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**Article**

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## ABSTRACT

*This survey outlines the characteristics and drivers of the phases of European industrial policy over the last century and attempts some conclusions about policy impacts. The first liberal phase and the second, ultimately autarkic, phase were ended by war. The third phase terminated with the oil price shocks of the 1970s at the high tide of interventionism. These shocks, and the associated economic growth retardation, contributed to the financial stringencies in the fourth phase that eventually prompted both privatisation policies and more modest policy aspirations. The historical record is consistent: policies that encouraged openness to trade and investment, by creating an environment favourable to competition, also enhanced industrial productivity.*

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# Industrial policy in Europe in the 20<sup>th</sup> century

## 1. Introduction

This paper reviews industrial policies in Europe over the past century, with a focus on their drivers, instruments, and impact during different episodes and in various countries<sup>1</sup>. The purpose is to draw policy lessons, including an assessment of the circumstances under which industrial policy appears to have been successful and those under which it has failed.

The first step in organising a history of industrial policy must be to delimit the subject matter – however much the attempt to do so trespasses upon the subject matter of other contributions to this volume of the *EIB Papers*. Industrial policy is concerned with an aspect of industry as an objective, and sometimes as an instrument. Broader supply-side policies also may have (the productivity of) industry as an objective among others, though advocates of such policies typically would not be keen on advocating ‘industrial policy’, at least in the United Kingdom. Regional policy often attempts to use industry as an instrument for boosting regional employment; it is in this sense an industrial policy too.

Most researchers and practitioners favour a definition based on the objective. Chang (1994, p.66) proposes that an industrial policy is one “... aimed at particular industries (and firms as their components) to achieve the outcomes that are perceived by the state to be efficient for the economy as a whole.” For Pack and Saggi (2006, p.2), an industrial policy is “any type of selective intervention or government policy that attempts to alter the sectoral structure of production towards sectors that are expected to offer better prospects for economic growth”<sup>2</sup>. Both these definitions and that of Pelksman (2006) exclude unintended policy effects. Pelksman distinguishes two types of policies which influence industry, yet are not part of industrial policy, namely, policies not for industry which affect industry and policies which directly help or constrain industry but are not meant (only) for industry. Omitting the second type from the definition can be problematic for a historical understanding of industrial policy, as we discuss below.

A wider, but implicit, definition of industrial policy may be found in European Community Treaty Article 157 (130) (modified by the Maastricht Treaty), which requires the EC and Member States to “ensure that the conditions necessary for the competitiveness of the Community industry exist”. The European Commission’s industrial policy focus is on the competitiveness of manufacturing industry, on the grounds that most innovations take place in this sector (European Commission 2002 and 2004). However, all these recent conceptions exclude the most important historical motivation for industrial policy – the desire to enhance security, using industry as an instrument. Defence and nationalism remain powerful justifications for interventionist industrial policy.

Industrial policy will therefore be defined as ‘state intervention that affects, or is intended to affect, industry but not other economic activities directly’<sup>3</sup>. The idea is to exclude monetary and



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1 This paper draws on Foreman-Peck and Federico (1999).

2 Both these definitions exclude ‘horizontal’ policies towards industry, such as competition policy, because these are not intended to alter industrial structure, even though they will do so. Consider a constant returns to scale economy with two sectors, one monopolised and one perfectly competitive. Introduction of an effective competition policy would expand the former monopoly sector, as prices and returns to capital are forced down, and contract the competitive industry as resources are bid away from it.

3 Here the state includes the central government, local authorities, and the EC, as well as independent agencies following government directives and using primarily public funds.

macroeconomic policies, so that for instance interest rate impacts are not considered. 'Industry' here includes manufacturing and infrastructure industries. The term might reasonably be extended to any source of employment – mining, agriculture, and services – particularly because the classification of jobs can be arbitrary<sup>4</sup>. Be that as it may, government policies towards agriculture and services generally have differed from those towards industry more narrowly defined, and the field must be limited if it is to be manageable.

'Intervention' covers the official endorsement of private agreements such as cartels. Policy makers may be institutions rather than individuals, and policies may be implicit rather than articulated. The impact of policy includes consequences that are unforeseen or unintended.

With these definitions duly noted, let us preview the rest of the paper. Section 2 sketches the origin, types, and drivers of industrial policy. Having set the scene in this way, Section 3 zooms in on different phases of industrial policy in the 20<sup>th</sup> century. Section 4 attempts to identify the impact of industrial policy. Section 5 draws some lessons from history.

## 2. Industrial policy: types and drivers

### 2.1 Types

***Two broad types of industrial policies can be distinguished: sector- or firm-specific (vertical) policies and general (horizontal) policies.***

Two broad types of industrial policies are generally distinguished: sector- or firm-specific (vertical) policies and general (horizontal) policies. Horizontal policies can be divided into those influencing the legal and institutional framework on the one hand, and those modifying technology and markets for inputs and outputs on the other. Vertical policies are structural, intended to alter the relative importance of industries and firms.

An essential component of a suitable framework is clearly defined and enforced private property rights, including intellectual property. This requirement was generally fulfilled in all European countries by the beginning of the 20<sup>th</sup> century (in some of them it had been fulfilled for many centuries already by then) – even if enforcement was not always complete. In Central and Eastern Europe, however, private property rights were later abolished by communist regimes and needed re-establishing after 1989. Company law continued to be subject to modification throughout the century.

Industrial policy can try to foster technical progress by supporting either innovation or the diffusion of existing techniques, possibly imported from abroad. To this end, states have directly undertaken research and development (R&D), usually for military purposes, or simply subsidised private R&D, often by granting tax concessions. The state might spread information about new technology through the specialist press, or through subsidised programmes. Industrial policy can also enhance competition in the market for products with the appropriate legislation about anti-competitive practices and mergers.

Another horizontal policy, widely used in the second half of the 20<sup>th</sup> century, aimed at boosting capital accumulation in manufacturing with tax incentives for savings or investment, and low-interest loans. Possibly one of the most dramatic cases in recent decades has been Ireland's low tax on profits, apparently immensely successful in drawing in export-oriented foreign direct investment (FDI) during the 1990s. Support for education and training, in turn, increases the supply of skills,

<sup>4</sup> To illustrate, in 1997, more than half of the employment by Siemens was indirect and, therefore, could be considered as services. But since Siemens is a manufacturing company, these jobs were classified to manufacturing.

and lowers their 'price', although this may be classified as active labour market policy as much as an industrial policy. In both the cases of capital and labour market policies, reducing the input price to industry is intended to increase output.

Governments can also regulate the prices of other inputs – such as energy and water – to support industry at the expense of utility companies, taxpayers, or private consumers. In addition, the efficiency with which the state supplies the infrastructure services for which it has accepted responsibility – such as roads and sometimes utilities – might substantially influence the business environment (Lynde and Richmond 1993).

By contrast with the foregoing horizontal or general policies, vertical or structural policies – which redistribute resources among sectors, industries, and firms – are the core of classical industrial policy. With some exceptions (notably the attempts at general planning of the 1950s and 1960s), these policies have targeted single firms or industries according to two different principles. One is 'picking winners' – supporting those industries or businesses that the authorities deem to have great potential. The other principle is 'helping losers', firms and industries in trouble. The crisis of the 1930s and the oil shocks of the 1970s initiated bursts of this second type of assistance.

## 2.2 Drivers

Industrial policy has generally been concerned with economic 'catching up' and with the economic basis for national security. The world productivity leader therefore has no need for a policy, only followers do. Hence there has been little discussion of an industrial policy in the United States, except during the period of American anxiety about Japanese overtaking in the 1980s. By contrast, throughout the 20<sup>th</sup> century and into the present period, European states have attempted to close a perceived gap or to recover a lead.

Four political economy drivers of intervention are prominent: promotion of national defence and order, 'capture' by special interest groups and lobbies, budgetary stringency, and prevailing views about the efficacy of intervention. Let us look at each in turn.

Ensuring an industrial base capable of supplying advanced technology weaponry explains the Spanish and Russian support for shipbuilding in the first decade of the 20<sup>th</sup> century, after respective defeats by the United States and Japan. The same motivation powered British and French support for nuclear and aerospace industries from 1945. Closely related to national security as an industrial policy driver has been the desire to maintain civil order and market functioning. To this end, states have bailed out, nationalised, or reorganised major employers or important defence contractors in attempts to prevent their closure. Such support might then continue for decades because of the electoral difficulties of running it down.

A principle of profit maximisation, forced on firms by market competition, is that all activities should be undertaken up to the point where the marginal revenues balance the marginal costs. Corporate activities include lobbying for state support – not merely for subsidies and tax concessions but also for the elimination or exclusion of rivals. The returns to spending on corporate lobbying (and how much it is worth undertaking) will be greater the more pervasive the role of the state in the economy. 'Regulatory capture' is a payoff to firms when government departments or agencies regulate in the interest of firms rather than, as they should, in the interests of users of firms' outputs.

