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The Rt Hon Norman Tebbit MP
Secretary of State for Trade and Industry

Norman Tebbit

CAPACITY CONSTRAINTS IN MANUFACTURING INDUSTRY

I recently asked my officials to take a look at the evidence for both actual and prospective capacity limitations in manufacturing. I thought you might like to see the enclosed paper which reports their analysis. I understand that your officials have seen it in draft and are broadly content.

In the absence of direct measures of capacity utilisation, the analysis necessarily places a great deal of weight upon the results of the CBI survey. This provides indirect evidence in the form of the percentage of firms reporting that they are working below capacity.

The paper suggests capacity utilisation is now back to the average levels seen in the 1960s and 1970s, leaving scope for further growth in manufacturing output. It also suggests that the higher levels of investment now evident and in prospect will increase the headroom available.

An analysis of the figures by industry suggests little sign of overheating. With the obvious exception of the computer industry, the firms which are operating close to capacity tend to be in the consumer sector. These industries do not seem to be investing particularly heavily at the moment, again suggesting that capital shortages are not yet critical.

In contrast to the experience of previous recoveries, there is little evidence of skilled labour shortages at the moment. Although shortages of technical staff do appear to have emerged in certain sectors of industry, this does not seem to be critical, except perhaps in the computer industry.

I am sending copies of this letter and paper to the Prime Minister and to the Secretary of State for Employment.

Nigel Lawson

NIGEL LAWSON

THE EVIDENCE FOR CAPACITY LIMITATIONS IN MANUFACTURING INDUSTRY

1. Introduction

1. In contrast to the experience of previous upturns when shortages of skilled labour have constrained manufacturing output, the evidence from recent CBI surveys suggests that deficiencies of usable plant capacity are currently more likely to be relevant, at least at the aggregate level. This note examines the available evidence and attempts to assess the implications for the current recovery.

2. Indicators of productive capacity in manufacturing

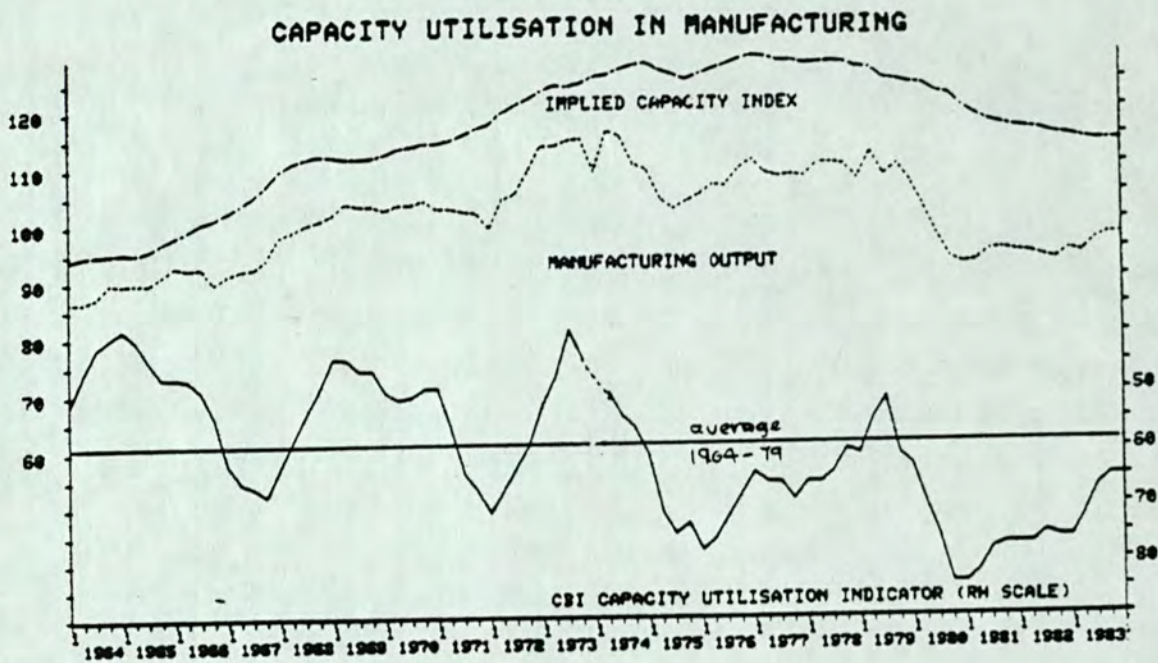
2. The idea that plant capacity constrains output has a strong intuitive appeal. However it is in practice very difficult to define productive capacity in a precise way. It would clearly be wrong to view plant capacity as an absolute constraint on production since it is almost always possible to increase the output of a given plant or machine by increasing manning levels or by simply operating it longer through overtime or extra shifts. The limits to this kind of increase are economic rather than physical. For this reason capacity must be viewed as an economic as well as a physical concept, depending upon prices, wages and profitability as well as technology.

3. The distinction between economic and physical capacity has become crucially important in recent years as increases in relative energy costs have made large sections of the capital stock economically obsolete, even though they have remained physically capable of production. This has made it very difficult to judge the extent of spare capacity in industry. It has effectively ruled out the use of conventional physical measures of the capital stock in studies of productive potential.

