

Investment in this recovery: an assessment

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Investment has grown less rapidly in this recovery than during the previous one, despite a relatively low user cost of capital, high levels of profitability and high stock market valuations of capital. Part of the reason may have been that firms were correcting for over-optimistic forecasts of demand in the late 1980s. Another possibility is that conventional measures of investment do not capture additions to the productive potential of the economy as accurately as they once did.

Introduction

Trends in investment are important for two reasons. First, investment adds to the capital stock, and helps to determine how the supply potential of the economy grows over time. This rate of growth in turn determines the rate at which demand can grow on a sustainable basis without inducing inflationary pressure. Second, investment is itself a component of demand (accounting for about 17% of GDP).

This article explores why investment has contributed less to this recovery than to the previous one, and has fallen as a share of GDP. It considers various economic variables that theory suggests should affect investment, and uses these to try to account for recent trends. The article distinguishes between two sets of arguments: those that relate to how the desired capital stock has grown during this recovery compared with the previous one, and those that explain how firms may have begun this recovery at a different point relative to that desired capital stock. Finally, it discusses problems in measuring investment that complicate the analysis of published data.

Recent trends in investment

Since the current recovery began in 1992 Q1, whole-economy investment has declined as a share of GDP, unlike in the previous recovery, ie from 1981 Q1 to 1986 Q3 (see Chart 1). This recent weaker growth in investment cannot be attributed solely to weak government or private housing investment: business investment has also grown less than it did in the previous recovery (see Chart 2).

Table A decomposes the growth in investment during each of the recoveries, by sector and by asset. This simple comparison shows that the growth in investment during this recovery has been slower than in the previous one in every sector except manufacturing, and for all types of asset. Table A also shows in particular that:

- Around one third of the relative weakness has been due to low general government investment. This is not because of privatisations, since

Chart 1
Whole-economy investment/GDP in recoveries
(at constant prices)

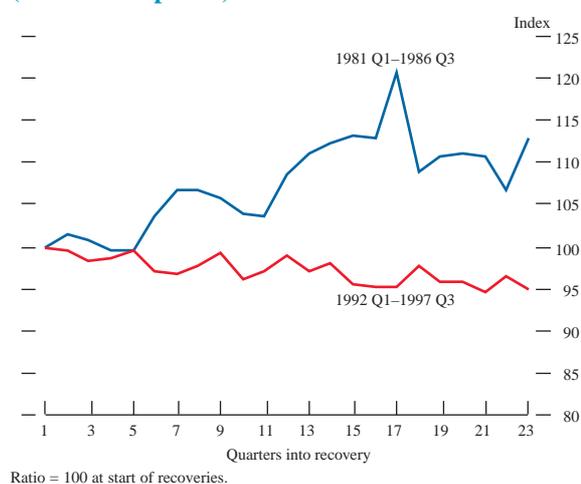
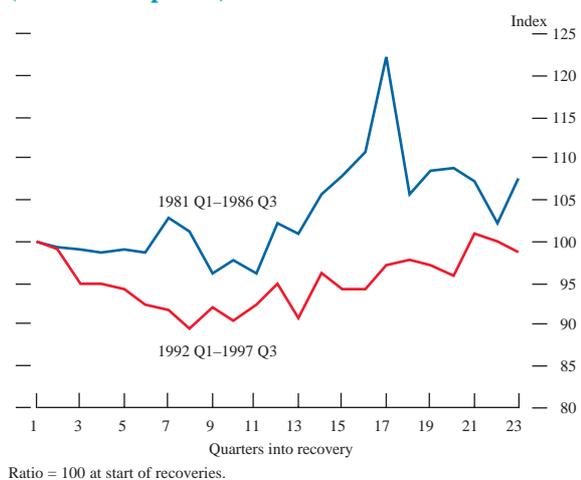


Chart 2
Business investment/GDP in recoveries
(at constant prices)



private sector investment is defined here to include public corporations. But there has been a policy of shifting investment expenditure from the government to the private sector via the Private Finance Initiative (PFI).

Table A
Contribution to cumulative growth of annual investment in recoveries

Percentage points (a)

	1996 weights in total (per cent)	1981–85 (1)	1992–96 (2)	Difference (2) – (1)
By sector				
Total		26	8	-17
<i>of which:</i>				
Government (b)	12	4	-2	-6
Private (b)(c)	88	22	11	-11
<i>of which:</i>				
Private dwellings (b)	23	6	3	-3
Business (d)	65	15	7	-8
<i>of which:</i>				
Services	45	16	11	-5
Manufacturing	12	0	1	0
Mining/oil	4	-1	-2	-1
Utilities	4	0	-3	-3
By asset				
Vehicles, ships and aircraft	9	4	2	-1
Plant and machinery	36	10	5	-5
Dwellings	19	4	2	-2
<i>of which:</i>				
Private	17	4	2	-1
Public	2	1	0	-1
Other buildings and infrastructure	36	7	0	-8

(a) Columns may not sum exactly because of rounding.

(b) Includes net purchases of land and existing buildings.

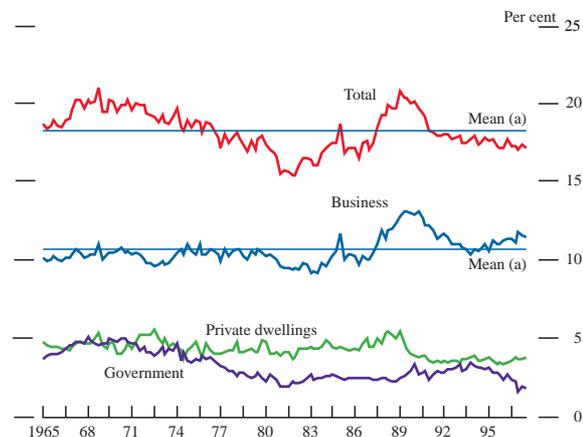
(c) Includes public corporations (except NHS trusts).