Rational lobbyists are unlikely to find general industrial policies worth pressing for. Instead they would push for sector- and firm-specific support. Tariffs or other foreign trade controls are the most studied

***Industrial policy has generally been concerned with economic catching up and, thus, the world productivity leader does not need a policy, only followers do.***

instruments of historical industrial policy. These were typically instruments of vertical policy and often a response to industry lobbying. The transparency of national political/budgeting systems therefore was likely to influence the sector/general pattern of tariffs and other support between countries; greater opaqueness increased opportunities for special interests to get their way (Neven 1994).

Turning to budgetary stringency as a driver of industrial policy, the need to balance government budgets prompted the 19<sup>th</sup> century nationalisation of German railways and the municipalisation of British electricity supply. Ironically, a century later, privatisation was driven by mounting budgetary cost of subsidising nationalised industries and by the need to mobilise more resources for their investment programmes.

Belief in the effectiveness of state intervention, peaking from the 1940s to the 1970s, also played an important role in driving industrial policy. Confidence that state-owned industry could operate more efficiently, and better advance the interests of society than private firms, underlay many nationalisations of this period, triggered by the market economies' depression of the 1930s and the contemporaneous industrial success, so it seemed, of the centrally planned Soviet economy.

These drivers influence the character of the phases – or epochs – of industrial policy. As we see next, four distinct phases of industrial policy in the 20<sup>th</sup> century can be distinguished for Western Europe.

### **3. Phases of industrial policy in the 20<sup>th</sup> century**

Shocks to the economy and society, together with policy responses to changed circumstances, created different phases of industrial policy. They altered the institutional framework and prevailing beliefs, changing the opportunities for the policy drivers.

#### **3.1 Phase 1 – the period to 1914: liberal industrial policies**

At the beginning of the 20<sup>th</sup> century, when it was becoming clear that US productivity was generally higher than in Britain and that in many branches of manufacturing Germany was overhauling Britain, elements of British industry began to feel a need for a policy, signalled by tariff reform agitation. In much of the rest of Europe, the demand for an industrial policy had arisen even earlier.

Despite far higher transport and communications costs than today, trade, capital movements, and migration tightly enmeshed European markets. 19<sup>th</sup> century European economic liberalism favoured markets and 'hands-off' policies. This liberalism was generally underwritten by limited political franchises and the accompanying respect for private property. The archetype was British industrial policy, the model for 19<sup>th</sup> century Belgium and the Netherlands. Scandinavian policies by and large encouraged trade and free enterprise, too. Although Italy and France pursued economic strategies that were liberal in comparison to later stances, when compared with other countries they were interventionist. In marked contrast to phases 3 and 4, cartels were legally enforceable and widespread in German industry.

Much of continental Europe leaned against the wind of international competition at the beginning of the 20<sup>th</sup> century, both in industry and agriculture, by imposing protectionist tariffs. But viewed from the end of the 20<sup>th</sup> century, most noticeable is that before 1913 all European governments were usually rather modest in their peacetime industrial policy aspirations and in their selection of policy instruments, by comparison with the years after 1945. We turn now to the four key policy areas: trade controls, infrastructure policy, state ownership of manufacturing firms and state purchases of industrial goods, and technology and patent policy.

***Shocks to the economy and society, together with policy responses to change, created different phases of industrial policy.***

Tariffs were preferred to subsidies as instruments of industrial policy simply because they did not consume tax revenues but brought money into state treasuries. Moreover, those who appeared to bear their burden were foreigners. The richest countries – Britain, Belgium, and the Netherlands – maintained low tariffs, and the poorest economies in Europe – Portugal and Russia – were the most protected.

Government involvement in creating a productive infrastructure constituted another policy aimed at supporting industrial activity. Direct state spending focused on communications and transport infrastructure, vital for the competitiveness of manufacturing and the effectiveness of national armies. 19<sup>th</sup> century technology determined that infrastructure business dwarfed the scale of manufacturing enterprises, and of these businesses the most expensive was railways. Railways and roads were needed to carry troops to the frontiers, and telecommunications to tell them what to do. The state therefore was interested as a user of services in which private monopolies were likely to emerge. For security reasons, communication networks, the postal service, and roads were traditionally state monopolies, as were electric telegraph and telephone, except when finance was not available.

By the end of the 19<sup>th</sup> century, state monopoly was being extended to railways in much of continental Europe. Most ambitious of state infrastructure investments was the French *Plan Freycinet* of 1879, but like the successor *Plan Baudin* of 1903 it was ended prematurely for financial reasons. Commitment to free trade did not rule out state ownership of infrastructure. For instance, despite a generally liberal stance on economic policy, Sweden's state railways in 1913 transported 60 percent of goods travelling by rail (Sweden also established a state-owned electricity generator to exploit hydroelectricity). Other liberal states, notably Britain, opted for arms-length regulation of railways. Even so, that did not necessarily leave the cheaper telegraph and telephone networks safe for private enterprise in these countries.

Local government imitated national infrastructure policy, supplying water, electricity, and gas in European cities. Dissatisfaction with private monopoly was a prominent motive, for instance in the German cities of Stuttgart and Stettin. As the most essential service, water was most likely to be municipalised, but the 28 largest German cities also took over gas supply between 1860 and 1896 (Batson 1933).

State buying was a long established and vital element of national demand for advanced technology industries. In the 20<sup>th</sup> century, a common argument was that civilian 'spin-offs' from such purchasing benefited and modernised the economy. Four major arms manufacturers employed 2,000 men in Turin in 1862, working with the most advanced machinery. Later they were the source of skilled labour for Ansaldo and Fiat (Saul 1978). The weakness of many spin-off claims is that the opportunity cost of the resources expropriated is ignored. What useful things might these workers have produced other than armaments, and how rapidly might 'raw' labour have been trained for civilian manufacture when the demand arose?

And then, one may ask whether these favoured industries could attain a minimum efficient size merely supplying one national market and what problems arose from the contractual relations with the state purchaser. To make the point, Sweden's L M Ericsson, now a world player in the telecommunications market, failed to receive Swedish state telephone contracts in the later 19<sup>th</sup> century and was forced to look for buyers abroad, especially in Russia. By contrast, the cosy relationship of Belgium's state telephone company with Bell Telephone Manufacturing Company raised its costs and reduced competitiveness.

**Government involvement in creating a productive infrastructure constituted one of four key policy areas in the liberal phase of industrial policies.**

To conclude the sketch of Europe's industrial policies in the period to 1914, we turn to technology policy. A classic liberal industrial policy was protection of technological property rights with patents. But economies with little patentable domestic innovation could choose to provide limited or no patent protection in order to acquire foreign innovations without payment. The Netherlands and Switzerland took a free ride on the innovative efforts of larger countries, to the advantage of some of their own manufacturers. Because German firms were unable to patent their processes in Switzerland, the Swiss chemical industry could employ German technology for free in the production of specialty dyes. The Netherlands lacked any patent law at all from 1869 to 1910. This helped the Jurgens brothers develop a French process for manufacturing margarine after 1870. The absence of patent laws was also very useful for Gerard Philips, who established an incandescent lamp factory at Eindhoven in 1891, making essentially Edison's carbon filament lamp with only minor modifications. Not burdened by royalty payments to Edison (and Swan), Philips was one of the largest manufacturers in Europe by 1913 (Schiff 1971). Once domestic technical progress in these sectors became self-sustaining in the early 20<sup>th</sup> century, both Switzerland and the Netherlands chose to join the International Patent Agreement so as to gain protection for their own technologies.

### **3.2 Phase 2 – 1914-50: the spread of interventionism in an era of disintegration**

***The shock of wars and economic disturbances sparked the second phase of 20<sup>th</sup> century industrial policy, with aggressive nationalism becoming a pervasive basis for European industrial policy.***

The shock of mobilisation and war in 1914 coupled with economic disturbances, especially the slump of the early 1930s, and with the Versailles Treaty, sparked the second phase. Aggressive nationalism, more powerful because of lengthened boundaries, became a pervasive basis for European industrial policy.

Military demands and bankruptcy of large employers (Citroen was bailed out in 1934, for instance), together with a discrediting of free markets in the slump, raised the proportion of national income that the state directly influenced. Mussolini's IRI holding company for large bankrupt manufacturers, taken over by the state in the 1930s, became the model for Franco's INI, the core of Spanish industrial policy from the 1940s for a generation.

By 1950, the Italian state controlled 80 percent of shipbuilding, 40 percent of rolling stock production, 60 percent of pig iron, and 43 percent of steel, mainly as an interwar period inheritance. Unlike Britain's newly nationalised industries, Italy's state enterprises were run as if they were separate private businesses, and priced accordingly (UNECE 1953).

Most of Europe fell back relative to the United States in the autarkic conditions of the time. Britain was unusually able to participate in the relatively free trade of the British Commonwealth. Like other continents, Europe expanded industrial employment and reduced exports during the 1930s by adopting strong protectionist policies. Import quotas assumed prominence as policy instruments in the early 1930s because, with falling prices, tariffs could not guarantee the desired import volume protection. The quotas remained when more prosperous times returned.

