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WHAT IS TO BE PRODUCED?

THE MAKING OF A NEW INDUSTRIAL POLICY IN EUROPE

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Brussels, July 2016

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This report does not reflect the view of the affiliating institutions of the authors.

FOREWORD

Eight years after the big crash at the Wall Street the European elites have still not learned their lessons how to make the European economy fit for the future. While the profits of big companies are skyrocketing and financial capital is regaining influence in the corridors of the national capitals and Brussels, the real economy is suffering its deepest crisis since over a half century. The Rosa-Luxemburg–Stiftung, has thus started to cooperate with researchers, trade unions, think tanks and left parties to work on a program for a progressive industrial policy.

Is it unwise to work on a progressive industrial policy in times of climate change and COP21? *Au contraire!*, we'd like to answer. A truly progressive industrial policy is one of the basic pillars which a sustainable future society will be built on. A truly progressive industrial policy is a necessary precondition for a strong and permanent social dimension for any future integrated Europe. Only if we endow our societies with an ecologically sustainable infrastructure and regional and circular economic relations we won't destroy the environment. Furthermore only economies with an industrial sector can provide enough stable jobs for the citizens. But a progressive industrial policy does not only take into account the ecological imperatives and the burning gender question, which has become even more severe due to the crises and the following cultural backlash. Far more: progressive industrial policies acknowledge the fact that democracy is based on the economic independence of citizens. Only if citizens have good permanent jobs they have the power and socio-psychological resources to build up hospitable societies. These material foundations provide the bases for social movements, trade unions and left parties.

We have been organizing several meetings over the last years to debate the status quo of the industrial policies of European countries and to define the requirements to build a common red industrial policy. These discussions inevitably led us to one question we could not answer without in-depth research and analysis: what room for maneuver actually is there today to implement a red industrial policy? Does the legal framework of today's EU provide any scope of action for a progressive industrial policy? We therefore commissioned this study to shed light on the major questions concerning a reconstruction of the real economies in Europe. Mario Pianta, Matteo Lucchese and Leopoldo Nascia have authored this insightful study and we would like to thank them for their exceptional work.

Martin Schirdewan *Head of office* and
Roland Kulke *responsible Project Manager*
20.06.2016, Brussels

TABLE OF CONTENTS

SUMMARY

The problem. The current transformations of European economies – accelerated by the crisis started in 2008 and by the austerity policies imposed by institutions of the European Union (EU) – are leading European countries towards a serious divergence in terms of economic activities, investment, productivity, employment and incomes. The divergence in manufacturing production and in the dynamics of private services is at the core of such a process. The group of economies that are closely integrated with the German production system have experienced limited losses of industrial production and are returning to growth. Southern European countries (France included) have suffered major losses in production capacity and risk new imbalances in current accounts alongside those in public budgets. Central-Eastern European economies have a differentiated pattern, with few cases of rapid but fragile growth, integrated in the 'German production core' (e.g. Poland) and others suffering the economic and social effects of the protracted recession. A clear risk of fragmentation of the EU exists and must be countered not just with macroeconomic policy changes – moving beyond austerity – but also with a reconstruction of production capacity in the weaker areas of Europe. Chapter 1 of the report documents the extent of these problems.

The objective. The goals of developing high-knowledge economic activities, expanding industry, reaching environmental sustainability and achieving greater convergence are clearly stated in the Europe 2020 strategy and in the major policy documents of the EU. Such objectives, however, lack effective policy tools; their pursuit would require the development of a European-wide industrial policy. The rationale for industrial policy is that it can steer the evolution of the economy towards activities that are desirable in economic terms (improving efficiency), in social terms (addressing needs and reducing inequality), in environmental terms (assuring sustainability and preventing climate change), and in political terms (protecting key national and European interests). Public policy can expand available resources and favour the growth of firms and industries that are characterised by strong learning processes, technological change, productivity increases, scale economies, internationalisation, and rapid demand growth. The resulting benefits include faster growth of production, incomes, employment and competitiveness and a higher quality of economic activities, employment and the environment. Chapter 2 of the report outlines the proposal for a progressive European industrial policy considering a 'decalogue' of principles, discussing its rationale, economic activities that could be targeted and the tools for implementation.

The policy space. What is the policy space for industrial policy in Europe? The current institutional setting of the EU is hardly adequate to address such challenges and to accommodate such policy tools. Effective action is prevented by a range of rules and approaches, including the rules on competition and State aid; the reliance on markets for the allocation of productive resources; the restrictions for the use of Structural funds to activities – such as infrastructure and education – that are not capable of leading to the emergence of new economic activities in less favoured regions; and the lack of significant

EU-level resources for industrial policy actions. However, significant changes in EU policy have emerged in recent years, including the flagship initiative "An integrated industrial policy for the globalisation era", 'Smart specialisations', the European Fund for Strategic Investment, etc. Chapter 3 of the report assesses the policy space that is offered by such EU policies and rules.

The proposal. Building on this analysis, chapter 4 of the report introduces a proposal for a European industrial policy that goes well beyond traditional approaches. It calls for a Europe-wide industrial policy, moving beyond traditional national actions. A policy mobilising 2% of Europe's GDP (about EUR 260 billion) per decade is proposed, offering at the same time greater national policy space with a 'golden rule' for public investment. A crucial goal of this policy is to reduce the divergence between Europe's centre and periphery, and therefore the resources of industrial policy should be concentrated in weaker regions and weaker countries.

A key role in shaping industrial policy should be played by the European Council and the European Parliament, deliberating on goals and instruments. Industrial policy tools should include public investment programmes, public enterprises, support of private firms, mission-oriented innovation programmes and other policy tools. Key fields to be targeted should include environmental sustainability; appropriate ICT applications; health and public services. The aim is to encourage innovative and efficient new economic activities employing high-skill, high-wage labour.

A Europe-wide industrial policy should be funded by Europe-wide (or at least Eurozone-wide) funds, with a major role for the ECB, in various forms. Long-term, high-risk public capital is needed to fund investment that financial markets are unable to support.

Practical action in this direction could start within the role of the EIB, as is happening in the case of EFSI, but a Public Investment Bank would be needed in the medium term. European industrial policy should be implemented at the national and regional levels, with bottom-up efforts and systematic democratic processes

For industrial policy to be successful, reinventing the governance of public-interest economic activities and organising a political and social consensus on rebuilding European economies are needed. The results of such efforts could be crucial for the future of Europe in ending stagnation, creating new high-wage jobs where they are most needed, in greater EU cohesion and public action, in progress towards an ecological transformation of Europe, and in greater democracy in economic decision making.

1

I

THE CURRENT CONTEXT

THE EFFECTS OF THE CRISIS ON EUROPE'S INDUSTRY

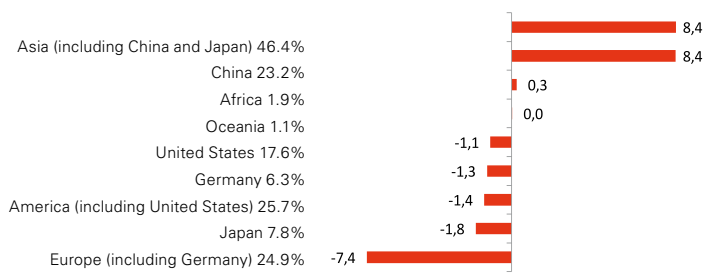
The crisis started in 2008 has changed the map of world industry and has accelerated Europe's industrial decline. Figure 1 shows the changes in the shares of world manufacturing value added from 2008 to 2013. Over five years, China's share grew from 14.8 to 23.2% (+8.4 percentage points). At the same time Europe's share fell from 32.2 to 24.9%, with a loss of 7.4 percentage points, including a loss of 1.3 points by Germany. The US and Japan have experienced lower losses of -1.1 and -1.8 percentage points respectively. The fall in Europe's share accounts for much of the rise of China and other Asian countries.

Figure 2 shows the divergent patterns of manufacturing production from January 2008 to December 2015 within EU countries, with Eastern economies experiencing rapid growth, Germany showing stable performance, the UK and France having poorer records and Southern European countries experiencing a major loss of industrial production. In the EU as a whole, manufacturing production is now almost 10% lower than at the start of the crisis.

The evolution of manufacturing production between 2008 and 2015 in the main European countries is shown in Figure 3. In Europe as a whole, industrial production has failed to return to pre-crisis levels. The recovery from the 2008 crisis has been robust in Germany, while Poland has shown a major expansion of about 34%. In France, production has lost about 15%; Italy and Spain have experienced dramatic losses – about 25% – with the latter showing modest improvement in the last two years. The combination of macroeconomic stagnation and industrial decline has wide-ranging consequences. As industry loses its role as a major source of employment – especially for mid-level skills – unemployment has become more intractable, wages have fallen, and inequality and poverty have increased.

WORLD MANUFACTURING VALUE ADDED SHARES IN 2013 AND CHANGE IN PERCENTAGE POINTS FROM 2008 TO 2013.

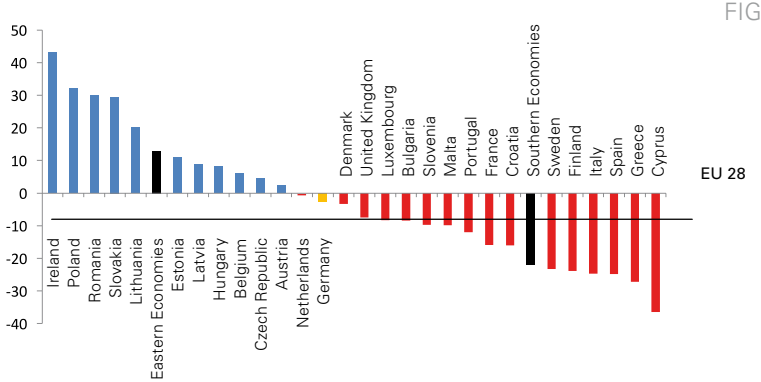
FIGURE 1



Annual data, US dollars at current prices and current exchange rates in millions.
Source: UNCTAD, Economic Trends, National accounts.

INDEX OF PRODUCTION IN MANUFACTURING FOR EU28 COUNTRIES – PERCENTAGE CHANGES FROM JANUARY 2008 TO DECEMBER 2015 (OR LATEST MONTH AVAILABLE).

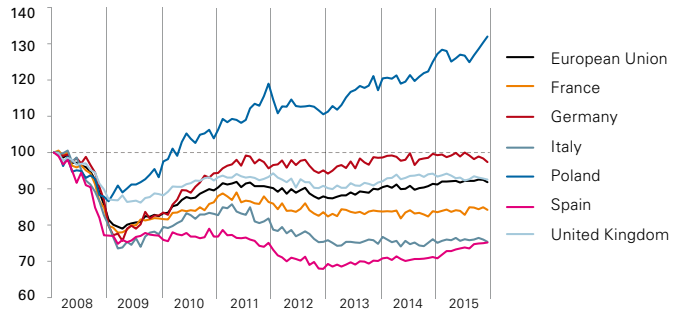
FIGURE 2



Monthly data, seasonally adjusted and adjusted by working days.
Source: Eurostat, Short-term business statistics, Industry.

INDEX OF PRODUCTION IN MANUFACTURING FOR EU28 AND SELECTED EUROPEAN ECONOMIES, JANUARY 2008=100.

FIGURE 3



Monthly data, seasonally adjusted and adjusted by working days.
Source: Eurostat, Short-term business statistics, Industry.

A more systematic picture of industrial change is offered by Table 1, where the index of industrial production for the manufacturing sector is associated with the youth unemployment rate. With 2008 values for industrial production equal to 100, in 2015 Germany, Austria and the Netherlands had an index that had suffered limited slumps during the recession and had returned to pre-crisis levels. Progress was made by Poland (reaching 134) and Ireland (145), with strong growth during the last two years.

Most countries in Central and Northern Europe failed to recover. Southern Europe has experienced a dramatic loss of industrial production: 2015 values are 92 for Portugal, 79 for Italy, 80 for Spain, and 74 for Greece. As a result of the prolonged European crisis, a permanent loss of production capacity is taking place in most industries and most countries, with major destruction of economic activities in the Southern 'periphery'.

A similar, extreme polarisation has emerged in the youth unemployment rate, whose change reflects the job opportunities for new entrants in the labour market, alongside the structural characteristics of society and labour markets. The absolute change between 2008 and 2015 in the percentage of youth unemployed (less than 25 years of age) has been a decline by 3.1 percentage points in Germany and minor rises in Austria and the Netherlands. Poland and Ireland had higher increases of jobless youth, in spite of expanding production. Central and Northern European countries had modest increases, but in 2014 and 2015 youth unemployment rate reached percentages ranging from 10% to 25%. The impact of the crisis on youth unemployment in Southern European countries has led to a very large increase – ranging from 10 to 30 percentage points – with 2014 shares reaching 52.4% in Greece, over seven times the value for Germany.

INDUSTRIAL PRODUCTION AND YOUTH UNEMPLOYMENT IN EUROPE.

TAB 1

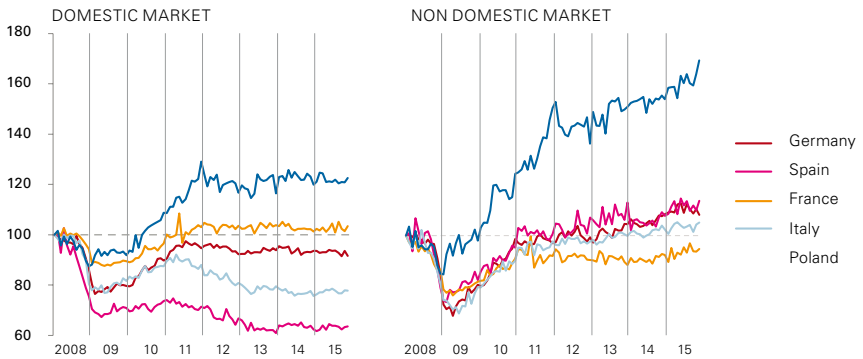
Countries *2014	**Industrial Production - Manufacturing (Nace C)** 2015 volume index of production (annual data) 2008 = 100	**Youth Unempl. rate (Less than 25 years)** Change in % 2008 – 2015	**Youth Unempl. rate (Less than 25 years)** % in 2015
Germany	102	-3.1	7.3
Austria*	102	1.8	10.3
Netherlands*	100	4.1	12.7
Poland	134	3.7	20.9
Ireland	145	7.3	20.6
Denmark	99	2.6	10.6
Finland	80	5.9	22.4
Sweden	82	0.2	20.4
France	89	6.1	25.1
United Kingdom*	97	1.9	16.9
Italy*	79	21.5	42.7
Portugal	92	10.4	32
Spain	80	23.8	48.3
Greece*	74	30.5	52.4

Source: Eurostat, Short-term business statistics, Industry; Eurostat, Labour Force Survey.