4. One way of overcoming this problem is to rely on the judgement of managers as to what the full capacity level of output actually is. This is essentially what the CBI survey does when it asks firms whether they are operating below capacity. The results of this survey - the percentage of firms saying that they are operating below a "satisfactory full rate of operation" - are shown in the lower panel of Chart 1 below. In order to show an increase in the

level of capacity utilisation and an increase in this measure, the left hand scale has been inverted. There is of course no certainty that the levels indicated by this response will not move over time as answering practices change, but we would expect movements over shorter periods and hence the cyclical pattern to remain unaffected by such a drift. In practice the CBI series fits in very well with other evidence and indicators of pressure in manufacturing industry.

CHART 1



5. The chart sets the CBI measure of utilisation alongside the CSO's manufacturing output index. The peaks in the former lead naturally to the idea of 'peak capacity utilisation' - the level of utilisation typically associated with peaks in output. However we should not necessarily view this as indicating the maximum level of capacity utilisation which the economy could economically or physically achieve. This would only be appropriate if capacity has consistently acted as an effective constraint on output in recovery periods and there is little direct evidence to suggest that this is the case. On the other hand, the peak levels of utilisation indicated in the

chart were only attained for brief periods and may not represent levels which are sustainable in the longer run. For example, it has been suggested that the 1973 peak was not sustainable.

6. Rough and ready indicators of the level of useful manufacturing capacity can be constructed by suitably combining the CSO output and CBI utilisation indices. An example of such an "implied capacity index" is shown in the upper panel of Chart 1. The scale used to represent this index is inevitably highly arbitrary. It was calibrated with reference to the 1964 peak in utilisation, so that at this point it equals the observed level of output plus an arbitrary five per cent. Although it cannot indicate "full capacity", this measure does at least give a rough indication of the level of manufacturing output which might be achieved if plant capacity utilisation were to significantly exceed previous peaks. We would regard this very much as an upper limit.

7. This index can also be used to compare the implied level of capacity at different points in time. For example it suggests that there was very little increase in potential between 1974 and 1979, and that there has been a large fall since then. This is despite the high levels of investment which were maintained during the 1970's, and almost certainly reflects the effect of adverse movements in energy prices and other developments on economic capacity.

3. The factors limiting manufacturing output in previous recoveries

8. This section takes a brief look at the constraints which were operative at previous output peaks, and ask whether output was limited by deficient capacity or by other factors. The most obvious of these are shortages of skilled labour and the availability of finance.

9. These factors work rather differently from capacity constraints. In the case of labour we would note three important differences:

- (a) Labour is much more mobile between firms than is capital, so that an individual firm can usually attempt to side-step labour shortages by bidding higher wages for the workforce it needs. This type of constraint is therefore felt in the market for a specific type of skill, usually in a particular location or industry, although it may spill over into an economy - wide skilled labour shortage. Such constraints will tend to be reflected in wage pressures with all their associated macroeconomic

effects. This is the most immediate threat which labour shortages post to a recovery.

- (b) Although capital tends to be immobile and specific to particular firms or technologies in the short run, it is quite flexible in the longer run. Capacity limits can be pushed back by investment in new capital assets and in this sense are a dynamic rather than an absolute constraint on output. Providing that adequate levels of investment and profitability are maintained, there is no reason why plant capacity, output and demand should not expand continuously and in parallel. It is more difficult to increase effective labour capacity or to adjust to specific shortages through resettlement, retraining and the like.
- (c) Reflecting (b), sustained economic growth requires a flexible supply of capital goods. In a closed economy this could put severe strains on the capital goods supply industry, frustrating the general recovery. However in an open economy such pressure points can in many instances (particularly in the case of plant, machinery and vehicles) be relieved by imports, unless of course there is a world wide shortage of capital goods. Labour shortages are again more critical in this respect.

10. Financial constraints may act in several different ways. To the extent that firms rely on internal rather than external finance they will be firm-specific, and the growth rate will be related directly to the rate of profitability and cash flow. But to the extent that firms finance their expansion externally this will put pressure on the financial markets and interest rates and this will have macroeconomic effects which impede recovery.

11. How have these various factors served to constrain previous recoveries in manufacturing? The CBI survey again offers interesting evidence on this, in the response to a direct question on the factors

limiting output. The percentage of firms citing skilled or other labour shortages on the one hand and plant capacity or materials shortages on the other are shown in Chart II. The percentage of firms citing delivery dates as an important limiting factor on export orders is shown in Chart III.