The collapse of the 19<sup>th</sup> century liberal economic order in a welter of trade and currency controls was matched by political changes. Dictatorships in Germany, Italy, Spain, Russia, and perhaps Portugal aimed at economic control by the state, but so did democratic France. While private property and peace persisted, dictators' industrial policies were unlikely to differ markedly from those that might be pursued by a corporatist democracy. However, in Soviet Russia during the 1930s, private property was virtually abolished and Stalin's industrial policy, based on central direction rather than markets, was therefore far more draconian than elsewhere.



Wealthier countries were more likely to be policy leaders, but strong ideology – in the case of Russia between 1917 and 1991 or maybe Portugal in the mid-20<sup>th</sup> century – could still allow policy makers to eschew the example of their richer neighbours. Most notably, Soviet Russia's avoidance of the Great Depression, which began in 1929, added prestige to central planning as an industrial policy and encouraged milder imitations later, even in capitalist countries.

More liberal states tried to deal with the impact of the world economic crisis by moral suasion rather than nationalisation. Thus, the Belgian government put pressure on the Société Générale to save the bankrupt carmaker Minerva, and the formally independent Bank of England began an anaemic interventionist industrial policy to prevent the Labour government of 1929-31 from taking more forceful action.

Electricity in the early 20<sup>th</sup> century, like steel in the later 19<sup>th</sup> century, was a basic industry for any state that aspired to military independence. That electricity transmission and distribution networks, like railways tracks, were natural monopolies, offered another reason for state intervention, often at the municipal level. Lenin's famous 1920 claim to the All-Russia Congress of Soviets that "Communism is Soviet Power plus electrification of the whole country" reflected the belief in a number of states that industrial development and competitiveness required the full exploitation of the new power source.

The European legacy of the traumatic period 1914 to 1945, or perhaps to 1953<sup>5</sup>, was a far greater role for the state in directing national resources. Industry was affected both intentionally and unintentionally by the extension of governmental economic power. In Britain and France, greater social spending went hand in hand with higher peace-time military outlays after 1945 as they tried to resume their traditional roles as world powers.

***The European legacy of the traumatic period 1914-1945 was a far greater role of the state in directing national resources.***

The 'displacement effect' of the war was most apparent in these countries (which were also the most heavily taxed) and their defence industries, especially aircraft and shipbuilding, accordingly gained. Britain also gave specific help to cotton and nationalised a considerable proportion of industry. Ambitious state finance for investment in France under the *Plan Monnet* was as nationalistic as any earlier policy, an attempt to restore France to pre-eminence in Western Europe. West Germany's policy was not so different in intention. But unlike in France, it did not lead to an increase in taxes as a proportion of income, mainly because central and local taxes had already been high before the war. Generally, subsidies had fallen by 1950 in all countries, though their course was more erratic in Greece and Ireland.

### **3.3 Phase 3 – 1950-73: industrial-policy heyday in an era of re-integration**

Phase 3 began with the rebuilding of the now divided European economy. The West benefited from new liberal international market institutions plus US cold war hegemony. These European economies expanded at unprecedented rates. International capital, trade, and migration flows increased more than proportionately with the growth of production. Beginning with the European Coal and Steel Community (or perhaps with the European Payments Union), institutions of European cooperation and coordination underpinned these flows and the ensuing economic growth. Yet, independent national industrial policies were still pursued, supported by greater state expenditure on a wider range of policy instruments – investment grants or tax rebates, including those intended to attract FDI, research and development subsidies, training investment, competition policies, and institutions

<sup>5</sup> The later date allows the inclusion of the Berlin Blockade, the beginning of the Cold War, and the Korean War as economically traumatic events that should be included with the World Wars and the Great Depression.

to fill gaps in existing market provision (Milward 1992). Costs of military and defence-related technologies – jet aircraft, computers, nuclear reactors – soared. These *grands projets* increasingly offered strong reasons for European cooperation to share costs too large for individual states.

The United States favoured a single Western European market with supranational institutions as a bulwark against Soviet influence. To ensure that Marshall Aid was spent in accord with US intentions, the first European organisations after the Second World War were brought into existence: the Organisation for European Economic Cooperation (later the OECD) and the European Payments Union. Thereafter a succession of treaties widened and deepened supranational arrangements in Western Europe. Formally, these treaties curtailed industrial policy powers of national governments but, in practice, national policies and policy objectives were awarded priority over supranational arrangements. In what follows, we look at the salient features of industrial policy in the context of European integration in the period to 1973.

A natural first step is to consider the European Coal and Steel Community (ECSC), established in 1952 by the Treaty of Paris and consisting of Belgium, France, Germany, Italy, Luxembourg, and the Netherlands (the ‘Six’). One way to interpret the willingness of these countries to create the ECSC is that purely national policies for coal and iron ore came closest to the self-defeating prisoners’ dilemma and, by extension, coordination could help countries to better exploit their deposits. A supranational coal and steel community was the obvious answer – if almost a century of hostility on different sides of frontiers could be put aside. In 1950, the French foreign minister, Robert Schuman, advanced a proposal that did exactly that. The resulting Treaty was contradictory in a way that became characteristic of European Union policy. Under certain conditions, the ECSC High Authority (in a sense a forerunner of the European Commission) could impose minimum prices, determine production quotas, and order import restrictions. Yet at the same time, the Authority was supposed to stimulate and enforce competition. The Authority never managed to dismantle the Ruhr coal cartel under Article 65 of the Treaty, nor was it able to put an end to collusive practices in the steel industries (Spierenberg and Poidevin 1994).

Intra-Community trade in steel nearly doubled in the four years after 1953, whereas production rose by only one-half. Intra-Community trade in non-treaty products increased by almost as much as steel, however, which at first sight suggests little effect of the ECSC. But considering the wrangling over the coal and steel resources that had bedevilled international relations earlier, the implicit counterfactual, or base case scenario, may be too optimistic. If so, a greater impact must be attributed to the ECSC.

**Unlike the Treaty establishing the European Coal and Steel Community, the Treaty of Rome creating the European Economic Community unambiguously embraced economic liberalism.**

Unlike the ECSC, the 1957 Treaty of Rome creating the European Economic Community (EEC) unambiguously embraced economic liberalism<sup>6</sup>. Underlying the Treaty is the doctrine that free movement of goods, services, and production factors will enhance competitiveness. Industrial policy was not mentioned explicitly. Reducing formal trade barriers between members (initially the ‘Six’) was the major achievement of the early years of the Community. Britain remained outside the EEC and formed a free trade area (EFTA)<sup>7</sup>, without a common external tariff and the supranational elements of the Treaty.

Implicit in the Treaty was the proposition that markets are largely self-regulating as long as they are in their competitive, ‘natural’, state. Enforcement of this proposition during the heyday of interventionist industrial policy was low and erratic. Through to the 1970s, much of the industrial

<sup>6</sup> The Treaty also established the European Atomic Energy Community.

<sup>7</sup> The original partners with Britain were Norway, Sweden, Denmark, Switzerland, Portugal, and Austria.

subsidies went to state industries that were key policy instruments of Western European states, which were not prepared to tolerate interference from the Commission.

Besides constraints imposed by key national governments, EEC policy was subject to internal pressures and contradictions. For instance, the Industry Directorate favoured big European companies as a means of strengthening European industries and, hence, there was always some potential tension with the Competition Directorate.

The EEC and member countries employed two instruments, in particular, to achieve industrial policy objectives: trade controls of the EEC and state ownership in member countries. To start with trade controls, it is fair to say that besides coordinating coal and steel resources, the principal element of European integration in the period considered was the creation of a customs union. Member countries abolished import tariffs on trade among themselves and introduced a common external tariff and a common commercial policy towards third countries. In the late 1950s and 1960s, import tariffs were cut considerably, in particular on goods imported from EFTA countries. Intra-European trade – both among the ‘Six’ and larger groupings of European countries, such as the EU of the late 1980s – grew faster than total European trade. Although the theory of customs unions predicts only small gains from such liberalisation, models based on different assumptions – scale economies and imperfect competition – generate larger benefits, more consistent with the strong industrial growth of the period.

***In 1950-73, the EEC and member countries employed two instruments, in particular, to achieve industrial policy objectives: trade controls of the EEC and state ownership in member countries.***

Under the General Agreement on Tariffs and Trade (GATT) of 1947, to which all Western European countries were signatories, import quotas, which had been so destructive between the world wars, were forbidden. That said, voluntary export restraints began to replace unilateral quotas. Usually the result of bilateral negotiations, such restraints were politically rather easy to implement because the restricted exporters could earn higher profits. In addition, they were popular with import-competing industries. The cost to the consumer was never made public and rarely included in the measurement of industrial support. One of the best-known voluntary export restraint agreements is the Multi-Fibre Arrangement (MFA) – the EEC signed the first MFA in 1974 – that aimed at protecting the textile industries of advanced countries against competition from newly industrialising countries.

The Soviet Union and the rest of Eastern Europe used the state monopoly of foreign trade to achieve similar ends. The Council for Mutual Economic Assistance (CMEA) was intended to mimic cooperative institutions in Western Europe, enhancing economic integration in the communist bloc. Soviet satellite economies had no choice but to continue with the Soviet model of industrial policy. But, like Western European states, they resisted specialisation within the CMEA bloc when required to lose, rather than to gain, industrial capacity.

