
1984	28.16	0.5762	0.5164	170226	322932	289445	6661	12637	10279
1985	29.00	0.5868	0.5226	179911	350044	311775	6897	13400	10750
1986	29.87	0.6150	0.5368	187377	392428	342500	7098	14886	11465
1987	30.77	0.6242	0.5206	191584	426415	355657	7389	16467	11559
1988	31.69	0.5952	0.4852	201604	436697	356009	7811	16920	11233
1989	32.64	0.5605	0.4413	213495	441821	347854	8446	17479	10656
1990	33.62	0.5648	0.4303	224198	476295	362829	8839	18779	10791
1991	34.63	0.5778	0.4191	216935	514850	373424	8647	20521	10783
1992	35.67	0.5701	0.4087	214107	531266	380877	8457	20983	10678
1993	36.74	0.5659	0.4080	221971	551642	397748	8532	21205	10826
1994	37.84	0.5596	0.3980	233803	571989	406803	8922	21827	10750

Data source table continued

YEAR	37 HYPOTHE-TICAL PRIVATE BUSINESS CAPITAL TO LABOUR HOURS RATIO	38 HYPOTHE-TICAL PRIVATE BUSINESS CAPITAL TO LABOUR HOURS RATIO	39 TOTAL PRIVATE EMPLOY-EES	40 PRIVATE BUSINESS AVERAGE HOURS PER EMP-LOYEE PER WEEK	41 HYPOTHE-TICAL TOTAL PRIVATE EMPLOY-EES 1	42 HYPOTHE-TICAL TOTAL PRIVATE EMPLOY-EES 2	43 HYPOTHE-TICAL TOTAL PRIVATE EMPLOY-EES 3	44 TOTAL UNEMPLO-YMENT	45 HYPOTHE-TICAL TOTAL 'PRIV.' UNEMPLO-YMENT 1
ABS No. /source			6203/4.0 6248.0					6204.0 Foster 4.3	
	21/35	21/36		34/ (39(/52))	35/ (40(x52))	36/ (40(x52))	Assume 40hrs/week & see 42		39+45-41
	$ constant	$ constant	Thousand		Thousand	Thousand	Thousand	Thousand	Thousand
1967	29.56	30.39	3180	37.85	3178	3091	2925	87	88
1968	28.43	31.09	3280	37.60	3551	3248	3053	81	-190
1969	31.52	31.64	3382	37.20	3466	3453	3212	79	-6
1970	31.52	32.52	3511	37.15	3714	3600	3343	78	-125
1971	29.73	32.26	3572	37.40	4203	3873	3621	93	-538
1972	31.33	33.25	3573	37.20	4297	4050	3766	144	-580
1973	34.63	36.48	3649	36.80	4193	3980	3662	106	-438
1974	34.00	35.20	3696	36.55	4604	4446	4063	141	-767
1975	31.34	33.15	3625	35.95	5407	5113	4595	278	-1503
1976	33.36	34.87	3570	35.45	5474	5236	4641	293	-1612
1977	35.25	38.92	3571	35.20	5537	5015	4413	359	-1607
1978	33.82	38.14	3565	35.30	6111	5419	4783	398	-2148
1979	37.96	40.59	3569	35.60	5776	5401	4807	378	-1829
1980	39.17	44.16	3643	35.40	5992	5315	4704	395	-1954
1981	38.42	45.70	3769	35.10	6593	5542	4863	381	-2444
1982	36.70	45.85	3814	34.90	7451	5964	5204	461	-3176
1983	35.08	49.14	3698	34.70	8381	5982	5190	687	-3996
1984	44.35	54.53	3671	34.90	6963	5664	4942	604	-2689
1985	44.52	55.50	3800	34.90	7384	5923	5168	573	-3011
1986	42.87	55.66	3934	34.70	8250	6354	5512	598	-3718
1987	41.49	59.10	4101	34.65	9139	6415	5557	602	-4436
1988	43.36	65.32	4310	34.85	9337	6199	5400	539	-4488
1989	45.10	73.97	4614	35.20	9549	5822	5123	468	-4467
1990	44.90	78.14	4822	35.25	10245	5887	5188	585	-4838
1991	43.42	82.64	4771	34.85	11324	5950	5184	799	-5754
1992	44.41	87.28	4707	34.55	11679	5943	5133	898	-6074
1993	45.97	90.05	4729	34.70	11752	6000	5205	916	-6107
1994	46.83	95.08	4881	35.15	11942	5881	5168	798	-6262