CHART II

CBI SURVEY : CONSTRAINTS ON OUTPUT

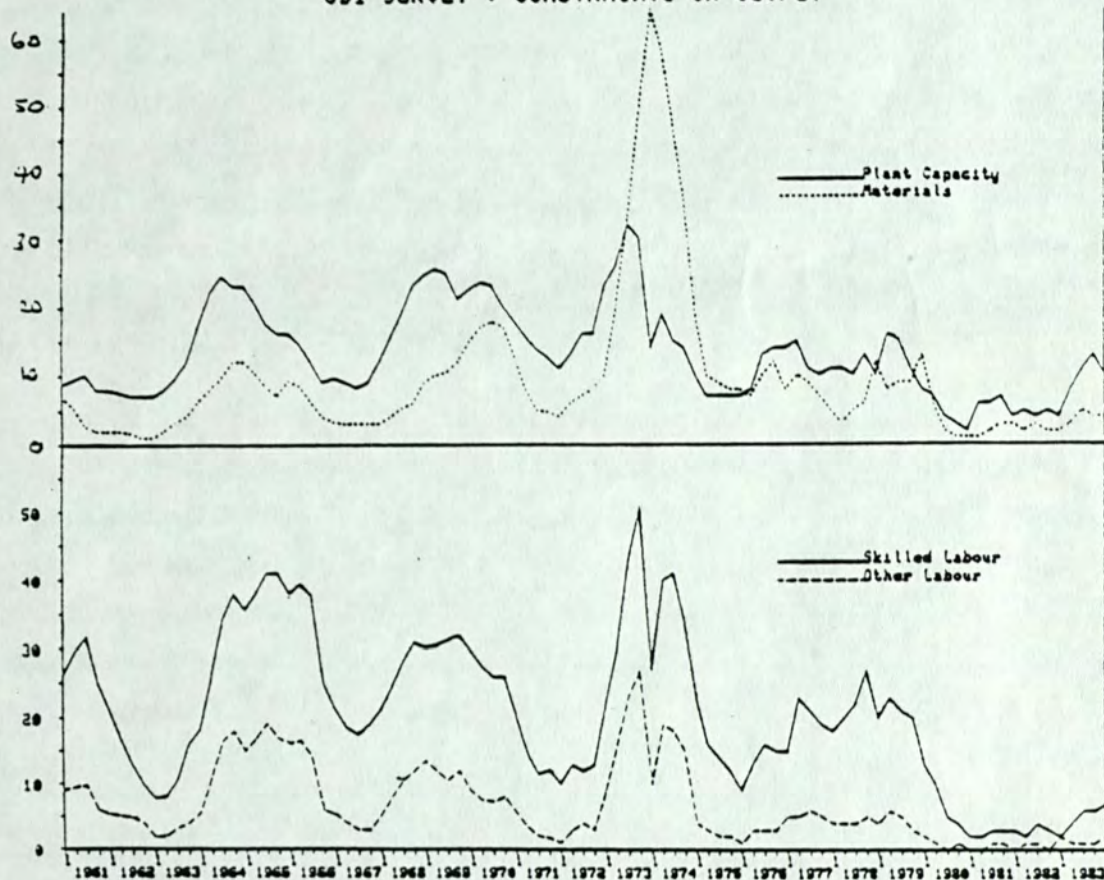
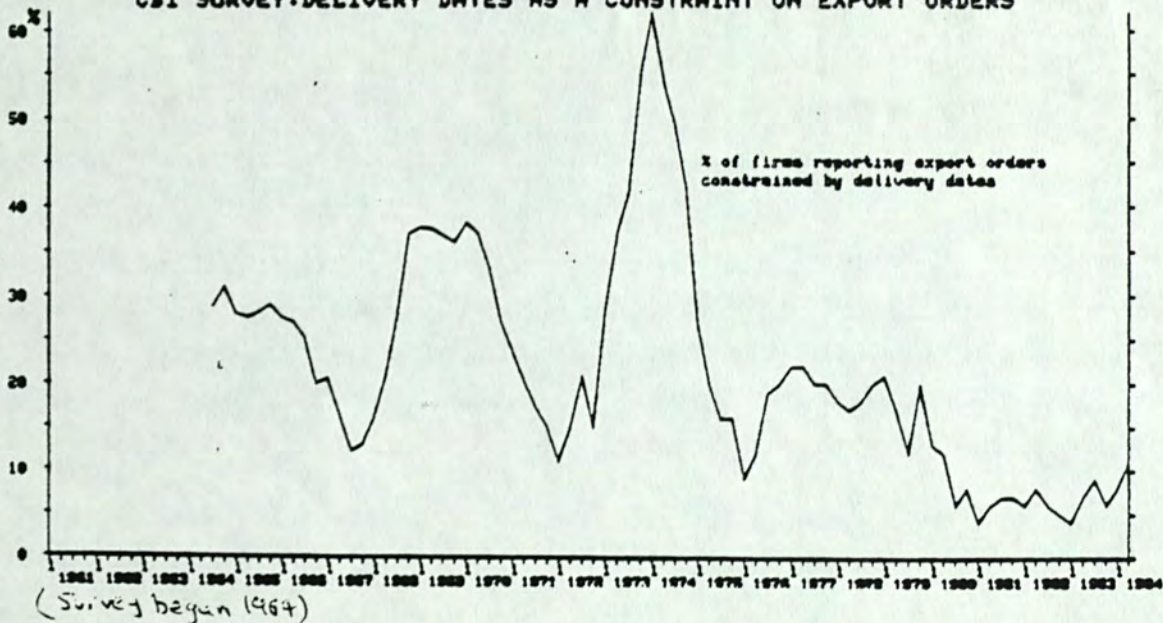


CHART III

CBI SURVEY: DELIVERY DATES AS A CONSTRAINT ON EXPORT ORDERS



12. Although these constraints have varied in their effectiveness with output levels, so that their effects are difficult to distinguish, the chart suggests that skilled labour shortages were probably more effective in limiting output than capacity until 1980. Taking the period 1961-79, the percentage of firms citing the former averaged 24% (ranging between 8% in early 1963 to 51% in late 1973) as against 14% for the latter (ranging between 8% and 32%). There also seems to have been a general shortage of labour at times, particularly during 1964-66 and 1973-74. These labour shortages were clearly reflected in wage pressures, which through their macroeconomic effects have arguably played the crucial role in arresting the last few economic recoveries. However it is important to note the effect which the general overheating of the economy had on the balance of payments during the 1960s and the stop-go cycle which this involved. Capacity shortages were clearly very relevant during these years.

