INDUSTRIAL AND TECHNOLOGICAL POLICIES IN POSTWAR WESTERN EUROPE*

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The structuralist thinking that generates industry and technology policies does not arise in a vacuum since all economic policies have structuralist implications. As economic policies change over time, so do the structuralist implications that can be drawn from them. An examination of specific major postwar Western European economic policies reveals that they do tend to influence the nature of industry and technology policies. But these industry and technology policies do not provide simple recipes for changing the industrial mix so that it is relevant to contemporary economic policy goals.

Keywords: Industry policy, technology policy, Western Europe, economic policy, economic structure, industry ranking, economic planning

INTRODUCTION

Implicit in many discussions of industry and technology policies is the idea that there is a preferred ranking of industries. Industries that export, industries that produce, or are heavy users of, advanced technology, industries with improving productivity, the education 'industry', industries that are labour-intensive and industries composed primarily of new, small firms are but some of the kinds of industries it is said that public policy should encourage.

Although governments may have preferred rankings of industries, it would be a mistake to view industry and technology policies as being solely, or even primarily, concerned with the value placed upon individual industries considered in isolation.[1] It is true that policies that benefit particular industries are frequently advocated, and defended, on microeconomic grounds. Nevertheless, these policies would have attracted little public support had they not appeared to make some useful contribution to the attainment of significant macroeconomic goals.

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This failure to make a more perceptive assessment of the past can impede the development of effective contemporary industry and technology policies, especially in those cases where governments seek to break with the conventional wisdom of the 1960s and 1970s. The lack of appreciation of the relationship between macroeconomic goals and budgetary priorities can also make governments less willing to believe that contemporary industry and technology policies can be relevant to the present economic circumstances.

In this paper, we explore the dependence of industry and technology policies on macroeconomic aspirations. While in the postwar years there developed a view that the government has a duty to encourage particular industries, especially those in the advanced technology sector, there has been more recently an erosion of the belief that there is a short list of industries upon which the economic salvation of advanced, industrialised, market oriented economies depends. On the one hand, advanced technology is seen to be not necessarily confined to particular industries and, on the other hand, the 'most desirable' sector of the economy is increasingly being seen as not just a restricted number of industries.

In advancing our argument that industry and technology policies have not yet been formulated which provide simple recipes for changing a given industrial mix so that it is relevant to contemporary economic policy goals, we seek to strike a balance between a superficial sketch of all the policy measures that might be treated under the general rubric of industry and technology policies, and an excessively narrow focus that would rob our findings of any claim to generality. Since the postwar European experience must loom large in any comprehensive treatment of industry and technology policies, we confine ourselves to examining specific aspects of this experience. To economise on space, we shall restrict ourselves to five major macroeconomic policies (the attainment of full employment, the restructuring of postwar economies in the light of evident immediate postwar needs, the search for high levels of economic growth, the need to combat inflation, and the problem of sustained recession) which we regard as representative. These economic policies will be briefly surveyed in a European context in the next section of the paper.

With the background established in the second section of the paper, we turn in the third section to focus on a limited number of attempts to develop industry and technology policies which would assist in the attainment of macroeconomic goals in postwar Western Europe. Since government activity in the area of industry and technology policies was most pronounced in the 1960s and early 1970s, these case studies are concentrated on that period. We examine the search by the Commission of the European Communities for a leadership role in industrial policy, the attempt by the United Kingdom to encourage

advanced technology, the place of advanced technology industries in French economic planning, then contrast the French approach to that adopted in West Germany and, finally, take a brief look at economic planning in Italy.

An overview of our argument is presented in the concluding section. It is clear that for structuralist policies to command support at the political level in the future they will need to be more closely related to budgetary and macroeconomic policies than has usually been considered necessary in the past. Contemporary industrial and technology policies should not be expected to address the present in terms that were meaningful at some time in the past.

THE MACROECONOMIC FRAMEWORK

(a) Demand Management Policies

The most influential approaches to economic policies were those associated with 'demand management'.[2] As far as industry level interventions in the economy were concerned, the demand management approach implied that these involved having recourse to the wrong instruments. The claim was that selective interventions would be ineffective without adherence to 'correct' macroeconomic policies and unnecessary when appropriate demand management policies were followed. A related argument is that the cost of economic intervention is minimised where demand management policies are sectorally neutral.

Despite these arguments, the dominant role of demand management policies had both explicit and implicit structural implications. Explicitly, demand management involves concern with ensuring an increase in demand in some circumstances and a decrease in others. At the very least, choices usually had to be made between further intervention in the public and in the private sector, and between further intervention in favour of tradeables and in favour of non-tradeables.

Implicitly, given the pervasiveness of demand management policies, it is often difficult to make a distinction between the attainment of full employment and other policies which involve some kind of trade-off with employment. Nevertheless, the quest for full employment had at least three major identifiable structural implications.

First, it led to a growth in the public sector. Second, it led governments to re-appraise the employment implications of their trade policies and, in particular, to seek, in economic liberalisation and economic integration, larger and more asssured markets for their exports. Third, the long-term effects on attitudes to economic policy of the easy fiscal and monetary conditions should not be overlooked. From *ad hoc* attempts to discriminate between more and less worthy

industries during induced contractions, attention turned to considering whether policy goals could be more easily attained if the nature and composition of the industrial structure was changed.