Data source table continued

YEAR	46 HYPOTHE-TICAL TOTAL 'PRIVATE' UNEMPLO-YMENT 2	47 HYPOTHE-TICAL TOTAL 'PRIVATE' UNEMPLO-YMENT 3
ABS No. /source		
	39+45-42 Thousand	39+45-43 Thousand
1967	175	341
1968	114	308
1969	7	249
1970	-10	246
1971	-208	44
1972	-333	-50
1973	-225	93
1974	-609	-226
1975	-1209	-691
1976	-1374	-778
1977	-1085	-483
1978	-1456	-820
1979	-1455	-861
1980	-1278	-667
1981	-1393	-714
1982	-1689	-929
1983	-1598	-805
1984	-1389	-667
1985	-1550	-795
1986	-1822	-981
1987	-1712	-854
1988	-1349	-551
1989	-739	-40
1990	-480	219
1991	-380	386
1992	-338	472
1993	-355	440
1994	-202	511

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Table 1 Spending determinants of Australian private business profit

$ current, ABS 5204.0, 5512.0

YEAR (END JUNE 30)	*INVEST-MENT SPENDING*	*DWELLING INVEST-MENT*	*PUBLIC SECTOR BORROWING REQUIRE-MENT*	*NET EXPORTS*	*RESIDUAL*	*PRIVATE BUSINESS PROFIT*
	I	*Id*	*PSBR*	*NX*	*β*	*Π*
1967	2872	1145	756	-201	2719	7428
1968	3052	1290	767	-556	2803	7517
1969	3487	1481	488	-368	3468	8777
1970	3701	1698	277	21	3566	9507
1971	4267	1785	383	-17	3053	9760
1972	4517	2089	457	441	3030	10822
1973	4788	2497	710	1625	3014	12855
1974	5539	3071	984	-3	5014	14994
1975	6087	3043	2852	-272	3362	15990
1976	7223	4240	3478	296	2806	18765
1977	8295	5348	3455	-532	4435	21933
1978	9360	5235	4323	-943	3855	23197
1979	11637	5533	6274	-1085	5200	28885
1980	12620	6508	4230	888	7565	33286
1981	16104	8199	4095	-2536	8759	36686
1982	19257	9041	6027	-5392	6921	38936
1983	18595	7717	9206	-3522	3274	38447
1984	19629	8707	12956	-2531	8494	50519
1985	22909	10413	10755	-4084	11839	56811
1986	27092	11239	11083	-7339	15298	62980
1987	31395	10734	8840	-4108	15974	68539
1988	37484	12468	441	-1323	23981	78796
1989	42665	17595	-5070	-5796	37114	91735
1990	44021	18633	2515	-6571	33147	98635
1991	38614	17357	5054	356	26720	94194
1992	34586	17510	15510	1898	19952	95238
1993	37356	20074	17972	-1597	24100	101472
1994	40682	23062	14122	-1549	29238	108314

Table 2 Average spending proportions of Australian private business profit

%, ordinary averages of the annual proportions in $ current for the years shown

YEAR (END JUNE 30)	*INVEST-MENT SPENDING*	*DWELLING INVEST-MENT*	*PUBLIC SECTOR BORROWING REQUIRE-MENT*	*NET EXPORTS*	*RESIDUAL (rounded)*	*PRIVATE BUSINESS PROFIT*
	I	*Id*	*PSBR*	*NX*	*β*	*Π*
1967-74	39.7	18.1	6.1	0.3	35.8	100.0
1975-79	39.0	21.5	18.5	-2.1	23.0	100.0
1980-84	43.7	20.5	17.8	-6.5	24.5	100.0
1985-89	44.6	17.4	8.9	-6.6	35.7	100.0
1990-94	39.3	19.4	11.0	-1.5	31.9	100.0

Table 3 Investment & growth rates needed for a stable profit rate

Average annual % growth, logarithmic regression estimates, *means rate of growth

AVERAGE ANNUAL GROWTH RATE OF:	*SYMBOL*	*ACTUAL DATA 1967-94*	*CONSTANT PROFIT RATE =*	*CONSTANT PROFIT RATE =*	*CONSTANT PROFIT RATE =*
(for Australian private business)			*24.59%*	*20.00%*	*18.00%*
Gross rate of profit	Π'*	-1.40	0	0	0
Investment	I*	3.22	7.60	6.02	5.34
Gross profit share	(Π/Y)*	-0.07	-0.07	-0.07	-0.07
Output (value added)	Y*	2.76	6.46	4.63	3.82