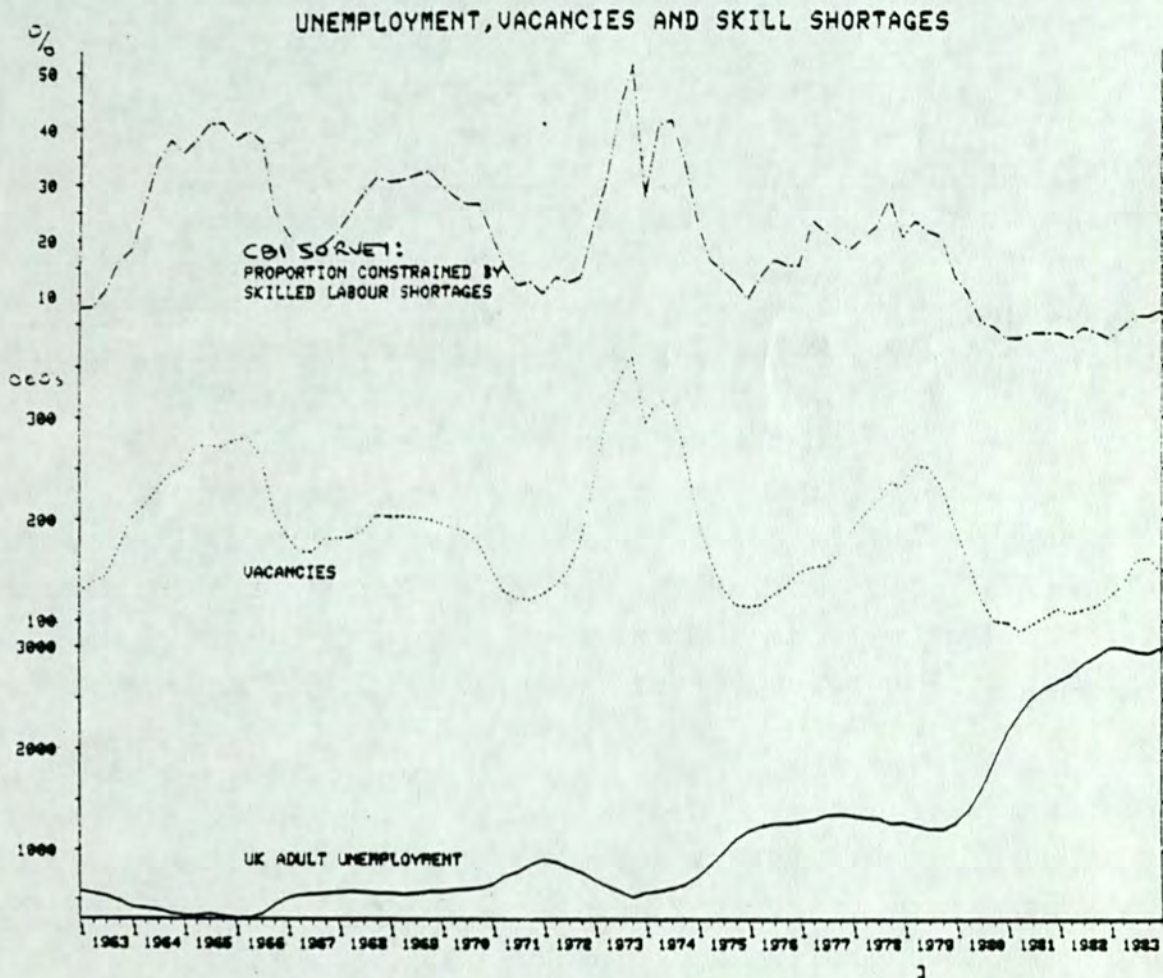
13. Although CBI evidence on financial constraints is very patchy due to changes in the questions posed, this does reveal that some firms were constrained by the availability of external finance during 1966-67 and again during 1970. There was also a marked increase in the number of firms citing a lack of internal finance as a reason for not investing during the liquidity squeeze of 1974-75 and again during 1980. The cost of finance was also significant during 1980 and again in early 1982.

4. Current evidence on capacity utilisation in manufacturing

14. In contrast to the experience of the past 25 years, Chart II makes it clear that labour shortages in manufacturing are not generally regarded as being important at the moment. By mid 1982 only 2 per cent of CBI respondents were reporting skilled labour shortages. This figure has now increased to 7 per cent but is still well below the pre-1979 average. Chart IV shows that the CBI labour shortage and official vacancies series are closely correlated. The vacancies and unemployment series both support the view that there is a great deal of slack in the labour market at the moment. On the other hand, turning back to Chart II, the proportion of firms constrained by plant capacity has risen from 4% in mid 1982 back to its historical average of 14% in recent months.