What are the sources of such an industrial polarisation in Europe? If we look at Figure 4, where for major EU countries manufacturing turnover is split between sales to domestic and foreign markets, we find that the former accounts for all the decline. The fall in domestic demand, worsened by austerity policies, appears to be the key driver of the loss of manufacturing production. Conversely, the performance of turnover for export has been very similar in Germany and other countries, with a fall in 2009 deeper than domestic sales, followed by a steady increase until the end of 2015. In other words, the collapse of manufacturing production is not mainly the result of a worsening of countries' competitiveness; in the context of rising world trade, Europe's firms focusing on foreign markets have increased sales, strengthening their financial and economic conditions. It is the depression of domestic demand that has led to the dramatic fall in production for firms depending on domestic markets. This helps explain the different dynamics between 'strong' economies around Germany and the 'weak' economies of Southern Europe.

TOTAL TURNOVER IN MANUFACTURING (DOMESTIC AND NON DOMESTIC MARKET) FOR SELECTED EUROPEAN ECONOMIES, JANUARY 2008=100.

FIGURE 4



Monthly data, seasonally adjusted and adjusted by working days.
Source: Eurostat, Short-term business statistics, Industry.

For weaker countries, this fall in industrial production may have deeper long-term consequences. If domestic demand ever picks up, the loss in national capacity means that the result will be a significant increase of final and intermediate imports. This could generate serious trade imbalances in the near future, which will have to be compensated by greater capital inflows, further expanding private and public debt in deficit countries, asymmetries within the EU and the risk of financial instability.

Recent studies have identified the emergence of a 'German production core' as a key development in Europe, with a production system centred in Germany and increasingly involving, as subcontractors, firms of a ring of surrounding countries, including Austria, the Netherlands, other Nordic countries, Poland, the Czech Republic, Slovakia, Hungary and other Central-East European countries, as well as Northern Italy.[1]

International production systems are thus moving towards a more hierarchical and concentrated structure; leading firms increase their oligopolistic market power and control a wider network of outsourcing and offshoring activities, distributed in a larger number of countries. Countries from the 'periphery' now have very few leading firms in global markets, and experience a continuing loss of ownership of major firms to foreign investors whose commitment to maintaining production, employment, R&D and managerial activities in the 'periphery' is at best uncertain.

THE CASE OF SOUTHERN EUROPE

Italy, Spain, Portugal and Greece have been particularly hit by industry's crisis. In the last two years, some of these countries have shown improvements, but losses in manufacturing production are still far from recovering.

Italy. The Italian economy has reduced its weight in Europe and its per capita GDP has fallen below EU average. Regional inequalities have also increased, with greater losses in the South of Italy. Unemployment rates increased from 6% in 2008 to 11.5% in 2015; youth unemployment has reached 40%; total employment in 2015 is back to the level of 2005.

The crisis has strongly hit Italy's manufacturing industry. In 2015, the index of industrial production was below pre-crisis level by over 20%. In 2014, total investments at constant prices in the manufacturing sector were still 28% below the pre-crisis level of 2008. In the last year, the volume of manufacturing production increased by 0.9%; however, the recovery is not widespread across sectors. Looking at the technological content of production, the decline of Italian industry is the result of a major fall in medium-high and medium-low technology sectors (-29% and -32% respectively from April 2008 to July 2015), while the reduction is less dramatic in low-technology industries (-19%), and is limited in high-tech sectors (-2%), which however only account for about 9% of total value added in manufacturing and for only 6% of total employees (full-time equivalent units in 2013) (Lucchese et al., 2016).

1 See Stöllinger et al. (2013). Analyses of the recent evolution of European industries and production networks include Simonazzi, Ginzburg and Nocella, (2013); Reinstaller et al. (2013); Amador et al. (2013), Aiginger (2014), Pianta (2014); Cirillo and Guarascio (2015).

Spain. The crisis severely hit Spain. From 2008 to 2013, GDP per capita decreased by 600 euros (as opposed to an average EU28 growth of GDP per capita of around 700 euros). In 2015, a significant recovery in GDP took place, but the unemployment rate reached 24.4% in 2014. The manufacturing production index has recorded a 20% fall from the 2008 level, but in the last two years, the majority of sectors have increased production.

Portugal. Since 2008, Portuguese GDP has fallen in most years; youth unemployment reached 34.7% in 2014 and poverty increased. The crisis has reduced the output of an already weak manufacturing industry by 8%.

Greece. After many years of growth above the EU average, Greece has fallen into a dramatic recession since 2008. In 2013, GDP per capita has fallen by 24% compared to 2008. The modest manufacturing base of the country has been dramatically downsized by the recession and austerity programmes, recording a fall of the manufacturing volume index of around 25%. In the last two years, some sectors have continued to show strong losses, although the index has grown by 3%.

In this context, the challenge for Southern Europe's industry is the very possibility to survive as a European player; this requires an active public policy role for defending and reconstructing manufacturing capabilities.

In a Europe still dominated by austerity policy, private investment continues to be negatively affected by expectations of low demand by firms and world exports have slowed down. In such a context, Europe is likely to develop a more polarised industrial structure; "weak" countries, regions, industries and firms are becoming weaker; the "centre" may be negatively affected by lower demand; and all countries will end up with a reduced ability to develop new technologies and economic activities. Without growth, change is more difficult; Europe as a whole could be stuck in its traditional economic trajectory – sluggish markets, a heavy environmental burden, cosmetic attention to climate change, and growing inequality – while other advanced and emerging countries may move faster towards new knowledge, new products and processes, and new sources of employment, supported by faster demand dynamics. The policy targets of Europe 2020 and the broader opportunity to develop in Europe a new trajectory of growth based on environmentally friendly activities and greater social justice would become more difficult to pursue.

THE RISE AND FALL OF INDUSTRIAL POLICY IN EUROPE

Europe's growth after the second world war was supported by an extensive industrial policy. Its objectives were the development of a large manufacturing base in the emerging industries of the 1950s and 1960s – steel, auto, and chemicals (the typical sectors of "Fordist" production) and, in the 1970s, the development of new activities in electronics, aircraft and biotechnology. At the same time, industrial policy has provided telecommunications and transport networks, a crucial infrastructure for modern economies, and the stable provision of energy, which is essential in industrial countries with scant energy resources. National policy tools that were adopted included an extensive role for state-owned enterprises; support to private firms through financial and investment aid, R&D funds, public procurement, market protection; specific support for the development of new firms, new technologies and major new products. At the European level, an active coordination of such policies had taken place since the very first steps of European integration with the creation of the Carbon and Steel Economic Community (CECA) in 1951 and of a free trade area for most industrial goods in the six original member countries of the European Economic Community (EEC) in 1957, whose fast growing markets were offered high trade protection from non-EEC producers. European industrial policy then evolved with various inter-governmental agreements; with a range of support initiatives and common regulations in specific sectors, aiming at the development of markets, industries and regions; with cooperation programmes in R&D and new technologies; and with the creation of the Airbus consortium among four EU countries that has now become the largest world producer of civilian aircrafts (see Box 1 below).[2]

2 For an overview of Europe's industrial growth and policies see Eichengreen (2008), Geroski (1989), Bianchi and Labory (2011), Grabas and Nützenadel (2014).

THE SUCCESS OF EUROPE'S CIVIL AIRCRAFT INDUSTRY: THE AIRBUS CASE

Airbus is today on par with Boeing as the largest world producers of civilian aircraft. It started in the 1970s as a consortium of aerospace manufacturers from France, Germany, the UK and Spain, with the goal of changing the overwhelming dominance of the US aircraft producers of the time (Boeing, McDonnell Douglas, and Lockheed). Company data report that Airbus has had orders for a total of 16,360 aircraft and has produced 9,542 (8,684 of which are currently in operation). Airbus has a total employment of 63,000 in sixteen plants in these four countries, a joint venture in China, a design centre in Russia and affiliates in the US, Japan and India. In the countries where it operates, Airbus has a major impact on R&D activities, specialised suppliers, subcontractors, and national exports, leading a high technology industry of great importance in terms of employment and wages as well.

The success of Airbus is the result of a clear industrial policy goal set mainly by French and German governments that were prepared to provide capital to the state-owned firms involved, subsidise the consortium, assure procurement and aircraft acquisitions, fund R&D, help its export strategies and support the project in a variety of other ways. Private strategies of the individual companies involved would have never been able to attain the results of this public policy.

Early projects at European cooperation in civilian aircrafts started in the 1960s, but only in 1979 the full ownership structure was defined; 80% of Airbus was owned by the European Aeronautic Defence and Space Company (EADS, with shares equally divided between French Aérospatiale and German Deutsche Airbus, with a 4.2% share of the Spanish CASA); 20% was owned by the UK BAE Systems (whose shares were sold in 2006, ending UK participation).

Civilian and military aircraft production has often been closely associated. In the case of Airbus, some military production, mainly of transport planes, was carried out. Military activities are now grouped in a different company, Airbus Defence and Space, while Airbus Helicopters has now inherited the activities of the Eurocopter Group. In this regard, Airbus can be seen as a success story in the priority given to the development of civilian markets, as opposed to maintaining subsidised military and 'dual use' productions (a strategy typical of the United States).

The success of Airbus was not an easy task. Managerial, technological, organisational and political problems were serious during its development. Almost since its start, Airbus had to face accusations of unfair State aid, mainly in the form of low-interest government loans for the development of new aircraft; Airbus claims that loans have always been repaid with interest and royalties. These accusations came in particular from the U.S. rival Boeing, and Airbus responded that Boeing military and space contracts offered an indirect subsidy to the U.S. company.

This conflict was managed with a 1992 EU-US agreement that set limitations on these forms of support. Once WTO rules were introduced, the companies appealed to the WTO conflict resolution body, which in 2010 and 2011 ruled that Airbus had received improper subsidies in the form of below market-rate government loans. In 2011, the WTO found that Boeing had received improper local and federal aid against WTO rules. These cases show the extent to which free trade and competition rules reduce the space for industrial policy and create hurdles that can be overcome only by a major political decision (see Thornton, 1995; Q&A: Boeing and Airbus, BBC News, 7 October 2004; www.airbus.com).

BOX 1

The policy instruments that were adopted in Europe can be summarised as follows:

a. creation or expansion of state owned firms in strategic industries, key infrastructures and natural monopolies;
b. subsidies and financial aid to private firms, support for their R&D and investment, creation of the necessary infrastructure in order to ensure that a large share of the demand in growing industries was met by domestic producers;
c. trade protection in infant industries (including voluntary export restraints, such as in car exports from Europe to Japan and from Japan to Europe) and use of managed trade and negotiations to open selected export markets, in order to favour the growth of new industries;
d. public procurement of high-technology goods, providing an early demand pull to the development of new industries; examples include advanced trains, telecommunications, military equipment, aerospace, biotechnology and health;
e. creation of institutions, forms of coordination, orientation of credit flows, financing and public-private cooperation for favouring the development of new industries, organising new markets, setting standards and regulations;
f. the strengthening of national innovation systems, including the development of public education, research and development with close links between public research, public services and public and private firms.[3]

Since the early 1980s, the economic policy debate in Europe and in the US has been dominated by neoliberal views that have argued that the above strategies – that were still adopted by emerging countries catching up with Europe – were inefficient and inappropriate (see, for example, Lerner, 2009). The neoliberal argument was that government failures are serious, and that markets are able to operate efficiently both in the short-term (allocating given resources) and in the long term, when the challenge is developing new activities, resources and markets. The large state-owned firms were privatised in most countries (France is a partial exception), leading to the extensive closing down of capacity, foreign takeovers and greater market concentration. Governments largely left decisions on the evolution of the economy to markets – that is, to large multinational firms. Europe's policy focused on global liberalisation of trade and financial flows, a deep liberalisation of its domestic markets, including public procurement, and monetary integration with the creation of the euro. The space for industrial policy at the national level was drastically reduced, and no integrated industrial policy emerged at the European level. What was left at the national level were policies that lost their selectivity and were limited to "horizontal" mechanisms, such as across-the-board tax incentives for R&D or for acquisition of new machinery, or incentives to producers and consumers of particular goods. The result has been a general loss of policy influence on the direction of industrial change and development in Europe. In most countries, this has meant a major loss of industrial activities.

3 On national innovation systems and their role in industrial policies see Nelson (1993) and Lundvall (2015).

THE EVOLUTION OF EUROPEAN INSTITUTIONS AND THE LACK OF SPACE FOR INDUSTRIAL POLICY

This trajectory has been deeply embedded in European institutions. The early 1990s have seen an acceleration of European integration, with projects for the Single Market and the European Monetary Union. Under the neoliberal rhetoric of "market efficiency", the power to make decisions on a country's trajectory of development was left to private actors, mainly large industrial and financial firms. Liberalisation of capital movements in 1990 promised to open up Europe's economies, but huge speculative trading led to the collapse of the British Pound, the Italian Lira and the Spanish Peseta in the summer of 1992. The liberalisation of finance promised to provide large funds for the growth of private firms focused on profits, but investments in industry hardly increased.

The Single European Act, signed in 1986 and coming into effect in July 1987, set the goal of establishing a Single Market in the European Community by the end of 1992, eliminating trade barriers and regulatory differences, and opening up public procurement. This policy promised gains in terms of greater competition, scale economies and lower prices and has been progressively extended to a broad range of activities, and in particular to services, with the directives from 2006 and 2015 (see below). This market integration, however, has opened up a process of industrial concentration that has reduced production diversification and polarised specialisation patterns in most countries, increasing the distance between strong and weak actors, resulting in increased oligopolistic power in a majority of industries.

