

Chapter VI Private sector investment

This chapter will present estimates of the level of private investment (gross fixed capital formation and stockbuilding) which would be generated at par levels of GDP. In addition we shall estimate private investment which should be expected under the hypothetical projection of GDP growth at 4.5% per year, starting from actual GDP in 1971

2. The types of investment which will be distinguished are private gross fixed capital formation in dwellings, other private gross fixed capital formation, and the physical increase in stocks and work-in-progress all measured in £ million, 1963 market prices. We shall refer to these categories as 'housebuilding', 'capital investment' and 'stockbuilding', respectively. For convenience public sector stockbuilding is not separately distinguished but is included with private stockbuilding. The remainder of this chapter will present estimates for each of the three categories of investment in turn. Public sector gross fixed capital formation has already been examined in the preceding chapter on public expenditure

3. Table VI-1 below summarizes the results of our analysis of private fixed investment (detailed results are given in Appendix table 3). Par housebuilding by the private sector is estimated to be 10% higher than actual housebuilding by 1971 and is expected to grow at 5% per year to 1975; but given 4.5% per year growth of actual GDP, actual private housebuilding is projected to grow at almost 10% per year and would exceed the par level substantially by 1975. Other private fixed investment has remained above the par level up to 1970 and is expected to grow slightly faster than the par level if actual GDP grows at 4.5% per year to 1975. By the latter year total private gross fixed capital formation, at the par pressure of demand, is expected to reach £5,000 million at 1963 prices, or over 13% of GDP.

Table VI-1 Investment and GDP

£ million, 1963 prices						
	Private housebuilding		Private capital investment			
	Actual	Par	Actual	Par	Actual	Par
					(as % of GDP)	
1961	580 541	539	2310 245	n.a.	9.1	n.a.
1965	677 536	534	2699 2513	2417	9.3	8.8
1969	564 552	618	3251 3371	3131	10.2	10.0
1971	603 594	663	3335 3387	3391	10.2	10.1
<i>Growth rates (% per year)</i>						
1961-5	3.9	-0.2	3.9	n.a.
1965-9	-5.3	3.7	4.8	6.7
1969-71	3.4	3.5	1.3	4.1
<i>projected</i>						
1975	878 ⁽¹⁾	810	4369 ⁽¹⁾	4277	11.2 ⁽¹⁾	11.2
<i>Growth rate (% per year)</i>						
1971-5	9.8 ⁽¹⁾	5.1	7.0 ⁽¹⁾	6.0

(1) Hypothetical projection assuming 4.5% per year GDP growth (see Chapter I, paragraph).

Private housebuilding

4. The simplified model used to estimate par levels of private housebuilding assumes that investment in dwellings depends on income (GDP), and the mortgage interest rate, regarded as a proxy for the availability of funds to potential house-buyers. An equation was estimated to obtain parameters for the influence of the level of GDP and the mortgage rate on private housebuilding (IDP):

$$IDP = 756.1 + 0.068(Y-Y^*) - 50.9i + 23.7t$$

(0.019) (25.0) (6.7)

where Y, Y* denote actual and par GDP, i is the mortgage rate of interest and t is a trend.

5. To estimate par housebuilding for the past (1960-71) the actual series was first adjusted for the divergence of actual GDP from par using the coefficient given in the equation above. This implies that if actual GDP is £100 million below par, then actual housebuilding would be £6.8 million lower than par housebuilding.
6. A further adjustment was made for fluctuations in the mortgage interest rate which shows a cyclical pattern because interest rates have been used as an instrument of conjunctural policy. The 'par' interest rate was assumed to be a smoothed trend, and for every 1% shortfall of the actual rate compared with the par trend, par housebuilding was adjusted downwards by £50.9 million from the actual figure.
7. The series for par housebuilding derived by adjusting actual figures for 1960-71 is shown in ^{Appendix} Table 3. Year-to-year movements are still not very smooth because the model used to obtain the par series provides a very incomplete explanation of actual movements.
8. An initial projection of par housebuilding in the future, 1972-5, was obtained on the assumption that the future mortgage interest rate would be held at its present level (8%). Starting at the estimated par level for 1971 the initial par estimate rises by £23.7 million per year, following the trend effect in the equation of paragraph 4 above. This basic estimate must then be modified to take account of various specific considerations relating to the period after 1971.
9. Of the five factors discussed below three are assumed to have little significant impact on the future par level of private housebuilding, but specific adjustments have been made on account of policies for higher public sector rents and larger expenditure on improvement grants.