(b) Postwar Reconstruction Policies

The immediate concern at the end of the war was to repair war damages and make good the neglect resulting from the war. While the initial emphasis was on restoring production to prewar levels, the alleviation of an apparent on-going 'dollar shortage' became a major policy consideration.[3] Many governments were unwilling to rely on the price mechanism as a means of rationing foreign exchange. New measures which led to increased domestic marketable production would not only reduce imports and increase exports immediately, but could also be expected to yield continuing benefits from the scale efficiencies and economies obtained. Consequently, attention was focussed on the technical efficiency of European industry as compared with North American industry. As Houssiaux has argued, the reaction has been to use the North American industrial system as a model for Europe, but with less emphasis on the adaptation of businesses and industries and more on guidelines and leadership.[4]

One effect of this difference in approach was that discussion tended to be concentrated on the efficacy of policy instruments rather than on their appropriateness. In particular, governments sought scale efficiencies and economies through specific structural measures, such as the encouragement of mergers and the acquisition of other firms,[5] and through political measures designed to obtain unimpeded access for national firms to larger markets by negotiation and by adherence to trading blocs such as the European Economic Community.[6] But surprisingly little attention was focussed on the question of whether a changed industrial structure yielded its expected benefits. Consequently, dissatisfaction with policy instruments led more to a search for new instruments, rather than to a fundamental re-appraisal of the situation. Therefore, we find that while policies change over time, there can be underlying themes in the approaches to economic reform that persist.

Attempts to improve the technical efficiency of European industry led to structural changes as a result of both direct and indirect measures. The former have tended to be concentrated in two areas. Assistance flowed not only to technologically progressive industries, but also to those which proved to be uncompetitive or to have excess capacity. The indirect measures supported those of a more straightforward nature by working to change the existing institutional arrangements. The public administration was reorganised, the industrial structure modified, the infrastructure upgraded, the service

(especially the credit extending) sectors were made more effective, and the quality of labour and management improved.

Postwar reconstruction also had to take account of the fact that the extent of war damage was greater in some areas than others. This led to a certain emphasis being laid on the spatial relocation of industry, an emphasis encouraged by the political division of Germany,[7] and by the perceived need to re-house a substantial number of people outside the old conurbations, as in the British new town policy.[8]

(c) Policies for Growth

These policies are concerned with attaining full employment and with increasing full employment output. While it may appear strange to look for full employment from a growth programme when it should result from the demand management policies, any apparent incongruity arises from the lead time and co-ordination problems associated with investments, particularly large investments. When the level of business activity fluctuates, sometimes at the behest of policy makers, it is not surprising that many investments are not made at a time appropriate to the steady expansion in output of the economy. Consequently, economic planning, especially that which looked for some guidance to early postwar French endeavours in this field, tended to be predicated on the assumption that investment and, hopefully, subsequent output will increase if decision makers, especially those in the private sector, can be persuaded that a market will actually exist for additional production once it becomes available. The government may have its economic targets; the plan seeks to persuade decision makers that what they and the government actually do will allow these targets to be attained.[9]

The discussion would appear to suggest that only a few key decision makers in charge of government economic policy and substantial enterprises in the private sector are relevant to economic planning. This can be misleading, especially when the second point — the need to increase full employment output — is considered. A narrow concentration on ensuring a steady expansion of demand ignores supply side problems, which may range all the way from the need to upgrade the human and physical plant through economic and social development, to ensuring the co-operation of a wide variety of interest groups (especially the trade unions). Consequently, economic planning in postwar Europe, while having important structural implications, did not lead to as limited a set of changes as might have been expected from looking at demand side considerations only.[10]

(d) Anti-inflation Policies

Since a medium and long term policy is really the medium and long term consequence of what will always be short term policies when they

are implemented,[11] it would be a mistake to assume that structural considerations are merely ones that are of concern in the medium to long term. When the medium and long term consequences of policies are assumed to be acceptable if the short term consequences are acceptable, it should not be surprising that the sources of many ineffective (short term) economic policies may be attributed to an inadequate appreciation of structural factors. A case in point is postwar European anti-inflation policies.

While many economists have attributed, and indeed still attribute, inflationary pressures to a failure to implement appropriate fiscal and monetary measures as part of a demand management policy, others have tried to incorporate a recognition of relevant structural factors in their analyses and policy recommendations. The problem they faced was that fiscal and monetary measures were based on a considerable relevant intellectual apparatus, whereas the contribution structural change might make was more a matter of conjecture.

In Norway in the nineteen sixties, the government developed a model to estimate the effect of negotiations on wages and agricultural prices.[12] Central to this model is the idea that exposed industries have their output prices determined by world markets, whereas sheltered industries tend to raise output prices in response to cost pressures. What is different in this approach is that these industries are identified not in terms of the particular circumstances of the time, but according to more intrinsic characteristics of the industry. In particular, the emphasis is laid on the sector of the economy to which the industry might be categorised — exposed or sheltered, tradeable or non-tradeable goods, manufacturing or services, marketable or non-market goods, consumer or producer goods. The effects on inflation of wage pressures in sheltered industries producing non-traded or non-marketed goods is clearly recognised in terms of overall inflation and competitive performance.

Of course, dichotomies of this kind are not new, nor is there novelty in the perception that there is a relationship between the industry mix and the attainment of government economic policy measures (consider the debates over the role of the tariff in industrialisation). What is new is the quality of the analyses which are offered to support the view that the composition of an economy's industry can determine the success of economic policy goals. Again it is true that it has long been recognised that relevant economic policies will engender an industrial structure appropriate to a country's comparative advantage in production and distribution. What is new are the attempts to demonstrate in a rigorous manner that the attainment of particular economic policies may be constrained by inherited industrial structure, fashioned by a combination of market forces and past governmental initiatives.