Turning to state-ownership and economic planning as industrial policy instruments, it is probably no exaggeration to observe that Western Europe was immune neither to beliefs that wartime resource allocation methods could be equally well employed in a civilian economy nor to the early successes of the Soviet model in boosting industrial production. The Soviet example influenced, in particular, French corporatist industrial policies in the 1950s. This was especially so for economic planning and the *Commissariat Général du Plan*, which were at their zenith in the 1950s and 1960s. The views of Jean Monnet, the first *Commissaire au Plan* in 1946, on the necessity for raising business expectations of growing markets eventually spilled over into Britain in the mid-1960s. The First French Plan focused on heavy industry, which was largely state-owned anyway, so plan implementation merely required directives. Even during the Second Plan of 1954-57, the state wielded considerable direct influence through control of finance and fiscal incentives (Denton *et al.* 1968).

Most other Western European states also had nationalised substantial proportions of industry, especially those with supposed 'natural monopoly' characteristics, like the utilities. By the end of the 1970s, the high tide of interventionism, electricity, gas, coal, airlines, and steel were likely to be owned by the state in most of Western Europe. Moreover, governments held stakes in the motor industries in Austria, France, Britain, Italy, the Netherlands, and West Germany. State ownership of railways and the postal service was complete in Europe, and only Spain broke the otherwise 100-percent nationalisation of the telecommunications sector. These businesses rarely operated on exclusively commercial criteria, but were used to achieve social and political objectives. In some countries, jobs in state industry became means of rewarding the party faithful.

National security continued to motivate a good deal of 'high-tech' development, often by state industry, in Europe during the great post-war boom. Military technology drove the costly British and French nuclear power generating industry. The German nuclear power programme also proved expensive; the SNR 300 Fast Breeder reactor lost DM 11 billion without ever entering service. Eventually, privatisation curtailed nuclear supply in Britain, by bringing into the open the risks and the expense of such technology. Computers and aerospace also absorbed vast sums of state money in the only two European states that continued to see themselves as 'great powers' in the 1950s and 1960s, Britain and France. Twenty-two percent of French state research funding in 1969 was spent on aerospace. British aircraft subsidies masqueraded as 'launch aid', but only one aircraft project ever managed to repay the aid from subsequent sales.

The enormous fixed costs of product development in aerospace singled out the sector as an obvious candidate for transnational collaboration. In the East, there was the R&D cooperation of the Soviet Union with its Warsaw Pact allies. A more equal distribution of the burdens and the benefits was specified in the Anglo-French supersonic commercial airliner project, the Concorde, which begun in 1960. A remarkable technological achievement, the enterprise was commercially misconceived<sup>8</sup>. Germany also had its Concorde – though it was not supersonic – the VFW 614. By the time the project was cancelled, the German taxpayer had spent about DM 1 billion.

### **3.4 Phase 4 – 1973 and beyond: eurosclerosis, globalisation, and de-industrialisation**

***Since the early 1970s, rising international capital mobility has increasingly constrained national industrial and other policies.***

Phase 4 was ignited by the oil shocks of the 1970s and the apparent failure of most European economies to adjust to the changed circumstances. Productivity growth slowed and government budget deficits increased. Industrial crises once more precipitated state intervention (both of contrasting types and with different results in the cases of the British and German motor companies BL and VW). Manufacturing employment declined and unemployment rose, along with industrial subsidies. The capital controls of much of phase 3 had been largely removed. Consequently, international capital mobility increasingly constrained national industrial and other policies; the newly elected French Socialist government in 1981 was obliged very quickly to adopt more market-sensitive stances in the face of capital outflows.

Some loss of momentum after post-war reconstruction was inevitable, but the rise of Japan and other competitors in the Far East, together with the continuing industrial lead by the United States, triggered concerns that the European slowdown was excessive. Very few of the largest European

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<sup>8</sup> The cost of Concorde over 14 years, £1 billion, was 500 percent above the 1962 estimate. Similarly, by 1971, the United States had spent \$1 billion on their aborted supersonic transport project. Together with the Advanced Gas Cooled nuclear reactor (AGR), the financial loss to the United Kingdom from Concorde amounted to more than \$20 billion in 1990 prices, or nearly two years of all British R&D expenditure in the late 1980s (Ergas 1992).

firms were judged particularly competitive in world markets by the 1980s. Instead they were 'sleepy giants', according to critics. Inevitably, European industrial policies were accused of braking industrial change, for much more was being spent than ever before. German economic success allowed huge outlays on industrial subsidies. Before 1914 subsidies paid to German companies were less than 0.01 percent of net national product (NNP). By the 1930s, the figure had risen to around ½ percent, and at the end of the post-war boom (phase 3) subsidies reached some 2 percent of NNP, tilted markedly towards 'sunset industries' (Giersch *et al.* 1992).

Rising unemployment went hand in hand with fewer manufacturing jobs. In the 1980s, Germany, France, Italy, and Britain all employed a smaller proportion of their workforces in manufacturing than in the 1960s (and experienced far higher unemployment – rates not seen since the 1930s). Between 1968 and 1984, the expanding industries in the seven largest OECD countries were services, led by financial services. Technologically sophisticated manufacturing (particularly computers, telecommunications, and semiconductor equipment) followed at a distance. Japan and the United States moved into these 'sunrise' sectors most rapidly, while France, Germany, and Britain pursued at a medium pace. The purging of Britain's manufacturing industry with the rising exchange rate and tight money of 1980-81 brought Britain the second greatest structural change after Japan (OECD 1992).

In the EU as a whole, less than one worker in five was employed in manufacturing in the mid-1990s. For those who saw manufacturing as the fountainhead of prosperity, this last development was ominous. When associated with an absolute fall in manufacturing output for long periods, the trend was especially worrying. In the recession that began around 1990, manufacturing value added declined in the four largest Western European economies.

Western Europe's economic concerns were, however, mere pinpricks compared with the industrial difficulties of the Soviet Union and Central and Eastern Europe. Here above all was a test of a non-market, interventionist industrial policy at its most extreme. In particular, a measure of the adverse impact of central planning is the divergence between the West and East German economies during the period of the Communist regime in the East. Despite remarkable technological achievements, such as the Sputnik satellite launched in 1957 and the Mir space station, Soviet industrial policy largely failed to deliver either sufficiently advanced products or consumer goods in volumes comparable with those of Western Europe. Moreover, the record of environmental pollution in centrally planned economies was abysmal. By 1991, the Soviet empire collapsed under the weight of its misconceived economics, beginning a fifth phase of industrial policy for Eastern Europe.

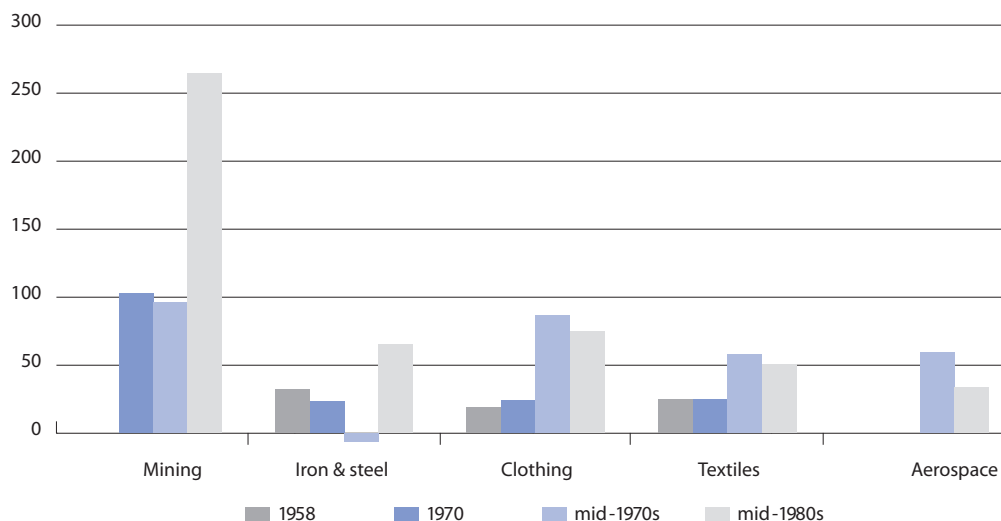
**Western Europe's economic concerns in phase 4 of industrial policy in the 20<sup>th</sup> century were small compared to the industrial difficulties of the Soviet Union and Central and Eastern Europe.**

How did these challenges affect industrial policies? Roughly following the template used in discussing earlier phases, we will look at industrial subsidies, trade controls, government procurement, and measures to improve market functioning.

Subsidies continued to be a central element of Western European responses to the problems faced by industry. Figure 1 shows the rise in West German rates of assistance to selected industries from the 1950s to the 1980s. In most cases, subsidies went to sectors with declining employment, but from the 1970s the expanding aerospace industry began to absorb substantial state support. That said, as Figure 2 shows, Germany offered the lowest payments to manufacturing between 1981 and 1986 among the European countries, but adding the enormous coal-mining subsidy would change the picture. German subsidies progressively increased after this period, in contrast to the trend in the rest of Europe. Reconstruction of eastern Germany in the 1990s was burdensome, but the multiple layers of German policy making and implementation created more deep-seated problems. Germany pursued industrial policy at three different levels – federal, state (*Länder*), and local.