15. Chart III shows that although poor delivery dates have remained a constraint on the exports of some firms during the recession and increasingly so over the last year as export growth has resumed, this factor is not as important as it was before 1979.

CHART IV



16. What seems to have happened is that the specific nature of capital assets - particularly those in energy and labour intensive activities - has led many of them to become economically obsolete in the face of changes in relative prices. At the same time these changes have also made the associated labour skills redundant as is clear from the pattern of unemployment. However the reduction in the effective capital stock appears to have been greater than the reduction in the effective labour supply, making capacity the more relevant constraint on output. The fall in potential is clearly reflected in the implied capacity index shown in Chart I.

17. Nevertheless this chart suggests that the capacity constraint still allows some headroom for manufacturing output growth, reflecting the fact that utilisation has only reattained average rather than 'peak' levels and that it might be pushed beyond these levels without serious problems emerging. It suggests that output could perhaps rise by a further 10% before utilisation would reach the levels associated with previous peaks. However it would not take very much of an increase to push utilisation back to the level seen at the relatively low 1979 peak.

5. The prospects for future increases in manufacturing capacity

18. Since as we have seen capacity acts only as a dynamic constraint on output it is important to consider prospective changes in capacity over the next few years. If further adverse movements in relative prices take place this will make the capacity constraint that much more serious. But on the other hand the recent and increasingly well established revival in manufacturing investment will have the effect of pushing up capacity, leaving more headroom for output growth. Since the pace of the current recovery in manufacturing is quite modest by recent historical standards it could be some considerable time before capacity is being fully employed.

19. A major reason for the revival in investment plans can be found in the marked recovery in profitability which has been evident recently. This appears to be fairly widespread across manufacturing, with the average real rate of return on capital rising from just $3\frac{1}{2}\%$ in 1981 to 6% in 1983 and increasing further this year. This will have had the effect of making investment out of internal cash flows easier and certainly more profitable. Reflecting this, the number of CBI respondents citing a shortage of internal finance as a constraint on investment fell to 19% in April, the lowest figure seen since this question was first asked, late in 1979.

20. The financial outlook seems generally favourable to investment at the moment, particularly in view of the short-term incentive effect of the budget. The experience of previous output cycles perhaps suggests that the demands made by industry on the financial markets, to finance development expenditures which they cannot meet out of internal sources, might push up interest rates to levels which threatened the recovery. However this problem is not an immediate one, and would again take time to develop given the pace of the current recovery in company expenditures. In the June forecast, which took account of these pressures, we saw real interest rates remaining

high, but there was little in the domestic prospect to point to higher rates.

6. Capacity constraints at the industrial level

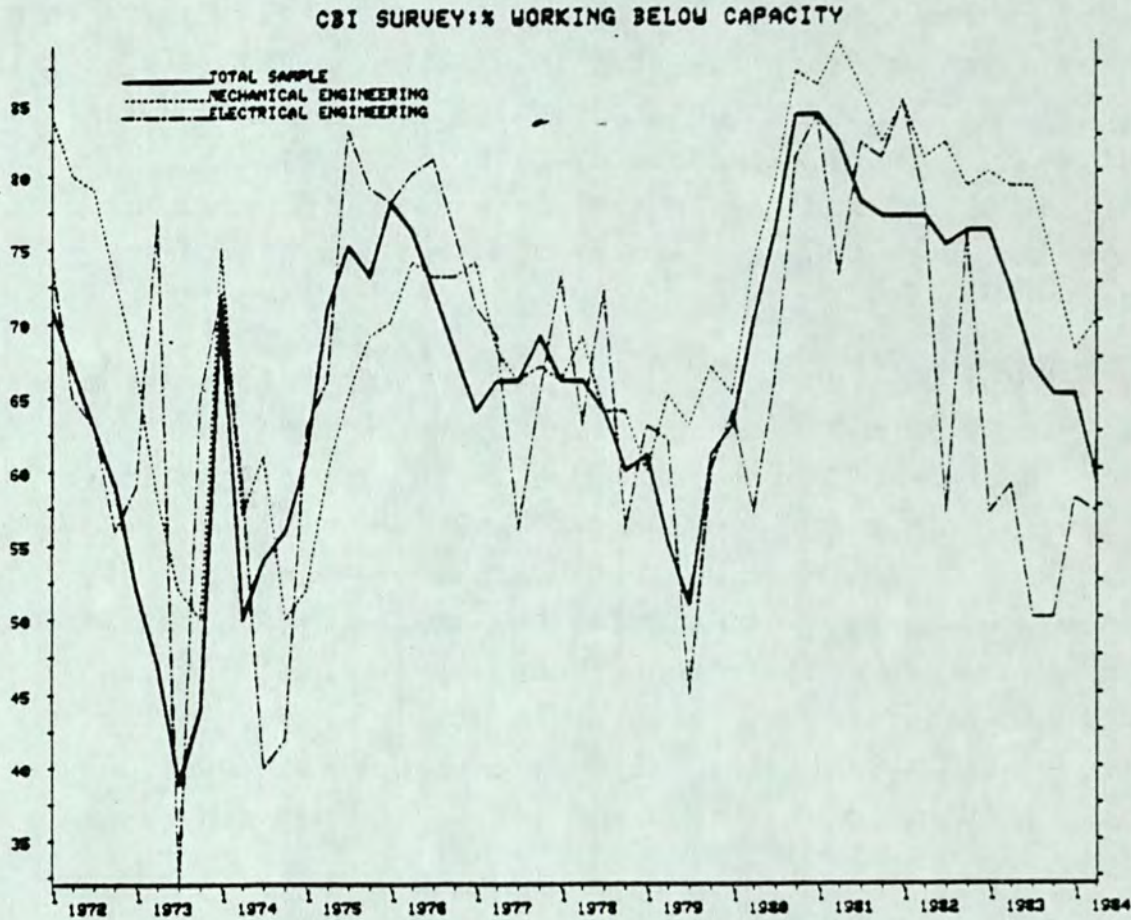
21. The recovery in investment plans may also be a response to capacity constraints, both actual and prospective. However there is not much support for this view in a detailed analysis of the recent CBI and DTI investment surveys. These suggest a widespread revival in investment expenditure, both in industries in which output and utilisation levels are high and rising (such as chemicals) and those in which these levels are low and tending to fall (as in the motor industry).