It is recognised that some of the dichotomies referred to above are not directly related to anti-inflation policies, yet it is relevant to draw attention to them in this context because essentially they all tend to reflect a failure to maintain full employment and satisfactory rates of growth with acceptable levels of inflation. The search for structuralist explanations is predicated on the assumption that conventional demand management policies are not working.

(e) Anti-recession Policies

The inadequate response of European governments to inflation has weakened their ability to develop effective anti-recession policies. Confining ourselves to the post-1973 period, we may note that there was a strong tendency to see the problem in the early years of the recession as a worldwide structural one brought about by very significant lags in developing new energy sources, energy economising methods and the requisite infrastructure within both the new energy-rich states and others capable of supplying alternative sources of energy (especially coal and natural gas). The issue in most developed economies appeared to be one of deciding the most appropriate governmental response to the need for structural adjustment. Of course, changes in the energy-related fields were not the only source of pressure for structural adaptation. In particular, it was becoming increasingly clear that many European industries were meeting significant extra-European competition, competition not limited to industries within which low-wage countries might be expected to have a comparative advantage.[13]

While the phrase 'structural adjustment' may well conjure up visions of the government providing assistance to encourage labour and other resources to transfer from contracting to expanding plants and firms, the reality was not as simple as this. Even putting to one side the determination of many not to adjust voluntarily under almost any set of circumstances, the range of expanding plants and firms was small, with attractive new areas for expansion being very limited. It tended to become increasingly easy to argue that general expansions of demand would not occur because of their inflationary and other (for example, balance of payments) consequences, while particular opportunities for selective expansions of demand were becoming increasingly circumscribed. Furthermore, even if an economy did have the potential to expand substantially new energy sources, doubts were being expressed as to whether the kind of economic growth being sought by European countries could be obtained without a revival in manufacturing.

Bacon and Eltis have argued that the economic problem of Great Britain is that the marketed outputs sector is too small relative to the

non-marketed outputs sector.[14] This imbalance leads either to wage inflation as resources are transferred from workers and salary earners to government, or to additional unemployment if the money supply is controlled. A way out would be to reduce net-of-tax profits, but the consequent fall in investment would have adverse effects unless capital-saving technological change took place.[15] Appealing as this thesis may be, it has been criticised on the grounds that it is not consistent with the (limited) available evidence.[16] Consequently, it is not surprising that others prefer accounts which apparently have a sounder empirical basis. Two of these will be considered briefly.

The major claim of the Cambridge Economic Policy Group[17] was that the United Kingdom needed an increased rate of growth of manufacturing output — a conclusion which appeared to be supported by the strong statistical associations of the rate of growth of manufacturing output, the rate of productivity growth and the growth of gross domestic product.[18] In particular, it was denied that a growth in service industries would provide a satisfactory alternative to the growth of manufacturing output,[19] or that a rapid exploitation of North Sea oil resources would be beneficial.[20]

An alternative approach to encouraging a 'virtuous circle of growth' through the link between output growth and productivity growth has been provided by Thirlwall, who assigns a key role to obtaining a growth in exports in order to lift a balance of payments constraint on growth.[21] Thirlwall's position is distinctive in that he rejects currency depreciation. He would prefer that an economic strategy be adopted that had two goals. First, to ". . . shift resources from technologically stagnant to technologically dynamic industries producing goods with more favourable demand characteristics in world markets." Second, to ". . . make exporting relatively more profitable than production for the home market."[22]

The difficulty many economists find with these prescriptions is that they seem to imply that the United Kingdom can solve its problems only by following policies which do not appear to be ones that can feasibly be followed by all other economies. Furthermore, given that the growth rate of the United Kingdom in the postwar period has not been unfavourable compared with that in earlier years, there must be some doubts expressed as to whether there is sufficient perspective in the diagnoses which are being made.

Postwar economic policies have led governments to pass through phases in which they variously tried to be neutral towards industries, tried to discriminate for (or against) broad groups of industries,[23] or tried to advantage (or disadvantage) quite specific industries.[24] Some effects of these policy shifts can be discerned in the approaches considered in the next section.

POLICY DEVELOPMENT IN CHANGING CIRCUMSTANCES: FIVE APPROACHES

(a) Commission of the European Communities

What the Commission considered under the heading of industry policy embraces much of what has been discussed above under the rubric of industry and technology policies. However, it should be appreciated that its industry policy was developed against a background of concern about the competitiveness and unification of the internal market. Furthermore, given the shifts in policy discussed above and the Commission's ultimate dependence on the member governments, it should not be surprising that the Commission had difficulties in deciding what it ought to do.

The first thing to note is that the scope of the Commission's activity is limited by the provisions of the Treaty of Rome. The Commission's obsession with scale efficiencies and economies led it to place much more emphasis on the maintenance of competition and the unification of the internal market than on supporting an outward looking industry policy. While it has always been open for the Council of the Communities to approve aid for worthwhile endeavours (by a qualified majority), funds tended to flow more readily along channels which could take advantage of the specific wording of the Treaty. Attention is drawn to two provisions in particular in the second part of the third section of Article 92 of the Treaty. These refer to:

(i) aid intended to promote the economic development of regions where the standard of living is abnormally low or where there exists serious unemployment;

(ii) aid intended to promote the execution of important projects of common European interest or to remedy a serious disturbance in the economy of a Member State . . . [25]