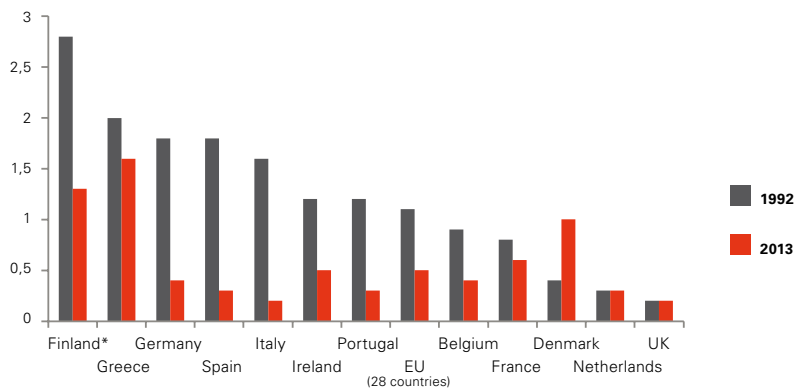
The Maastricht Treaty of 1992 opened the way to the creation of the Euro with a deeply flawed institutional construction, as revealed by the crisis started in 2008. The Maastricht Treaty also forced a reduction of countries' public debt and deficits that was often associated with the privatisation of public enterprises. The creation of the Single Market relied on the ability of market forces to direct investment and guide the evolution of European economies. The new policy (European Commission, 1990), pushed back political involvement in industry and reduced the role of policy, arguing that state support of specific industries had failed in promoting competitiveness and delayed the restructuring needed for firms' internationalisation and innovation. Moreover, discretionary government measures favouring particular firms or industries were seen as "distorting" market competition. Public procurement was liberalised at the European level; the homogenisation of rules among member countries required an end to established policies that could provide selective (and therefore "unfair") support to national firms. A new consensus emerged against the State as a "producer", limiting its role that that of market "regulator". "Selective" industrial and technology policy, targeting particular fields, were to be abandoned as the market "knew best" which industries and firms were more efficient. "Horizontal" policies became fashionable, i.e. policies such as R&D tax incentives, which affect all firms in the same way.

Government action was conceptualised as "State aid"[4] and viewed with suspicion. Europe's statistics monitor such activities, documenting that between 1992 and 2013 for the 28 EU countries, State aid as a share of GDP fell from 1.2% to 0.5%, as shown in Figure 5 (European Commission, 2014). These data effectively summarise the retreat of policies in the field of production activities. The fall of State aid has slowed down during the crisis after 2008, but it played no counter-cyclical role in supporting demand and investment (Stöllinger et al, 2013).

Within this general reduction, Italy, Germany, Spain and Portugal are the countries that reduced State aid fastest. In Germany, the adjustments in policy that followed unification explain much of this reduction. In Southern Europe, the long-established role of public enterprises and the extensive support that the State had provided to relatively weak private industry was rapidly reduced under the pressure of new European rules, contributing to the fall in industrial activities documented above. Conversely, Northern European countries maintained higher expenditure, e.g. in France in 2013, State aid amounted to EUR 13 billion (0.6% of GDP), almost four times Italy's funds. Figure 6 shows that, across Northern Europe, most State aid goes to horizontal policies for environmental protection and energy saving, documenting an important direction for the evolution of public action in economic activities.

NON-CRISIS STATE AID AS A PERCENTAGE OF GDP IN EUROPEAN COUNTRIES

FIGURE 5

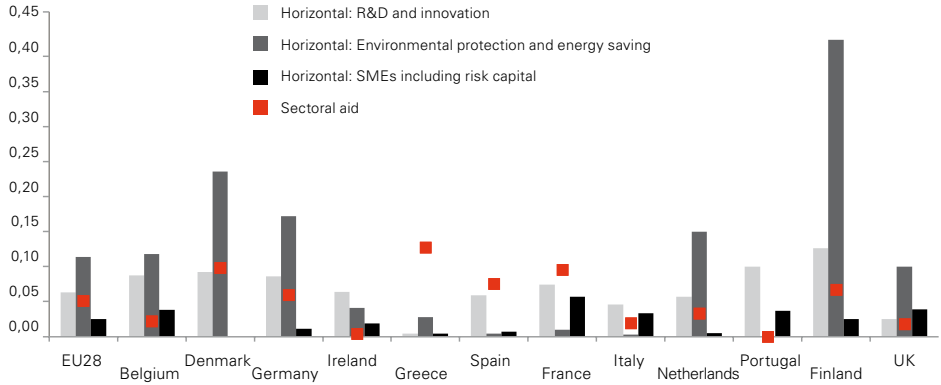


State aid data excludes railways
* For Finland 1995, 2013.
Fonte: State Aid Scoreboard 2014, DG Competition.

4 State Aid expenditure is defined on the basis of four requirements. State aid must come from a public source and must give an advantage to specific firms with an alteration of business competition and of the flow of exchanges between states. It refers to manufacturing industries, services, agriculture and fisheries, and includes resources devoted to "horizontal" objectives of common interest, or granted to particular sectors of the economy and for specific objectives (such as the rescue of firms and restructuring aid). Aid granted to the financial sector as a response to the financial crisis is excluded from non-crisis State aid.

NON-CRISIS STATE AID BY TYPE OF AID AS A PERCENTAGE OF GDP IN EUROPEAN COUNTRIES.

FIGURE 6



Fonte: State Aid Scoreboard 2014, DG Competition.

Such a retreat of European and national policies has had long-ranging consequences. First, it has let market mechanisms operate in a way that has increased concentration, specialisation and oligopolistic power in most industries. Second, it has meant that the goal of supporting industrial development in backward regions has been abandoned. Europe's Structural Funds were the strictly 'horizontal' policy tools devoted to create more favourable conditions – education, infrastructures, etc. – for the growth of private firms in less favoured areas. However, direct support to firms and public investment in production was not allowed by the Structural Funds rules. The result is that, since the crisis, regional disparities have increased all over Europe (Eurostat, 2014).

Third, in most European countries the hurried process of privatisation of public enterprises and the abandonment of industrial policy has seriously weakened high-technology activities, namely in electronics, telecommunications, software, chemicals, transport equipment, etc. Business-funded R&D experienced a dramatic fall or stagnation in most countries and privatisation failed to stimulate the emergence of new large private firms in the majority of EU countries. Conversely, this opened the way to a process of industrial concentration, with the largest players extending their market power.

Summing up, there is evidence that the retreat of industrial policy in the last decades has left Europe with a poorer economic and technological base that is more polarised between 'centre' and 'periphery', and has been unable to recover after the 2008 crisis. In the context of sluggish private investment and stagnating world exports, an active industrial policy is a necessary condition for a recovery in European economies.

2

II

PROPOSALS FOR A PROGRESSIVE INDUSTRIAL POLICY

A return of industrial policy is essential in Europe, but what form should it take? A simple return to the policies and institutional arrangements of the post-war decades is impossible, and a new set of principles, economic arguments, policy justifications with clearly defined objectives and instruments for policy is needed.

PRINCIPLES AND RATIONALE

In the current European context, the rationale for industrial policy is that it can steer the evolution of the economy towards activities that are desirable in economic terms (improving efficiency), in social terms (addressing needs and reducing inequality), in environmental terms (assuring sustainability and preventing climate change), and in political terms (protecting key national and European interests). The economic rationale includes the search for improvements in static and dynamic efficiency (especially in the cases of market failure), in coordination of decisions and in the framework conditions of economic activities. Gains in dynamic efficiency are the most important argument for industrial policy. Public policy can expand available resources, favouring the growth of firms and industries that are characterised by strong learning processes, technological change, productivity increases, scale economies, internationalisation, and rapid demand growth. The resulting benefits include faster growth of production, incomes, employment and competitiveness (Pianta, 2014, Intereconomics, 2015).

A DECALOGUE FOR INDUSTRIAL POLICY

Industrial policy has traditionally been based on specific economic principles, associated with the search for greater efficiency. We argue that the two traditional economic principles justifying industrial policy should be expanded to a decalogue of principles that can guide the emergence of a progressive industrial policy in Europe.

1. Achieving static efficiency. A key concern of economic policy is that, in a short-term perspective, given available resources are efficiently used. This means that capital and labour should not be left unemployed and should be directed towards activities that are more productive; that domestic production capacity and potential demand be brought closer together. In the cases of *market failures*, where market mechanisms are inadequate and private profit-making firms cannot operate efficiently (as in the case of natural monopolies), the principle of efficiency requires that public policy makes sure, through a variety of possible forms of public intervention including direct provision, that the goods and services needed by society are effectively produced.

2. Achieving dynamic efficiency. When a longer-term perspective is considered, resources are not 'given' anymore and the key economic question for industrial policy is how they could be expanded through research, innovation, investment, education and acquisition of new competences and skills. Public action can support dynamic efficiency through the growth of national industries with strong learning and productivity growth, able to sustain international competitiveness and high-wage permanent employment.

As a result of these principles, industrial policy has to select economic activities where such potential for efficiency improvement and desirable growth exist. By its very nature, therefore, industrial policy has to *target* the economic activities that are encouraged to emerge and expand. Targeted policy actions have to replace the 'horizontal' approach of past decades that left the power to decide on the evolution of European economic activities to the market (that is to say, to the strongest firms).

When we talk about a *progressive* industrial policy, we need to make clear what the principles that may qualify such policy are, in addition to the two economic criteria summarised above. Eight further criteria emerge as fundamental. They generally share the idea that new economic activities that are encouraged must be characterised by a high 'social quality' in terms of the democratic political process that is set in motion, of the technologies developed and used, of their impact on production, jobs, the environment and the distribution of gains.

3. Practicing democracy and diffusing power. Market processes lead to greater industrial concentration and to the extension of opaque connections between economic and political power, thus reducing democratic spaces. A key principle of a progressive industrial policy is therefore the use of public action for opening up new spaces for democratic practices in the deliberation of common priorities, decision making processes and in action aimed at reshaping economic activities. The institutions of the new industrial policy, their forms of governance and the procedures they adopt, including the involvement of social forces, will have to be informed by the principles of democratic participation, representation and power diffusion.

4. Designing appropriate technologies. The direction taken by technological change is the result of private and public R&D programmes, of firms' innovation and organisational change in the context of broader social behaviour that includes the role of workers, consumers and citizens. Socially unacceptable results of technological change have to be rejected and industrial policy should encourage technological change that is coherent with all other principles listed here. In particular, it should be ecologically sustainable and employment friendly, avoiding systematic labour replacement by machines and the model of extreme robotisation associated with the Industry 4.0 project (see chapter 3). Industrial and innovation policy should direct technological change towards market and non-market activities of greater public interest, including the areas identified below as key targets for industrial policy. In the context of the opportunities offered by Information and Communication Technologies, technological change should increasingly take the form of a social, cooperative and open process, expanding the sharing of knowledge in non-market forms, building on the experiences of Wikipedia, open-source software, peer-to-peer exchange, etc.

5. Reducing the role of finance. Industrial change in recent decades has been dramatically affected by the power of finance to shape business priorities, in particular through the 'shareholders value' principle. The pursuit of short-term financial gains has encouraged mergers and the break-up of firms, plant closures and stock buy-backs, and has reduced the resources available in firms for R&D, innovation and investment, accelerating industrial decline in most European countries. The extreme pay of top managers (Mishel and Davis, 2014) has also become a serious problem in Europe. A new industrial policy in Europe should be part of broader regulations that limit financial activities and reorient business practices, favouring productive investment rather than financial speculation, and clearly discourage the extreme compensation of top managers and a highly unequal distribution of rewards (Lazonick and Mazzucato, 2015; Lazonick, 2015).

6. Disarming the economy. Differently from the United States, European countries have a lower orientation towards military technology, industry and exports. The dangers of militarisation of the economy (especially in times of stagnation and depression) are well-known in Europe's history. Military priorities distort technological change, reduce the resources available for socially useful activities, fuel arms races and international instability, and endanger peace, which has to be secured mainly by political, not military, means (Melman, 1999). It is crucial that public action assumes the explicit objective of reducing the dependency of European economies on military production. Conversion of current arms production to civilian activities should be a key part of Europe's industrial policy programmes.

7. Supporting employment. Industrial policy has to be designed so that its outcomes are employment friendly. The new economic activities that are developed have to be characterised by a high intensity of skilled labour, high knowledge and learning processes, and the possibility of paying high wages (Vivarelli and Pianta, 2000). As Europe's industrial structures evolve from 'old' activities with stagnating demand, low productivity, high international competition and stagnating wages to 'new' dynamic activities, industrial policy should accompany and orient this process of structural change with particular attention to the protection of workers, avoiding excessive job losses, reallocating and retraining workers hit by such a transition, and assuring adequate income and social protection to those losing jobs.

8. Improving ecological sustainability. The seriousness of the ecological crisis and of climate change mean that all policies (most notably, the policy aiming to reshape Europe's production structures) must give top priority to the improvement of the ecological sustainability of the activities that are developed. Sustainability requires that changes take place in parallel in supply structures as well as in consumption, with a move towards a consumption pattern that is more sober, responsible, sustainable, and locally sourced. This challenge goes far beyond Europe 2020 goals on the environment and requires a more radical departure in the reshaping of economic activities.

9. Assuring a fair distribution of benefits. The distribution of the benefits from industrial policy should be the subject of an open, democratic debate. Experience shows that, in the new 'Schumpeterian' activities characterised by new technologies, organisations and markets, most benefits go to new firms in the forms of high profits (often associated with a temporary monopoly), while old firms disappear. Workers of the former tend to obtain a smaller share of the functional income distribution, which nonetheless allows a faster than average wage growth. Workers at the disappearing firms are the losers in this process, as they lose jobs, income and security. The benefits of industrial policy also include the possibility of lower prices for the resulting goods and services to citizens, consumers and to other firms buying intermediate inputs for their production. Plans for industrial policy should also include consideration of these dimensions.

10. Supporting an even development of European countries and regions. Finally, all the issues discussed above take place in space: in specific countries, regions, cities and localities. Market processes lead to an increasing polarisation between 'centre' and 'periphery', between areas concentrating economic strength and areas hit by marginality and decline. A more even geographical distribution of economic activities is required by basic principles of social justice and solidarity, by the need to grant equal opportunities for employment and progress and, by definition, by the principle of environmental sustainability. The industrial actions designed on the basis of the principles listed above should aim to a more even development of European countries and regions, assuring convergence of economic, social and environmental conditions within the EU.