22. One possible reason for the poor relationship between current capacity levels and investment plans is that firms are investing in order to increase efficiency as much as to expand capacity. This is consistent with the April CBI Survey which suggests that 78% of firms are investing for the first of these reasons and only 20% for the second. If this trend continues then the higher level of investment now projected may not make very much of an impact upon physical capacity levels. However it will make for increased economic viability. And as utilisation improves we would expect a greater proportion of investment to be directed towards increasing capacity.

23. The industrial detail is nevertheless interesting since it suggests that the capital goods industries are not as yet working under much pressure. The April CBI survey shows for instance that 70% of firms in the mechanical engineering industries are currently working below capacity as against 57% in electrical engineering and 59% for the whole of manufacturing. The response of these sectors to this question in previous surveys is shown in chart V. Further analysis shows that just under 50% of firms in the electronic and electrical capital goods and instrument engineering industries are reported to be below capacity, but this largely reflects the fact that the technological or energy-saving characteristics of these industries has sheltered them from the worst effects of the recession. Of the industries with less than a third of firms below a satisfactory level of output, most - footwear (19%), other leather goods (30%), wool textiles (30%) hosiery and knitwear (29%) and furniture (29%) - are in the consumer goods sector. These are also areas in which a lot of capacity has been shed in recent years. The only other sectors

working so close to capacity are office machinery and data processing equipment (30%) and industrial chemicals (31%).