Table 4 Hypothetical growth rates needed for a stable profit rate

Average annual % growth, logarithmic regression estimates, *means rate of growth

AVERAGE ANNUAL GROWTH RATE OF: *(for Australian private business)*	*SYMBOL*	*ACTUAL DATA 1967-94*	*H1* *(hypothetical variables in bold)* *Π = 24.59%*	*H2* *(hypothetical variables in bold)* *Π = 24.59%*	*H3* *(hypothetical variables in bold)* *Π = 24.59%*
Gross rate of profit	Π'*	-1.34	**0**	**0**	**0**
Investment	I*	3.22	7.60	7.60	7.60
Output (value added)	Y*	2.76	6.46	5.14	5.14
Relative prices	P_{π},*	0.25	0.25	0.25	0.25
Gross profit share	(Π/Y)*	-0.07	-0.07	1.17	1.17
Output-capital ratio	(Y/K)*	-1.52	-0.18	-1.42	-1.42
Labour productivity	(Y/L)*	1.66	1.66	**3.00**	**3.00**
Capital-labour ratio	(K/L)*	-3.23	1.84	-4.48	-4.48
Hourly product wage	w*	1.72	1.72	1.72	1.72
Average weekly hours	(L/52N)	35.68	35.68	35.68	**40**
Total private employees	N*	1.40	5.04	2.39	2.08

Table 5 Hypothetical growth rates needed for a stable profit rate (with increased innovation/competition)

Average annual % growth, logarithmic regression estimates, *means rate of growth

AVERAGE ANNUAL GROWTH RATE OF: *(for Australian private business)*	*SYMBOL*	*ACTUAL DATA 1967-94*	*H1* *(hypothetical variables in bold)* *Π = 24.59%* *c = 0.45*	*H2* *(hypothetical variables in bold)* *Π = 24.59%* *c = 0.45*	*H3* *(hypothetical variables in bold)* *Π = 24.59%* *c = 0.45*
Gross rate of profit	Π'*	-1.34	**0**	**0**	**0**
Investment	I*	3.22	6.12	6.12	6.12
Output (value added)	Y*	2.76	5.00	4.06	4.06
Relative prices	P_{π}*	0.25	0.25	0.25	0.25
Gross profit share	(Π/Y)*	-0.07	-0.07	0.82	0.82
Output-capital ratio	(Y/K)*	-1.52	-0.18	-1.07	-1.07
Labour productivity	(Y/L)*	1.66	1.66	**2.50**	**2.50**
Capital-labour ratio	(K/L)*	-3.23	1.84	3.61	3.61
Hourly product wage	w*	1.72	1.72	1.72	1.72
Average weekly hours	(L/52N)	35.68	35.68	35.68	**40.00**
Total private employees	N*	1.40	3.60	1.84	1.52

Table 6 Hypothetical growth rates needed for a stable profit rate (with increased innovation/competition)

Average annual % growth, logarithmic regression estimates, *means rate of growth

AVERAGE ANNUAL GROWTH RATE OF: *(for Australian private business)*	*SYMBOL*	*ACTUAL DATA 1967-94*	*H1* *(hypothetical variables in bold)* *Π = 24.59%* *c = 0.45*	*H2* *(hypothetical variables in bold)* *Π = 24.59%* *c = 0.45*	*H3* *(hypothetical variables in bold)* *Π = 24.59%* *c = 0.45*
Gross rate of profit	Π'*	-1.34	**0**	**0**	**0**
Investment	I*	3.22	6.12	6.12	6.12
Output (value added)	Y*	2.76	5.00	3.70	3.70
Relative prices	P_{π}*	0.25	0.25	0.25	0.25
Gross profit share	(Π/Y)*	-0.07	-0.07	1.17	1.17
Output-capital ratio	(Y/K)*	-1.52	-0.18	-1.42	-1.42
Labour productivity	(Y/L)*	1.66	1.66	**3.00**	**3.00**
Capital-labour ratio	(K/L)*	-3.23	1.84	4.48	4.48
Hourly product wage	w*	1.72	1.72	1.72	1.72
Average weekly hours	(L/52N)	35.68	35.68	35.68	**40.00**
Total private employees	N*	1.40	3.60	0.99	0.68