These principles of a progressive industrial policy could be the object of a wide debate among public opinion, trade unions, civil society, political forces and lead – after a wide consultation – to the definition of a new set of policy goals that could integrate and improve the objectives of Europe 2020.

The policy rationale. Moving from general principles to the specific policy rationale for developing a progressive industrial policy in today's Europe, we can point out five major reasons why a new progressive industrial policy is needed.

a. Macroeconomics. The first one is rooted in macroeconomics. Exiting the current stagnation requires a substantial increase in demand, which could come from a Europe-wide investment plan driven by public policies (see chapter 4).

b. Structural change. The second one is associated with the changes in Europe's economic structure resulting from the crisis. Major losses are taking place in troubled industries, a downsizing is needed of the inflated financial sector and no new large economic activities that could offer new useful products and services and provide new employment are emerging. Employment problems are worsening, with record unemployment rates in Southern Europe, extremely high youth joblessness, a rapid spread of 'non-standard' jobs often associated with precarisation and insecurity, especially for women and youth and low wages that leave many workers in poverty. An EU-wide industrial policy could drive the rise of new environmentally sustainable, knowledge- and labour-intensive activities with high skills and high wages. Specific activities that could be targeted include (see chapter 4): a) the protection of the environment, sustainable transportation, energy efficiency and renewable energy sources; b) the production and dissemination of knowledge, applications of Information and Communication Technologies (ICT) and web-based activities; c) health, welfare and caring activities.

c. The ecological transition. Third, a new EU-wide industrial policy could become a major tool for addressing the urgent need for an ecological transformation of Europe.[5] Turning Europe into a sustainable economy and society (reducing the use of non-renewable resources, developing renewable energy sources and energy efficiency, protecting ecological systems and landscapes, lowering CO_2 and other greenhouse gas emissions, reducing waste and generalising recycling) goes well beyond the emergence of specific, environmentally friendly new activities. It is a transformation that concerns the whole economy and society. A combination is needed of direct public action with provision of environmental services and appropriate regulations for private activities, including environmental taxation, incentives, public procurement and organisation of new markets. A new EU-wide industrial policy could provide the framework for integrating the different policy tools needed for making Europe sustainable. With a pioneering role along the road to ecological transformation, Europe could also substantially increase its role at the global level.

5 Bankrupting nature (Wijkman and Rockström, 2013) is the most recent report to the Club of Rome documenting the extent of the global ecological crisis. The Europe 2020 strategy has taken on board some targets addressing environmental issues that, however, fall short of the action required.

d. Public-private balance. Fourth, a new EU-wide industrial policy is needed in order to reverse the massive privatisation of past decades. An economy based on private, market-based activities, with decisions left to the short-term interests of firms (where finance is playing a dominant role) has failed to sustain investment, employment and environment-friendly growth. The new activities outlined above require a substantial action by the public sector at the EU, national and local levels in setting priorities, investing and creating employment. Public action could provide direction and support to private activities, including the development of competences and entrepreneurship, access to capital, the organisation of new markets, etc. and could directly produce public goods, such as knowledge, environmental quality, well-being, social integration and territorial cohesion.

e. European cohesion. The need for greater cohesion and reduced imbalances within the EU and individual countries is the fifth reason for a new EU-wide industrial policy. Current changes in Europe's industrial structure open up a growing divide between a relatively strong "centre" and a "periphery" where a large share of industrial capacity is being lost. This leads to deepening imbalances within the EU (and within individual countries) in terms of knowledge base, investment, trade, employment and incomes. An EU-wide industrial policy could have a specific aim of reducing such imbalances, concentrating action in the countries of the "periphery" and on the less favoured regions of the "centre".

Industrial policy can be an important and flexible tool for addressing all these priorities. In order to implement it effectively, there is a need for new institutional arrangements and funding sources, new mechanisms of accountable governance, efficient and effective operation, systematic links between the EU, national and local levels, and forms of democratic control with participatory practices (see chapter 4).

ACTIVITIES THAT COULD BE TARGETED BY A PROGRESSIVE INDUSTRIAL POLICY

The general principles of industrial policy discussed above are simple enough. It should favour the evolution of knowledge, technologies and economic activities in directions that improve economic performance, social conditions and environmental sustainability. It should favour activities and industries characterised by learning processes for individuals and in organisations, rapid technological change, scale and scope economies, and strong growth in demand and productivity.

By definition, this requires a set of targeted actions that have to replace the 'horizontal' approach of the past decades, which treated all activities and firms in the same way to avoid 'interfering' with the market. Clear choices must be made on which activities are desirable and are to be supported.

Three sets of economic activities are proposed here as targets for industrial policy: activities centred on the environment and energy; knowledge and information and communication technologies (ICTs); and health and welfare.

Environment and energy: The current industrial model has to be deeply transformed in the direction of environmental sustainability. The technological paradigm of the future could be based on "green" products, processes and social organisations that use much less energy, resources and land, have a much lighter effect on climate and eco-systems, move to renewable energy sources, organise transport systems beyond the dominance of cars with integrated mobility systems, rely on the repair and maintenance of existing goods and infrastructures, and protect nature and the Earth. Such a perspective raises enormous opportunities for research, innovation and new economic and social activities that may develop either in markets or in the sphere of public, non-market activities. A new set of coherent policies should address these complex, long-term challenges.

Knowledge and ICTs: Current change is dominated by the diffusion throughout the economy of the paradigm based on ICTs. Its potential for wider applications, higher productivity and lower prices, and new goods and social benefits should be supported, including their use in traditional industries. Moreover, ICTs and web-based activities are reshaping the boundaries between the economic and social spheres; on the positive side, we have seen the success of open-source software that copyleft, Wikipedia and peer-to-peer clearly show. Much more problematic is the rise of platforms that use people's social activities to obtain a market advantage, as in the case of AirB&B and Uber, where a lack of policy and regulation is having serious consequences on existing economic activities in the same field. More generally, policies should encourage the practice of innovation as a social, cooperative and open process, easing rules on access to and sharing of knowledge, rather than enforcing and restricting it based on intellectual property rules designed for a previous technological era.

Health and welfare. Europe is an aging continent with the best health systems in the world, rooted in their nature as a public service outside the market. Advances in care systems, instrumentation, biotechnologies, genetics and drug research have to be supported and regulated, considering their ethical and social consequences (as in the cases of GMOs, cloning, access to drugs in developing countries, etc.). Social innovation may spread in welfare services with a greater role of citizens, users and non-profit organisations, renewed public provision and new forms of self-organisation of communities.

All these fields are characterised by labour-intensive production processes and by a requirement of medium and high skills, with the potential to provide 'good' jobs.

THE TOOLS FOR A PROGRESSIVE INDUSTRIAL POLICY

Industrial policy has long relied on different mechanisms like funding the development of new activities on the supply side, using the demand-pull effect of public programmes, organising new markets and coordinating public-private cooperation in R&D, innovation and investment. Building on the theory and practice of industrial policy, and on the policy experience of the post-war decades, the following policy instruments appear as the most relevant and effective for today's challenges.

a. Public enterprises and organisations. Publicly owned or publicly controlled firms have a key role to play in targeted fields, strategic industries, key infrastructures, natural monopolies and public services. This implies a reversal of the pressure to privatise all public firms and to reduce the scope of their action.

The rationale for public enterprises has to consider, first of all, the 'public good' nature of the relevant activities. When activities have some 'public goods' characteristics (users cannot be excluded and consumption is not rival), markets cannot efficiently produce such goods and they have to be provided by public action. Relevant cases for our discussion include the cleaning up of pollution, ICT education or hospitals and caring services. There is a serious underproduction of these public goods, and the EU industrial policy should allow existing public organisations to invest and expand the quantity and quality of their services. While no profit could be made on such public activities, the multiplier effect of such investment in novel fields would pull an expansion of a wide range of market activities in its wake.

In the public production of goods by public enterprises, a number of problems of efficiency and effectiveness have emerged, associated with the forms of governance of organisations that could be subject to arbitrary political decisions, 'crony' practices, corruption, and could be used by those with political authority for expanding their power and consensus, resulting in a loss of political legitimacy and economic efficiency.

The development of new democratic governance systems that provide practical models for public economic action that overcome these problems is crucial for the possibility to introduce new tools for an industrial policy that has both economic effectiveness and public opinion legitimation. Key aspects that could be introduced include, first of all, a governance system that assures a 'safe' distance from political power and from economic interests, including norms against conflicts of interest and 'revolving door' moves by people with top responsibilities from business to politics and industrial policy and back. Second, the decision-making process should reflect a clear political mandate, discussed by Parliaments, and be carried out by a governance structure (including governing boards and management) that fully represents the different social interests and stakeholders involved. Third, full transparency should be assured, with systematic use of open data practices that allow public opinion to be informed and provide feedback on activities of public relevance. Fourth, strong anti-corruption norms should be enforced (see chapter 4 below for details).

b. Public Investment Banks and private-public cooperation. A public investment bank is needed as the key player in planning and managing the financial and operational activities of an industrial policy action. It will hold the shares of new ventures launched with the support of industrial policy and provide financing to private firms playing a key role in these initiatives. The role of a public investment bank is essential in market activities where there is rapid technological change, high uncertainty and lack of committed long-term private investors (Mazzucato, 2013). In the fields we are considering, typical examples include photovoltaic cells, software or medical machinery. Existing private firms underinvest in these activities due to high uncertainty on technological and market developments. In such conditions, private finance is usually unwilling to provide long-term loans at accessible rates. The action of existing public investment banks (see Box 2 below) could provide a model for the implementation of EU industrial policy; a Europe-wide public investment bank and similar national institutions could offer capital and long-term loans to private firms or take equity in them when there is a convincing plan for developing production and employment in the targeted fields and regions. As successful firms grow and markets expand, private finance could be attracted and replace the initial support by public agencies.

In some emerging fields, no private firms may yet exist with relevant capabilities to carry out important new economic activities, addressing specific innovation and production challenges. A typical example here is the lack of strong European producers of photovoltaic cells. In these cases, public investment banks could take on a more entrepreneurial role, linking up with competences in R&D organisations and private firms, and take the lead in the creation of new firms that could respond both to the needs of public procurement and to the needs of emergent markets. As in the previous case, when successful firms grow and markets expand, private finance could be attracted and replace the initial support by public agencies.

The examples above suggest that private-public cooperation is needed in a variety of fields, which can be institutionalised in different forms, including the role of central, regional and local governments, and the importance of non-profit organisations, consortia and cooperatives. Again, the same need for a new democratic governance system pointed out above for public enterprises also applies to public investment banks.

c. Public R&D and public support to dynamic firms. Building on current policies, industrial policy has to envisage an expansion of public R&D that provides the economy and society with new knowledge, and must provide subsidies and financial aid to private firms, supporting and orienting their R&D and investment. Public research in universities, public laboratories and agencies (sometimes also funded by EU R&D programmes) have been a key factor in Europe's long-term growth. In this context, however, there is a need to greatly strengthen public research organisations in all EU countries carrying out work in environmental, ICT applications and health fields; new EU-wide public research organisations and innovation agencies could be created with a focus on specific issues. Their role is important because the research and innovation agenda in these areas has to be developed in the public domain, building on strong competences and on openly debated social priorities, rather than being left to private decisions based on profit opportunities perceived by firms. Strong EU-wide public research and innovation organisations can develop and diffuse the fundamental competences that are required in these fields, providing knowledge and experienced personnel to private firms.

At the same time, a system for targeted incentives to firms carrying out R&D, innovation and investment in the targeted fields has to be developed in order to encourage private actors to develop their economic activities in the direction defined by public policy.

d. Public procurement programmes. The demand-pull effect of public expenditure on the evolution of economic activities has always been a very important factor. This has been crucial in the field of high-technology goods, providing an early demand pull to the development of new industries. Examples include advanced trains, telecommunications, military equipment, aerospace, biotechnology and health.

Considering the activities that are targeted by industrial policy, one specific model for policy widely used in the US is the 'Mission-oriented technology programme' that identifies specific goals for scientific and technological advancement (in fields such as energy efficiency, renewable energy, prevention and cure of particular diseases) with the goal of developing new products and processes with potentially large markets. Public funds could attract innovation efforts by firms aiming to develop new competences that could be crucial for future production. Public action could stimulate production through procurement programmes, the organisation and regulation of markets with high growth potential, and support and incentives for early users of new technologies. Policies of this type have long been adopted in the science and technology efforts of the US and some EU countries, in fields ranging from military to space and health research.

A comprehensive review of such policies is provided by Mazzucato (2013), emphasising the potential of "mission-oriented" public funds and actions as effective ways for directing private firms to carry out R&D, innovation and production in targeted fields. As in the case of previous policy tools, mission-oriented actions could also distinguish between actions focusing on the one hand on R&D and, on the other hand, on the procurement of new products supporting emergence in new markets.

An important qualification is needed on the balance between 'suppliers' and 'users' in the institutional arrangements of innovation and industrial policies. So far, the evolution of most R&D and innovation activities has been driven by the design of suppliers rather than by the requirements of the users, often resulting in a limited expansion of new activities and in the unrealised potential of the new technologies. This "technology push" has often become a straitjacket for the expansion of new economic activities, due on one hand to the lack of coordination and coherence of organisational, institutional and social innovations and, on the other hand, to the lack of a "demand pull" able to launch the growth of new large markets for new goods and services (some of these issues are addressed in High level expert group, 1997). This "demand pull", which could also characterise 'mission-oriented' projects or R&D and innovation, should rely not just on 'top-down' public procurement, but rather on new schemes "empowering the users", letting them define specific applications of existing technologies that address existing social needs and may lead to new goods and services with large markets. This is clearly the case in high-quality, custom-made product development in most industries, in environmental activities and in educational, cultural, health and caring services.

e. An appropriate institutional context. All the above actions require an appropriate context with institutions, forms of coordination, financing, setting of standards and regulations, and broader forms of interaction among key players that may favour the development of new industries and organisation of new markets. This includes the need to strengthen national innovation systems, including the development of public education, research and development with close links between public research, public services and public and private firms.

Moving in this direction, a new generation of Europe-wide industrial policies may overcome the limitations and failures of past experiences (such as collusive practices between political and economic power, heavy bureaucracy, and a lack of accountability and entrepreneurship). They should be creative and selective, with mechanisms of decision-making based on the priorities for using public resources that are more democratic, inclusive of different social interests, and open to civil society and trade union voices. They have to introduce new institutions and economic agents, and new rules and business practices that may ensure an effective and efficient implementation of such policies. Chapter 4 provides specific proposals in this direction.