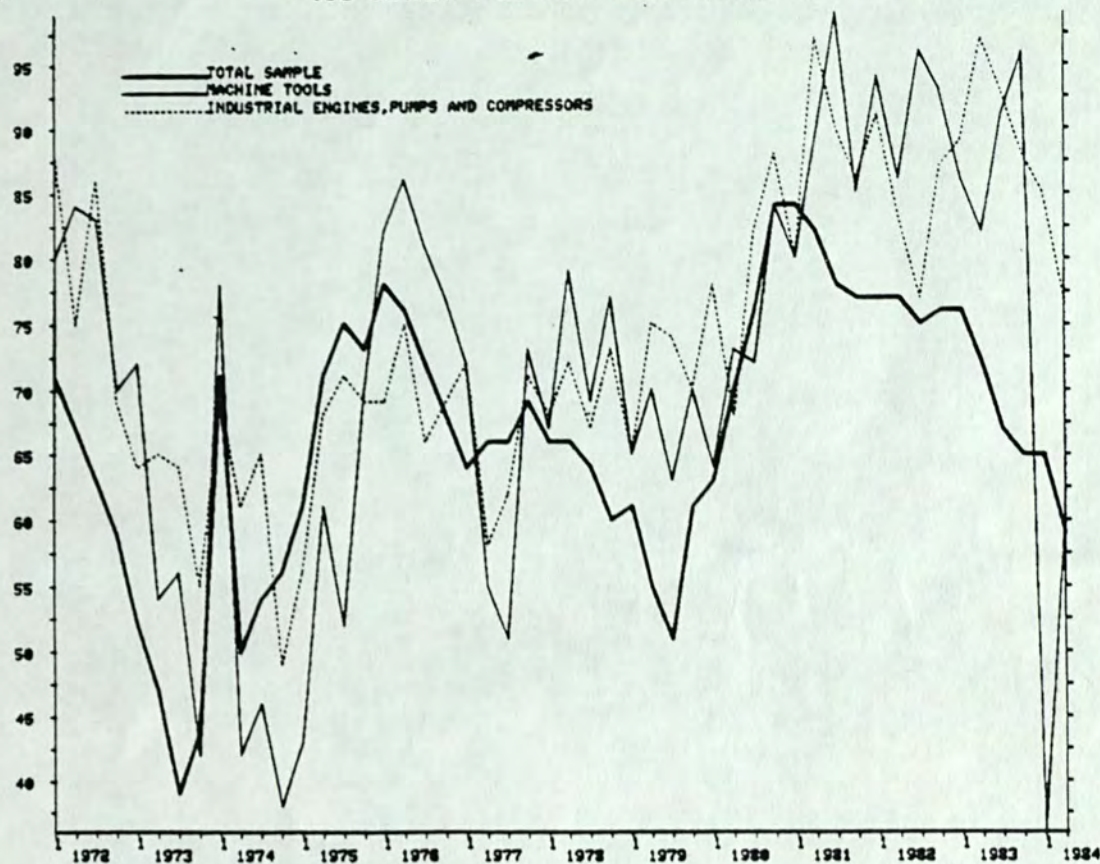
CHART V



24. The only capital goods industry which has come under any pressure in recent months is machine tools - again an area where a lot of capacity has been shed. The January CBI survey revealed a marked improvement in orders for machine tools. This was reflected in the response to other questions, particularly the percentage of firms reporting that they were below capacity, which fell from 98 to 36%. This moved back up to the average for manufacturing in May. Chart VI shows the CBI results for capacity in machine tools and the industrial engines sector. These tend to move in a similar way, lagging slightly behind the total manufacturing sample.

