Capital investment incentives in an inflationary environment
The South African example

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The attention in this paper has been directed at the problem whether the 30% machinery investment allowance was sufficiently high enough seen against the background of the present double digit inflation. The authors arrived at the interesting conclusion that the shortfall at replacement is caused by the fact that depreciation for fiscal purposes is based upon historical cost and not on replacement cost. The investment allowance filled this gap and it was concluded that this allowance was high enough in the majority of cases.

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In hierdie referaat is gepoog om te bepaal of die 30% masjinerie beleggingstoelae hoog genoeg is gesien teen die agtergrond van die huidige dubbelsyferinflasie. Daar word tot 'n interessante slotsom gekom, naamlik dat die tekort wat by vervanging ontstaan, veroorsaak word deur die feit dat depresiasie op historiese kosprys en nie op vervangingswaarde gebaseer word nie. Die beleggingstoelae vul dus hierdie gaping aan en daar word bevind dat die 30% beleggingstoelaag in die meeste gevalle voldoende is.

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The impact of increases in price levels, commonly referred to as inflation, on the capital investment decisions of firms has attracted attention for over a decade. The nature of this impact[1,2] has been examined; methods for making capital budgeting decisions under inflation have been developed;[3,4,5] the effectiveness of federal tax policies in offsetting the impact has been analysed[6,7] and policy proposals designed to offset the impact of inflation on investment decisions have been made.[8]

Over the same time period the Republic of South Africa has experienced both a high rate of inflation and a relatively high real growth rate. The South African Consumer Price Index has shown double digit inflation rates since 1973;[9] the compound rate for the decade 1971 – 1980 is approximately 13% with recent (1982) estimates of a current 16% rate. Over the same 1971 – 80 period, however, Gross Domestic Product has averaged a real growth rate of 3,6% per annum.

In such a situation it would be expected that high rates of inflation would have a depressing effect on investment in plant and equipment and would encourage the substitution of labour for capital. This has not been the case in South Africa. The value of capital stock in manufacturing industries has risen from R5 223 million in 1970 to R9 520 million in 1979, measured in 1975 rand, an annual rate of growth of 6,9% (a higher rate of real growth than the economy as a whole). Over the same period, capital stock per employee in manufacturing has increased (in constant rand) at a 4,2% annual rate. These facts indicate that a relatively high rate of investment — both absolutely and per employee — has been maintained in manufacturing industries in South Africa.

Although a number of factors contribute to South Africa's economic — and investment — climate (natural resources, especially gold and international political attitudes, along with more common general economic factors), it seems likely that a part of the reason for the maintenance of a satisfactory rate of capital investment in spite of high inflation is government policy. Since 1973 the South African Ministry of Finance has consciously provided tax allowances intended to offset some of the negative effects of inflation on business investment in capital goods, as well as to provide an investment incentive.[10]

Two incentives, used in combination, have been incorporated into South African corporate tax regulations for manufacturing firms.[11] The first, termed a 'Machinery Initial Allowance' is essentially a form of accelerated depreciation. A firm can take the 'Initial Allowance' — currently equal to 25% of the cost of the asset — as added depreciation in the first year, with ordinary depreciation reduced proportionately. Thus if: I = Investment

a = Initial allowance (%)
d = Depreciation (%)
m = Expect life in years

then first year depreciation allowed would be equal to:

$a \times I + (1-a)I/m$, instead of I/m; in subsequent years, allowed depreciation becomes $(1-a)I/m$.

The second incentive, termed the 'Machinery Investment Allowance' provides a deduction, in the tax year of the purchase, of a percentage (currently 30%) of the cost of the asset acquired. At the present time, the 30% Investment Allowance with corporate taxes at 46,2% is comparable to a (0,3)(0,462) = 13,86% tax credit. In total then, the first year's deduction for a new investment with, say, a five year life, would be 0,3I + 0,25I + (0,75/5)I = 0,7I, or 70% of cost, instead of normal depreciation of 20% of cost.