(d) Private sector and public corporations' (except NHS) non-residential investment (including investment under the PFI).

- Most of the two-thirds difference accounted for by the private sector has been due to the relative weakness of business sector investment.
- The service sector has accounted for around half of the relative weakness in business sector investment; the rest has been because of mining/oil and utilities, even though these are much smaller sectors.
- Across different types of asset, non-residential construction investment contributed most to the relative weakness.

It is important to maintain a broader historical perspective, and in particular to consider levels of investment as well as growth rates. In purely accounting terms, Chart 3

Chart 3
Investment by sector/GDP (at constant prices)

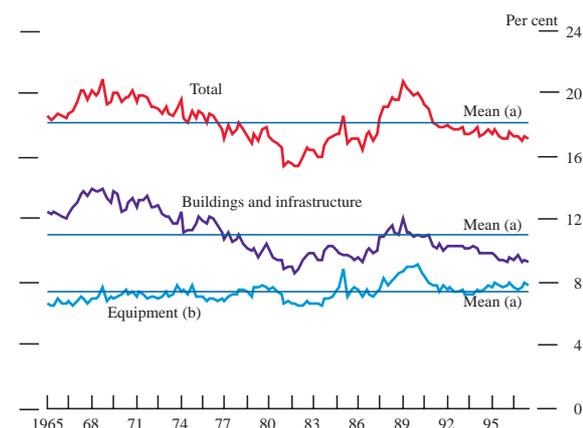


(a) For period shown in the chart.

(1) All investment shares in this article are expressed in constant prices. The current price investment/GDP ratio is lower than the constant price ratio because there has been a decline in the reference price of capital goods.

indicates that the whole-economy investment/GDP ratio is low relative to its historical average because of low government investment. Though business investment has grown relatively slowly during this recovery, it began the recovery at a relatively high level and has been rising as a share of GDP since 1994; this share is now above its historical average. By asset, Chart 4 indicates that the low investment/GDP ratio is accounted for by low investment in buildings and infrastructure.⁽¹⁾

Chart 4
Investment by asset/GDP (at constant prices)



(a) For period shown in the chart.

(b) Equipment comprises plant and machinery, vehicles, ships and aircraft.

These historical comparisons can help to account for movements in investment, but to explain them we need to understand the economic factors affecting investment, which may have differed greatly in the two recent recoveries. We focus on business investment, which accounts for two thirds of total investment.

How can we explain the behaviour of business investment?

Investment is the means by which firms adjust their capital stock to its desired level. Therefore, investment is determined by how this desired capital stock grows over time. So one reason why investment may have been weaker in this recovery is that the desired capital stock to which firms are adjusting may not have risen as much as during the previous recovery. However, since it is costly for a firm to adjust the size of its capital stock, and because firms make errors in forecasting future market conditions, they may at any time be some way from their desired capital stock. If firms began the respective recoveries at different positions relative to their desired capital stock, this would also affect the subsequent rate of investment. What follows therefore considers factors that may have affected the growth of the desired capital stock, and then examines whether firms might have begun this recovery with 'too much' (or the previous recovery with 'too little') capital.

Factors affecting the desired capital stock

(i) *The real user cost of capital*

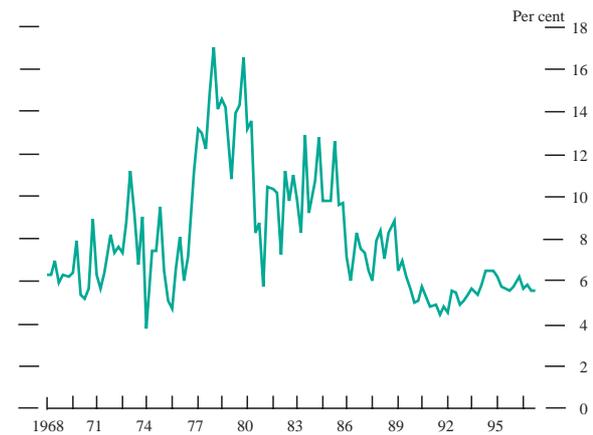
A simple way of looking at investment behaviour is to assume that firms maximise the expected present value of future profits, and hence the value of the firm to shareholders. When there are no adjustment costs, firms maximise profits by ensuring that the capital stock in each period is at a level where its marginal product—the return from the most recently acquired unit of capital—is just equal to the marginal cost of using that last unit. This cost is known as the ‘real user cost of capital’ and can be thought of as the amount the firm would pay to rent a capital good for each period. Many factors affect the real user cost of capital: the real purchase price of capital goods; the rate at which they depreciate through use; the real opportunity cost of investing in fixed capital rather than a financial asset with similar risk characteristics (usually called the real cost of finance); and taxes on the purchase price and on the flow of profits from the investment.⁽¹⁾ Each of these is discussed below.