CHART VI

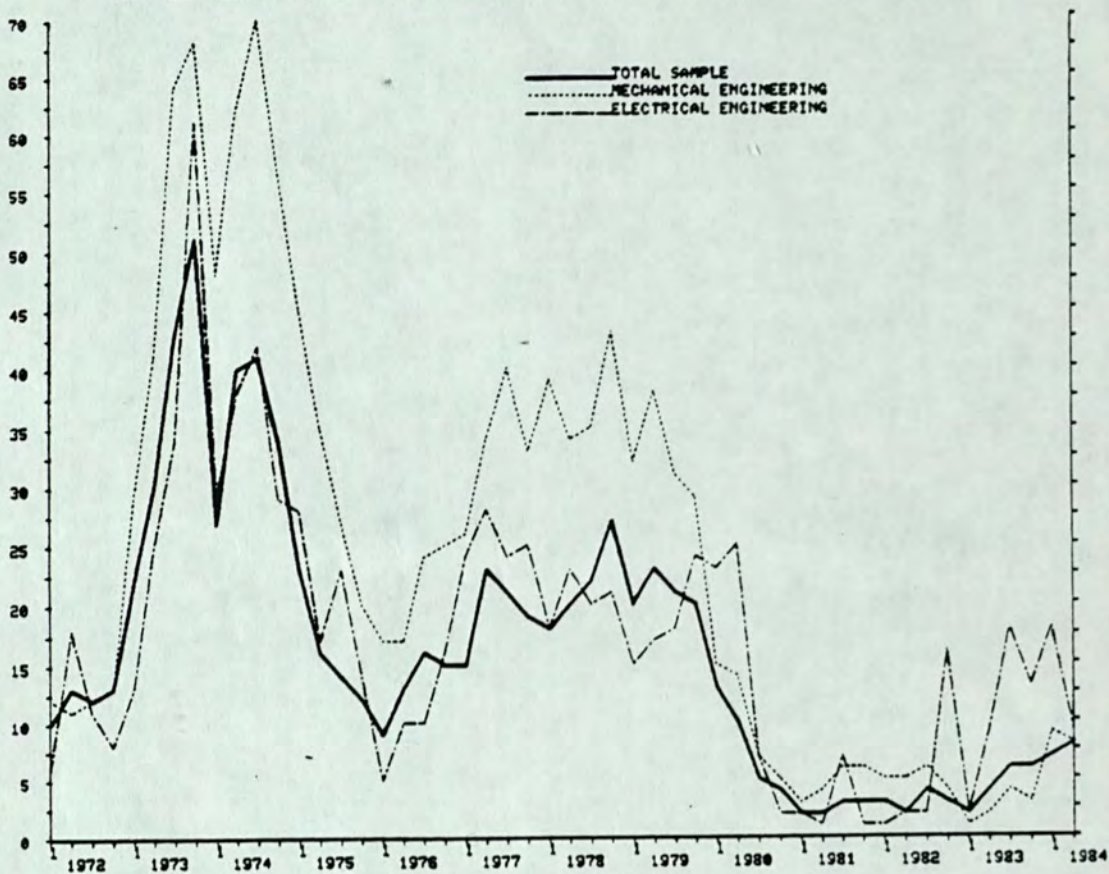
CBI SURVEY: % WORKING BELOW CAPACITY

7. Labour market indicators

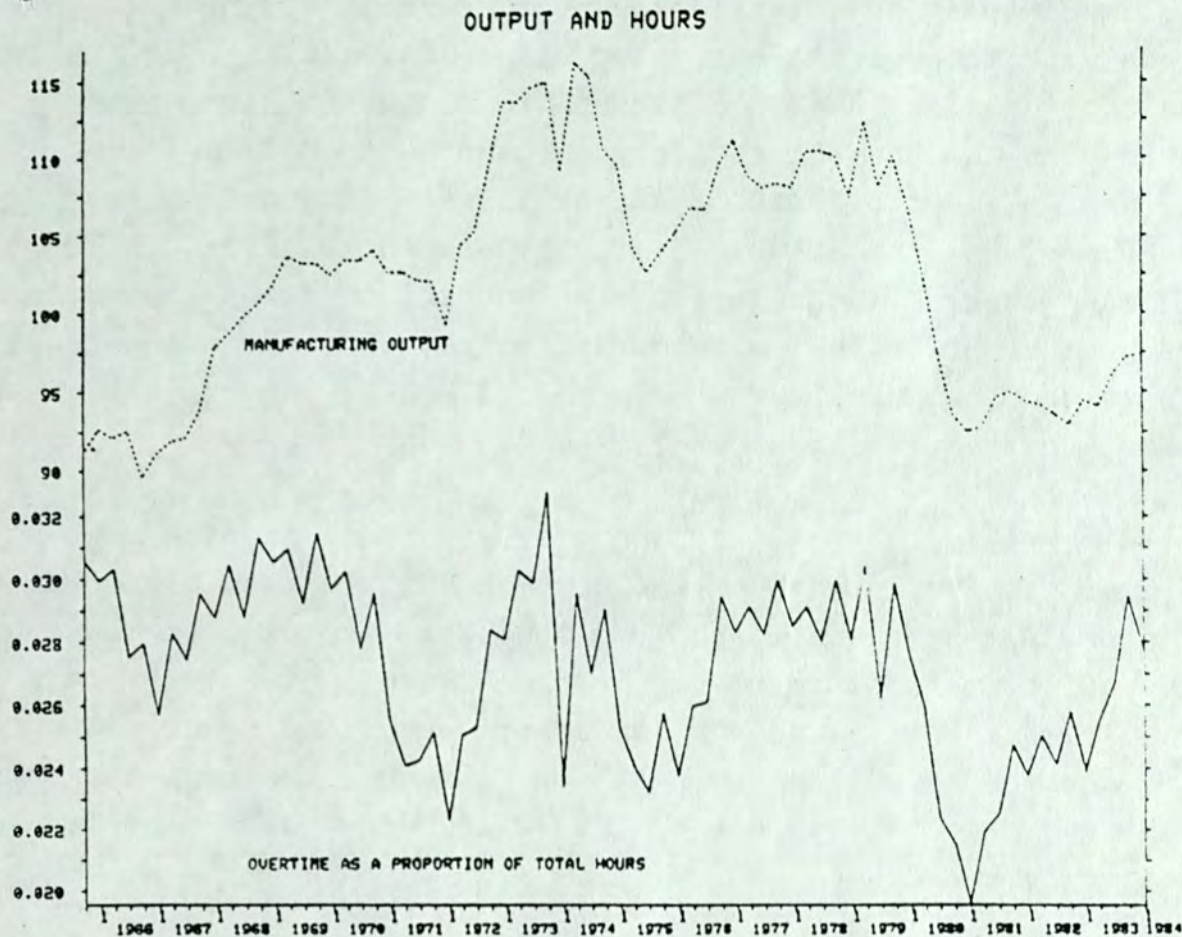
25. The disaggregated information from the CBI surveys suggest that most sectors of manufacturing have experienced only small increases in skilled labour shortages over the past two years. The results for mechanical and electrical engineering are shown in Chart VII. Emerging constraints have been most evident in the electrical engineering and textiles industries where about 20 per cent of firms were reporting shortages in early 1984. Within the former sector, shortages of skilled labour appear to be quite acute in certain areas such as computers. There is no evidence of any skilled labour shortage in the mechanical sector.

CHART VII

CBI SURVEY: OUTPUT CONSTRAINED BY SKILLED LABOUR SHORTAGE (%)



26. Consistent with the apparent absence of significant labour shortages there is little evidence of upward pressure on wage settlements, though the downward movement of recent years seems to have been arrested. Only the overtime data seem, at first sight, to be providing a contrary indication. Chart VIII shows that, since early 1981, the proportion of overtime hours to total hours worked in manufacturing has risen from a deep trough to a level close to the 1979 peak.



27. A similar rapid rise in overtime during 1972 and 1973 was clearly associated with widespread labour shortages. But it seems more likely that the recent rise simply indicates a cautious response by firms to the very modest upturn in output. Having been caught with too much labour in 1980 and undergone the painful process of labour shedding, firms are now reluctant to take on more labour until they feel confident that the recovery will be sustained. There may at this stage be some reluctance by firms to take on unemployed labour of unknown quality while their existing workers are prepared to work more overtime. But as recovery continues, it seems likely that future increases in the demand for labour will be met more by rising employment than further increase in overtime. There would certainly appear to be enough slack in the labour market to permit this.

7. Conclusion

28. In contrast to the experience of previous upturns, the evidence suggests that the availability of plant capacity is more likely than shortages of labour or finance to be the factor identified as limiting the present recovery in manufacturing. However utilisation is still only at average levels and does not as yet pose a serious limitation. To the extent that individual pressure points do emerge, these are likely to spill over into imports. More general pressures, with direct effects on prices and indirect effects working through the effect of a higher import bill on the exchange rate, seem less likely.

29. Given the high rate of productivity growth and the revival of manufacturing investment the current relaxed pace might be sustained for some considerable time before capacity begins to act as an effective constraint. This conclusion must however be a tentative one in view of our imperfect understanding of the structural changes which have been taking place in manufacturing industry in recent years and the effect of these and future developments on capacity trends.