In recent years, however, the adequacy of these allowances has been questioned severely. MacGregor, for instance, has argued that with 10% inflation the Machinery Investment Allowance should exceed 48% (instead of 30%) for five-year life assets; and 100% for ten-year life assets. In this article we will develop a methodology for estimating the required allowance and evaluate the adequacy of the present 30% Machinery Investment Allowance.

Although the intent of the tax allowances, when initiated, was both to encourage growth and to compensate for inflation, the present question is whether or not they are adequate as an offset to inflation. Thus we develop a methodology that focusses on the adequacy of the Machinery Investment Allowance as an offset to inflation. A major concern of a firm's management in an inflationary environment is the extent to which current sources of funds fail to be sufficient to replace operating assets that are ending their useful lives. This deficiency is the determinant of the adequacy of tax allowances to offset inflation.

To determine this deficiency we begin by considering the most general case: a stable (non growing) all equity firm with multiple assets, with an equal portion (in real terms) of the assets being replaced annually. In Exhibit I such a firm is described in the absence of inflation (but with the initial allowance included for depreciation purposes). If, as shown, dividends paid equal net profit, then in each year the firm retains exactly the cash flow required to replace retired assets.

In Exhibit II we show the same firm with inflation, assuming that the impact of inflation is the same for both the cost of new assets and for Earnings before Depreciation and Taxes. If once again we assume that reported profits are paid out as dividends, the cash available for asset replacement is clearly insufficient, because of inadequate depreciation allowances.

Finally, in Exhibit III, we establish a normative benchmark to compare with the actual effects of inflation. Column 1 repeats the no-inflation case of Exhibit I, In column 2, the 'expected' amounts for each row are found by raising the figures in column 1 by the compounded rate of inflation. Thus we can see, for instance, that a stockholder who received a dividend of R26,90 in the absence of inflation should expect to receive R47,41, (the equivalent in real terms of R26,90) after five years of 12% inflation. Similarly, if depreciation were to increase with the inflation rate then no deficiency in cash flow for replacement would occur.

In column 3 we repeat the actual results of five years of 12% inflation (from Exhibit II) and in column 4 we find the difference between 'actual' and 'expected'. This shows that the deficiency in available cash flow has been reported as gross profit and thus paid out as taxes (the 'inflation tax bonus') and as 'excess' or 'bonus' dividends.

On this basis a more formal model can be developed to identify an adequate tax allowance to offset the effects of inflation. Once again we assume that assets are replaced in equal real amounts annually and that all the variables determining earnings before depreciation and taxes are affected by the same rate of inflation as are the costs of replacement assets. If I = annual investment amount, X = earnings before depreciation and taxes, D = depreciation, T = taxes, P = profits (= dividends), C = D + P = total cash flow after tax, A = required machinery investment allowance (in current rand), M = required machinery investment allowance (as a % of investment), i = inflation rate, t = tax rate, m = asset life (= number of assets), n = time period, with n = m, a = initial allowance, as a decimal, d = annual depreciation (1 − a) m, and r = rate of return on asset (= RoA), then for any year, in the absence of inflation,

$$X = m(r.I);$$

$$D = aI + (1-a)I = aI + m.d.I;$$

$$T = t(X-D);$$

$$P = X - D - t(X-D);$$

$$= (1-t)(m.r.I - D);$$

$$A = X - T - P - I = 0.$$

With continuous inflation in year 'm' the required investment to be made, I_m, will equal the initial amount of investment being replaced (I_0) adjusted for inflation by $I_0(1+i)$. At the same time,

$$X_m = r.m.I_m = r.m.I_0(1+i)^m;$$

but

$$D_m = aI_{m-1} + dI_{m-1} + dI_{m-2} \ldots dI_0.$$

Since

$$I_{m-1} = I_m(1+i)^{-1};\ I_{m-2} = I_m(1+i)^{-2};\ \text{etc.}$$

$$D_m = aI_m(1+i)^{-1} + dI_m\sum^{m}(1+i)^{-n}.$$

As a result, total cash flow after tax (D + P) will be

$$C = D_m + (1-t)(X_m - D_m)$$

$$= X_m(1-t) + tD_m$$

$$= r.m.I_m(1-t) + t[aI_m(1+i)^{-1} + dI_m\sum^{m}(1+i)^{-n}] \quad (1)$$

At the same time, *expected* profit (= dividends) will be real profit adjusted for inflation, or