Policy makers at the lower levels supported declining industries to maintain jobs and tried to attract new employment at the expense of their neighbours. The Bavarian and the North Rhine-Westphalian state-bank-industry networks both appeared effective in this respect.

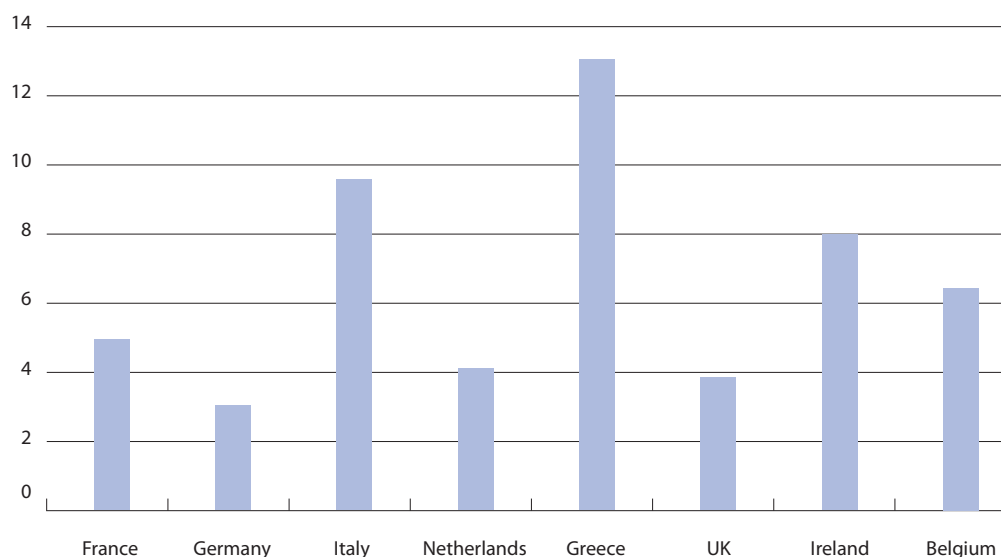
**Figure 1. Effective rates of assistance to selected West German industries**



Source: Giersch *et al.* (1992)

Notes: Effective rates of assistance include subsidies and protective non-tariff barriers to trade. Import barriers for inputs to an industry will raise that industry's costs and therefore create a 'negative rate of assistance' unless offset by protection or subsidies for the industry's sales.

**Figure 2. Manufacturing subsidy as percent of sector value added, 1981-86**



Source: Ford and Suyker (1990)

In the late 1990s, Greece's strong desire to satisfy the budgetary requirements for membership in the European Monetary Union provided a motivation for a change in industrial policy. Retrenchment was needed because Greece headed the European subsidy league in the 1980s. In addition, the opening of the Greek market to EU imports of manufactured goods created a crisis of adjustment.

Greece was not unique, for all EU countries with smaller manufacturing sectors tended to offer higher subsidies, perhaps because they were more anxious to encourage them. Steel was a major recipient of financial support everywhere, except in Germany and the Netherlands. Large subsidies hindered the phasing out of unprofitable activities and the search for new products and markets. Once international, and in particular Japanese, competition began to bite, Europe's steel industry declined. Europeans failed to modernise adequately in the more prosperous years before 1973 and suffered political difficulties of adjustment in the collapse after 1975. This was in part due to cartelisation and restrictive practices persisting in the ECSC.

R&D subsidies remained a common form of industrial policy after the switch towards markets and competition in the late 1980s. EU and EFTA governments that provided lower industrial subsidy rates showed some tendency to emphasise research and development support through other elements of their total policy package. Small countries – Denmark, Switzerland, and Finland, for example – favoured R&D subsidies over other forms. Most countries tended to focus assistance on specific new technologies: Norway and Denmark preferred biotechnology and information technology, the United Kingdom microelectronics applications, Spain industrial robots among other fields, and Italy aeronautics (OECD 1986).

***R&D subsidies remained a common form of industrial policy after the switch towards markets and competition in the late 1980s.***

That smaller subsidisers focused more on R&D support suggests that some political systems were more prone to respond to lobbyists than others. In the 1980s, the fragmentation of Western European political parties was associated with higher state aid to manufacturing industry. Holding other factors constant, highly concentrated industries were apparently more successful at lobbying. Individual country peculiarities, associated with lax procedures and lack of transparency that made capture by business interests easy, were of greatest importance in explaining the pattern of state support (Neven 1994). Belgium and Italy were among the countries that used the least transparent procedures for allocating state aids. Lack of policy transparency also encouraged corruption (Ades and Di Tella 1997).

By the 1980s, many manufacturing activities could afford to pick and choose their locations, especially when operating as subsidiaries of multinational companies. Hence, there was strong inter-government competition with subsidies to attract silicon chip or motor vehicle plants. These policies were 'pro-active' in contrast to the more usual 'reactive' industrial policies of European history. Probably more than 1,000 agencies in Europe competed to attract inward investment in the 1990s. Britain implemented the most effective policy – in the sense that it drew in perhaps 40 percent of all FDI.

Subsidies were often directed at nationalised industries, which continued to account for a large proportion of gross domestic product (GDP) in most European countries. State-owned industries in Portugal and Greece produced over 20 percent of GDP, and France and Italy were not far behind. By contrast, privatisation had radically altered Britain's position in 1991 compared with the 1970s. Most Western European governments disposed of some state assets in the 1980s, but only Britain and France (at a considerable distance) shifted the private-public industrial boundaries (Vickers and Wright 1988). The West German programme was merely symbolic (though Germany's state-owned sector was smaller than elsewhere in Europe) and the Italians moved a labour force of only 100,000 to the private sector. Explanations for the unwillingness of much of the rest of Western Europe to follow radical privatisation include the fragility of coalition politics and constitutional protection of state monopolies. In Eastern Europe during the 1990s, the collapse of the Soviet empire led to massive privatisation programmes. In former East Germany, the *Treuhandanstalt* had privatised 17,000 previously state-owned enterprises (or establishments or plants) by 1994.



Turning to trade controls in support of industries, lobbying ensured that they varied markedly among Western European countries in the 1980s, despite the European common external commercial policy. Voluntary export restraints of Japan's car industry that differed across EU countries were a clear violation of this policy. France allowed these exports no more than 3 percent of its car market, Italy limited them to 2,500 cars, Spain to 1,000 cars, and Britain permitted them up to 11 percent of total domestic car sales. By 1988, of 261 voluntary-export-restraint agreements in the world, 138 were imposed by the EU. Textiles were more regulated by such agreements than any other sector in the world and, in the EU, were second only to agriculture. The most stringent restrictions were imposed on the cheapest foreign exporters. In Britain, the cost of each textile job saved in 1988 was three to four times employee earnings.

***International economic interdependence sometimes generated strange industrial policy spillovers, with US restrictions on Japanese car exports benefiting European exporters.***

International economic interdependence sometimes generated strange industrial policy spillovers. US restrictions on Japanese car exports in the 1980s allowed European exporters to charge higher prices than they would otherwise, conferring on them a very substantial gain at the expense of US consumers (Dinopoulos and Kreinen 1988).

Government procurement continued to support national defence industries or other 'strategic' suppliers, such as telecommunications. EU directives to open state purchasing to competitors from other member countries seem to have been ineffective. The import content of purchases by governments of large member states was less than 4 percent. This form of trade barrier was of considerable importance since public procurement accounted for 7-10 percent of member countries' GDP (Tsoukalis 1997). Private businesses were unwilling to push for the enforcement of fair procurement procedures for fear that in reprisal they might never receive future state contracts.

Differences in procurement policies could affect national competitiveness. British regulation of safety, pricing, basic research, and FDI created a demanding local competitive market for British pharmaceutical firms, training them in the necessary skills for international competitiveness. By contrast, French pharmaceutical policy protected the local market and French firms therefore lost out internationally (Thomas 1994). Unusually, the Swedish Public Procurement Act required state tenders to be genuinely open to foreign competition. Some observers consider this approach to public procurement, which acknowledges that a small country must specialise and cannot hope to efficiently supply the full range of products, as one reason for low telecoms and electricity prices in Sweden (see Hjalmarsson 1991, for instance).

At the European level, in addition to the common external tariff, industrial policy encouraged European networking in advanced technology sectors, market integration (for example by harmonisation of standards), and market liberalisation. The European Commission tried to extend European technological cooperation by sponsoring pre-competitive research with the ESPIRIT programme of 1984, although funding was low. Similar programmes in other areas followed; Research in Advance Communications for Europe (RACE) and Basic Research in Industrial Technologies for Europe (BRITE).

A possible drawback of such programmes, however, was the creation of European standards that could act as barriers more effective than the common external tariff. A wider market would enhance competitiveness, and common voluntary standards, for instance on safety, could increase the effectiveness of cross-border trade as a stimulus to efficiency. But national standards – for electrical equipment, pharmaceuticals, and food – can be major barriers to transnational competition.