Chart 1 Profit and investment 1967 - 1994

$ constant, ABS 5204.0

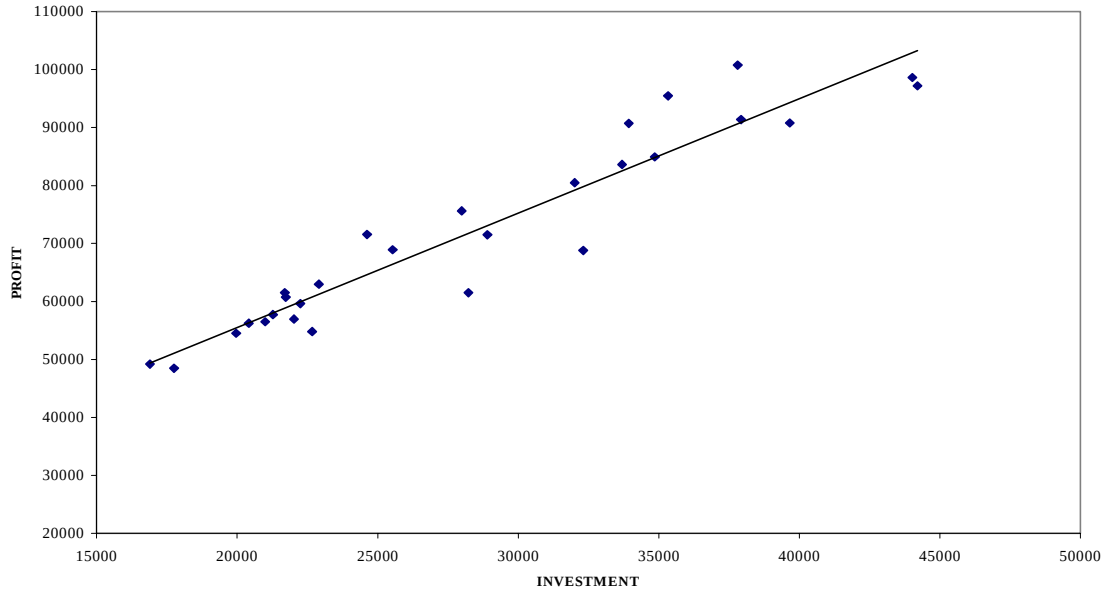

Chart 2 Australian private business gross profit rate

$ current, ABS 5204.0, 5221.0

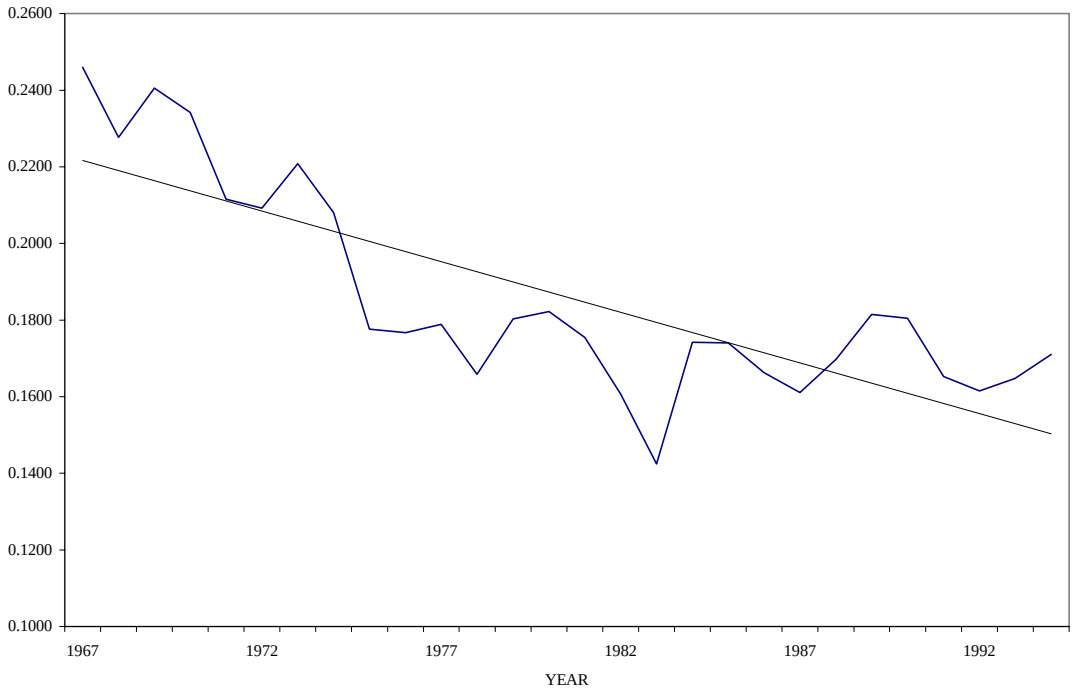

Chart 3 Ratio of investment to capital stock growth

$ constant, ABS 5204.0, 5221.0