THE EXPERIENCE OF PUBLIC INVESTMENT BANKS

In the last decades Public Investment Banks have played an increasingly relevant role in industrial development. The experiences that have attracted the greatest interest include the Brazilian National Development Bank (BNDES), the German Kreditanstalt für Wiederaufbau (KfW) and the development banks of China and Korea (Mazzucato and Penna, 2014, 2015). Two features have driven their action: a) the promotion of investments targeting societal challenges, favouring structural change towards dynamic and sustainable economic activities; b) their countercyclical role, financing firms and infrastructural projects in times of austerity and limited resources, especially in the case of small and medium-sized enterprises (SME). Public Investment Banks have provided long-term financing to firms and infrastructural projects (including intangible ones) in areas where private financing would have been reluctant to invest, due to high uncertainty and costs (Mazzucato, 2013). New areas of investments included: peoples' access to health systems (BNDES), activities responding to demographic change and to globalisation (KfW and EIB), and the transition to a green economy (BNDES, KfW, the development banks of China and Korea) (Mazzucato and Penna, 2013). These activities have provided opportunities to create new technologies and new markets, driving private finance towards new commercial ventures.

Public Investments Banks offer a variety of tools for national policies, ranging from equity participation to venture capital for promising high-tech start-ups, to financing arrangements for private firms. The sharing of risks with a national public bank has the additional advantage of allowing firms to obtain more favourable credit conditions in financial markets.

BNDES has played an important role in Brazil's expansion, and several studies have documented the success of its operation. In particular, BNDES has paid attention to the institutional capabilities of the country, with the creation of a network of actors involved in its projects, and has developed a comprehensive strategy combining industrial, technological and environmental policies (Carlos-Ferraz et al., 2014). BNDES is currently promoting a system that would give higher importance to the sustainability of investment projects, selecting funds and projects that follow specific "green" and "social" criteria (Mathews, 2014). Evidence shows that firms financed by BNDES are characterised by a higher level of investment and higher creation of employment (Carlos-Ferraz et al., 2014).

3

III

THE POLICY SPACE IN EUROPE FOR A PROGRESSIVE INDUSTRIAL POLICY

In recent years, the policy debate on the role of industrial policy – including mainstream views – has led to a rethinking of the importance of public initiatives in this field and of manufacturing industry itself.[6] Arguments have pointed out that the question is not whether industrial policy makes sense, but the way in which it can be carried out. This debate has been particularly important in new industrialised countries, where extensive public policies have been effective in combining public and private efforts to develop knowledge, acquire technologies, invest in new activities and expand foreign markets. Investigating the experiences of the US and Europe, Mazzucato (2013) has emphasised the need for a broad role of 'transformative' public action in innovation and industrial change.

When we address the possible evolution of European actions in the direction of industrial policy we should emphasise, as pointed out by Dellheim and Wolff (2013), that article 130 of the Maastricht Treaty states that:

1. The Community and the Member States shall ensure that the conditions necessary for the competitiveness of the Community's industry exist. For that purpose, in accordance with a system of open and competitive markets, their action shall be aimed at:
   - speeding up the adjustment of industry to structural changes,
   - encouraging an environment favourable to initiative and to the development of undertakings throughout the Community, particularly small and medium-sized undertakings,
   - encouraging an environment favourable to cooperation between undertakings,
   - fostering better exploitation of the industrial potential of policies of innovation, research and technological development.
2. The Member States shall consult each other in liaison with the Commission and, where necessary, shall coordinate their action. The Commission may take any useful initiative to promote such coordination.
3. The Community shall contribute to the achievement of the objectives set out in paragraph 1 through the policies and activities it pursues under other provisions of this Treaty. The Council, acting in accordance with the procedure referred to in Article 251 and after consulting the Economic and Social Committee, may decide on specific measures in support of action taken in the Member States to achieve the objectives set out in paragraph 1.

This title shall not provide a basis for the introduction by the Community of any measure which could lead to a distortion of competition or contains tax provisions or provisions relating to the rights and interests of employed persons.[7]

6 Restatements of the need for industrial policy have been provided by Chang (1994), Hausmann and Rodrik (2003), Rodrik (2008), Wade (2012), and Greenwald and Stiglitz (2013). Studies on emerging countries are in Cimoli, Dosi and Stiglitz (2009) and in Stiglitz and Lin Yifu (2013). The cases of Asia and Korea are investigated by Lee (2013a, 2013b) and Freire (2013). On Europe, assessments and arguments have been offered by Coriat (2004), Pianta (2010, 2014), Lucchese and Pianta (2012), Stollinger (2013), Reinstaller et al. (2013), Aiginger (2014) and Transform! (2015).

7 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:12002E157

This provides a significant base for the development of a European industrial policy, even though subsequent treaties have limited this policy space (see the detailed discussion in Dellheim and Wolff, 2013). This chapter addresses current EU policies and programmes that are relevant for industrial policy. It summarises the evolution and resources of such initiatives and identifies the possibility of using existing EU institutions, activities and policies to the end of expanding their mandate and initiatives in the direction of a progressive industrial policy.

EUROPE 2020

Since 2010, European Union policies have been framed in the Europe 2020 strategy, replacing the Lisbon Strategy that had set the goal for Europe "to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion". A comprehensive economic strategy was expected to be developed "preparing the transition to a knowledge-based economy and society by better policies for the information society and research and development (R&D), as well as by stepping up the process of structural reform for competitiveness and innovation and by completing the internal market; modernising the European social model, investing in people and combating social exclusion; sustaining the healthy economic outlook and favourable growth prospects by applying an appropriate macro-economic policy mix". As pointed out by Lundvall and Lorenz (2011; see also Lorenz and Lundvall, 2006), after the mid-term evaluation of 2004-05 (and with right-wing governments replacing centre-left majorities in most European countries), the EU strategy was scaled down and focused on neoliberal policies for employment and economic growth.

The Europe 2020 strategy identifies three priorities: 'smart growth' (an economy based on knowledge and innovation), 'sustainable growth' (a resource-efficient, greener and more competitive economy), and 'inclusive growth' (a high-employment economy with social and territorial cohesion). By 2020, the EU is expected to reach five "headlines targets",[8] and eight "flagship" initiatives have been launched (European Commission, 2010a). The most relevant initiatives are the "Innovation Union" (European Commission, 2010b) and "An integrated industrial policy for the globalization era" (European Commission, 2010c). They aim to provide the best conditions for business to innovate and grow, and support the transformation of manufacturing towards a low-carbon economy.

8 The specific targets include the goal of devoting 3% of EU GDP to R&D expenditure (in 2008, R&D in EU-27 amounted to 2.1%). Innovation capacity should be supported by the formation of human capital: the share of early school leavers should be under 10% in 2020 (it was 14.4% in 2009 in EU-27) and at least 40% of the younger generation should have a tertiary degree (32.2% in 2009 in EU-27). Progress towards such goals has been highly uneven, and the recession has rolled back advances in "periphery" countries. The strategy includes a set of indicators from the 20/20/20 climate/energy targets established in 2009 by the European Council. The first one is the 20% reduction of emissions by 2020 based on the 1990 levels. In 2009, the EU level has declined by 17%, largely due to the economic crisis that has deeply reduced output as well as emissions. The second target is the reduction of 20% in the use of renewable sources (in 2008, it was 10.3%); the third one is an increase of 20% in energy efficiency, with a move towards clean and efficient production systems.

The "horizontal" approach has dominated such initiatives, where the main policy tools are the provision of infrastructures, the reduction of transaction costs across the EU, and a more appropriate regulatory framework favouring competition and access to finance. A significant role is ascribed to the ability of small and medium enterprises to promote growth and create employment. Key issues include the need to fight protectionism, increase the flows of goods, capital and people within and outside the EU, to exploit a more open Single Market for services and to benefit from globalisation.

In January 2014, the European Commission introduced a new policy initiative called "Industrial Compact", establishing the "target" of returning industrial activities to 20% of GDP by 2020, against the present 16% (European Commission, 2014a). German (and, to a lesser extent, Italian industry and governments lobbied for such an action, which remains entirely within the Europe 2020 approach. The only novelties include the call to support investment in fast growing, high value added industries such as energy efficiency, green industries and digital technologies, and the consideration of industrial research among the aims of existing EU initiatives, such as the Horizon 2020 R&D programme, the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME), and the Structural Funds (including national co-financing). Greater attention is also emerging toward the need to act at the EU level on climate change and energy, but again few additional resources are available and no change has been made in the approach to industrial policy (European Commission, 2014b; European Parliament, 2015).

The framework of Europe 2020 includes several major funding programmes that are relevant for European industrial policy, with a significant budget for the period 2014-2020. A detailed analysis of current programmes and their relevance for industrial policy has been carried out by the European Parliament Report "EU industrial policy" (European Parliament, 2015; see also Vannuccini, 2015). Table 2 documents the budget resources that are relevant for industrial policy, which are briefly reported below.

a. Horizon 2020 provides EUR 77 billion, but the resources that fund specific programmes include EUR 6.6 billion for innovation in the Key enabling technologies; EUR 2.8 billion for SMEs actions; EUR 287 million for the Eurostars programme for the internationalisation of SMEs; 200 million for the programme Fast Track to Innovation for R&D; and 20 million for the Sustainable Industry Low Carbon (SILC) II programme on innovation.
b. Connecting Europe Facility is the main programme funding infrastructures for transport (EUR 13.2 billion), energy (EUR 5.1 billion) and broadband (EUR 1 billion).
c. COSME is the main programme for SMEs, with EUR 2 billion divided into access to finance, internationalisation, simplification measures and entrepreneurship.
d. EaSI (EU Programme for Employment and Social Innovation) provides EUR 815 million for employment and microfinance projects.

The above programmes amount to modest resources and continue to show a strong 'horizontal' perspective and a serious fragmentation of initiatives that are unlikely to have a significant impact on the evolution of European industry.

EUROPEAN UNION PROGRAMMES THAT ARE RELEVANT FROM AN INDUSTRIAL POLICY PERSPECTIVE

	EU INITIATIVE	BUDGET (€)	SUB-INITIATIVE RELEVANT FOR AN EU INDUSTRIAL POLICY	BUDGET (€)	DG	THEME
Competitiveness for growth and jobs (EUR 125.6 billion, 13% of MMF budget)	**Horizon 2020**	77 billion (56%)	KET	6.6 billion	Research and Innovation	Innovation
			SME instrument	2.8 billion	Research and Innovation	SMEs/ICT
			Eurostars	287 million	Research and Innovation	SMEs Internationalisation
			Fast track to innovation	200 million	Research and Innovation	Research and Innovation
			SILC II	20 million	Research and Innovation	Technological/non-technological innovation
	Connecting Europe Facility	19.3 billion (15%)	Energy infrastructure	5.1 billion	Connect	Energy connections - Single Market
			Broadband infrastructure	1 billion	Connect	Digital connections - Single Market
			Transport infrastructure	13.2 billion	Connect	Transport connections
	COSME	2 billion (2%)	Access to finance	163 million	Enterprise and Industry	Loan guarantee facility, equity financial instruments
			Access to market (e.g. EEN)	57 million	Enterprise and Industry	Internationalisation
			Framework conditions (e.g. SBA performance review, REFIT, etc.)	34 million	Enterprise and Industry	Simplification measures
			Entrepreneurship	9 million	Enterprise and Industry	Entrepreneurship
	EaSI	815 million (1%)	Progress	479.1 million	DG Employment, Social Affairs and Inclusion	Employment
			EURES	146.7 million	DG Employment, Social Affairs and Inclusion	Employment services
			European Progress Microfinance Facility	171.1 million	DG Employment, Social Affairs and Inclusion	Microfinance
Economic social and territorial cohesion (EUR 325.1 billion, 34% of MMF budget)	**Cohesion Policy**	322 billion (99%)	ERDF	100 billion	DG Regional and Urban Policy	Innovation and research, the digital agenda, support for SMEs and a low- carbon economy
			ESF	n.a.	DG Employment, Social Affairs and Inclusion	Active labour market policies
			Cohesion fund	66.3 billion	DG Regional and Urban Policy	Digital infrastructure, energy, transport infrastructure
Sustainable growth and Natural resources (EUR 373.2 billion, 39% of MMF budget)	**Community Agriculture Policy (CAP) Pillar II**	84.9 billion (23%)	European Agricultural Fund for Rural Development (EAFRD)	84.9 billion	DG Agriculture and rural development	Diversification and development of non-agricultural SMEs in rural area
	European Maritime Affairs and Fisheries	6.6 billion (2%)	European Maritime and Fisheries (EMFF)	6.6 billion	DG Maritime Affairs and Fisheries	Fishing industry - adaptation to changing conditions

Source: European Parliament (2015, p.31-32).

TAB 2

THE FLAGSHIP INITIATIVE "AN INTEGRATED INDUSTRIAL POLICY FOR THE GLOBALISATION ERA"

The two "flagship" initiatives devoted by Europe 2020 to innovation and industrial policy include the "Innovation Union" (European Commission, 2010b) and "An integrated industrial policy for the globalization era" (European Commission, 2010c). The aim is to provide the best conditions for business to innovate and grow, as well as to support the transformation of the manufacturing system towards a low-carbon economy.

A number of Commission communications have developed the strategy of European reindustrialisation based on the promotion of the internal market, firms' internationalisation and investment. Specific attention has been devoted to industries[9] where Europe has comparative advantages and on 'Key enabling technologies' that are expected to have pervasive impact across the economic system.[10]

This strategy does not envisage additional resources to be invested in these activities; Horizon 2020 and Connecting Europe funds remain the main sources of funds that, however, are expected to cover a wide range of activities.

This *flagship initiative* is related to the objectives of Europe 2020 and to the 'grand societal challenges' identifying key priorities in technological and industrial activities (in the sectors listed in note 13). The 'sector-specific dimension' of the 'targeted approach' proposed by the *flagship initiative* includes the following: space manufacturing activities; motor vehicles for sustainable mobility; industries related to climate change, health and security; sectors where value chain considerations are crucial (chemicals, engineering, transport equipment, agro food, business services); energy intensive and extractive activities (European Commission, 2010, p.23-24).