The real cost of finance

It is difficult to measure the real cost of finance precisely. One simple measure would be a long-term interest rate adjusted for the rate of inflation. But this would need to be the expected average rate of inflation for the whole period of the investment project, rather than the prevailing inflation rate. Prevailing inflation rates may imply a very low real interest rate (as occurred for example during the 1970s), but uncertainty about future inflation rates may still discourage investment. And an interest rate is unlikely to represent the return that shareholders require from an investment project, because equity is more risky than debt. What we require is a measure of the overall real cost of finance. This is the rate at which a company’s future real earnings are discounted by the capital market in valuing the securities upon which those earnings will accrue, whether in the form of interest, dividends, or retentions. Future real earnings are not observable, but if we assume that real earnings in future years are equal to earnings in the current year, then the ratio of current real earnings to the market value of a firm’s liabilities (its debt and equity) gives a measure of the real cost of finance.⁽²⁾ Chart 5 shows such a measure for the UK non-financial corporate sector.⁽³⁾ The real cost of finance during this recovery has been well below its level during much of the 1970s and 1980s. This is consistent with a reduction in the risk premium—the premium that investors require to compensate them for macroeconomic uncertainty.

Chart 5

Real cost of finance^(a)



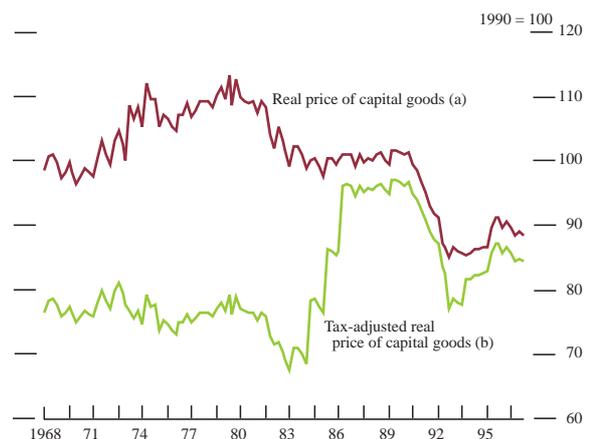
(a) Defined as ICCs’ post-tax net operating surplus divided by the market value of their net financial liabilities, expressed as a percentage.

Tax

The tax regime also affects the user cost of capital. In the United Kingdom, the tax system affects the user cost of capital in two ways: capital allowances reduce the effective real purchase price of capital goods; and corporation tax raises the pre-tax revenue that investment projects must generate to be profitable. The real price of capital goods has been lower than in the previous recovery (see Chart 6). But this is before tax. The 1984 corporate tax reforms reduced tax allowances for investment. Because the changes were phased in over two years, investment rose sharply in 1984 and 1985 (as shown in Chart 2) in anticipation of what was effectively an increase in the tax-adjusted price of capital goods. The real tax-adjusted price of capital has been higher than during the equivalent phase of the previous

Chart 6

Real price of capital goods



(a) Business investment deflator relative to GDP deflator.
(b) Defined as the real price of capital goods multiplied by one minus the present value of capital allowances.

(1) Formally, the measure is calculated as:

$$\text{real user cost of capital} = \frac{(1-A)}{(1-t)} P(r+d)$$

where A is the present value of capital allowances, t is the rate of corporation tax, P is the real price of capital goods (the price of capital goods divided by the GDP deflator), r is the real cost of finance, and d is the rate of depreciation.

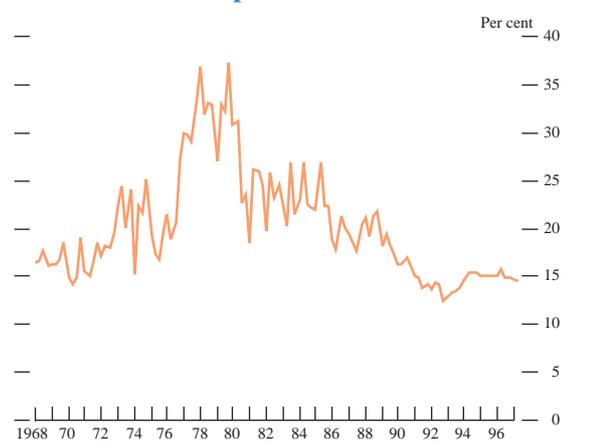
(2) This approach was taken by Fleming *et al* (1976).

(3) This is calculated as the ratio of its post-tax net operating surplus to the market value of its net financial liabilities. The post-tax net operating surplus is defined as gross trading profits plus rent minus stock appreciation (that part of accounting profits attributable to the effect of price changes on stock values) and minus capital consumption (depreciation).

recovery. The decline in capital allowances has been partly offset by reductions in the corporate tax rate from 52% to 35% in 1986, to 33% in 1991, and to 31% in the most recent Budget.⁽¹⁾ This has reduced the minimum pre-tax return necessary for investment projects to be profitable.

Taking all these factors into account, the estimated real user cost of capital has been lower in this recovery (see Chart 7). By raising the desired capital stock, this, other things being equal, would lead us to expect stronger investment growth than in the previous recovery, counter to the evidence presented earlier. So if we are trying to explain this apparent puzzle, we could conclude one of two things: either that we should place more emphasis on factors that might have driven firms away from their desired capital stock, or, alternatively, that some or all of the assumptions behind our measure of the user cost of capital do not hold.