(a) The increased rate of demolitions forecast by the Department of the Environment is not out of line with actual increases in demolitions achieved in the 1960's; their effect on private housebuilding is in principle already incorporated in the trend projection.

(b) It seems possible that the low level of public sector housebuilding forecast to 1975 will stimulate private sector housebuilding; but as no 'substitution' of this kind can be detected in the past when public housebuilding fluctuated substantially, no allowance for this effect has been made in the projection.

(c) The high rate of inflation of house prices in the last two or three years may have tended to make investment in housing more attractive at any given mortgage rate, and if this inflation is expected to continue could contribute to a faster future growth of private housebuilding. As against this, the higher cost of new housing increases the difficulties (particularly for young couples) of financing house purchase. Again no specific adjustment has been made for the effects of inflation.

(d) Changes in Government housing policy to be introduced in 1972/3 will raise public sector rents thus encouraging more existing council tenants to purchase houses in the private sector. Between 1969 and 1971 about 50,000⁽¹⁾ council tenants moved each year to private housing (being replaced, in general, by new council tenants). Our guess is that about 5,000 (1974) and 10,000 (1975) additional houses may be built by the private sector because of the impetus to the movement of council tenants to home ownership given by the higher rents policy. This raises the projection of par private housebuilding (at 1963 prices) by £20 million in 1974 and £40 million in 1975.

(e) A final factor affecting private investment in dwellings is the programme of improvement grants. The White Paper does not provide estimates of expenditure on these grants but a substantial increase must be expected because of an announced increase of £46 million to be spread over 1971/2 and 1972/3 and because of the statement of policy in the White Paper⁽²⁾ on housing. We have assumed that the

(1) A.E. Holmans - Social Trends No. 1, 1970.

(2) Fair Deal for Housing (Cmnd. 4728).

effect of these grants on private investment is roughly one-for-one because although improvement grants do not generally cover the full cost of improvements, they may be used in part to finance improvements which would have been carried out in any case. In the absence of estimates in the White Paper we have made rough calculations that accelerated expenditure on these grants will raise private housebuilding by £25 million in 1972, rising to £42 million in 1975.

10. After allowing for the trend increase in private housebuilding and the factors discussed above, par expenditure at 1963 prices is estimated to rise from £663 million in 1971 to £810 million in 1975. The figures for each year are shown in Appendix Table 3.

11. Under the hypothetical projection of 4.5% per year growth of GDP from 1971, private housebuilding is estimated to rise from its actual level of £603 million in 1971 to £878 million in 1975. This projection is obtained by using the coefficient in the equation of paragraph 4 to adjust the par estimates to the assumed levels of actual GDP. The implied annual rate of growth is almost exactly the same as that achieved between 1963 and 1965.

Private capital investment

12. We now turn to estimates of other private fixed capital formation which includes all other investment by the personal and company sectors. In interpreting past data we have to take account of the nationalization of steel which removed about five per cent of private capital investment into the public sector. It is difficult to estimate a satisfactory quantitative model for private investment partly because this category covers a heterogeneous group of types of expenditure in widely differing industries, and also because of the importance of lags and expectations in determining the level of expenditure.