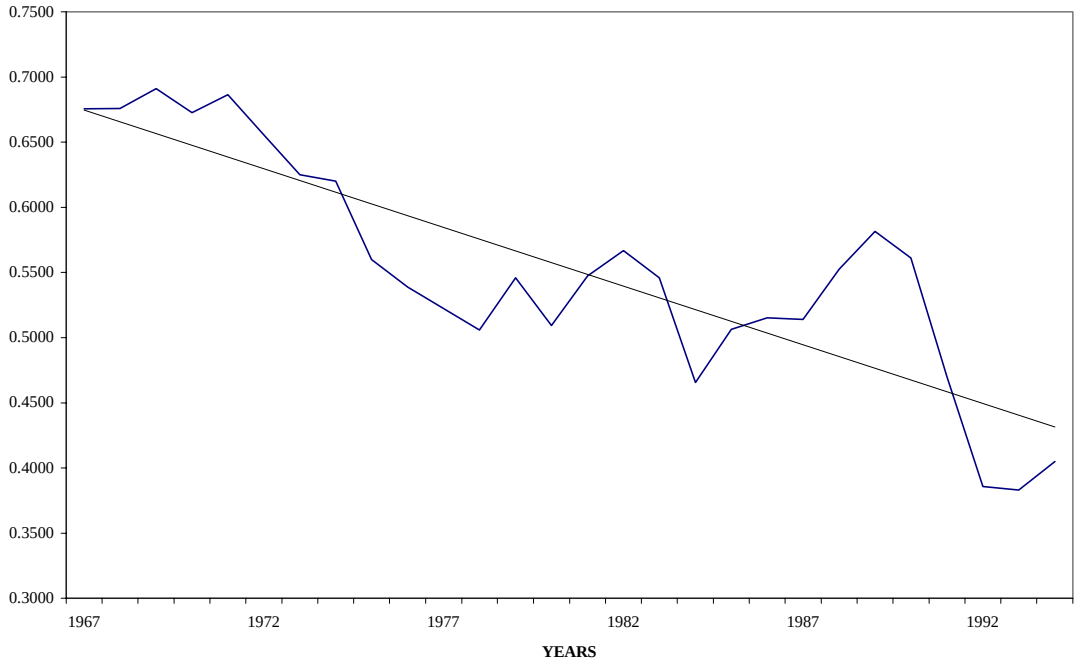

Chart 4 Output-capital ratio and output growth rates (with trends)

$ constant, ABS 5204.0, 5221.0, trends are 5-year moving averages

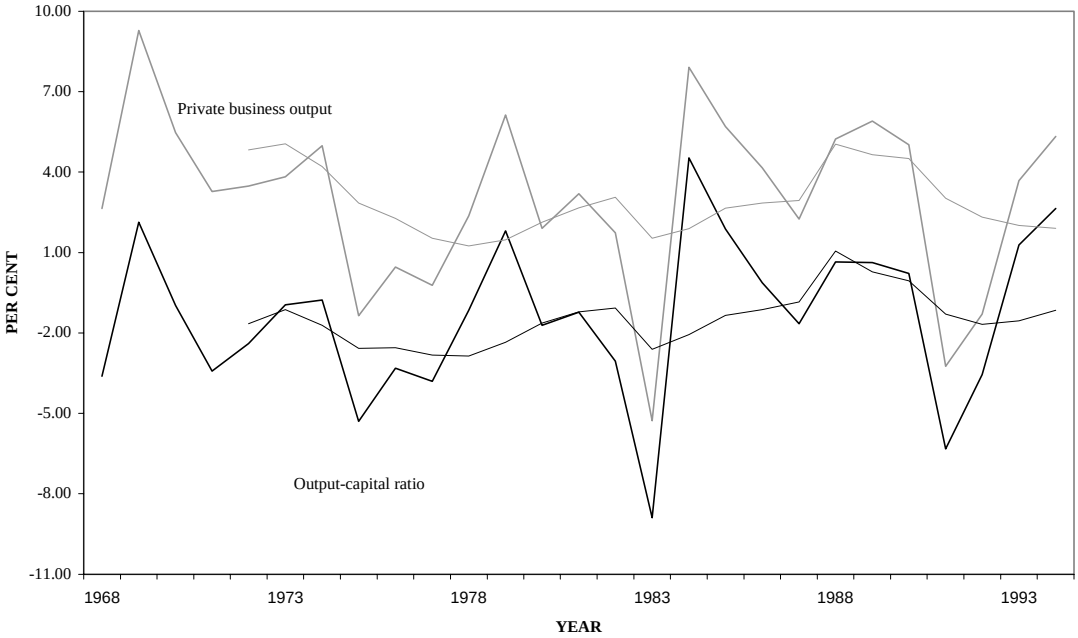

Chart 5 Labour productivity and output growth rates (with trends)

$ constant, ABS 5204.0, 6203.0, 5304.0, trends are 5-year moving averages