Chart 7
Real user cost of capital



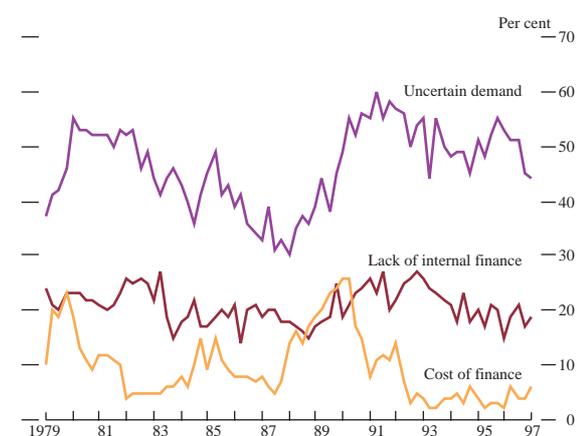
To calculate the user cost of capital, we have to make several assumptions. First, we have assumed that there has been no change in the rate of depreciation of capital goods (in other words, that there has been no change in the average useful life of a capital good). In reality, average asset lives may have fallen (or depreciation may have increased). For example, the fact that IT equipment has accounted for a growing share of the capital stock would imply a fall in average asset lives as IT equipment becomes obsolete more quickly. This would imply that the true cost of capital is higher than is shown in Chart 7. The second uncertainty is about the price of capital goods: if measured prices do not take account of improvements in quality (or productivity), then our measure could overstate the true cost of capital (this also affects the measured volume of investment and is explored later in the article). Correct price measurement is a particular problem with IT equipment, where quality—particularly computing power—

has increased rapidly. Finally, our estimate of the real cost of finance is very approximate. In deriving an implicit discount rate from the market valuation of the ICCs sector, we have assumed that the market expects future profitability to be equal to current profitability. In reality, expectations about the future will vary as the market receives news about the economy. All of these factors could distort our measure of the user cost of capital, and their net effect is not clear.

(ii) Uncertainty

The riskiness of an investment project should be reflected in the cost of finance. But in some circumstances, uncertainty may have an additional effect. Because of the lack of liquid, efficient, second-hand markets in capital goods, most investment is to some extent irreversible. So expansion today may leave the firm with too high a capital stock over a prolonged period, if future conditions turn out to be less favourable than expected. In contrast, not investing now leaves the firm with an option to invest later, if uncertainty is reduced and expansion proves warranted. Investing today eliminates the value of this option, so it should be included as one of the costs of the project—in effect raising the required rate of return. The value of this option increases with the level of uncertainty. This may be one factor explaining the high required rates of return (relative to estimates of the cost of finance) quoted by firms in surveys.⁽²⁾ And according to the CBI Industrial Trends Survey, uncertainty about demand is a far more important constraint on investment than either internal finance or the cost of finance (see Chart 8).⁽³⁾ The level of uncertainty—at least for manufacturers—has remained high during this recovery. We do not have an equivalent measure of uncertainty for the rest of the business sector. It is possible that the previous recession is still affecting perceptions of risk, and holding back investment.⁽⁴⁾ But we would expect

Chart 8
Factors constraining investment^(a)



(a) Based on CBI Industrial Trends Survey; percentage of manufacturing firms citing each factor.

(1) A further planned reduction to 30% was announced in the November 1997 Pre-Budget Report.

(2) For example see Wardlow (1994), who reports an average required real rate of return (before depreciation) of around 15%, much higher than the 6% shown in Chart 5.

(3) Although there is some doubt about whether CBI respondents interpret the questions on uncertainty correctly.

(4) The theoretical literature shows that the long-run effect of uncertainty on investment is ambiguous, but that investment will become more lumpy when uncertainty is higher. However, Price (1996) does find that aggregate uncertainty has a negative effect on the level of manufacturing investment.

firms to be more certain about the future macroeconomic environment in the new monetary framework.

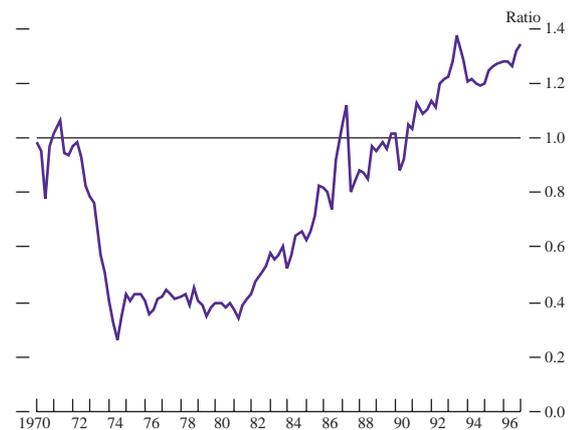
(iii) Tobin's q

It is clearly too simplistic to assert that investment depends only on the prevailing marginal product and/or user cost of capital. Most firms purchase rather than rent capital goods, so they cannot costlessly alter their capital stock each period, both because of adjustment costs and because there is often no well-functioning second-hand market in capital goods.⁽¹⁾ Because firms cannot costlessly adjust the capital stock in each period when capital productivity and/or its user cost changes, they must look at the expected present value of all revenues generated by an investment project over its whole life. Firms will invest only if this exceeds the purchase price of the capital goods by more than the adjustment costs. Since adjustment costs are likely to be increasing with the amount of investment, investment ought to be related positively to the difference between the value an additional unit of capital adds to the firm and its purchase price. Under certain conditions, the value of an additional unit of capital can be measured by looking at the stock market's valuation of existing capital.

The ratio of the market value of a firm to the replacement cost of its capital stock is termed 'Tobin's q ' (Tobin and Brainard (1969)). Firms' investment should be positively related to the divergence of Tobin's q from one. The Bank's measure of Tobin's q for the ICCs sector has risen significantly in this recovery, and is at a historically high level (see Chart 9). This implies that the incentive to invest in new capital has been higher than in the previous recovery. But the empirical relationship between Tobin's q and investment in fixed capital has not been at all precise in the past. One reason might be that the stock market does not always accurately reflect the 'fundamentals'—expected future streams of profits—upon which investment decisions are based. For example, the information available to those who buy and sell shares may be different from the information used by those who control the day-to-day investment decisions of firms. And the stock market may be subject to 'fads' and 'bubbles' (Blanchard *et al* (1993)).