They may also be an effective weapon of protection, for instance by denying competitors access to networks.

The European Commission therefore faced a dilemma. If they tried to impose their own standards, they were in danger of creating 'angry orphans' – standards without business 'parents' and thus which no firm wished to use. On the other hand, a single European market would never be a reality if standards were not harmonised, as the 1985 White Paper on the single market acknowledged (CEC 1985). In the case of pharmaceuticals, firms interested in a position in the world's largest market, the United States, were bound to adopt US standards as a minimum, regardless of those of their country of origin. The Commission therefore attempted to achieve only mutual recognition of national standards. But the complexity and volume of business in enforcement of deregulation meant that officials needed to rely on greater transparency and on 'self-enforcing' regulations where, for instance, aggrieved firms themselves took legal action against governments not adhering to EU regulations.

During the 1980s, the European Commission became increasingly active in promoting competition and deregulation. But even when liberalisation and privatisation gained some momentum in Europe at the national level as a response to insupportable levels of public expenditure and debt, EU policies were obliged to bend pragmatically during recessions, such as the one in the early 1990s. A case in point was the massive subsidy to Air France in 1996.

### 3.5 The phases summarised

Faith in the market's ability to deliver economic objectives, usually the inverse of belief in the effectiveness of industrial policy, varied between phases. The period to 1914 was the lowest intervention era of industrial policy, but even then state support for infrastructure industries and security-related industries was significant, while structural or vertical policies were commonly implemented by import tariffs. Total war brought more industrial policy, as did the shock of the 1930s and the need for bailouts in phase 2.

Another world war swept in the high tide of industrial policy after 1945. Phase 3 offered unprecedented opportunities for policy 'capture' – by technologists among others – prominent with *grands projets*, especially in the nuclear and aerospace sectors. Until the crisis of the 1970s, extraordinary economic growth, boosted by new institutions of European and world economic integration, provided both the scope for and, by association, belief in the success of interventionist industrial policy.

Thereafter in phase 4 budgetary pressures prompted less ambitious policies and something of an unwinding of earlier commitments – as witnessed by privatisations. Globalisation increasingly restricted the range of effective industrial policy interventions, at the same time as triggering concerns about foreign competition and de-industrialisation that demanded more policy responses.

## 4. Industrial policy impacts

How do we judge the effects of these policies? What would have happened without them or if different policies had been pursued? The theory of market failure in principle provides the basis both for estimating the impacts of intervention and for assessing whether intervention is worthwhile.

*Faith in the market's ability to deliver economic objectives, usually the inverse of belief in the effectiveness of industrial policy, varied between the four phases of 20<sup>th</sup> century industrial policy.*

It does so by indicating the scope for a ‘compensated Pareto improvement’.<sup>9</sup> Such an improvement makes some people better off without making anybody else worse off – at least after hypothetical or actual compensation has been paid to any losers.

Market failure may stem from inadequate competition, indivisibilities, incomplete or unenforced property rights, or from missing institutions (and therefore from coordination failures). Information deficiencies are often believed to underlie many of the most important sources of market failure in practice. An effective policy entails addressing these causes. But implementing the ‘adjustment of market failure’ approach can be problematic. The practical difficulties arise from both quantifying market failures and the costs and possible effectiveness of interventions. A policy to remedy a genuine market failure may do more harm than good if the intervention has side effects or is too expensive: the intention to improve is no guarantee for success.

**To assess industrial policy impacts one can study individual interventions or the performance of economies as a whole.**

To assess policy impacts there are two broad approaches, neither of which is entirely satisfactory in practice. One is to study individual interventions: particular industrial tariffs, projects such as Concorde, R&D subsidy programmes, investment incentives, or infrastructure regimes such as in electricity generation. The alternative is to attempt to assess the total effect of policy by considering the performance of the economy as a whole.

In the first case (‘bottom up’), the studies available may not be representative or of sufficient coverage. The justification for the second approach (‘top down’) is that a jurisdiction catching up more rapidly with the productivity leader is *prima facie* pursuing more effective and efficient policies than another that lags behind. But other policies, or shocks such as wars or natural disasters, can counterbalance the most effective policies towards industry. And there may be permanent advantages or disadvantages such as climate that limit potential to catch up. Conversely, in a particular period the impact of damaging industrial policies may be more than outweighed by a benign world economy.

#### **4.1 Natural experiments with openness and tariffs as an industrial policy**

Bearing in mind these caveats, and taking first the ‘top down’ approach, we use four natural experiments concerning productivity gaps and industrial policies. The first uses the continental-size integrated US economy at the beginning of the 20<sup>th</sup> century as a ‘control’ for the fragmented European economies. This was a period when the most popular industrial policy was the tariff, designed to prevent international market integration. The second contrasts the productivity of the European economy most open to the world economy with the others. The third is a comparison of US and European productivity over a period when European industrial policy first centred on the systematic reduction of intra-European trade barriers. The fourth is a similar comparison for a follow-up European policy, the completion of the single market.

In 1913, US manufacturing industry and the economy as a whole were more productive than the principal economies of Western Europe (Figure 3). A substantial part of the explanation is that the United States was more regionally specialised than was Europe as a whole. Absence of trade barriers allowed tougher competition, more trade, and stronger focus on relatively more productive firms and industries, thereby raising the average productivity of the US economy. The European industrial belt containing the Ruhr, Northern France, and Belgium (originally coal-related) accounted for a large proportion of Western European industry – outside Britain – for the first half of the 20<sup>th</sup> century.

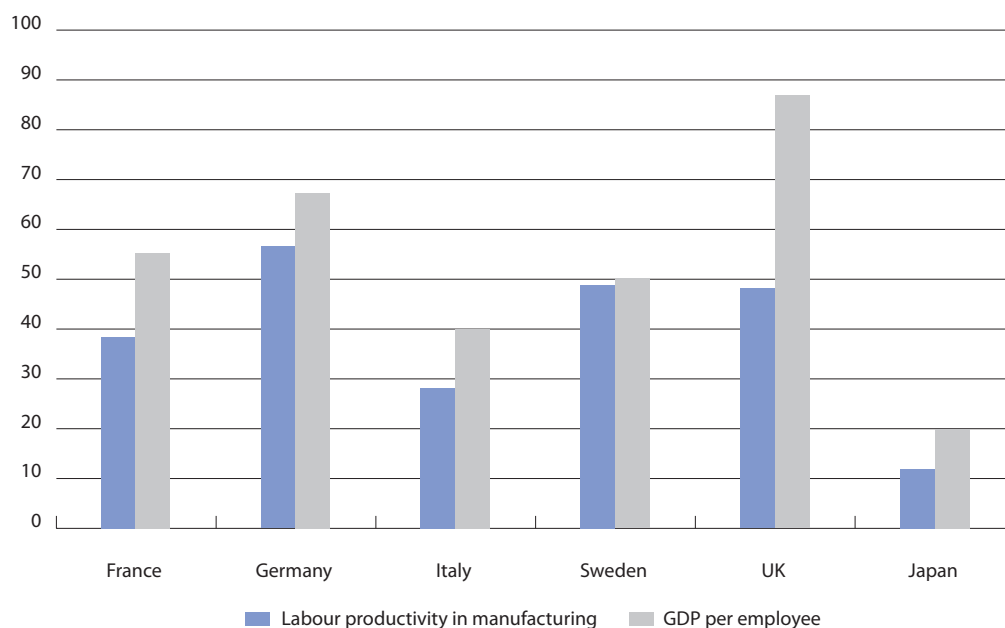
<sup>9</sup> The theories of strategic trade policy and of the optimal tariff also indicate that national welfare can be enhanced insofar as the terms of trade can be shifted against trade partners.

But US manufacturing industry was much more concentrated, in a relatively small part of the Northeast and the eastern part of the Midwest, from the mid-19<sup>th</sup> century to the 1960s (Krugman 1991).

The second point about the early 20<sup>th</sup> century is that the European economy with the highest income (GDP) per capita was Britain, even though it was not by then a European productivity leader in manufacturing (Figure 3). Free-trade Britain was the most highly specialised economy, capturing by far the largest share of competitive world markets in shipbuilding and cotton textiles. Specialisation and openness to trade implied that some British industries, such as electrical engineering, would be small in comparison to those elsewhere.<sup>10</sup> Again, this natural experiment is consistent with countries pursuing trade openness as an industrial policy being likely to achieve higher productivity than those that did not. But the findings are more nuanced. Clearly, manufacturing industry in Germany and Sweden possessed competencies that British industry lacked, and effective policies to address such shortcomings would have been in British interest.