$$P_0(1+i)^m = (1-t)(m.r.I_0 - D_0)(1+i)^m.$$

Since

$$I_0 = D_0 = I_m(1+i)^{-m},$$

$$P_0(1+i)^m = (1-t)[rm\ I_m(1+i)^{-m} - I_m(1+i)^{-m}](1+i)^m$$

$$= (1-t)[rmI_m - I_m]$$

$$= rmI_m(1-t) - I_m(1-t). \qquad (2)$$

Then, if stockholders receive their expected real inflation adjusted dividend (without an 'inflation bonus'), net cash flow available for asset replacement will be

$$C_m - P_0(1+i)^m = rmI_m(1-t) + tI_m a(1+i)^{-1} + tI_m d \sum^m (1+i)^{-n} - rmI_m(1-t) + I_m(1-t)$$

$$= I_m[ta(1+i)^{-1} + td \sum^m (1+i)^{-n} + (1-t)]. \qquad (3)$$

The deficiency in cash flow required for the new asset will then be:

$$A = I_m - [C_m - P_0(1+i)^m]$$

$$= I_m[1 - (1-t) - ta(1+i)^{-1} - td \sum^m (1+i)^{-n}]$$

$$= tI_m[1 - a(1+i)^{-1} - d \sum^m (1+i)^{-n}], \qquad (4)$$

but A is the *cash* deficiency at the time the investment is made. An adequate machinery investment allowance will be

(a) Expressed as a percentage of investment;
(b) Received in the year *after* the investment is made, and thus also subject to inflation;
(c) Sufficient, as a deduction *before* taxes to equal 'A' on an after tax basis.

Therefore

$$M_1 = \frac{A(1+i)}{t.I}$$

$$= (1+i)[1 - a(1+i)^{-1} - d \sum^m (1+i)^{-n}]. \qquad (5)$$

In Table 1, the required investment allowance (M) for assets with different rates of inflation is calculated.

Table 1 Machinery investment allowance required for selected asset lives and inflation rates

Asset life (years)	Inflation rate 8%	12%	16%	20%
5	18,32	26,44	34,03	41,17
10	28,65	29,54	48,95	57,27
15	36,78	48,86	58,66	66,95
20	43,24	55,63	65,21	73,09

More important, it is clear that, if government provides a benefit equal to 'A', it is doing no more than returning to the firm the amount of taxes that represent the 'inflation bonus' (cf. Exhibit III). Actual taxes with inflation are equal to:

$$t(X-D) = t(r.m.I_m) - tI_m[a(1+i)^{-1} + d \sum^m (1+i)^{-n}].$$

At the same time *expected* taxes (real tax on real income, increased by inflation) are:

$$t(r.m.I_0 - I_0)(1+i)^m = trmI_0(1+i)^m - tI_0(1+i)^m$$

$$= trmI_m - tI_m.$$

The difference between actual and expected taxes (the 'inflation bonus') then is

$$t(rmI_m) - tI_m[a(1+i)^{-1} - d \sum^m (1+i)^{-n}] - [trmI_m - tI_m]$$

$$= tI_m[1 - a(1+i)^{-1} - d \sum^m (1+i)^{-n}] \qquad (6)$$

or the same as expression (4) above.

The preceding eq. (5) for 'M_1' presents an adequate investment allowance for firms or industries which are free to raise prices in an inflationary environment. In South Africa, however, a number of predetermined industries are subject to price control. In general controlled prices will be set so that EBIT/Total Assets remains a predetermined percentage. In such cases, an allowance of 'M_1' will be inadequate since the denominators of the equation will lag inflation.