The absence of more specific provisions for creating industry and technology policies of the kind being considered in this paper reflected aspirations as to the future development of the Community. While there was opposition to the continuation of autarkic arrangements in the manufacture and distribution of industrial products and a hope that 'the completion of a common market' in these products would, by itself, lead to changes in European industry which would make it much less dependent on direct governmental assistance and intervention, it was recognised that the regulation of state aid in Articles 92-94, could provide an existence and legitimacy that needed to be carefully circumscribed. In any event, the EEC was established in an economic environment which favoured the liberalisation of trade and which did not forsee the advent of the so-called 'new' industry

policy. The common market in industrial products was realised in July 1968, a year ahead of the original schedule.[26]

The mid-1960s saw a change in the attitude toward the European economy because there were various indications that the postwar expansionary phase was coming to an end. With this change in attitude came a new appreciation of the role which the EEC Commission might play in fostering European industry. These developments culminated in the release, in March 1970, of the Memorandum on Industry Policy.[27]

The Memorandum is of interest not because the Commission had much success in implementing its recommendations — it did not[28] — but because it clearly indicates the difficulties that exist in trying to take inadequately articulated ideas about the relative worth of industries to incorporate them in a programme of action. The fourth part of the Memorandum — which is of most relevance to industry policy — is concerned with the Community's achievements in promoting industries which employ advanced technology: its four chapters cover international technological co-operation and industrial development, rationalisation of technological development and the introduction of Community contracts for industrial development, the attainment of a common market in the advanced technology sectors, and a common policy towards third countries.

While. as we have argued elsewhere,[29] it is possible to debate the wisdom of allowing the Commission to obtain control over 'active' industry policy, the previous discussion raises the prospect that, in any case, with limited powers, the Commission has constraints on its ability to choose among alternative approaches to changing the industrial mix. This is because, unless the policy implications of the approach adopted allow for an effective encouragement by subsidy of new technology,[30] the Commission may find that the most appropriate policy instruments are in the hands of national governments.[31] However, the Commission's position does no more than reflect the fact that a combination of autonomous interested parties and the risks involved in advanced technology projects has made it extremely difficult to achieve its desire to exploit the advantages accruing from the integration of markets.[32]

(b) The Wilson Government in the United Kingdom

Hodges blames the relative ineffectiveness of the EEC Commission on the lack of a consensus among member governments.[33] The Wilson government in the United Kingdom launched its industrial policy with no such hesitations. Its approach reflected a determination to make the selective exploitation of advanced technology one of the cornerstones of its economic policy.

On attaining office in 1964, the Prime Minister (Harold Wilson) decided to include in his Cabinet a Minister of Technology. The goals of the Ministry were summarised in the Labour Party's manifesto for the 1964 General Election as 'to guide and stimulate a major effort to bring advanced technology and new processes into industry' in order to help implement the fourfold programme outlined by Mr. Wilson as part of his speech to the Labour Party Conference in October 1963:

> First, we must produce more scientists. Secondly, having produced them we must be a great deal more successful in keeping them in this country. Thirdly, having trained them and kept them here, we must make more intelligent use of them when they are trained than we do with those we have got. Fourthly, we must organise British industry so that it applies the results of scientific research more purposively to the national production effort.[34]

The Ministry began by being responsible for the government's relations with the machine-tool, computer, electronics and telecommunications industries as well as being responsible for the Atomic Energy Authority, the National Research Development Corporation and the industrial research elements of the former Department of Scientific and Industrial Research. However, it was found desirable to extend considerably the range of the Ministry's responsibilities on a number of occasions up to the time of the Ministry's abolition after the change of government in June 1970. Briefly, the Ministry assumed responsibility for governmental relations with the mechanical, electrical engineering, shipbuilding, textile, chemical and other manufacturing industries, 'took over' the Ministries of Aviation and Power, and obtained oversight over regional industrial policy, investment grant administration and the Industrial Reorganization Corporation.[35]

What happened was that the Labour government had to abandon is chosen approach to making government assistance to industry 'selective'. In future, the Ministry could support advanced technology anywhere in British industry. The conventional wisdom of the time was overturned by the nature of the task facing the government. The Minister began by being responsible for advanced technology industries but, in reality, what he was responsible for was the encouragement of advanced technology in advanced technology industries. Then his powers expanded in two directions. First, he was to encourage whatever it was the government was seeking to encourage in industry, and second he was to encourage it in all industries. The meaning of 'selectivity' is still one of the major unresolved issues in industry and technology policy. The British experience suggests that there is a world of difference between

selectively exploiting opportunities in the advanced technology field as they occur, and being able to select sufficient opportunities to make them the basis of a 'big push' instrument of economic policy.

(c) France and the Technology Gap

The creation of the Ministry of Technology in the United Kingdom formed part of what was termed the National Plan. Since the adoption of this plan reflected, in part, the contemporary high repute of indicative economic planning in France, it is useful to consider how advanced technology came to assume so prominent a role in perceptions of what French planning was about.

The First Plan, with its projected goals for the period 1947 to 1950 (later extended to 1952), has been frequently described as a reconstruction plan in view of its emphasis on six basic industries — coal, steel, electricity, cement, transport and agricultural machinery. There was a substantial element of direction behind government expectations for these industries. This direction included production and modernisation programmes. The next three plans (1954-1957, 1958-1961 and 1962-1965) were more concerned with the implications of sustained economic growth, with consistency rather than direction, and with forecasts rather than targets.[36] The Fifth Plan (1966-1970) sought to take into account the impact on French industry of international competition. Industry policy, constrained by a desire to achieve a balanced budget, now stressed structural problems in the economy and the need to act in conformity with the Treaty of Rome.[37] This led to a search for permissable means of lending support to industry.