*The experience of free-trade Britain in the early 20<sup>th</sup> century suggests that trade openness enhances the chances of achieving high productivity.*

**Figure 3. Comparative labour productivity in 1913 (US productivity = 100)**



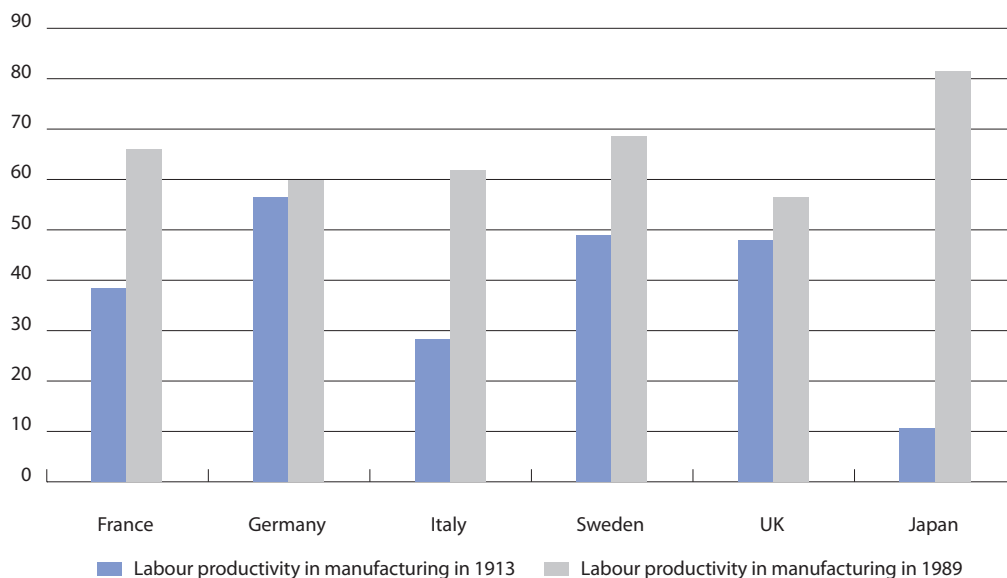
Source: Broadberry (1997)

The third natural experiment concerns the catch up of Europe with the United States after 1945. Figure 4 shows that major European economies all closed the gap with the United States over the 20<sup>th</sup> century in manufacturing (though not as spectacularly as Japan)<sup>11</sup>. This was also the period when European economies were increasingly able to take advantage of a continental market, thanks to the larger free trade area created by the new European and international institutions. The smallest and most open European economy shown in Figure 4, Sweden, caught up the most.

<sup>10</sup> Germany tended to dominate in Europe in steel and sulphuric acid and in chemicals more generally. France was pre-eminent in the still tiny motor and aircraft industries.

<sup>11</sup> Note that the 1989 productivity figure for Germany is for West Germany.

Figure 4. Comparative labour productivity in manufacturing in 1913 and 1989 (US productivity = 100)



Source: Broadberry (1997)

***With globalisation and free international movement of capital, even large European economies are constrained in the way smaller ones have always been.***

Why did Sweden prove so precocious? When international competition and factor mobility are limited, there will be greater capital rents in larger countries. Prices and returns to capital can be driven up without losing too much business. In this sense, earlier 20<sup>th</sup> century Britain, France, Germany, Italy, and Russia could afford to drive up costs and prices through more interventionist policies than smaller countries (though they did not necessarily use this opportunity). Larger countries could also more easily cover the largely fixed costs of high-tech defence. With greater free trade zones behind their protected national borders, industrial policies to defend national markets cost less than in smaller economies. Liberalisation or an industrial policy of openness mattered more for these smaller countries. Sweden recognised that its industries needed to compete in world markets and could not afford policies that did not contribute to this end. Not all smaller European states have recognised their constraints, however. Whereas Scandinavia and the Low Countries typically did so, and achieved higher productivity, Portugal and Greece did not. Ireland moved from the second to the first camp, with remarkable economic growth results. With globalisation and free international movement of capital, rents disappear and by the late 20<sup>th</sup> century even large European economies were constrained in the way smaller ones had been from the beginning.

The final European experiment is the Single European Market drive. The Cecchini Report (European Commission 1988) predicted the level of GDP to rise by 4½ percent thanks to a better exploitation of scale economies. European productivity growth was high relative to the United States until the mid-1990s. Most of the measures proposed by the 1985 White Paper (European Commission 1985) were in fact implemented, albeit with delays and national differences of interpretation. So there is reason to believe that some of the catch up stemmed from this industrial policy of opening up national European markets. On balance it seems that while trade restrictions could be effective in switching demand from foreign to home production, in general they failed to boost long-run productivity.

## 4.2 Industrial policy phases and productivity growth

The second type of information in the ‘top down’ impact assessment is European time series evidence. As a first approximation, GDP per capita can be regarded as a labour productivity measure. In phase 1 of European industrial policy (1870-1913), productivity on this measure grew more slowly than in the United States (Table 1). Less competition and specialisation in Europe might account for differences in levels of productivity but less obviously for growth rates. The ‘closing of the frontier’, as massive waves of migrants and foreign capital were flooding into the United States, seems a more likely explanation.<sup>12</sup>

During Europe’s traumatic phase 2 (1913-1950), the advantage of the United States increased, with US productivity growing twice as fast as the European average. Here the divergence is more readily attributable to the shocks Europe suffered, for during the US depression of the 1930s the gap somewhat narrowed, although the policy stances provoked by these shocks may have contributed.

Phase 3 (1950-73) began with the reconstruction boom but, unlike the 1920-38 period, continued into sustained economic growth. The contrast with the interwar years, both internationally and European, seems more than coincidental, and a powerful impact stemming from the institutional support for trade and investment openness is consistent with the openness natural experiment described above. European industrial policy was more interventionist than ever, though with considerable variations between countries. Was it a significant contributor or did growth take place despite the policies? Supplementary evidence is necessary to reach a credible conclusion.

*During the post-war boom, European industrial policy was more interventionist than ever, though with considerable variations between countries.*

The fourth phase (1973-98) shows US and Western Europe productivities, proxied by GDP per capita, growing at approximately the same, now slower, pace. Eastern European growth is more sluggish than in any other period due to, first, the shortcomings of central planning after reconstruction and, second, the pains of transition to market economies. Western European productivity actually grew faster than that of the United States between 1970 and 2000 according to Blanchard (2004).<sup>13</sup> Can we infer that Western European industrial policies after 1973 were at least as effective as different US policies? They might both have been ineffective, damaging, or too small to be noticed.

**Table 1. Real GDP per capita (annual average growth rates in percent)**

	1870-1913	1913-1950	1950-73	1973-98
Western Europe	1.32	0.76	4.08	1.78
Eastern Europe	1.31	0.89	3.79	0.37
United States	1.82	1.61	2.45	1.99

Source: Maddison (2001) Table B-22

Western European policies were not homogenous, and indeed diverged from each other in the late 1990s (Nicoletti and Scarpetta 2005). Most common law countries, including the United

<sup>12</sup> The United States pursued a tariff-based industrial policy against other economies in response to industrial pressure groups. Was this the reason for its advantage? More likely it was the opening up to European settlement and development of the hinterland, together with the abundance of natural resources that drove US growth in this period.

<sup>13</sup> Output per capita in Europe at the end date was 30 percent lower than in the United States because fewer people worked and employees worked fewer hours. One third of this gap was due to taxation – and minimum wages and employment protection contributed as well. But Blanchard concludes that around two thirds of the output per capita gap was a matter of preferences, a reflection of a European view that work was not as important as Americans believe (possibly because of the European social safety net).

States and the United Kingdom, had relatively light product market regulation, for instance. Large continental EU countries were subject to heavy administrative regulation and also imposed onerous requirements upon firms. They tended to invest less in information and telecommunications technologies and to lag behind the United States and the United Kingdom in investing in vital non-manufacturing industries. Nicoletti and Scarpetta (2005) estimate that aligning the overall regulatory stance of continental EU countries with that of the most liberal OECD country could increase their annual productivity growth rates by 0.4 percent to 1.1 percent over ten years.

**There is evidence that regulation that inhibits competition reduces productivity, and conversely, regulation that enhances competition raises productivity.**

The proposition that openness raises productivity appears to hold true also for a sample of most of the world's economies after 1960 (Hoover and Perez 2004). Openness policies include removing any barriers to trade and competition, not all of which would count as industrial policies. They might involve adopting common currencies, for example, as well as harmonising standards for consumer durables or eliminating tariffs and quotas. As the complexity of products increased over the 20<sup>th</sup> century, the volume and intensity of product market regulation increased. For the most recent period there is evidence that regulation inhibiting competition reduces productivity, and conversely, regulation that enhances competition raises productivity. An industrial policy of openness now requires more than in the simpler world of phase 1.

### 4.3 Case studies

To supplement the 'top down' analysis, we now turn to the 'bottom up' approach, that is, to case studies. This 'bottom up' approach to evaluating the impact of industrial policy is restricted to elements rather than taking it as a whole. For the earliest phase, the central policy instrument of tariffs must be assessed. The answer to the question what would have happened either without tariffs, or if the level or structure of protection had been different, depends on the model employed. With constant returns to scale and no spillovers, the conclusion must be consistent with the top down analysis; tariff protection lowers output and productivity. Cross-European correlations confirm a negative association between productivity and tariff protection before 1914.<sup>14</sup>

The second principal policy instrument of the first two phases is infrastructure provision. In contrast to tariff protection, infrastructure indivisibilities and network effects offer a *prima facie* case that this industrial policy instrument could enhance labour productivity. But such projects can always be mismanaged or conducted on excessive scales so that society loses from the investment. The Baudin and Freycinet plans seem to fall into this category. Few cases have been systematically evaluated, but the introduction of a national electricity network in the 1930s (phase 2) is an exception. The British use of a 'public interest' arms-length company to coordinate both municipal and private electricity generators through the network has been modelled. The new organisation provided benefits by 1937 of around 0.3 percent of GDP, or alternatively, cut generating costs by one third (Foreman-Peck and Hammond 1997).