To evaluate such a situation, we must ignore changes in profits and dividends, and, abstracting from our prior analysis and using the original assets being replaced as a base, we can say:

(a) Cost of new assets $= I_0(1+i)^m$;

(b) Normal (straight line) depreciation $= \frac{I_0}{m} \sum^m (1+i)^n$;

(c) Cash flow effect of initial allowance (a)

$$= I_0 t \left[\frac{1-a}{m} \sum^m (1+i)^n + a(1+i)^{m-1} - \frac{1}{m} \sum^m (1+i)^n\right]$$

$$= I_0 t\ [a(1+i)^{m-1} - \frac{a}{m} \sum^m (1+i)^n];$$

(d) Adjustment to convert cash flow required to a tax allowance received later

$$= \frac{(1+i)}{I_0 t(1+i)^m}$$

Then, focussing on the cash flows that occur without regard to profit, we can identify the allowance required by

M_2 = (Adjustment) [Cost − Normal depreciation − Initial allowance]

= (d) [a − b − c], or

$$\frac{(1+i)}{tI_0(1+i)^m}\left\{I_0(1+i)^m - \frac{I_0}{m}\sum^m (1+i)^n - I_0 t\left[a(1+i)^{m-1} - \frac{a}{m}\sum^m (1+i)^n\right]\right\}.$$

$$M_2 = \frac{1}{t(1+i)^m}\left\{(1+i)^{m+1} - \frac{(1+i)\sum^m (1+i)^n}{m} - t\left[a(1+i)^m - \frac{a(1+i)}{m}\sum^m (1+i)^n\right]\right\} \quad (7)$$

$$= \frac{(1+i)}{t} - \frac{(1+i)(1+i)^{-m}}{mt}\sum^m (1+i)^n - a + \frac{a(1+i)(1+i)^{-m}}{m}\sum^m (1+i)^n$$

$$= \frac{(1+i)}{t} - a - \frac{(1+i)}{mt}\sum^m (1+i)^{-n} + \frac{a(1+i)}{m}\sum^m (1+i)^{-n}$$

$$= (1+i)\left[\frac{1}{t} + a(1+i)^{-1} - \left(\frac{1}{t} - a\right)\sum^m \frac{(1+i)^{-n}}{m}\right]. \quad (8)$$

When M_2 is compared to M_1, it can be seen — as expected — that the necessary investment allowance for a firm under price control is higher, since

$$M_2 - M_1 = \left[(1+i)\frac{1}{t} - a(1+i)^{-1} - \left(\frac{1}{t} - a\right)\frac{\sum^m (1+i^{-n}}{m}\right]$$

$$- (1+i)\left[1 - a(1+i)^{-1} - \frac{(1-a)}{m}\sum^m (1+i)^{-n}\right]$$

$$= (1+i)\left[\frac{1}{t} - 1 - \left(\frac{1}{t} - a\right)\frac{\sum^m (1+i)^{-n}}{m} + (1-a)\frac{\sum^m (1+i)^{-n}}{m}\right]$$

$$= (1+i)\left[\left(\frac{1}{t} - 1\right)\left(1 - \frac{\sum^m (1+i)^{-n}}{m}\right)\right] \quad (9)$$

Since $1/t > 1$, for $0 < t < 1$; and since

$$\frac{\sum^m (1+i)^{-n}}{m} < 1$$

for $0 < i < 1$, $M_2 - M_1$, is positive so long as i and t are positive but less than 1.

One additional alternative is possible. In some cases a price controlled firm is permitted to include so-called 'additional depreciation' in establishing its prices, so that the required percentage is based on (EBIT − Additional Depreciation)/Total Assets. In theory, such additional depreciation is determined annually as the difference between the expected cost of the replacement asset and the normal (straight line) depreciation of existing assets; or, after taxes

$$(1-t)\left[I_0(1+i)^m - \frac{I_0}{m}\sum^m (1+i)^n\right].$$

If we convert this to a tax allowance received a year later, we have

$$D_A = \frac{(1+i)(1-t)}{tI_0(1+i)^m}\left[I_0(1+i)^m - \frac{I_0}{m}\sum^m (1+i)^n\right]$$

$$= \frac{(1+i)(1-t)}{t(1+i)^m}\left[(1+i)^m - \frac{1}{m}\sum^m (1+i)^n\right]$$

$$= (1+i)(1-t)\left[\frac{1}{t} - \frac{(1+i)^{-m}\sum^m (1+i)^n}{tm}\right]$$

$$= (1+i)(1-t)\left[\frac{1}{t} - \frac{\sum^m (1+i)^{-n}}{tm}\right]. \quad (10)$$