The disconnection between these targets and the above funding programmes is a major shortcoming of EU policy.

When the crisis started in 2008 and austerity policies were imposed on Euro-area countries, the emphasis on fiscal consolidation and macroeconomic coordination further side-lined any serious discussion on industrial policy in this context. The goals of Europe 2020 are now reinterpreted in line with the neoliberal view that economic growth can be supported by the operation of markets and that fiscal consolidation and debt reduction create appropriate conditions for long-term growth. Europe 2020 only suggests that governments devote more resources for "growth-enhancing items" such as education, R&D and innovation, at the expense of social expenditure, which is considered unsustainable (European Commission, 2010a, 2010c).

9 The industries considered include Chemical, Automotive, Machinery (mechanical engineering), Forest-based industries, Steel, Non-ferrous metals, Textile, fashion and high-end, Defense, Space, Agri-food industries, Pharmaceuticals, Bio-Based Products, Cement, Ceramics, Glass, Construction, Tourism and the issues related to standards and standardisation.

10 Key enabling technologies include bio-based products, clean vehicles and vessels, sustainable construction and raw materials, and smart grids.

Such a view has become explicit in the policy directives imposed in 2011 on the weaker countries of the "periphery" of Europe – Greece, Portugal and Spain in particular – as conditions for granting them financial help facing their debt crises. Cuts in government expenditures, public sector jobs and wages, liberalisation of labour markets and reduced workers' protection have been key elements of the austerity plans imposed on these countries, with the result of worsening the recession, industrial decline and unemployment.

SMART SPECIALISATIONS

The idea of Smart Specialisations (Foray et al., 2009) has been adopted by EU policy, encouraging regions to focus their "horizontal" efforts in building a critical mass of R&D, innovative and investment capacity in highly specific activities, combining both advanced technologies and local competences in traditional industries. The novelty of this policy is that it recognises the diversity of capabilities and specialisations of local production systems, which requires a bottom-up definition of the areas of strength that could be advanced by policies. Policy makers are asked to develop plans for Smart Specialisations that may involve the use of EU Structural Funds, EU R&D funds from the Horizon 2020 programme, national resources and private investment by firms, with no additional funds from the EU.

This policy opens up the possibility of a more serious selective intervention, rooted in the presence of production capacity. Again the disconnection with a specific, targeted funding programme is a major shortcoming of this experience.

From the perspective of developing a progressive industrial policy, this strategy could be of some interest. The investment and innovation programmes that are proposed in chapter 4 below could be matched to the profiles of smart specialisations that emerge from this strategy in each European region. The consultation process developed in this context could also be relevant for the deliberative process needed for defining the areas of investment and innovation envisaged by the proposals of chapter 4 below.

Finally, the regulatory and standard-setting activity by the EU Commission has important influence in shaping the quality of economic activities in specific fields, in particular where food, environmental, safety and health or cultural issues are at stake. Regulations and standards, however, cannot by themselves redirect or expand private production in desirable directions.

EU STRUCTURAL FUNDS AND COHESION POLICY

Structural Funds are the most important EU programme addressing imbalances at the regional level and "compensating the losers" in market competition; they amount to 0.4% of EU GDP. They are provided from Brussels – conditional to co-financing by national governments and local authorities – to fund the "horizontal" activities described above: infrastructure construction; education and training programmes; and other support for local development, excluding funding for specific firms or economic activities.

Over the 2014-2020 period, EU Structural Funds amount to EUR 322 billion, including EUR 100 billion for ERDF, the European Regional Development Funds for R&D spending, the digital agenda, SMEs and low carbon transition. The Cohesion fund amounts to EUR 66.3 billion for digital, energy, and transport infrastructures.

Since the start of the 2008 crisis, however, regional disparities have increased all over Europe, and in particular between Southern European regions and the rest of the EU, showing the limited ability of EU cohesion policy to assure convergence (Eurostat, 2014). At the same time, cohesion funds have helped reduce to some extent disparities between 'old' EU regions and the regions of the newly accessed countries of Central and Eastern Europe.

The overall impact of Structural Funds as a tool for supporting economic convergence among EU regions is disappointing; the approach is misplaced and a major change of perspective would be needed in this regard. First, 'horizontal' action on local framework conditions are – almost by definition – incapable of setting in motion a process of development. Second, there is a continuing confusion between decision powers at the EU, national and regional levels, preventing a consistent and effective policy from emerging. Third, in many countries, cohesion funds have either not been fully used, or have been characterised by waste, excessive bureaucratic burden and sometimes corruption. A different model of governance and a reform of EU Cohesion Funds is therefore needed, as pointed out by the 2009 Barca Report (Barca, 2009), which argued for a "place-based" development strategy in Europe, a multilevel governance of funds, a focus on selected core priorities and an effort to favour better design, implementation and evaluations of projects. Such changes would require a stronger coordination between the different actors involved to improve the effectiveness of funds. Since the start of crisis, however, the rethinking of cohesion funds has made little progress.

ENVIRONMENTAL ACTIONS AND THE ENERGY UNION

Environmental issues are addressed by a variety of EU policy tools. The major programme regarding environmental issues is now the Energy Union, a framework strategy aimed at achieving three long-term objectives: security of energy supply, sustainability and competitiveness. The main environmental goal of the strategy *is a domestic emission reduction target of at least 40% for 2030 through the decarbonisation of energy production.* The strategy has been designed to build a single energy market, integrating national policies and actions across different policy areas. Two pillars of the strategy are the agreement on the 2030 Framework for Climate and Energy and the European Energy Security Strategy (European Commission, 2015c).

The security of supply relies on the diversification of energy sources and suppliers, and on the promotion of voluntary buyer's groups for the common purchase of gas. Attention is devoted to achieving a higher share of energy from renewable sources. The case for lifting national barriers in the electrical market is also made. However, it appears that concerns over security of the energy supply, and natural gas in particular, are the dominant ones in shaping this policy. Geopolitical considerations and the role of major pipeline projects emerge as key factors. On the whole, the Energy Union is not designed to effectively move Europe beyond its old model of dependence on fossil fuels and non-renewable energy resources (Fiedler, 2015, see also Transform!, 2016).

Again, this framework strategy is not provided with a specific budget. As we have seen above, funds for Energy Union activities mainly come from the Connecting Europe Facility (CEF) for energy infrastructure and from Cohesion Funds. CEF infrastructure spending in 2016 is expected to be about EUR 216 million. The Cohesion Policy programme makes EUR 38 billion available over 2014-2020 for the shift to a low-carbon economy. Moreover, some EFSI projects are developed in the environmental and energy fields.

Some national environmental and energy policies of European countries have been promising in moving towards renewable sources. The case of Germany's energy strategy is summarised in Box 3 below.

THE RENEWABLE ENERGY POLICY IN GERMANY

In Germany, the 2000 Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG) set the legislative basis for a new mix of energy sources with objectives to phase out nuclear energy by 2022 and to achieve largely decarbonised energy generation, as stated in the amended version of the EEG in 2012 that envisages a target of renewables of 50% by 2030 and 80% by 2050. The EEG provides incentives for renewable energy production, including a 20-year guaranteed feed-in tariff for investors in renewables. This energy strategy and the resources it mobilised have been investigated by a report of the German Development Institute (Lütkenhorst and Pegels, 2014); it shows that this policy has created important investment opportunities and markets for green technologies in the country. As a result, Germany is now one of the world leaders in wind and solar energies.

In the field of renewable energy, innovation plays a critical role in improving available technologies, and the EEG supports such actions. The incentive scheme supporting greenfield energy investment projects reduces investment costs – with cash incentives, favourable loans and public guarantees for the investor – and lowers operating costs through support for R&D, especially for SMEs, and for labour costs. The public budget for R&D projects is significant, with public institutions – both regional and national ones – making direct incentives available. A major result of this policy has been the development of a strong wind energy manufacturing industry, employing in 2012 117,900 people, with a total investment of EUR 3.8 billion. The industry has developed close links with R&D institutions, logistic services and other industries; 213 firms have been involved in the value chain of wind energy production.The solar energy industry in 2012 employed 87,800 people with a total investment of EUR 11.2 billion and exported 60% of output. The photovoltaic value chain in 2013 included around 390 major players, including firms and R&D institutions. However, competition from Chinese manufacturers is affecting the industry; in recent years a loss of jobs has been experienced and some firms have been taken over by foreign companies.

The amount of public resources that have devoted to the development of German renewable energy is difficult to estimate, due to methodological problems and to the difficulty of agreeing on shared criteria on a sensitive policy issue. However, the German Development Institute report argues that the size of the subsidies to renewable energy sources is lower than those granted to conventional sources. Subsidies for solar energy have been higher than those for wind energy production; the economic and social returns (in terms of job creation, value added and technological innovation) of the wind industry appear so far to be greater than those of solar photovoltaic (Lütkenhorst and Pegels, 2014).

This German policy on renewable energy is in line with the broad objectives of Europe 2020, although the pace of the energy transition and the forms of its implementation could be improved. Although this initiative is rarely framed in terms on an industrial policy, it is effectively changing Germany's energy system, improving sustainability, developing new dynamic economic activities, generating new employment and wages. Key elements of this experience have been the clear, long-term planning of the energy transition by the Federal government; the availability of vast public resources to be invested in such a policy; the integration of developments in R&D and manufacturing of wind and solar equipment, in the deployment of wind and solar systems, in the restructuring of the electricity grid as a result of these new sources. In 'systemic' activities, such as energy production and delivery, the ability to effectively integrate changes in several different dimensions appears to be a crucial condition for success.

BOX 3

THE ROLE OF THE EUROPEAN INVESTMENT BANK

The European Investment Bank (EIB) is a public investment bank controlled by the EU that operates with a logic typical of financial markets, and which funds private and public projects (with a budget of EUR 72 billion in 2013). Bond emissions by the EIB are required to obtain the triple-A from rating agencies; profitability is required, and this necessarily excludes investments that are riskier or with longer time frames for obtaining returns, or where the public, non-market benefits are more important than profits.

Over time, EIB has developed a range of competencies and tools based on a partnership between public institutions and private actors; these capabilities could be used to help the development of investment projects in Europe. The aim of the EIB and its role within the European Union has changed over time, following different objectives: from a bank devoted to foster regional development projects in poor areas in the 1950s and 1960s, to the promotion of energy independence in the 1970s, to a role in the liberalisation and privatisation policies in the 1980s and 1990s (Fontana, 2015). After the 2008 crisis, EIB has tried to address the investment gap in Europe by increasing its budget. However, in 2016, a reduction of funds is expected (to EUR 50 billion), with a substantial reduction of investment projects that can be financed.

For the development of a European industrial policy, the EIB could play a crucial role as it has the status, role and competences that enables it to operate effectively in financial markets and make decisions on investment projects. In fact, when the EU launched the 'Juncker investment plan', the agency required to carry it out was the EIB (see below). In the short-term, the EIB could act as a key institution for the implementation of a European industrial policy, filling the gap left by the lack of a European public investment bank with the mission to develop Europe's new economic activities. However, the constraints the EIB has in its operations in financial markets make it structurally inadequate to fund a wide range of investment where there is a strong public nature to activities and a high uncertainty of technological and market development. Therefore, the creation of a real European Public Investment Bank could be envisaged as the proper tool for the implementation of an industrial policy.

In particular, first, the EIB operates on the basis of financial considerations and is an important player in European financial markets. A European Public Investment Bank and the implementation of industrial policy should operate primarily on the basis of real economy considerations, looking at the impact of the investment that is financed on production, employment and sustainability rather than on financial returns alone.

Second, this financial mandate means that the EIB funds investments with low risk, low uncertainty and high profitability, so that its emissions of bonds can obtain triple-A ratings by rating agencies. Conversely, a European Public Investment Bank should have the mandate to invest in high-risk, high-uncertainty projects which may have low profitability in the short-term, but may provide high economic and social returns in the longer-term.

This is exactly the reason why financial markets fail to perform an important task and why a public institution such as a European Public Investment Bank should be created to fill this gap. The lower short-term financial returns that are obtained should be compensated by greater liquidity and loans provided by the ECB (see below). A greater ability could also be developed to obtain longer-term returns from successful investment decisions on the basis of agreements with private firms exploiting the results of the public investment made in uncertain R&D and innovation activities, thus reducing the current private appropriation of the gains from public investment (see Mazzucato, 2013). When public investment provides social and environmental benefits outside market processes (as in the case of public goods), no financial returns could be expected, since in standard banking activity and EU and national public budgets have to either provide capital or support the activities that are developed.

Third, the EIB is mainly accountable to EU institutions and financial markets and has no democratic process in its governance arrangements. A European Public Investment Bank should be created with a more transparent, democratic governance system, including a major supervisory role for the European Parliament and an ability to integrate a wide range of social interests in its decision-making process and investment decisions.

Finally, a crucial aspect of the operation of the EIB today, and of a possible European Public Investment Bank, is their relationship with the ECB. On the one hand, they should be able to obtain low-interest loans and other financing from the ECB. On the other hand, they should be considered a major channel for turning monetary expansion into real investment in the context of stabilisation and recovery policies by the ECB.

THE EUROPEAN FUND FOR STRATEGIC INVESTMENT AND EIF

The failure of private investment to recover after the crisis, and the growing realisation that Europe needed some sort of answer to industrial decline, led the Commission President in late 2014 to launch the 'Juncker Investment Plan', with the aim of supporting public and private investment. In 2015, the European Fund for Strategic Investments (EFSI) was created and 'located' in the European Investment Bank. EFSI is expected to fund new investment projects of up to EUR 315 billion. EU funds are providing EUR 8 billion; the EU guarantee on the projects is expected to bring in additional EUR 8 billion and EUR 5 billion have come from funds of the EIB. This total of EUR 21 billion is expected to mobilise private funds of an amount 15 times greater, relying on a huge leverage effect in financial markets expecting high returns on investment.

The European Fund for Strategic Investments is expected to fund investments in infrastructure and innovation; it also provides finance for Small and Medium-sized Enterprises (SMEs) – with a role of EIB's European Investment Fund (EIF). Interestingly enough, by spring 2015, member states had proposed 1,300 projects costing a total of EUR 2,000 billion. This shows the great need for public investment in EU countries and the huge mismatch with current policies and available resources. This argument has now been made by a wide spectrum of voices – including the OECD, the IMF, etc. – that have called Europe and national governments to expand investment, moving beyond the constraints of austerity measures (see below).

