Appendix D

Government policies

Government measures in the United Kingdom from 1945 to 1980

The post-war reconstruction plans in the United Kingdom were built around the principle of fairness for all classes with special attention being paid to those who had suffered during the hostilities. In addition reconstruction was broadened to include health, housing and education, all to a much higher standard and controlled directly by government. Plans were made and executed and the reputations of government ministers relied on the number of new houses built, hospitals commissioned or primary schools opened to a new and modern design.

During this period, little attention was paid to industry by policy makers, except in so far as ministers were determined that firms should not be allowed to profit from the shortages and problems of the reconstruction period. To this end, raw materials could be obtained only on licence and, before 1952, precise product specifications were laid down by government departments under the 'utility' schemes. It followed that there was little or no room for innovation nor for the flexibility required to adjust to the post-war shortages. Furthermore, while British manufacturers remained in a straitjacket, their competitors on mainland Europe were making a rapid recovery, and their new and innovative products proved highly competitive in British markets.

With demobilisation incomplete, the extensive war damage repairs and the growing activity of the public sector, a shortage of labour was inevitable. A cost of living sliding scale was in operation; but between 1946 and 1948 earnings rose by 14.2 per cent.

Concern about the problem of rising earnings was responsible for the first White Paper in February 1948, *Personnel, Incomes, Costs and Prices*, which concluded that: 'There is no justification for any general increase of individual money incomes'. In October 1948 the 'Stafford Cripps wage freeze' was introduced. In September 1949, sterling was devalued and the cost of living sliding scale was abandoned.

From 1950 to 1979, an attempt was made by successive governments to restrain wages and prices. This was done by means of policy statements, with or without new statutory bodies. From 1957, when a Conservative Government was in power, these included the following:

August 1957	The Council on Prices, Productivity and Incomes

Conservatives win election – October 1959

February 1962	White Paper, *Incomes Policy, the Next Step*, (Guideline 2-2.5 per cent)
July 1962	National Incomes Commission

April 1964	Statement of Intent (Guideline 3.5 per cent)

Labour wins election – October 1964

December 1964	Joint Statement of Intent on Productivity, Prices and Incomes
February 1965	White Paper, *Machinery of Prices and Incomes Policy*
March 1965	National Board for Prices and Incomes (TUC agrees to 3-3.5 per cent norm for wages increase)
April 1965	White Paper, *Prices and Incomes Policy* (Cmnd 2639)
November 1965	White Paper, *Prices and Incomes Policy: an Early Warning System* (Cmnd 2808)
July 1965	White Paper, *Prices and Incomes Standstill Period of Severe Restraint* (Cmnd 3073) Six month freeze

Labour wins election – March 1966

August 1966	Prices and Incomes Act 1966 passed
March 1967	White Paper, *Prices and Incomes Policy after 10 June 1967* (Cmnd 3235)
April 1968	White Paper, *Productivity, Prices and Incomes Policy in 1968 and 1969* (Cmnd 3590) This set ceiling of 3.5 per cent with productivity exceptions
July 1968	Prices and Incomes Act 1968 became law
October 1969	National Board for Prices and Incomes to be merged with Monopolies Commission in a new Commission for Industry and Manpower
December 1969	White Paper, *Productivity, Prices and Incomes Policy after 1969* (Cmnd 4237) Range for settlements 2.5-4.5 per cent (Actual: explosion of wage settlements – in engineering 18 per cent)

Conservatives win election – June 1970

November 1970	Office of Manpower Economics established
February 1972	State of Emergency declared. 2-3 day week introduced
August 1973	CBI, TUC and Government discuss anti-inflation policy
November 1972	Counter-inflation (Temporary Provisions) Act 1972
	Temporary wages standstill
	White Paper, *A Programme for Controlling Inflation, The First Stage* (Cmnd 5152)
January 1973	Pay Board and Prices Commission set up for three years under Counter-Inflation Act 1973
February 1973	Green Paper, *The Price and Pay Code – a Consultative Document*
March 1973	Pay Board established
April 1973	White Paper, *The Counter-inflation Programme – The Operation of Stage Two* (Cmnd 5267)
November 1973	New code on pay came into force
November 1973	State of Emergency declared