In order to determine the required investment allowance (M_3) for a price controlled firm permitted to use 'additional depreciation' in price-setting we can set

$$M_3 = M_2 - D_A.$$

However, we can also express D_A [eq. (10)] as:

$$D_A = (1+i)\left[\frac{1}{t} - \frac{\sum^m (1+i)^{-n}}{tm} - 1 + \frac{t(1+i)^{-n}}{tm}\right]$$

$$= (1+i)\left[\frac{1}{t} - 1 - \frac{\sum^m (1+i)^{-n}}{tm} + \frac{\sum^m (1+i)^{-n}}{m}\right]$$

$$= (1+i)\left[\left(\frac{1}{t} - 1\right)\left(1 - \frac{\sum^m (1+i)^{-n}}{m}\right)\right], \quad (11)$$

which is the same as eq. (9), or $M_2 - M_1$. Thus it is clear that

$$M_3 = M_2 - (M_2 - M_1)$$

$$M_3 = M_1.$$

As a result only two expressions — M_1 and M_2 — are required to determine the adequacy of the South African Machinery Investment Allowance: M_2 for firms under strict price control and M_1 ($= M_3$) for those not price controlled and for those price controlled firms permitted to use 'additional depreciation'.

From a practical standpoint, at least one additional variable should be considered. Most South African firms use gearing (financial leverage) to some extent, with the result that the effects of inflation are thereby diminished. From the standpoint of our existing models (for M_1 and M_2) the effect of gearing can most easily be introduced by estimating its impact on cash flows and converting the cash flow effect into the same terms as the required investment allowance. Thus if we assume that a constant portion of each asset required is financed by debt, the gearing ratio (g) is

$$g = \frac{\text{Debt}}{I_n}$$

and the amount financed by equity will be $I_n(1-g)$.

If we assume that equal annual loan reduction payments are made, they will be equal to gI_n/m for each asset; with inflation this will become

$$\frac{gI_m}{m}\sum^m (1+i)^{-n}$$

for all assets. At the same time with inflation the new amount borrowed to purchase I_m will be gI_m. Thus the net cash flow to the firm will be

$$gI_m - \frac{gI_m}{m}\sum^m (1+i)^{-n}.$$

When this cash flow is converted to the terms in which M is expressed (by changing from a cash flow to a tax allowance) we have

$$G = \frac{(1+i)}{tI_m}\left[gI_m - \frac{gI_m}{m}\sum^{m}(1+i)^{-n}\right]$$

$$= \frac{g(1+i)}{t}\left[1 - \frac{\sum^{m}(1+i)^{-n}}{m}\right]. \qquad (12)$$

Using eq. (12) both M_1 and M_2 can be adjusted to take into account the effects of gearing:

$$M_1 = (1+i)\left[1 - a(1+i)^{-1} - d\sum^{m}(1+i)^{-n}\right]$$

$$- \frac{g(1+i)}{t}\left(1 - \frac{\sum^{m}(1+i)^{-n}}{m}\right)$$

$$= (1+i)\left[1 - a(1+i)^{-1} - d\sum^{m}(1+i)^{-n}\right.$$

$$\left. - \frac{g}{t}\left(1 - \frac{\sum^{m}(1+i)^{-n}}{m}\right)\right] \qquad (13)$$

$$M_2 = (1+i)\left[\frac{1}{t} - a(1+i)^{-1} - \left(\frac{1}{t} - a\right)\frac{\sum^{m}(1+i)^{-n}}{m}\right.$$