This example shows that filling gaps in markets and institutions efficiently was possible. Another likely case is the creation of specialised financial institutions. Probably falling into this category are the two British organisations created in 1945 to lend to firms not large enough to acquire finance from the stock market but too large to obtain adequate finance from local banks. The activities of these institutions survived and expanded in a successor organisation, the 3i. By 1991, 10 percent of all manufacturing workers in Britain were employed by companies financed by 3i.

14 A statistical analysis (Foreman-Peck 1995) suggests that Spain might have raised output per capita in 1910 by perhaps one fifth if it had adopted tariffs at British levels. Positive cross-country correlations between tariffs and productivity may stem from sample selection (O'Rourke 2000). Higher productivity, 'New World', countries had better data and happened to favour high tariffs at the beginning of the 20<sup>th</sup> century. They are more likely to be included in data samples, but their productivity derived from an abundance of natural resources.

A shortcoming of the bottom up approach to evaluating industrial policy as a whole is that while the above two examples had positive effects, their impacts might have been more than offset by other costly and inefficient interventions. *Grands projets* are very expensive in all epochs and rarely efficient even when effective. Concorde, VFW 614, and the AGR nuclear programme are clear examples (Ergas 1992). Even Airbus from the world's viewpoint, but not Europe's, did not produce a social surplus (Neven and Seabright 1995).

State ownership of industry, a widespread instrument of European industrial policy in phase 3 and much of phase 4, typically prevented private sector competition with state enterprises. Trade union membership tended to be higher than in the private sector and organisations were usually required to pursue a variety of objectives. As a policy for enhancing the productivity of industry it was therefore rarely effective – with a few exceptions – perhaps the municipal development of Schipol in the Netherlands, the early phase of Volkswagen's growth in Germany, and Italy of the 1950s, where Mattei (natural gas) and Singaglia (steel) were successful innovators. However, state-owned firms in Spanish manufacturing industry during phase 4 were less efficient than private sector businesses (Hernandes de Cos *et al.* 2004).

In network industries, less susceptible to competition, the evidence is mixed. For international samples, water does not seem to have gained from privatisation (Conti 2005). Finding the appropriate regulatory regime to encourage yardstick competition is likely to be especially challenging in this sector. In contrast to the water sector, productivity in telecommunications did improve when subject to full privatisation (Li and Xu 2004). During phase 4 more use of franchise bidding has been made in this sector to encourage 'competition for the field' (as first suggested by Chadwick 1859). A study of 12 British privatisations noted an improvement in productivity in the run up to privatisation and a better labour productive performance in a slight majority of cases. There was no evidence that competition made a difference in the sample (Parker and Martin 1995). The decisive advantage of privatisation for Western European governments was usually obtaining revenue and reducing subsidy costs. Eastern Europe proves more challenging to evaluate because privatisation was linked to economy-wide changes on a massive scale.

Investment grants and tax concessions to enhance capital formation, particularly in manufacturing industry, must have contributed to the rapid growth of the capital stock in phase 3. But in phase 4, when European unemployment rose, the likely stimulus to substitute capital for labour was identified as a drawback. Grants for setting up plants continued to be employed to attract FDI, as did investment to regions identified as experiencing employment problems. Insofar as the policy was effective, it was not undertaken, in Britain at least, with sufficient strength to make much difference (Wren 2005).

In the high capital mobility environment of phase 4, taxation of capital simply raised the cost of capital to domestic industry, and to foreign business located in the domestic country. Economies with lower corporation taxes, or tax breaks, were likely to achieve larger industrial sectors. Not surprisingly then, among the most effective fiscal policies to encourage industry was Ireland's low corporation tax rate in phase 4 (Barry 2004). Ireland's FDI stock and living standards soared; how much at the expense of the destinations to which the FDI would otherwise have flown remains to be shown. If Ireland's tax cut had been matched throughout Europe, Ireland would have gained less and the rest of Europe would have acquired more investment, but the critical magnitudes are a matter for conjecture.

Incentives for research and development, justified by supposed beneficial knowledge spillovers (a market failure), appeared to boost R&D spending between 1979 and 1997 (Bloom *et al.* 2002). Yet, whether such extra investments increased output significantly is not entirely clear. On the

***Investment grants and tax concessions support capital accumulation. However, when European unemployment rose, the likely stimulus to substitute capital for labour was identified as a drawback.***



one hand, the social rate of return to R&D in the United Kingdom has been estimated at around 90 percent (Griffith *et al.* 2001). On the other hand, greater R&D spending may not necessarily have raised R&D output. The supply of R&D personnel, expenditure on which constitutes the bulk of outlays, is inelastic. Tax credits or subsidies then may have primarily enhanced R&D personnel's wages, rather than increased output (Goolsbee 1998).

## 5. Lessons

While the scope and intensity of industrial policy has expanded along with the power and pervasiveness of the state, over the last century, it is not obvious that the social benefits from industrial policy have increased at the same rate. Market failures are typically difficult to quantify, as are the costs and effectiveness of interventions.

***The most prominent message of European history for industrial policy is that freer trade and competition, rather than state intervention, enhance productivity.***

Lessons have been learned from the high tide of industrial policy optimism in the great boom after 1945 – as the comparison of Concorde with Airbus shows. But the most prominent message of European history for industrial policy is that freer trade and competition, rather than state intervention, enhance productivity. Differences between US and European productivity and industrial geography at the beginning of the 20<sup>th</sup> century support this position. So does the intra-European experience. Britain leaned the least against the wind of market specialisation and reaped the highest gains from trade before 1914. Greater proportions of workers were employed in higher productivity sectors. Moreover, the US-Europe productivity gap narrowed when Europe integrated and national markets opened up during phase 3.

Markets are social arrangements dependent on a variety of institutions, some of them might be improved and others might need to be created. In infrastructure provision, competition in the 'natural' markets of phase 1 was limited because of indivisibilities and network effects. A common policy response was nationalisation or municipalisation, but in phase 4 many of these were reversed. In such cases, interventionist policies are especially warranted, establishing or restructuring institutions to encourage yardstick competition, or perhaps 'competition for the field', such as periodic franchise or licence bidding rounds.

High capital mobility in the absence of capital controls did not appear to be a constraint on policy in phase 1 because policy was much less interventionist than in the remainder of the century. Taxation of imports of goods was the principal instrument. In much of phases 2 and 3, capital in larger European economies could earn rents because of the lack of international competition, and this rent could be redistributed by industrial and other policies. In phase 4, capital mobility became a tighter constraint, as capital controls were completely removed. Industrial policies that restricted profits were therefore met by capital outflows. Ultimately this implies either tax harmonisation by inter-governmental agreement or restructuring of European taxes so that the most mobile factor, capital, bears the least tax.

Interventionist industrial policies can be expensive and historically often were abandoned for want of sufficient resources. Even with the enhanced tax powers of governments in phases 3 and 4, subsidies to state industries often proved too high from the 1970s. One of the attractions of privatisation was the budgetary relief, if only temporary, rather than productivity improvement. However, where there were competitive pressures, the simplification of corporate objectives generally ensured private-owned businesses were more efficient than state-owned enterprises.

Shifts between industrial policy regimes have been triggered by shocks; in Eastern Europe most recently by the fall of the Soviet Union, and in the West by the oil price hikes of the 1970s, together



with the worldwide slowdown in economic growth. The state must be expected to intervene when there are major industrial crises to maintain confidence in the system. Failure to maintain employment above critical levels can trigger retreats from pro-competitive policies of openness, as in the 1930s. But the successful policy is one that ensures 'emergency' subsidies taper off rapidly. Much of Western Europe after the oil shocks has been rather slow in readjusting appropriately.

The growing power of the state over the last century has increased the need for transparency in the formulation and implementation of industrial policy, for it has raised the incentives for firms to lobby for state support rather than to engage in productive activities. Thus special interests, rather than the general interest, may become drivers of industrial policy. There is evidence that product market regulation and administrative burdens on business in the large continental EU economies are retarding productivity growth, instead of promoting consumer interest. The general interest is likely to be better served by industrial policies of openness, creating an environment that encourages competition, and thereby enhances industrial productivity growth.

The most prosaic lesson of this survey is that the definition of industrial policy continues to create challenges for history. It is entirely possible that the principal objective of much industrial policy – i.e., to raise industrial productivity – might be better achieved indirectly. Human capital or active labour market policies, directed to training and labour force participation, could perhaps deliver what is required, rather than industrial policy instruments (unless human capital policies are defined to fall within the ambit of industrial policy). Yet, a study of industrial policy must almost inevitably ignore such factors in order to keep the size of the project manageable.

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