Since its inception, several criticisms have been made to the Juncker Plan and EFSI. First, EU resources available are limited and consist of a repackaging of resources from previous EU programmes, relying on a huge leverage effect in financial markets. Second, there is an imbalance between private and public interests; private investors have guaranteed returns in low risk activities, while public-interest projects may have to generate greater income (paid by users) than in the case of traditional public investment. In fact, projects funded exclusively by public agencies are excluded from the plan. Third, it envisages a collection of disparate investment projects with no public authority providing a framework strategy and coordinating the projects; this may allow large oligopolistic firms to expand their market power and their involvement in public interest activities (De Masi et al. 2015, GUE/NGL, 2015). Finally, the plan does not set specific guidelines on the location of planned investment. While investment is most needed in 'periphery' countries hardest hit by the crisis, there is a risk that richer countries may fund projects in their own economies only, enhancing – rather than reducing – the divergence in economic performances within Europe.

However, the creation of EFSI and the role assumed by the EIB in managing it – including the European Investment Fund (EIF) for investing in SMEs – open an important policy space for the possibility of a European industrial policy. For the first time, there is an EU-level programme that can obtain resources to be invested for improving countries' infrastructures and production systems. For the first time, there is a modest investment plan driven by public policy that expands demand and tries to fill – to a very limited extent – the gap left open by the collapse of private investment since the 2008 crisis. For the first time, there is an EU policy action that recognises that markets cannot be considered perfectly capable of identifying appropriate investment opportunities. For the first time, a public policy initiative drives and attracts private financial resources that have been left idle.

All these aspects are important starting points for an evolution of industrial policy proposals that move closer to the policy actions presented in chapter 2 above.

ALTERNATIVE PLANS FOR SUPPORTING INVESTMENT

The case for a progressive industrial policy in Europe has been made by a growing number of contributions. In 2012 ,the German trade union confederation DGB has proposed "A Marshall Plan for Europe" (DGB, 2012), envisaging a public investment plan of the magnitude of 2% of Europe's GDP per year over 10 years, equal to EUR 260 billion euro per year, including EUR 150 billion for energy efficiency. Funds could be raised on financial markets by a new European Public Agency; funds could come from the Europe-wide receipts of a once-for-all wealth tax and from the newly introduced Financial Transactions Tax. Such tax income could help cover interest payments for the necessary projects that are not profitable in market terms. This arrangement would not burden domestic public finances and could visibly make the connection between policies for downsizing finance, taxing the rich, reducing inequality, and the industrial policy that could lead to new economic activities and jobs.

Along the same lines, the European Trade Union Confederation has developed the proposal "A new path for Europe" (ETUC, 2013), again setting the target of investing an additional 2% of EU GDP per year over a 10-year period. The directions for investment can be taken from past EU and EIB priorities and from national priorities. Investments should stimulate a sustainable path of development for Europe and create decent and high-skill jobs. Areas of investment include energy, transport networks and infrastructure, education and training, expansion of broadband networks; industrial modernisation and energy efficiency, public and private services, infrastructure and housing for old people, social housing and new, sustainable water management. Great importance is devoted to the development of a new democratic institutional arrangement to drive the process of growth. The Italian Trade Union CGIL in 2013 proposed a 'Plan for employment' that envisages EUR 50 billion of expenditure in three years for funding new public activities and creating jobs (CGIL, 2013; Pennacchi, 2013).

The European Greens developed an investment proposal for a sustainable Europe amounting to EUR 750 billion over 3 years, based on EUR 250 billion of direct funding and EUR 500 billion invested by private investors with a leverage ratio of two to one. Interventions concern energy efficiency and sustainable and inclusive local development (The Greens, 2014).

An important, more conceptual contribution that combines the needs for alternative European policy, industrial policy and social and ecological conversion has been provided by Dellheim and Wolf (2013) in the debates of the Rosa-Luxemburg-Stiftung and of the EuroMemorandum Group. They point out the policy space offered, even by current EU rules, and set out a range of criteria and arguments – with special attention to the needs for the demilitarisation and sustainability of European economies – that could contribute to the emergence of a new industrial policy.

A more general economic proposal for Europe has come from Varoufakis, Galbraith and Hollande (2014) that includes proposals for an investment plan to be carried out by the EIB. EIB could launch a long-term investment plan and the ECB could buy EIB securities on the secondary market in order to keep interest rates low. This proposal does not require a change in European Treaties, but has faced strong opposition by Germany and other 'core' European countries, as it would imply a sharing of risks with 'periphery' countries. Nevertheless, the ECB is already engaged in the purchase of limited amounts of EIB bonds.

Dauderstadt (2015), in a report for the Friedrich-Ebert-Stiftung, has provided a comparative analysis of the Juncker plan and of 10 other proposals for supporting investment in Europe.[11] His evaluation is that the 'investment gap' experienced by European economies after the 2008 crisis is much larger than the expected resources that could be mobilised by EFSI and other plans. The ability of modest public funds to leverage large private finance – as expected by EFSI – can be seriously questioned and the expectations by private investors of high returns with low risk from investments that are mainly directed at public infrastructure are difficult to warrant. Moreover, regional allocation priorities generally are not discussed. While a generally positive effect on growth and employment is expected from investment plans, the impact on competitiveness and current accounts can be uncertain.

A document by the GUE/NGL group of the European Parliament (GUE/NGL, 2015) has provided a critical assessment of the inadequacy of the 'Juncker Plan' in the context of the failed austerity policies of Europe. It argues that, in order to overcome the crisis, the EU needs an investment programme ranging from EUR 250 to 600 billion (2 to 5% of EU GDP) for ten years, using EIB bonds and BCE credit to finance it.

These arguments and the rationale for such actions have been developed in a paper by De Masi, Lopez and Viegas (2015), MEPs of the GUE/NGL group. The effects of the crisis and the gap in investment in Europe are documented in detail, showing the limits of EFSI in addressing such problems. The alternative proposed is a European public investment programme amounting to 2% to 5% of EU GDP for a period of ten years, using EIB and ECB funds. Member states would be called to act, obtaining financial resources from the ECB at non-market conditions, enhancing the effects in the real economy of expansionary monetary policy. Resources could also come from the taxation of wealth, capital and high-incomes, as well as from the fight against tax heavens. EU countries could reinforce this action with selected industrial plans to foster industrial recovery.

11 Proposals considered include those of the parliamentary group of the Socialists and Democrats (S&D); the proposal of the Greens (The Greens, 2014); the document of the Liberals (ALDE); the early proposal of the German Trade Union Federation (DGB, 2012); two studies by FEPS (Foundation of European Progressive Studies) by Kollatz-Ahnen (former vice president of the EIB) and by Udo Bullmann (MEP); the proposal by Cozzi and Griffith-Jones; the proposal of the Polish finance minister, Mateusz Szczurek; the analysis of the European NGO "Europe 2030"; the study by Enderlein and Pisani-Ferry (two experts from Germany and France); and the proposal by Varoufakis, Holland, Galbraith (2014).

Additional proposals in this direction were developed in Pianta (2010), Lucchese and Pianta (2012), EuroMemo Group (2013); an extensive formulation is in Pianta (2014); a specific discussion on Italy is in Lucchese et al. (2016). Chapter 4 below draws on some of these proposals.

An awareness of the investment gap in advanced economies has also emerged in recent documents from major international institutions. For the G20 meeting of July 2015, the OECD prepared a report (OECD, 2015a) on the importance of infrastructure investment strategies, providing countries with recommendations on how to identify areas (including environmental issues), foster efficiency and develop long-term financing opportunities. An emphasis on investment in innovation is at the core of the 'OECD 2015 Innovation Strategy' (OECD, 2015b), setting out an agenda to strengthen innovation performance in OECD countries. In particular, the report recognises the importance of improving the capabilities of each country in terms of policymaking and policy implementation of strategies, sharing experiences and best practices across countries. In 2014, the IMF (IMF, 2014) released a report on the evaluation of the macroeconomic impact of public investment in developed and developing countries. The report finds that increasing infrastructural investments in countries where investment efficiency is high can raise output in the short and the long terms, without increasing the debt-to-GDP ratio, particularly during periods of economic slack. Improvements in fiscal institutions and the introduction of some 'fiscal rules' (as the 'golden rule', see below) can be a useful tool to support investment in periods of fiscal consolidation. Conversely, for countries where investment efficiency is low, the impact of debt-financed public investments can lead to limited output gains and a rise in public debt-to-GDP ratios. For these countries, there is a strong call for raising the quality of infrastructure investments by improving the public investment process.

Industrial policy has also attracted the attention of an International Labour Organization (ILO) study (Milberg et al, 2014) in the context of the current globalisation of production and increase in the trade of intermediate goods, which put employment and wages under pressure in advanced countries. The study argues that industrial policies should be designed to manage global value chains with the aim of capturing more value added along the production process. This is an important perspective, as the international division of labour is less and less defined by countries' specialisation in 'vertically integrated' sectors and increasingly based on specific segments of the production process.

THE POLICY SPACE FOR INVESTMENT IN EUROPEAN FISCAL RULES

European fiscal rules, from the Maastricht Treaty to the Stability and Growth Pact, to the Fiscal Compact, have been a cornerstone of the neoliberal trajectory of European integration for 25 years. Their rigidity has been at the root of the fall in public expenditure and in public investment in particular; the European inability to change such rules, even after the 2008 crisis, is a major cause of the long depression and stagnation that has hit European economies.

In recent years, very modest openings have emerged in this regard. The first one is the "investment clause", concerning the opportunity to exclude investments for co-financed public investments from the deficit/GDP ratio. The 'investment clause' was introduced in 2012, allowing temporary deviations from the structural deficit path linked to the realisation of "projects co-funded by the EU under the Structural and Cohesion policy, Trans-European Networks or Connecting Europe Facility with a positive, direct and verifiable long-term budgetary effect" (European Commission, 2012). However, its use was associated with restrictive conditions and its implementation for member countries has been strongly limited (Truger, 2015). Although the European Parliament had supported the idea to push for a more ambitious plan (Prota and Viesti, 2013), the European Commission has put forward no new concrete proposals. Recently, the European Commission slightly revised conditions for using the 'investment clause' to take better account of country-specific situations: "The Commission will apply the 'investment clause' irrespective of the economic condition of the euro area or EU as a whole, in order to link it only to the cyclical conditions faced by individual Member States". This interpretation "will permit a broader application of the clause than in the past, and one which better reflects country-specific conditions" (European Commission, 2015a).

The second measure is the opportunity to obtain a temporary deviation from the path of consolidation of public deficit for countries involved in structural reforms. This, however, has no specific association with investment activities. These two measures have provided some degree of 'flexibility' in managing public resources, but they do not allow significant counter-cyclical expenditure, nor do they appear able to foster additional investments.

An important debate has emerged on the introduction of a 'golden rule' that excludes public investment from the restrictions on public deficits. The argument is that public investment will mainly benefit future generations and it is therefore reasonable to fund it not through tax receipts, but through public debt. Moreover, current cuts in public investment can be detrimental to future economic growth, with negative effects on future wellbeing and fiscal budgets (Feigl and Truger, 2015).

A specific proposal for a 'golden rule' that excludes (some) public investment from deficit calculations has been developed by Truger (2015). The specific components of public investment that could be included in such an exemption are discussed in detail, but the study argues that by itself the rule would be unable to trigger significant new expenditure and has therefore to be complemented by a large investment plan. Such a 'golden rule' could be introduced without a change in treaties; the inclusion of the public financing of intangible investments (innovation, patents, software and education) among the exempted expenditure lines could stimulate sectors and activities that are more related to a sustainable path of growth for Europe (Truger, 2015). However, the range of activities that could be exempted from deficit restrictions requires a broad agreement. They should include investments that are growth-enhancing: a stricter definition could consider infrastructural projects alone, while a wider definition could include investments in education and training, R&D, and human capital. In order to avoid the accumulation of excessive debt, an upper limit to the investment exempted from deficit restrictions could be established, taking into consideration the parallel evolution of GDP (Feigl and Truger, 2015).

A parallel proposal concerns the extension of the built-in flexibility of the current fiscal pact with a "silver rule" for investments. When structural reforms are undertaken, member countries could be allowed to spend more than by the Fiscal Pact allotted for two years for debt-financed investments that are highly relevant for long-term growth and for slowing down climate change, (Aiginger, 2014, 2015).

The adoption of a 'golden rule' would allow a significant reduction of austerity in public budgets and would tackle the issue of demand shortage. In the short-term, a significant extension of 'flexibility' in the calculation of allowed budget deficits for EU countries could represent the most immediate and easiest possibility for counter-cyclical fiscal policy supporting domestic demand. This is what several EU governments have demanded, opening up occasional confrontations with the European Commission. An informal, ad hoc relaxation of fiscal rules could indeed be the most feasible way for moving out of current austerity policies. Giving a new priority to investment expenditure associated with industrial policy and public infrastructure could be a reasonable and effective way to implement such a policy change in a 'soft' and legitimate way. The concrete possibility to use such an opportunity, however, depends on the balance of power within European institutions and among national governments and political forces.

POLICIES FOR ATTRACTING FOREIGN INVESTMENT

The increasing concentration of activities in large multinational firms in most manufacturing and service industries has reduced the space for the survival and growth of domestic producers, and has emphasised the importance of foreign direct investment (FDI) in shaping countries' economic activities. The retreat of industrial policy in Europe, the widespread process of privatisation of public enterprises, and investment choices by private capital that have favoured financial activities over productive ones have pushed governments – especially those of smaller countries – to develop policies for attracting FDIs as a way to sustain and diversify their production base.

The location strategy by multinational firms for their FDIs is the organisation of global production systems that are able to access the knowledge, technology and competences of a given country and, at the same time, that can penetrate new national markets when their products are appropriate and competitive. Europe has been at the forefront of FDI activities (see UNCTAD, 2015) although the crisis has slowed down cross-border investment in Europe.

National policies for attracting FDIs have included the following tools:

- Tax incentives, which have led to growing tax competition also within the EU;
- Investment incentives, easy credit conditions, and favourable employment arrangements that aim to reduce capital and labour costs for multinational firms;
- Agreements on investment packages that often included privatisation of public enterprises, the takeover of national firms and access to public procurement contracts;
- Other inducements, including the provision of adequate public infrastructure and modifications of the regulatory environment.