$$\left. - \frac{g(1+i)}{t}\left(1 - \frac{\sum^{m}(1+i)^{-n}}{m}\right)\right]$$

$$= \frac{(1+i)}{t}\left[1 - g - at(1+i)^{-1}\right.$$

$$\left. - (1 - g - at)\frac{\sum^{m}(1+i)^{-n}}{m}\right]. \qquad (14)$$

The impact of gearing is clearly to reduce the required amount of the Machinery Investment Allowance. As Table 2 shows, for firms that are not price controlled or are allowed to use 'additional depreciation' in setting controlled prices, the present 30% rate is more than ample for a gearing ratio of 30%. However, firms under strict price control will find the allowance inadequate — even with 50% gearing — if inflation exceeds 12%. (Table 3).

Table 2 Machinery investment allowance required (%) for selected asset lives, inflation rates and levels of gearing (M_1)

Asset life (years)	Gearing (g)	Inflation rate 8%	12%	16%	20%
5	0	18,32	26,44	34,03	41,17
	30	4,19	6,15	8,03	9,85
	50	neg	neg	neg	neg
10	0	28,65	39,54	48,95	57,27
	30	5,58	7,90	10,03	12,01
	50	neg	neg	neg	neg
15	0	36,78	48,86	58,66	66,95
	30	6,67	9,15	11,34	13,31
	50	neg	neg	neg	neg
20	0	43,24	55,63	65,21	73,09
	30	7,53	10,06	12,21	14,14
	50	neg	neg	neg	neg

Table 3 Machinery investment allowance required (%) for selected lives, inflation rates and levels of gearing (M_2)

Asset life (years)	Gearing (g)	Inflation rate 8%	12%	16%	20%
5	0	43,65	62,83	80,65	97,33
	30	29,53	42,54	54,65	66,01
	50	20,11	29,01	37,32	45,14
10	0	70,02	96,27	118,74	138,42
	30	46,95	64,64	79,83	93,17
	50	31,57	43,55	53,88	63,00
15	0	90,78	120,06	143,53	163,13
	30	60,67	80,36	96,21	109,50
	50	40,59	53,89	64,66	73,74
20	0	107,26	137,34	160,25	178,80
	30	71,56	91,78	107,25	119,85
	50	47,76	61,40	71,92	80,55

In conclusion, it appears that the South African tax policy may well have done what was intended: stimulate growth and offset inflation. If we consider the period of the late 1970s, when the inflation rate was about 13% per annum and the tax rate 42%, Column (1) of Table 4 indicates that a manufacturer (not strictly price-controlled) with relatively modest levels of debt should not have been harmed by the impact of inflation on investment. Specific firms — for instance, with uneven asset replacement patterns, or with cash flows unevenly impacted by inflation — may have had more (or sometimes less) of a problem. In general, however, it appears that tax policy was sufficient to offset inflation and even to encourage some investment, if the firm's capital structure included debt. Since gearing levels of 30% or more are common for South African firms, and, in manufacturing, asset lives typically average less than 10 years, such a result seems probable.

For the same class of firms the future is more difficult. With an expected inflation rate of 16% and a current tax rate of 46,2%, Column (2) of Table 4 shows a higher breakeven gearing ratio than Column (1). However, since break-even gearing remains below 20%, the end result for many firms should be satisfactory.

In contrast many price-controlled firms that are not allowed 'additional depreciation' (cf. Table 3) have undoubtedly felt some negative effects of inflation, whatever

Table 4 'Break-even' gearing ratios for a machinery investment allowance of 30% and initial allowance of 25%

Asset life (years)	(1)[a] i = 13%, t = 42%	(2)[a] i = 16%, t = 46,2%
5	neg	4,64%
10	9,76%	14,61%
15	14,03%	18,17%
20	16,17%	19,93%

[a]See text.

their level of gearing. With expected inflation at 16% it seems unlikely that any such firms will escape some inflationary impact on their replacement investments.