Another reason why a Tobin's q in excess of one might not imply a large incentive to invest in fixed capital is that as the economy becomes more service-oriented, a higher proportion of the market value of the corporate sector relates to intangible assets such as intellectual and human capital and brand image, which are not captured in the denominator (fixed capital). This gives an upward bias to measured q . For example, companies such as Microsoft have a Tobin's q far in excess of one (see the *Inflation Report*, November 1997).⁽²⁾ There are also many reasons why the stock market valuation of existing capital may not be the same as their

Chart 9
Tobin's q ^(a)



(a) Defined as the ratio of the market value of ICCs' net financial liabilities to the replacement cost of their capital stock.

valuation of an additional unit of capital; it is this marginal value relative to costs (marginal q) that should determine investment.⁽³⁾

(iv) Profitability

Approaches based on the user cost of capital and Tobin's q assume that the source of finance is irrelevant for the optimal path of investment. In fact, the cost of external finance (or the stock market's valuation of investment opportunities) may be a relatively unimportant determinant of investment at the margin, if capital markets are imperfect. Capital markets may be imperfect because, for example, the providers of finance know less than the firms themselves about the quality of investment projects (and those managing them). In this case, finance providers have an incentive to ration by quantity rather than price, since those firms willing to borrow at high interest rates are more likely to be risk-loving, and therefore high-risk firms. If firms are constrained in the amount they can borrow to finance investment, they will have to raise extra funds internally. In this case, investment will be determined partly by the amount of profits available for investment. Also, if managers prefer to retain control of the firm, then they will value the streams of profit accruing from internally financed projects more highly than those from externally financed ones. Their cost of finance is therefore reduced when profitability increases. In the CBI Industrial Trends Survey, firms consistently quote lack of internal finance as a bigger constraint on investment than the cost of finance (see Chart 8). And there is a good deal of other evidence that firms are financially constrained at times, so that investment is related to internal cashflows.⁽⁴⁾ But investment may also be affected by current profitability, even if firms are not financially constrained, if current profitability is used as an indication of future profitability.⁽⁵⁾

(1) For example, according to the Finance and Leasing Association, only around 20% of non-residential investment is leased.

(2) In aggregate, the brand image effect alone on q should cancel out—an increase in the brand image and hence market value of one firm in an industry is likely to be at the expense of other firms in that industry.

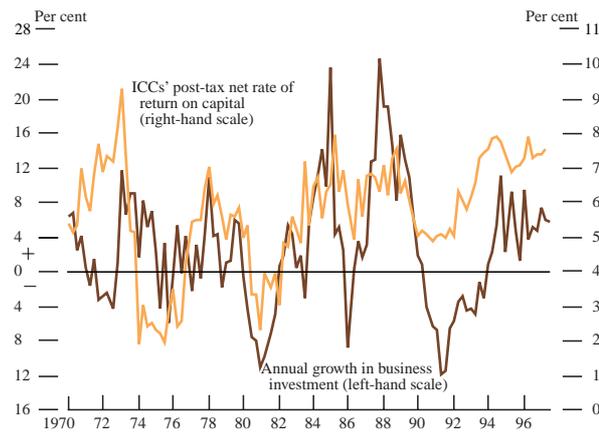
(3) When there are no adjustment costs, the firm will maintain its capital stock at the level where marginal q is one. Note that this is an alternative way of expressing the condition that the marginal product of capital is equal to its real user cost (as defined earlier).

(4) Formally, firms are defined as financially constrained if a windfall increase in profits, ie an increase not associated with any change in expectations about future profits, would lead to an increase in investment. For a survey of the growing literature in this field, see Schiantarelli (1996).

(5) This assumption was made earlier in deriving the cost-of-finance measure.

As Chart 10 shows, there has traditionally been a close relationship between the growth rate of business investment and profitability. The rate of return on capital is currently at near-record levels and hence, on the basis of the historical relationship, we would expect business investment growth to be higher. So movements in profitability cannot explain the weakness in investment relative to the previous recovery—though we would expect the relationship between profits and investment to have weakened, given the financial liberalisation that has taken place.

Chart 10
Growth in business investment and profitability



Factors that may have pushed firms away from their desired capital stock

The factors we have considered so far are those that may affect the desired capital stock, and hence the flow of investment needed to reach it. Other things being equal, a low user cost of capital, high stock market valuations and high profitability would suggest that the desired capital stock had risen and that investment should be buoyant. But firms may have begun the respective recoveries at different positions relative to their desired capital stock, which would also have affected the subsequent rate of investment.