During the Fourth Plan, President Charles de Gaulle accepted the view that Western Europe, including France, faced economic and political subjugation by the world's foremost scientific power, the United States, unless it adapted to the contemporary scientific-technological revolution.[38] Consequently, it is not surprising that the Fifth Plan involved a commitment to increase the proportion of gross national product devoted to research and development from 1.7 per cent to 2.5 per cent over the life of the plan.

Much has been written on the so-called technological gap, but attention will be focussed on only one point. United States corporations, which were obtaining an increased stake in the French economy, were seen to be the vehicle by which the United States obtained an increasingly significant advantage over its commercial rivals.[39] Advanced technology came to be identified with industries which had, or were considered likely to obtain, a strong position in the French economy. Public discussion centred on advanced technology industries rather than advanced technology *per se*.

This shift of emphasis was helped by the then current concern with the relative worth of particular industries and, in particular, with the share each industry had, or was likely to have, of international trade in manufactures. 'Advanced technology' became a very convenient shorthand description for the kind of industry the state was expected to promote. The encouragement of advanced technology was no longer exclusively identified with the encouragement of technology in particular industries since, in practice, government policy had shifted from technology promotion to the promotion of industries with certain technological characteristics. The French were caught up in the enthusiasm for advanced technology as a technological solution to economic problems, but realised that such technology must be given an appropriate role in the chosen economic strategy.

(d) West German Technology Policy

Despite the tendency to shift from technology promotion to the promotion of industries with certain technological characteristics, a government may still consider it worthwhile to encourage structural change at the firm and industry level without being overly concerned with the relative merit of industries. The experience of the Federal Republic of Germany is of interest in this respect in that, during the years when France and Great Britain were concentrating on assisting particular industries, the Federal Republic was increasing its commitment to research and technology without engaging in a search for the ideal industrial structure.

It is true, as claimed by Küster, that "by 1973, the German Government's support of science-based industries had been concentrated on aeronautics and space, computers, and nuclear energy".[40] However, just glancing at budgetary outlays can be somewhat misleading in situations where support of science-based industries is motivated to a considerable extent by a desire to maintain a research presence in these industries. Clearly, more money has to be spent in areas where a research presence is more costly than in areas where such a presence can be obtained more cheaply. Therefore, budgetary outlays do not provide a complete picture of research and industry priorities. Furthermore, these outlays appear to reflect more a pressure from potential suppliers of this equipment than an evaluation of the most apposite size for these industries. Of course, the economic difficulties of the 1960s made the government more susceptible to arguments that more should be spent on research and development and industry in general, but the West German political/administrative process would appear to have reflected as much a search for ways in which the economy would benefit from increased

research and development outlays or needed other, very specific interventions, as any preconceived ideas on shaping the industrial structure. As late as 1980 a Federal minister for research, in making a case for intervention in the market mechanism, could point only to the watch, computer and machine tool industries.[41]

The relative lack of interest in determining the most appropriate industrial structure reflects various facets of the postwar German situation. German industry was always expected to be strong once reconstruction had taken place. The ideological climate favoured deregulation. West Germany considered herself more politically dependent on the United States than did, say, France. Finally, there appeared to be little interest in the search for economic nostrums to meet immediate economic and political problems.

To give but one example of the West German approach, consider government-enterprise relations at the sectoral level. In 1966 and 1968 the Federal Minister of Economic Affairs had published 'Principles of Sectoral Policy' and 'Principles of the Federal Government's Sectoral and Regional Economic Policy'. Kuster identifies five general principles and three aims, including the promotion of research and development in the high technology industries. The five principles were:

> Structural intervention was only justifiable when the difficulties concerned the whole sector and were based on lasting economic changes.
>
> The entrepreneurs and managers were to be primarily responsible for the necessary structural adaptation.
>
> The government's role was to support measures of self-help, provided these measures promised to strengthen, on some lasting basis, the competitiveness of the enterprises concerned.
>
> Special governmental aids or other interventions could only be considered if the individual sectors were undergoing major changes at a rapid rate, and if the changes would generate undesirable economic and social consequences.
>
> The aids should be temporary, should be gradually withdrawn, and should not cripple the competitive process.[42]

Furthermore, and more revealingly, while the first aim (to stabilise and improve the income of employers and employees in lagging industries) received 66 per cent of Federal subsidies and tax allowances in 1970, the second (to help in the process of adaptation on the part of industry) received 28.5 per cent, and the third (the promotion of research and development in high technology industries) only 5.5. per cent.[43] Clearly, the encouragement of neither advanced technology nor advanced technology industries was perceived as a central issue in government intervention in industry.

(e) The First Italian Economic Plan, 1966-1970

Whatever the West German reasons for a lack of interest in industry and technology policies, it might appear reasonable not to expect them to apply to the Italians with their lower standard of living and 'more opaque' political/administrative structures. It is interesting to look at some reasons why this expectation would involve a considerable misreading of the situation. Basically there are three points. First, there was much less concern in Italy than in France or the United Kingdom with the export performance of the economy. Secondly, exports were not seen as the principal constraint on economic growth, and finally, there was not the pattern of state-enterprise relationships implied in the French, British and West German approaches. The export performance of the Italian economy in the 1960s was extremely good, although it may be noted that surpluses on current account tended to be matched by outflows of capital.[44] Stern, looking at the period 1957-1964, particularly points to the importance of improvements in Italy's export price competitiveness.[45]

As has already been noted, the balance of payments is regarded by some as a constraint on economic growth. Stern has examined the applicability of 'export-led' models of economic growth to Italy. The essential feature of these models is that an increase in foreign demand for a country's exports will in turn stimulate its domestic growth, exports make growth possible by obviating the need for restrictive demand policies, and exports induce investments and other productivity improvement measures which make further growth and exporting (through increased supply and price competitiveness) possible.[46] Stern finds that neither of the approaches he is able to quantify provides, at least at an aggregated level, an adequate explanation for Italian experience between 1951 and 1963. This is at least consistent with how most Italians appear to have viewed the situation — the constraints on growth are to be found in backward and dualistic features of the economy, not in export-based constraints.