Serious as this situation may be, the overall result is not as bad as that represented by some widely-cited critics of the present allowances. In Table 5, where our results are compared with those of a critic's, it can be seen that tax policy is generally much closer to being adequate than he suggests, except for shorter-lived assets belonging to price controlled firms.

Table 5 A comparison of M_1 and M_2 with critic's estimates of required allowances at 8% inflation and no gearing

Asset life (years)	M_1	M_2	Critic[a]
5	18,32	43,65	36,42
10	18,65	70,02	72,90
15	36,78	90,78	–
20	43,24	107,26	148,86

[a]Source: Ref. 10.

From the standpoint of the government, maintaining — or even increasing — the allowances seems a reasonable policy. For the unlevered firm that is not strictly price controlled, an investment allowance of 30% or more does not equal the inflation tax bonus when inflation is at 16%. Since the inflation tax bonus for government is not reduced by the addition of gearing to the formula (gearing simply lowers the amount of non-borrowed funds required, and thus the investment base) a 30% (or higher) allowance should encourage growth by levered firms. The serious problem confronting government is the plight of the strictly price-controlled firm.

On balance, however, it appears that, for many firms, South African tax policy has been a realistic and relatively successful approach to the problem of offsetting the negative impact of inflation on investment and, in some cases, may also have served as a stimulus to investment. While higher current inflation rates may substantially reduce its usefulness as an investment stimulus, it should remain an adequate inflation allowance for firms able to maintain a gearing ratio of 20% or more, that are not strictly price-controlled.

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Appendix

Exhibit I Multiple asset firm, no inflation

Asset						Total for firm
Purchased at time	0	1	2	3	4	Year 5
Initial investment	100	100	100	100	100	500
Cash flow determinants						
Earnings before depreciation and tax (RoA = 30%)	30	30	30	30	30	150
Depreciation	15	15	15	15	40	100
Gross profit (EBIT)	15	15	15	15	(10)	50
Tax (at 46,2%)	6,93	6,93	6,93	6,93	(4,62)	23,10
Net profit (= dividend)	8,07	8,07	8,07	8,07	(5,38)	26,90
Cash flow available						100
Cash required for new investment						100
Difference (deficiency)						0

Exhibit II Multiple asset firm, with 12% inflation

Asset						
Purchased at time	0	1	2	3	4	Total for firm Year 5
Initial investment	100	112	125,44	140,49	157,35	635,28
Cash flow determinants						
EBDT (RoA = 30%)	$30(1,12)^5$	$33,60(1,12)^4$	$37,63(1,12)^3$	$42,15(1,12)^2$	$47,21(1,12)$	
$= 0,3I_{n-1}(1,12)^{5-n}$	= 52,87	= 52,87	= 52,87	= 52,87	= 52,87	264,35
Depreciation (SLD)	15	16,80	18,82	21,07	23,60	95,29
Depreciation (initial allowance)	–	–	–	–	39,34	39,34
Gross profit (EBIT)	37,87	36,07	34,05	31,80	(10,07)	129,72
Tax (46,2%)	17,50	16,66	15,73	14,69	(4,65)	59,93
Net profit (= dividend)	20,37	19,41	18,32	17,11	(5,42)	69,79
Cash flow available (95,29 + 39,34)						134,63
Cash required for new investment $(100)(1,12)^5$						= 176,23
Difference (deficiency)						(41,60)

Exhibit III Multiple asset firm: actual *vs* expected with 12% inflation

	(1)[a] Expected	(2)[a]	(3)[a] Actual	(4)[a] Difference
	No Inflation (Ex I)	Inflated [Ex I]$(1,12)^5$]	(Ex II)	[(3) – (2)]
EBDT	150	264,35	264,35	0
Depreciation	100	176,23	134,63	(41,60)
Gross Profit	50	88,12	129,72	41,60
Tax (46,2%)	23,10	40,71	59,93	19,22
Net profit (= dividend)	26,90	47,41	69,79	22,38
Cash flow available	100	176,23	134,63	(41,60)
Cash req. for inv.	100	176,23	176,23	0
Difference (deficiency)	0	0	(41,60)	(41,60)

[a]See Text