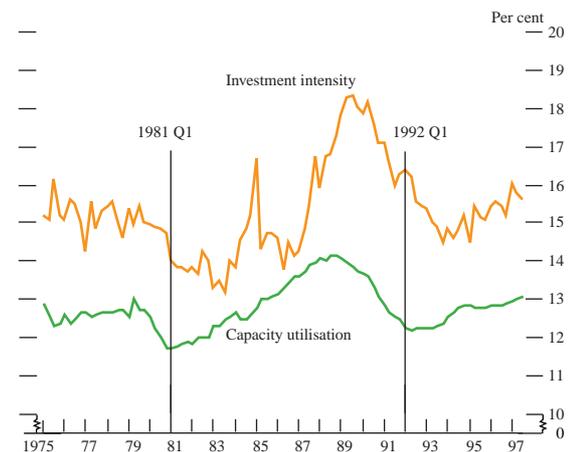
(i) Capacity utilisation

One way of assessing whether firms began this recovery with too much capital is to look at measures of capacity utilisation. Firms may choose to maintain spare capacity because it is costly to adjust the capital stock to match every fluctuation in demand. But if firms' previous forecasts of demand turn out to have been over-optimistic, then they may find themselves with more spare capacity than they need. In this case, any subsequent increase in demand, even if it is expected to be permanent, may not lead to firms choosing to acquire as much extra capital as they would in the absence of these forecast errors.

We do not have a direct, survey-based, measure of the level of capacity utilisation in the business sector. But we can

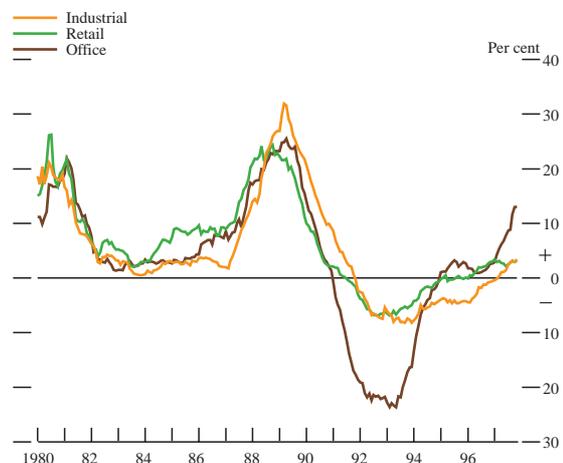
estimate it by using ONS data for business sector output and its capital stock to compute the volume of output per unit of capital.⁽¹⁾ Chart 11 shows that historically there has been a positive relationship between business investment intensity (the ratio of investment to output) and this measure of capacity utilisation. It appears from ONS data that capacity utilisation at the beginning of the present recovery (1992 Q1) was not significantly different from its level at the beginning of the previous recovery (1981 Q1). But firms were investing a much greater share of their output, so it was understandable that investment grew less rapidly than output during the early part of the latest recovery, as firms sought to increase utilisation of existing capacity. Business is now investing a relatively high share of its output. Other indicators suggest that for some assets the degree of excess capacity was greater at the beginning of the present recovery. In the commercial and industrial property sector, rental values were declining until 1995 (see Chart 12) and, as shown earlier (Chart 4), investment in buildings and infrastructure has been particularly weak.

Chart 11
Business investment intensity and capacity utilisation^(a)



(a) Capacity utilisation is defined as the volume of output divided by the net capital stock, expressed as a percentage.

Chart 12
Annual rental value growth



Source: Richard Ellis.

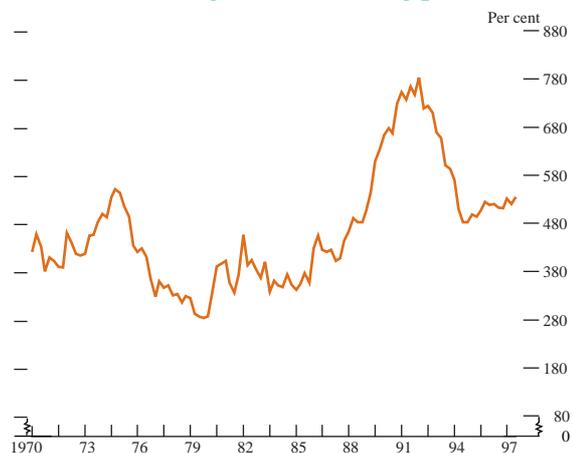
(1) The drawback of this approach is that the difficulties of correctly allowing for depreciation and scrapping mean that capital stock estimates are imprecise.

(ii) Indebtedness

We can also look for evidence of firms having inherited ‘too much’ capital by looking at firms’ financial liabilities. Other things being equal (particularly the supply of finance), capital accumulation should have been reflected in additional borrowing.

Chart 13 shows that the corporate sector began this recovery with an unprecedentedly high debt burden. During the early part of the recovery, firms used higher profits to repay bank debt. So this may be one reason why investment did not rise in line with profitability during the early part of the recovery. How can we interpret this pattern of events? Smith *et al* (1994) show that firms that were highly indebted in 1992 had been among the most profitable in the second half of the 1980s; their profitability then fell rapidly to a trough in 1992. This profile is consistent with firms borrowing in the second half of the 1980s to invest in projects that they and the banks expected, based on current profitability, would generate profits more than sufficient to repay the debt. During the recession, firms found themselves with excess fixed capital, and hence excess debt used to purchase the capital. In the early part of the recovery, firms were still correcting for that previous expectational error. This contrasts with the previous recession, when the decline in profitability had not been preceded by an increase in indebtedness, so that the rate of subsequent insolvencies was lower.