December 1973	Three-day week announced

Labour wins election – March 1974

July 1974	Pay Board abolished with all associated statutory controls on pay
September 1974	Social contract (Average wage increase 24 per cent)
July 1975	White Paper, *The Attack on Inflation* (Cmnd 6151)
May 1976	Price rises to be kept to 5 per cent for 6 months from 16 February
June 1976	White Paper, *The Attack on Inflation. The Second Year* Cmnd 6507
1977	The Price Commission Act 1977
April 1978	National Engineers' pay agreement. Lowest paid to move onto new minimum rates
July 1978	White Paper. *Winning the Battle against Inflation*.
	(1) Productivity must be self-financing
	(2) Price control to continue
January 1979	Government wages policy relaxed. More cash for the lower paid

Conservatives win election – May 1979

May 1979	The Notification Order of Price Code revoked with effect from 24 May
April 1980	Competition Act 1980
	Repealed:
	The Counter-Inflation Act 1973
	The Prices Act 1974
	The Price Commission Act 1977 and (Amendment) Act 1979

Price control and its effects on innovation

Price control, its objectives and its effects, have been mentioned in the description of the performance of British industry. Further discussion is required because Britain is the only country of those studied where pricing policy was overseen by civil servants for the best part of 35 years. It is of interest that French industry is in the same situation and the findings (including those of the economists at the OECD) have shown very similar results to those in Britain.

Price control was finally removed by the Competition Act in 1980. As this was nine years ago, it is easy to assume that its effects have long since disappeared. But this is not so. Research and innovation are still funded out of the discretionary funds, that is the funds remaining after all disbursements for current production have been made – the 'disposable funds' as they appear in the tables. It follows that, if disposable funds are reduced, then intangible investment is directly affected, and the damage to product development is cumulative.

It should be noted that the implementation of counter-inflationary policies was over a very long period, from 1948 to 1979. Some of the worst aspects are described in *Price Controls and the Price Commission: The Business View*, CBI, May 1979. It concluded:

> There is no doubt that the price control rules of the Price Code were not the answer: on the contrary they created conditions which were seriously anti-competitive in their effect.

The general effects were insidious and cumulative; they added to industrial costs, an extra accountant was often needed to handle the paper work, they diverted attention away from the market and the activities of competitors and, most important of all, by denying companies the short-term premium price for innovative products, they reduced (sometimes obliterated) laboratories and design teams. This meant that price control depressed innovative activity just at a time when Japanese competition was building up.

In the early years, control had been intermittent, but from August 1966, following a six months freeze on prices, the *Prices and Incomes Act* was passed and was strengthened by the *Prices and Incomes Act 1968*. All British governments embraced these policies and in 1973 the control was further strengthened. The Pay Board and Prices Commission was set up under the Counter-Inflation Act 1973, with a staff of 250 in eighteen regional offices.

During all this period, output in mechanical engineering was rising, the peak coming in 1974. Nevertheless, between 1967 and 1973, R&D expenditure and manpower had been halved. The pattern of costs shows the details, disposable funds had fallen and the only offset had been a fall in taxation.

With this background, the first oil price shock was catastrophic. It raised the price of materials by 55 per cent, while price control held price increases down to 30 per cent. The comparison with Germany, where producer prices rose to meet the higher material costs, emphasises this point.

This evidence on its own and the consequent fall in R&D would have been serious enough, but it coincided with the rise in competitiveness of Japanese industry. With R&D held down over the previous 20 years and product development reduced accordingly – and unrewarded when successful – British industry had no reply. Between 1973 and 1982, output fell heavily and market share dropped from 11 per cent to 7 per cent.

With R&D manpower reduced from 20,000 in 1967 to 9,000, the mechanical engineering industry had inadequate financial or technological strength to answer the rising R&D employment in Japan and in Germany.