The First Italian Economic Plan reflected this assessment of the situation. Its objectives were as follows:

1. Full employment of the labour force.
2. Elimination of the gap between the South and the rest of the country.
3. A progressive equalisation of labour income in agriculture and in non-agricultural activities.
4. A redistribution of resources in favour of such collective needs as schools, housing, health, social security, professional training, transport, urban development, soil conservation, and scientific research.[47]

Ultimately, the Plan was not successful in imposing its pattern on events. The actual growth rate was nearly 6 per cent (forecast 5 per cent), while productivity increased at an annual rate of 6.2 per cent (forecast 4.2 per cent), with an increase in the balance of payments surplus. However, as far as the Plan was concerned, there was a decrease in employment of 172,000 (forecast 800,000 increase), and targets for public consumption expenditures were almost attained, but not the target for public social investment. The gap between the South and the national average in terms of value added per man was to have been reduced by 6 or 7 per cent, but actually increased by 24 per cent. An interesting comment on export-led growth ranking of industries is that one of the problems with the First Plan was that two-thirds of the additional gross national product over the five year period was absorbed by the increased balance of payments surplus.[48] There is clearly more to the economic growth story than obtaining additional exports, whether from high technology industries or by other means. Like the West Germans, the Italians did not perceive advanced technology or advanced technology industries as being central to the economic problems they face, or as being relevant to economic policy.

CONCLUSION

In the second section of the paper, it was argued that the structuralist thinking that generates industry and technology policies does not arise in a vacuum. All economic policies have structuralist implications. As economic policies change over time, so do the structuralist implications that can be drawn from them. Five main currents in postwar economic policy thought have been surveyed. While the first — demand management policies — does not fit easily into a time slot, the other four can be considered (perhaps somewhat loosely) as stages in postwar economic policy thought.

In a tidier economic world, it might be possible to demonstrate that each economic policy implies a distinctive set of industry and technology policies which need to be followed if it is to be successfully implemented. Although it is not possible to determine from an examination of real world economic policies precisely which distinctive sets of industry and technology policies they imply, it is possible to point out that specific economic policies do tend to influence the nature of industry and technology policies.

There has been some converging of views on the role of structuralistic considerations in economic policy making. Structuralist thinking has moved beyond disputes over whether technological change provides an alternative structural explanation for unemployment, and whether trade balances depend on the ability to

export a limited number of advanced technology products, to a recognition that the structural characteristics of all industries can be significant. At the same time, there appears to be a greater willingness in the more conventional approaches to economic policy making to give serious consideration to claims that some economies at least may suffer from serious structural imbalances that make conventional economic prescriptions difficult to apply.

While the historical perspective over the past forty years is useful, it is also desirable to examine what is happening in particular countries during important cross sections of the past. The EEC and four countries have been considered in the light of the mid-sixties enthusiasm for advanced technology. Whether the policies which generated this enthusiasm are as continually relevant as some contemporary commentators still urge is difficult to say, but what is clear is that these policies must be placed in proper perspective.

To conclude, a case may be made for the claim that exports, growth and other policy goals depend on the industrial mix. Whether industry and technology policies have yet been formulated which provide simple recipes for changing a given industrial mix so that it is relevant to contemporary economic policy is less certain. What we have instead are sweeping, and largely unproven, claims that past policy goals would have been achieved more readily with the adoption of advocated industry and technology policies.

NOTES AND REFERENCES

1. Similarly, we do not identify industry and technology policies with particular measures, whether implemented in a number of industries or confined to a specific industry.
2. For a statement of what might be regarded as the conventional position on demand management see P. McCracken *et al., Towards Full Employment and Price Stability,* OECD, Paris, June 1977, pp. 179-206.
3. See, for example, the summary in Economic Commission for Europe, *Economic Survey of Europe in 1948,* United Nations Department of Economic Affairs, Geneva, 1949 (the other issues in this series in the immediate postwar years are also relevant). A brief, but useful, overview is provided by E.B. Kapstein, 'The Marshall Plan and industrial policy', *Challenge,* 7, 2, 1984, pp. 55-9.
4. J.R. Houssiaux, 'American influence on industrial policy in Western Europe since the Second World War' in C.P. Kindleberger and A. Shonfeld (eds), *North American and Western European Economic Policies,* Macmillan, London, 1971, pp. 351-63.
5. Both the British and the French had bodies to encourage mergers, while the

Italians had a large, active, state-owned holding company (see P. Siekman, 'Europe's love affair with bigness' reprinted in J.M. Samuels, *Readings on Mergers and Takeovers,* Paul Elek Books, London, 1972, pp. 248-59). However, the importance of a tolerant attitude to mergers and takeovers resulting from private initiatives must be stressed in this context since this is a policy instrument as much as more active interventions in the economy (see 'Extracts from three speeches on aspects of mergers policy by the President of the Board of Trade (Mr. Anthony Crosland)' in Board of Trade, *Mergers: A Guide to Board of Trade Practice,* HMSO, London, 1969, pp. 57-66). The implication of this policy — that it reduced competition — did not go unnoticed. For example, the Conservative government elected in June 1970 sought to encourage competition by undoing many of its predecessor's actions (see the editorial postscript (pp. 260-4) to the Siekman paper cited above). For a more recent overview of the impact of industrial policies in the 1960s and 1970s see A.P. Jacquemin, 'European industrial policies and competition' in P. Coffey (ed.), *Economic Policies of the Common Market,* St. Martin's Press, New York, 1979, pp. 22-51.