Chart 13
ICCs’ outstanding bank borrowing/profits^(a)



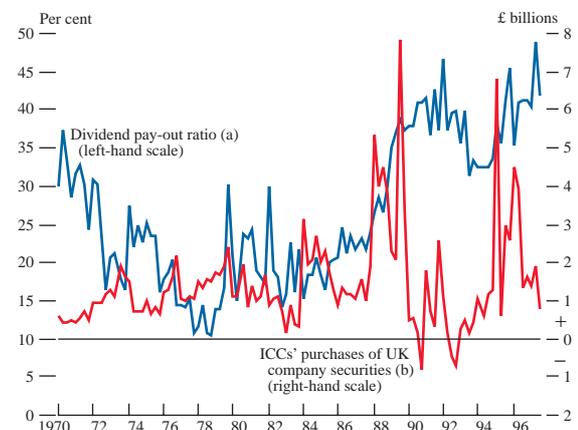
(a) Defined as the ratio of the stock of M4 lending to ICCs’ gross trading profits, expressed as a percentage.

Of course, the supply of finance may not have remained ‘equal’, as we have assumed. It could be that the repayment of debt reflected the fact that financial intermediaries corrected for their own errors in expectations, not only about the future demand for their borrowers’ goods and services, but also about the level of financing that is consistent with profit maximisation in the newly liberalised financial market.

(iii) Mergers and acquisitions (M&A) activity and dividend payments

Another reason why investment may not have risen in line with increases in the desired capital stock—and, in particular, why it may not have risen in line with profitability (as we saw in Chart 10)—is that firms have been expanding via acquisition and, as a result, a large proportion of profits has been paid out to shareholders as dividends. The market for corporate control can lead to defensive dividend payments by firms at times of high M&A activity: a high dividend may boost the share price and make takeover more expensive for the predator firm.⁽¹⁾ But until the most recent Budget, there has also been a bias in the UK tax system towards dividend payments rather than retained earnings—pension funds received a refund on Advance Corporation Tax paid on dividends on their behalf—which became more severe when lower capital allowances reduced the attraction of investing retained earnings. Chart 14 shows that the dividend payout ratio is much higher than during the previous recovery, and has been rising during the period of the recent M&A boom. The higher the share of profits absorbed by dividends, the more likely firms are to face a binding constraint on investment spending. Against this it is argued that dividends can be recycled as external finance, so this dividends-based explanation relies on there being some rationing of (or preference against) external finance.

Chart 14
The dividend payout ratio and M&A expenditure



(a) Defined as the ratio of dividend payments to ICCs’ total income after tax and interest payments, expressed as a percentage.

(b) Deflated by the FT All-share Index (1990 = 100).

There are other problems with this explanation. First, it is not clear why there has been an M&A boom: theory says that when Tobin’s q is above one, firms should be expanding via investment rather than acquisition. Second, work by Thomas (1996) explains how an increase in M&A activity could eventually lead to an increase in fixed capital investment. This work argues that firms use ‘excess’ money holdings to acquire financial assets via, for example, mergers and acquisitions. Financial asset prices are bid up

(1) In order for this to be an effective strategy, shareholders must interpret a high current dividend payment as a signal that future dividend payments will be higher than they would be under the management bidding for control.

and this drives down the cost of finance, which in turn increases investment in fixed capital in the long run.

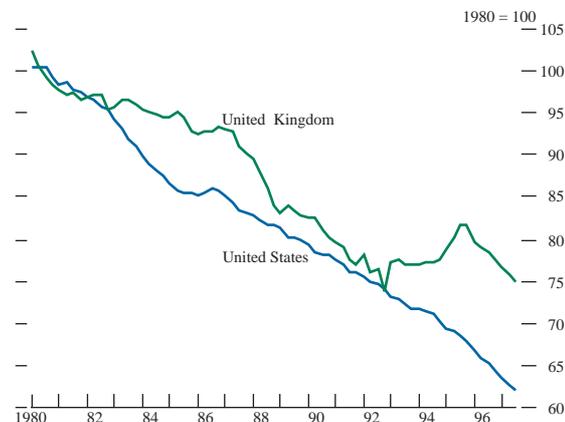
Measurement problems

We have identified some economic factors that could explain why business investment has grown more slowly in this recovery than in the previous one, but part of the explanation may lie with measurement error. This section looks at various ways in which investment may have been underrecorded during this recovery.

(i) Prices

Our measure of the real quantity of investment depends on our having an accurate measure of the price of capital goods. But prices need to be adjusted for (the now rapid) improvements to the quality of capital goods. If prices are overstated, we may underestimate investment volumes. This could account for some of the relative weakness of measured investment in this recovery. Methodological differences mean that UK statisticians may make less allowance for quality than their US counterparts. The fact that, relative to the overall price level, the price of equipment in the United States has declined more rapidly than in the United Kingdom is indicative of this (see Chart 15).

Chart 15
Real price of equipment in the United States and United Kingdom^(a)



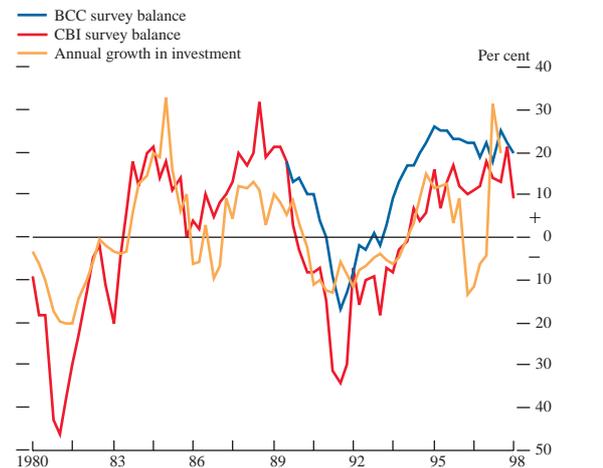
(a) Defined as the price of equipment divided by the GDP deflator.