13. The model used to analyze past investment in order to adjust to the assumed par level of GDP makes private capital formation (excluding investment in dwellings

and in the steel industry, IKPS, a lagged function of the level of GDP. Two rather different models are obtained under alternative assumptions about the way in which expenditures are generated. The model we have used to estimate par investment takes the form

$$\text{IKPS} = -2043 + .210Y_{-1} - .053Y_{-2} + 11.7t$$

$$(.076) \quad (.073) \quad (32.8)$$

where Y_{-1} , Y_{-2} are the levels of GDP in the two previous years and t is a linear trend. This equation was estimated by least-squares on data for the period 1948-70. It will be seen that no attempt has been made to incorporate the effects of investment incentives. The equation implies that the level of investment will be higher by about 16% of any assumed increase in the 'long-run' level of GDP, and that there is also an 'accelerator' effect equal to about 5% of the increase in GDP between the two preceding years. The coefficients of the GDP terms were used to adjust actual private capital investment (including private steel investment but excluding housebuilding) to obtain an estimated par series corresponding to par levels of GDP.

14. An alternative formulation of the above equation is

$$\text{IKPS} = -2284 + .161Y + .057Y_{-1} - .050Y_{-2}$$

$$(.028) \quad (.029) \quad (.029)$$

estimated with a second-order serially correlated error process with coefficients 1.26 and -0.77 (standard errors of coefficients are asymptotic values). This formulation again implies that investment will be the higher by about 16% of any postulated increase in the level of GDP, and provides an accelerator effect equal to about 5% of the increase in GDP between the two preceding years. But investment is now related to the level of current GDP and much of the fluctuation in investment is left as a residual in the equation which shows compensating fluctuation over rather a long period; investment tends to be too high (or low) for two or three years and then swing the other way in compensation. At the

present stage we have not used this equation (or other variants which have also been estimated). If it is applied to past data to estimate par investment there are complexities in handling implied changes in the pattern of serially correlated residuals. For the future it would yield par projections almost identical to those obtained using the equation in para 11, particularly since the residuals estimated for 1970 and 1971 are small. This equation provides a warning that one may expect large and systematic fluctuations in private investment which are not directly related to current and lagged levels of GDP.

15. Par private capital investment, estimated using the coefficients of the equation in paragraph 13, for 1962-71 shows growth at about 6.5% per year on average resulting from periods of rather rapid growth followed by two or three years of relative stagnation (see Appendix Table 3). For the future, 1972-5, par private capital investment is projected using the same equation, adding back an estimate of future private investment in the steel industry (which was not included in the equation).

16. A special adjustment was made to the par series for 1973-5 to take account of expected investment in the distribution network and refinery capacity for North Sea oil. For this we have allowed an extra £50 million of investment in 1973 rising to a maximum of £150 million by 1975. The implied growth rate of par private capital investment, 1971-5, is 6% per year raising this category to nearly £4,300 million by 1975. The use of alternative equations for projection could have raised this figure by up to £500 million, but the equations projecting a higher figure seem rather less plausible.

17. Under the hypothetical assumption of 4.5% per year growth of actual GDP from 1971 private capital investment is projected to exceed the par level by 1974. The estimate is made using the coefficients of the equation in paragraph 13 to adjust back from par to assumed actual levels of GDP.

Stockbuilding

18. To complete the estimate of resources required for investment it is necessary to examine the requirements of stock-building. The highly volatile short-period fluctuation in stock-building is important for short-period demand management but is of little concern in this exercise which examines the use of resources in a longer-term context. The model used for stock-building therefore simply assumes that total stocks are maintained at a level appropriate to a trend stock-output ratio, interpolated between 1961, 1965 and 1969, and projected to decline slowly to 1975 at the same rate as between 1965 and 1969. Past and future par estimates as well as the hypothetical projection (assuming 4.5% GDP growth) are all derived from GDP series and the trend stock-output ratio. Table VI-2 below gives the implied average annual rates of stock-building.

Table VI-2 Stockbuilding \$million, 1963 prices

(annual average rates)		
	Par	Actual
1962-5	276	315
1966-9	339	236
1970-1	367	165
	Par	Projected ⁽¹⁾
1972-5	371	558

(1) hypothetical projection assuming 4.5% per year growth of GDP.