6. The anticipated economic advantages are discussed in N. Owen, *Economies of Scale, Competitiveness and Trade Patterns within the European Community,* Clarendon Press, Oxford, 1983, pp. 1-7; while the (ultimately) political advantages are discussed in G. Colonna Di Paliano, 'Why Europe needs Continental-scale firms', *European Community,* July-August 1968, pp. 4-5.
7. H. Menderhausen, *Two Post War Recoveries of the German Economy,* North-Holland, Amsterdam, 1955, pp. 22-31.
8. For a brief discussion of the new town movement and the impetus given to it by the needs of postwar reconstruction, see F. Schaffer, 'The new town movement' in Hazel Evans (ed.), *New Towns: The British Experience,* Charles Knight, London, 1972, pp. 14-19.
9. R.B. du Boff, 'The decline of economic planning in France', *Western Political Quarterly,* 21, 1968, pp. 98-109.
10. See the various essays in J. Hayward and M. Watson (eds), *Planning, Politics and Public Policy. The British, French and Italian Experience,* Cambridge University Press, London, 1975.
11. See, for example, Stout on the meaning of medium-term policy. D.K. Stout, 'Medium term policies' in D. Morris (ed.), *The Economic System in the U.K.,* Oxford University Press, Oxford, 1979, pp. 487-8.
12. See O. Aukrust, 'PRIM I: a model of the price and income distribution mechanism of an open economy', *Review of Income and Wealth,* 16, 1, 1970, pp. 51-78; and O. Aukrust, 'Wage-price interdependencies in open economies', *OECD Regional Trade Union Seminar on Prices Policy, Final Report,* OECD, Paris, 1974, pp. 61-76. A recent assessment of this approach may be found in G. Bartoli, 'An assessment of the Scandinavian model of inflation', *Economia Internazionale,* 27, 3-4, 1984, pp. 221-35.
13. A well known example is the Japanese invasion of traditional Swiss markets in the watch industry. A brief overview of large scale employment dislocations in four major industries (textiles, steel, shipbuilding and automobiles) can be found in R.B. McKersie and W. Sengenberger, *Job Losses in Major Industries. Manpower Strategy Responses,* OECD, Paris, 1983, pp. 11-27. See also OECD, *The Impact of the Newly Industrialising Countries on Production and Trade in Manufactures,* Paris, 1979.
14. This work is particularly useful because it discusses the effects of alternative divisions of the economy into "(I) industrial and non-industrial sectors; (II) a sector which produces tradeable goods and services and one that produces non-tradeable; and (III) a sector that produces marketed goods and services and one that produces non-marketed outputs." See R. Bacon and W. Eltis, *Britain's Economic Problem: Too Few Producers,* Macmillan, London, 1978, pp. 165-206.
15. *ibid.,* p. 110.

16. See G. Hadjimatheou and A. Skouras, 'The growth of the non-market sector and the Greek economy', *Greek Economic Review,* 2, 2, 1980, p. 178.
17. For an attempt to expound rigorously the Group's ideas, see F. Cripps and W. Godley, 'A formal analysis of the Cambridge Economic Policy Group model', *Economica,* 43, 172, 1976, pp. 335-48.
18. One part of the literature on the group's policies concerns claims (and counter claims) as to the nature of the economic regularities which can be discerned in appropriate data. See, for example, T.F. Cripps and R.J. Tarling, *Growth in Advanced Capitalist Economies, 1950-1970,* Cambridge University Press, London, 1973; and M. Chatterji and M. Wickens, 'Verdoorn's Law — the externalities hypothesis and economic growth in the U.K.' in D. Currie, R. Nobay and D. Peel (eds), *Macroeconomic Analysis: Essays in Macroeconomics and Econometrics,* Croom Helm, London, 1981, pp. 405-29.
19. See, for example, V.H. Woodward, 'Government policy and the structure of the economy' in W. Leontief (ed.), *Structure, System and Economic Policy,* Cambridge University Press, London, 1977, pp. 57-73.
20. See, for example, T. Barker, 'Depletion policy and de-industrialization of the UK economy', *Energy Economics,* April 1981, pp. 71-9.
21. For example, in A.P. Thirlwall, 'The balance of payments constraint as an explanation of international growth rate differences', *Banca Nazionale del Lavoro Quarterly Review,* 128, March 1979, pp. 45-53; *idem, Balance-of-Payments Theory and the United Kingdom Experience,* Macmillan, London, 1980; and *idem,* 'Deindustrialisation in the United Kingdom', *Lloyds Bank Review,* 144, April 1982, pp. 22-37.
22. *ibid.*, p. 37.
23. Such as agriculture, manufacturing, mining, service — or even inward-looking, outward-looking, etc.
24. Such as coal, computers, finance, etc.
25. The articles of interest (92-94) are printed in S.J. Warnecke (ed.), *International Trade and Industrial Policies. Government Intervention and an Open World Economy,* Macmillan, London, 1978, pp. 239-40.
26. The previous paragraph, this and the next three paragraphs draw (to varying extents) on C.J. Aislabie, 'Industrial policy in the European Economic Community', *Journal of Industrial Affairs,* 8, 1, 1980, pp. 1-6.
27. The change in emphasis over time is captured quite well in the following brief extracts from the 'Introduction and general guidelines' to this document:

    > In order to increase the common good, industry should primarily be allowed in the first place to make the most of the existence of the common market on its present scale . . . Secondly, the market must be kept dynamic by appropriate measures to enable organistions to adjust to change: to promote new technologies through scientific and technical policy; to supervise manufacturing organisation by means of a competition policy; . . . The industrial policy recommended in this memorandum is deliberately oriented towards the future . . . "

    Commission of the European Communities, *Industrial Policy in the Community: Memorandum from the Commission to the Council,* Commission of the European Communities, Brussels, 1970. A detailed history of the Commission's activity in this area is to be found in M. Hodges, 'Industrial policy: a Directorate-General in search of a role' in Helen Wallace, W. Wallace and Carole Webb, *Policy-Making in the European Communities,* John Wiley and Sons, London, 1977, pp. 113-35; and the Memorandum itself is summarised in D. Prag and E.D. Nicholson, *Businessman's Guide to the Common Market,* Pall Mall, 1973, pp. 251-9.
28. As can be seen from examining the Community's ambitions in 1982 as explained in P. Maillet, *The European Community's Industrial Strategy,* Commission of the European Communities, Luxembourg, 1983, p. 54. It is important in selecting

alternative approaches for study not only to concentrate on 'successes' and 'failures', but also to recognise that, in many cases, underneath the surface of the rhetoric comparatively little was being attempted.

29. See Aislabie, *op. cit.*
30. The Memorandum envisaged specific intervention involving the letting of contracts for industrial developments for new goods and equipment. Commission of the European Communities, *op. cit.*, p. 357.
31. Note title of Hodges, *op. cit.* But, to keep matters in perspective, it cannot be denied that, within the constraints imposed upon it, the Commission has tried to force the pace of development in advanced technology by creating a number of institutions usually referred to by their acronyms. See M. Richonnier, 'Europe's decline is not irreversible', *Journal of Common Market Studies,* 22, 3, 1984, pp. 227-43; and P.A. Geroski and A. Jacquemin, 'Industrial change, barriers to mobility and European industrial policy', *Economic Policy,* 1, November 1985, pp. 170-218.
32. See N. Owen, *op. cit.*
33. Hodges, *op. cit.*
34. See Richard Clarke, 'Mintech in retrospect', *Omega,* 1, 1, 1973, pp. 26-8.
35. *ibid.*, pp. 29-37. A further article (Richard Clarke, 'Mintech in retrospect - II', *Omega,* 1, 2, 1973, pp 137-63) is also of interest.
36. See J.-J. Bonnaud, 'Planning and industry in France', in J. Hayward and M. Watson (eds), *op. cit.*, pp. 94-5. For an overview as to the success of the plans in meeting the forecasts, see J.-J. Carrê, P. Dubois and E. Malinvaud (eds) (trans. J.P. Hatfield), *French Economic Growth,* Stanford University Press, Stanford, 1975, p. 463. Another useful summary of the early plans is to be found in J.S. Harlow, *French Economic Planning: A Challenge to Reason,* University of Iowa Press, Iowa City, 1966, pp. 35-70.
37. As Hough (J.R. Hough, *The French Economy,* Croom Helm, London, 1982, p. 113) points out, the Fifth Plan is sometimes referred to as 'the high-water mark of French planning', although it might be argued that the Sixth Plan (1971-1975) was equally extensive in scope.
38. See R. Gilpin, *France in the Age of the Scientific State,* Princeton University Press, Princeton, 1968, p. 3.
39. See Chapter 3, 'The dimensions of the American challenge' in *ibid,* pp. 39-76.
40. G.H. Kuster, 'Germany' in R. Vernon (ed.), *Big Business and the State: Changing Relations in Western Europe,* Harvard University Press, Cambridge, Massachusetts, 1974, p. 77.
41. See E.O. Smith, *The West German Economy,* St. Martin's Press, New York, 1983, pp. 94-5.
42. *ibid.*, p. 73. For details of sources see fn. 23, p. 282 in this reference. Other useful papers are K.H. Oppenländer, 'Starting points and problems of sectoral structural policy in the Federal Republic of Germany' (a translation provided by Oppenlander of a paper originally appearing in *IFO-Studien,* 20, 1, 1974, pp. 1-17); O. Keck, 'West German science policy since the early 1960's: trends and objectives', *Research Policy,* 5, 2, 1976, pp. 116-57 and K.H. Oppenländer, 'The role of business and government in the promotion of innovation and transfer of technology' in C.T. Saunders (ed.), *Industrial Policies and Technology Transfers between East and West,* Springer-Verlag, Vienna, 1977, pp. 243-59.
43. G.H. Küster, *op. cit.*, pp. 71-2.
44. Giselle Podbielski, *Italy: Development and the Crisis in the Post-War Economy,* Clarendon Press, Oxford, 1974, p. 90.
45. R.M. Stern, *Foreign Trade and Economic Growth in Italy,* Frederick A. Praeger, New York, 1967, p. 21.
46. *ibid.*, pp. 53-67.
47. Podielski, *op. cit.*, pp. 170-1.
48. *ibid.*, pp.171-4.