(ii) Expenditure

There is also some evidence from survey data that suggests that investment expenditure may be under-recorded. Chart 16 shows that during 1996, a substantial gap opened between recorded growth in manufacturing investment and investment intentions expressed in surveys. There have been gaps between these series in the past, but they occurred at peaks and troughs in the cycle. Under-recording of investment is more likely in the service sector, because ONS survey coverage is less comprehensive (and perhaps less likely to cover new firms, who are more likely to be investing). A gap has emerged between service sector investment growth and BCC survey intentions (see

Chart 17). And there is some anecdotal evidence from the Bank's regional Agents that IT equipment may, because of its short economic life, be recorded as current rather than capital expenditure. Against this, it is important to note that gauging the quantitative significance of a change in a qualitative survey balance is not straightforward (Cunningham (1997)).

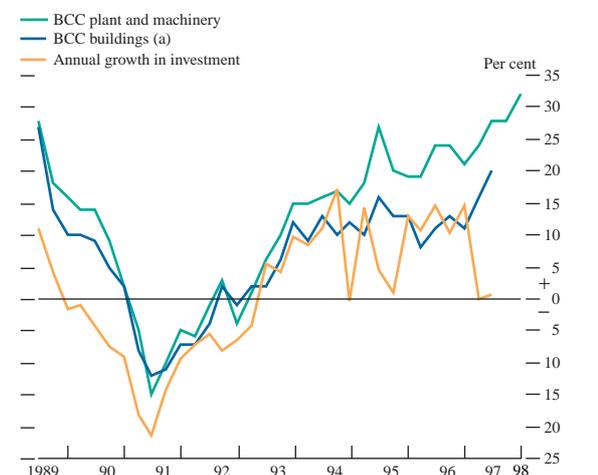
Chart 16
Manufacturing investment intentions



Note: Survey balances are determined by subtracting the percentage of companies reporting decreases from the percentage of companies reporting increases. The survey balance has been moved forward two quarters, as it relates to intentions.

Sources: British Chambers of Commerce, CBI and ONS.

Chart 17
Services investment intentions



Note: Survey balances are determined by subtracting the percentage of companies reporting decreases from the percentage of companies reporting increases. The survey balance has been moved forward two quarters, as it relates to intentions.

Sources: British Chambers of Commerce and ONS.

(a) This series has been discontinued.

The ONS has analysed revisions to the expenditure components of GDP between initial release and the final estimate published three years later. Over a ten-year period, revisions to investment showed a significant upward bias. On average, four-quarter growth rates were revised up by 2.6 percentage points between the initial and final estimate (see Table B). Using a longer data period, the ONS also

looked at the effect of the economic cycle. The mean revision in the expansion phase was higher than in the contraction phase, but its standard error was also higher, so that it is more difficult to say whether it was significantly different from zero.

Table B
Revisions to investment (whole-economy)

Revisions to four-quarter growth rates of constant price investment (1986–95) (a)				
Mean revision	Standard deviation	t-value (b)	Percentage of revision	
2.6	0.8	3.2	+	-
			83	17

Revisions to four-quarter growth rates of constant price investment (1991–95)				
Mean revision	Standard deviation	t-value	Percentage of revision	
2.3	1.2	1.9	+	-
			75	25

Tests for cyclical variation (1982–95)

Expansion phase		Contraction phase	
Mean	t-value	Mean	t-value
3.9	1.8	1.2	2.2

Source: Rizki (1996).

(a) Dating refers to publication of revisions.

(b) t value > 1.96 indicates that the mean revision is significantly different from zero at the 95% level.

Overall, the survey data and ONS research suggest that one reason why investment growth has been weaker in this recovery is that investment in recent years may have been under-recorded.

It is also important to realise that investment, as currently defined, is now a less useful guide to increases in productive capacity, because of the growing importance of computer software. The definition of investment will change in 1998 when the United Kingdom, along with other European countries, moves onto the new European System of Accounting: software expenditure will be recorded as investment, even when it is developed in-house. This should help to align measured investment more closely with changes in the economy's productive potential.⁽¹⁾

Summary

Investment has grown more slowly in this recovery than in the previous recovery, and this is not restricted to particular sectors or types of asset. But though growth in business investment has been weaker than in the previous recovery, its level at the start of the recovery was relatively high and at present accounts for a relatively high share of GDP. The decline in investment as a share of GDP during this recovery can be attributed to weak government investment, or by asset, to weak investment in buildings and infrastructure.

How can we explain the behaviour of business investment during this recovery, compared with the previous one? Part of the answer lies in how economic factors may have changed the desired capital stock. Other things being equal, a low user cost of capital, high stock market valuations and high profitability would suggest that the desired capital stock had risen and that investment would be buoyant. But this is not the case. This points us towards explanations for why firms may be away from their desired capital stock, and how they might be adjusting towards it. In the early part of the recovery, the corporate sector may have had to correct for excessive levels of debt and capital stock, which slowed investment relative to the previous recovery. The unusual increase in debt and investment during the second half of the 1980s could well have been, in retrospect, based on unrealistic expectations about future profitability. A more recent feature of corporate behaviour—the M&A boom and associated high dividend payouts—may also have diverted funds away from investment in fixed capital. Finally, there may be statistical as well as economic reasons for the observed sluggish growth in investment. Some of the apparent weakness may be due to measurement errors, both of the price of investment goods and of the amount of expenditure. But it is also true that investment, as currently defined, is now a less useful guide to increases in productive capacity, because of the growing importance of computer software.

(1) Revisions will be made to the National Accounts for previous years.

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