The result as seen in mechanical engineering, motor vehicles, electronics and textiles was a devastating fall in competitiveness. No combination of policies could have been devised that so effectively reduced the power to compete, especially at a time when industrial relations were exceedingly difficult.

With the passing of the Competition Act 1980, price control was removed but the accumulated deficits in research and innovation could not be corrected in the short term; plans for new products had to be brought forward and teams for research and product development rebuilt. The index of output suggests that two years were required for this turnaround; output fell for a further period before starting to rise. This is particularly clear in textiles – an industry heavily affected by competition from Asia – yet the price control plunge was reversed, and this despite the recession of 1980 and 1981. A very similar picture emerges for motor vehicles and electronics. Chemicals had suffered less loss of output than engineering, nevertheless growth was the lowest of the four countries. However, with the removal of price control, growth was resumed particularly in pharmaceuticals and speciality products and, by 1986, the industry was able to challenge that of Germany.

The influence of the City analysts, the requirement to maintain dividends (the so-called short-termism) has been discussed earlier; it proved a less than helpful influence for product development. The imposition of price control exaggerated the City effects particularly where labour was uncooperative.

Evaluation of R&D and innovation

It has been shown that disbursements for the future output of a company are an economic imperative – that is, in the absence of a flow of new scientific knowledge and the application of that knowledge, the industry falls behind its competitors and loses market share. Put another way, research provides the dynamic, the scientific information which is then studied and commercialised. It must be remembered also that any research project may give a negative answer, providing the information 'not this way' or 'not yet'. In Japan, MITI accepts that 40 per cent of the research funded by companies will not have an immediate application, but will be put on the shelf for use or guidance at a later date. Such research – the 40 per cent – is not considered a failure, for experience has shown that results are part of the stream of information essential to rapid product development.

For wider policy considerations the important thing to remember is that research results carried out by industry are normally the sole property of a particular company and, thus, are not available to other companies (unless released to customers as part of the sales package).

The study of the cash flow models has shown that, as the name implies, there is a flow of cash allocated to R&D and a further one for innovation or commercialisation which includes market studies, product design and manufacturing start-up. The cash flow models reveal first that these disbursements are substantial in high-tech industries and, second, that they are not one-off events, but flows within which various projects may be interacting. Evaluation of the combined functions of R&D and innovation is, in practice, an evaluation of the work of teams of people – scientists and technologists with their supporting technical staff and, equally essential, the company planners and experts in finance and market intelligence. So how should economists, or company boards, evaluate the work of these teams?

The first question to be asked is, what is the precise aim of their work? The simplest answer is the survival of the company. Translated this means, in terms of cash flow, two different things:

- on the revenue side: a product acceptable to the customers so that the price charged is high relative to costs (substantial 'disposable funds' result)
- on the cost side: the establishment of a process by which the goods are produced efficiently and the equipment is well maintained and updated.

To achieve the survival of the company, more is needed than the mere existence of a laboratory. Sir Alastair Pilkington in a paper to EIRMA, emphasised that1:

> In a company that believes in R&D the activity will be thoroughly integrated with the rest of the business. It will be an intrinsic part of the company's strategic thinking. It will, by its integration, infuse into the company the awareness of the importance of defining its future... Scientists will be helped to invent the right things for a company if they are integrated because this will help them to know and define what is worthwhile in the market place.

Thus evaluation becomes an evaluation of the whole company performance and this has been the subject of the study described in this book.

In evaluation, the revenue from sales is the first and most visible criterion; it comes at the frontier with the customer who provides the money; it encapsulates competitiveness. At this frontier there is much conceptual confusion. Many people see companies as welfare organisations, dedicated to raising the standard of living of the customers by selling cheaply, barely above costs. 'We may not be the best, but we are certainly the cheapest', was a claim made by some manufacturers in Britain in the 1970s, encouraged by people

who despised profits. Simple arithmetic, using the figures from the cash flow models, shows why this has been a dangerous philosophy. Low prices breed low margins which, in turn, reduce the money available for employment, reduce recruitment of scientific manpower, and so inhibit scientific advance and product development. Customers become dissatisfied with an inferior product, demand falls, prices are discounted and the firm goes into liquidation.

Furthermore, it is a self-defeating exercise. Wealthy consumers in Japanese, German and American markets buy imported goods as cult items and high prices are no barrier; they are part of their attractiveness. Moreover, to sell in this elitist market the goods must be of the highest quality, incorporating the latest improvements and novelties and, to achieve this, R&D and innovation are the mainspring.

The second criterion of evaluation is cost, the sum of *all* the cost items for current output. Some costs are controllable by the entrepreneur (employment and services) and some are not (material purchases and taxes). In evaluation this distinction is very important. It is arguable that the margin added to material purchases (or gross earnings) is the most important element in evaluation for, in the absence of price control, the margin added as a percentage of sales is the measure most sensitive to scientific know-how and its application - it reflects the two critical skills of product design and canny purchasing2.

Thus evaluation implies three techno-economic stages – excellence in product design brings the *potential* for high margins; the existence of good market intelligence captures the customers *to confirm* such high margins; and the high margins ensure that innovation continues.

There are, however, two macro-economic situations which can modify this. The first example concerns the discounted prices sometimes used by Japanese industry to gain market entrance, and the second is price control as used (before 1980) by successive governments in the United Kingdom. These circumstances raise a highly important point in evaluation. What is being evaluated? Is it the survival of the company or is it the underpinning of government policy?

Manufacturing industry occupies a unique forum, one where technology, economics and policy-making meet; and this fact presents problems. Added to such problems are those of time scale which haunt politicians. If legislation damages the commercial opportunities by raising costs or delaying the launch of the new products, this should be taken into account in evaluating R&D. In practice, this is extremely difficult; legislation will itself alter the base from which company decisions are made (projects cut, technologists dismissed or factories closed). The one possibility is to compare the pattern of costs over the period of evaluation with that of an earlier period. This, at the very least, would show first, the degree of cost distortion, and second, where the changes have been made. Only then could one assess whether the products were sold in the planned number and/or produced the expected increase in sales revenue, or gross earnings.

But there is another approach – the path taken by Japan – which is to attain technological advance at whatever cost in respect of material purchases, remuneration or the accumulation of debt. If the financial and social culture of the country means that some understand the economic logic and regard these features as acceptable, then R&D projects can be given a positive evaluation purely on the grounds of market share – even though, in Europe, they would fail on financial criteria.

The technological infrastructure

So far, we have discussed firms with a solid technological base – mainly those who spend on R&D including contract R&D. In Britain there are 950 of these out of 90,000 manufacturing companies, so the remainder must obtain their technology from elsewhere. These figures provide one argument for research laboratories owned or sponsored by government, including those in universities. It is an argument well understood in Japan where new MITI laboratories are being built to handle emerging technologies.

Staff of small and medium-sized firms are not expert in all modern techniques and processes; they never can be. Dutch and German authorities have experimented over the last 15 years to improve the means of technology transfer. But for government financial officers there remains the same problem – who makes the decisions? Whether civil servants, with their committees, are believed to be all-wise, or whether the research directors at the laboratories are seen as closer to the problems through their personal contacts with industry, the question of choice remains. What should be done and how should it be evaluated?

One thing is certain. Whatever the end results, these evaluations must proceed in two stages. First, in the light of all published data – with full historical comparisons and in the light of the current macro-economic policies. Second, the impressions gained should then be tested in the field.

There will never be a complete answer, but the imperative is to incorporate all available information in a structured programme of analysis so that comparisons can be made over time, and between countries.

References

1. European Industrial Research Management Association, Proceedings of the EIRMA annual conference, 1981, p.13.
2. In mechanical engineering firms in West Germany it has been observed that firms with less than 100 employees achieve a higher margin than larger firms – presumably a combination of close attention to customer needs and careful purchasing to avoid waste.