Foreign FDI inflows have been largest in the major European countries, as part of the integration of production systems by large multinational firms; in relation to the size of national economies, however, they been of crucial importance for smaller countries, such as Spain, Portugal and Ireland, whose production activities in many industries are dominated by foreign-owned firms. While in the short-term FDIs can contribute technology, capital, production and employment to a national economy, there are a number of problems that have emerged in Europe. First, tax reductions have lowered public receipts and have put countries in a competition to offer the most favourable conditions to investors. Second, FDIs produce a permanent outflow of profits and royalties to the home country that weaken current accounts and tax receipts, and may reduce resources for investment. Third, the oligopolistic power of large multinational firms may prevent the development of national competitors and keep prices artificially high. Finally, national autonomy and democratic processes in key policy decisions may be curtailed by the strong power and influence of multinational firms.

While in many cases attracting FDIs is necessary for supporting weak economies, a number of measures could be introduced in order to increase the potential benefits and reduce the negative impact of FDIs. In particular:

- FDIs could be attracted in order to strengthen domestic production capabilities, integrating missing links in national production (joint ventures have often been used to this end);
- FDIs could be attracted with the aim of obtaining systematic technology transfer to domestic firms. Joint ventures have also often been used to this end, and the Chinese experience has been particularly effective in this regard;
- Foreign multinational firms could be required or encouraged to develop local supply chains that may have multiplier effects in domestic production;
- Governments could negotiate with foreign firms for the granting of access to domestic markets and procurement with conditions in terms of employment protection, quality of jobs and environmental sustainability.
- While regulatory restrictions on FDIs have almost entirely disappeared in Europe, some conditions could be introduced in some cases for specific activities by foreign firms, including tax behaviour, the repatriation of profits, equity restrictions, etc.

Such norms should be developed at the European level, providing tax harmonisation, avoiding tax evasion – as in the case of Google and Amazon – and limiting business power. However, some policy space could be found by national governments in negotiating specific investment plans.

STATE AID, SINGLE MARKET FOR SERVICES, TISA AND TTIP

The prospect for an EU industrial policy faces a major barrier in the rules on State aid and competition policies. The elimination of barriers to the operation of markets and the drastic reduction of State aid have been key elements of EU policies in the last two decades, and have built a complex system of regulations and rules that may create a series of obstacles for the emergence of a serious industrial policy. Such rules have often been enforced by the European Court of Justice, and now appear as a cornerstone of European integration. Moreover, there are several developments in EU policy that are making these rules more pervasive and stricter, with the Single Market for services and with international negotiations on TiSA and TTIP. The possibility of developing an industrial policy in Europe will crucially depend on the ability to stop or slow down such initiatives and introduce a clear principle that all the activities falling under the industrial policy mandate be temporarily exempted (say, for a period of five years) from current EU competition rules, from State aid restrictions, from Single Market regulations, as well as from the provisions of TiSA and TTIP in the case that they are introduced.

The general principle of EU legislation is the prohibition of any kind of selective government support providing any advantage to a firm over its competitors (see section 1.2 above, note 8). The Treaty of Rome in 1957 stated the limitations and the exemptions to State aid (Art. 81-89), revised by the Lisbon Treaty in 2008 (Art. 101-109). However, EU legislation offers the possibility of implementing some specific derogation, as enlisted in the Art. 107 of the Lisbon Treaty. The inclusion of State Owned Enterprises in the notion of State aid introduced another obstacle to the implementation of national industrial policies.[12]

Building on the European Single Market discussed above, a new development concerns the strategy for a European Single Market of goods and services launched in 2015. The focus is on services that have remained somewhat 'protected' by national rules and practices. The EU Commission argues that persisting barriers to services have a significant cost and their removal through the systematic implementation of the Services Directive would increase EU GDP by 1.8%. The 2006 Services Directive concerns services that represent 46% of EU GDP, including retail trade, tourism, construction and business services. The full implementation of the 2006 directive should aim, in the Commission's view, to remove 'red tape' and to simplify the establishment of service providers in their home country and abroad; to simplify the cross-border provision of services in other EU countries; to strengthen the rights of service recipients, in particular consumers; and to ensure easier access to a wider range of services.

12 EC (2012) Guidance Paper on state aid-compliant financing, restructuring and privatisation of State-owned enterprises, Staff working paper, Brussels.

The 2015 strategy aims to remove barriers to 'the free exchange of products and services', intervene on the inadequate enforcement of existing rules and on low levels of cross-border public procurement, and insufficient political support for structural reforms. Sectors such as transport, telecommunications and energy are also included in the strategic document of the EC.

Liberalisation efforts also include public services. The current approach of the EU commission towards the liberalisation of public services has widened the field of application for State aid legislation. Many public services, traditionally provided by a public monopoly, have been opened up in several countries to a privatisation and liberalisation process; this model envisages companies offering public goods and services below their costs and obtaining a subsidy from the government. The waves of privatisation have created new areas of State aid legislation, especially for companies providing publicly subsidized services and private market services.

The current rules about State aid defined the notion of Services of General Economic Interest (SGEI) as a special case for State aid policies. SGEI are services relevant for the population that are not supplied by the market alone. The usual examples are transport networks, postal services and social services. The provision of SGEI from or by publicly subsidised private companies falls under the requirements of the State aid legislation with the exemption of the *de minimis* measures.[13] Social Services of General Interest (SSGI) are another group of public services, usually not provided by markets that must comply with specific set of rules within State aid legislation. In 2012, the EU Commission revised the set of regulations for SGEI and SSGI, extending their application. In 2003 the European Court of Justice, with the so called Altmark judgment, formulated the four mandatory conditions that exclude State aid rules from application to social and general interest services.

After the 2008 crisis, the EU Commission had to allow more space for emergency action by governments with temporary State aid measures for the financial sector and failing banks in particular, in derogation from the Treaties with the goal of ensuring financial stability. After 2013, these exceptions have been closed as the Banking Union has redefined rules for the financial sector, including 'bail-in' regulations.

Finally, current State aid legislation ignores the impact of favourable tax treatment by EU member states. In fact, the global tax planning of transnational companies aiming to minimise tax payments represents a major 'distortion of competition' that is ignored by the European Commission.

The importance of industrial policy in the context of the recovery from the 2008 crisis and the need to target new areas of expanding economic activities may provide a strong argument for the weakening of State aid rules and of the ideological pursuit of competition and liberalisation measures that have so far characterised the action of the European Commission and the Court of Justice. Again, the possibility of changing such rules will depend on the balance of

13 Subsidies of scarce amount compliant with the current EU limitations.

forces within European institutions, among national governments and political forces.International developments that constrain European policies should not be forgotten; they mainly include the negotiations for TiSA and TTIP.

THE TRADE IN SERVICES AGREEMENT (TISA)

The Trade in Services Agreement (TiSA) is a trade agreement being negotiated by 23 members of the World Trade Organisation (WTO), accounting for 70% of world trade in services. The main objective of TiSA is the opening up of markets and improving rules in areas such as licensing, financial services, telecoms, e-commerce, maritime transport, and professionals moving abroad temporarily to provide services. TiSA would enable a greater liberalisation of the trade in services through multilateralisation. In a first step, the participants are negotiating a plurilateral agreement, which would then be extended to other countries. The impact of TiSA will be particularly relevant for service sectors such as telecoms and financial services. The negotiations started in 2013; in 2016 a new round of consultations is ongoing. The European Commission submitted a list of activities opened up for liberalisation and declared that they will not include publicly-funded health services and social insurance, since in the EU it is the right of each EU country to decide the public or private nature of each service.[14] The TiSA agreement would also lead to additional protection for private foreign investments, limiting the scope for national and European policy and regulation.

THE TRANSATLANTIC TRADE AND INVESTMENT PARTNERSHIP (TTIP)

A major policy development emerged in 2013 in Europe with the talks for the Transatlantic Trade and Investment Partnership (TTIP) with the United States. The Treaty is currently under negotiation and has come under strong criticism, but may be approved in 2016. TTIP would move Europe further along the road of trade liberalisation, would offer strong protection for private foreign investment and scale back the scope for public policy and regulation in major fields, including environmental rules, GMOs, utilities and other public services.[15] In case of approval of TTIP, the scope for industrial policy and, more generally, for public action in the economy would be drastically reduced.

THE FIVE PRESIDENTS' REPORT AND INDUSTRIAL POLICY

Looking into the future, the most influential document on the evolution of European integration, "Completing Europe's Economic and Monetary Union", was published in 2015 as the "Five Presidents' Report" (European Commission, 2015b).

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14 http://trade.ec.europa.eu/doclib/press/index.cfm?id=1254

15 On TTIP and the expected economic benefits, see CEPR (2013); a critical review is in EuroMemo Group (2014, ch.7). On global activism against liberalisation of trade and investment, see Utting, Ellersiek and Pianta (2012) and Pianta (2014).

Industrial policy is not addressed as such, but several policies have major implications on the space and scope for such public intervention.

The Reports emphasises the need for 'flexible' economies able to quickly adjust to 'shocks' and argues for a 'new convergence process'. The agenda that is set includes completing the Banking Union, accelerating the Capital Markets Unions, and then moving to a Fiscal Union "that delivers fiscal sustainability and fiscal stabilisation", and finally towards a Political Union. The theme that is more relevant for the 'real economy' is the goal of a 'new convergence' and the creation of national 'Competitiveness authorities' with the task of influencing wage setting, under the assumption that (downward) wage flexibility is the main 'shock absorber' and a key tool for assuring the (cost) competitiveness of national economies. The lack of any attention to technological competitiveness, quality, innovation and other non-price factors is indeed a worrying sign of the lack of understanding by all European institutions of the real foundations of Europe's ability to compete. The creation of Competitiveness authorities may in fact institutionalise the pressure towards wage and cost reductions in the pursuit of greater cost competitiveness, especially in less technologically advanced countries. In the same vein, employment is supposed to be created by 'efficient labour markets'. Conversely, the steps towards a Fiscal Union outline the prospect of a Euro Area Treasury as a guardian of the Stability and Growth Pact, but they do not envisage any additional budgetary resources for public investment, nor significant tools for Keynesian countercyclical policies. If EU policies move along the direction envisaged by the 'Five Presidents' Report', the space for an industrial policy will be further reduced.

INDUSTRY 4.0

The most recent international trend in business and policy concerning the future of industry and manufacturing is the 'Industry 4.0' framework on the digital transformation of production (Roland Berger, 2014). The idea was launched by international consulting companies and has now made inroads into national and EU policies. In most countries, national programmes have been developed supporting the diffusion of new technologies such as cloud computing, big data, sensors, 3D-printers, expanding current policy tools and proposing a new governance system including business and policy makers.

This represents a further danger for the possibility of developing industrial policies in the direction suggested in chapter 2 above. The emphasis of such plans are on the extreme automation and robotisation of production, systematically reducing human labour, also in service activities. A close interaction is expected between technological development, forms of organisation and actual production, where human labour and skills play almost no role. Moreover, little room for public debate on such themes is left, as the arguments are framed in technocratic terms and all decisions are left to large firms and consultants. Again, this road to industrial change would lead to a reduction of the space for industrial policy.

POLICIES FOR OPEN SOURCE DIGITAL ACTIVITIES

The rapid scientific and technical advances in information and communication technologies has given new importance to traditional Intellectual Property Rights (IPR), leading to a "commodification" of knowledge and technology under the legal protection of more stringent IPR regulations.

In the US, the Bayh-Dole Act (1980) triggered a patent rush by research institutions. In 1998, the Digital Millenium Copyright Act extended copyright to a broad range of digital services, strengthening the process of privatisation of digital goods. US IPR legislation has been extended to also include technical information and business methods formerly in the public domain.

In the analysis of Paul David, this policy has helped incumbent firms "to stabilize traditional business models by blocking incursions by new entrants' pursuit of disruptive business strategies" (David, 2014). Although the mainstream policy approach justified increased IPR protection as a greater incentive to innovation, IPRs have not been a factor in triggering ICT growth or innovation (Granstrand, 2003). In fact, many innovations have emerged and continue to spread in an 'open' framework.

The scientific community has reacted to such a privatisation process with the development of a new group of digital procedures and new modalities of "open" research: open science, open data and open repositories. The analysis of Paul David (2014) has pointed out several experiences of "bottom-up", cooperative, "opened" responses by the scientific community, including the Neurocommons project (a collaboration between Science Commons and the Teranode Corporation), the Human Genome Project, and the Haplotide Mapping Project All are major international programmes that adopted open commons licenses to prevent the patenting of their output.

Also in the digital industry, a similar "open" approach found major success with the development of open source software communities such as Linux or Wikipedia, the worldwide collaborative free encyclopaedia developed by the collaboration of users. The portal SourceForge.net, a major open source community, provided tools for developers to create software in over 430,000 projects with a daily average of 4.8 million downloads.

The open source approach led to innovative typologies of licensing, such as copyleft, with a huge international adoption. Online creation communities (OCCs) have emerged, bringing together individuals that mainly interact via a platform of online participation, with the goal of building and sharing common resources (Fuster Morell 2013).

There is a lack of wide-ranging EU policies for supporting the expansion of open source activities. The EU Commission does not look at open source as a competitive factor for the economy; collaborative projects are left to specific cooperation agreements between interested actors and software communities. The only exception is copyleft licensing and open source software for public administrations. A major interest has recently emerged on organisation and access to open data. This includes data released by governments and is associated with the emergence of "Big Data", very large databases that could be used as inputs for digital industries and new services.

In fact, Greenwald and Stiglitz (2013) argued that greater attention to open source and lower protection of IP would boost innovation by expanding collaborative behaviour between scientists, researchers and firms that is currently discouraged by the strict protection of IPR.

An appropriate, imaginative industrial policy for digital activities could therefore expand the space for "open activities" – open source, open data, open collaboration – both in the market and in non-market, socially relevant activities. This would favour the emergence of new forms of producing, sharing and using knowledge, and in new forms of work (see the analysis of Rushkoff, 2016 on the alternative to "digital industrialism" and experiences such as the videogame company Valve Inc, where workers have introduced self-management practices, http://www.valvesoftware.com/company/Valve_Handbook_LowRes.pdf).

ACTIONS AT THE NATIONAL LEVEL

In addition to Europe-wide programmes, several tools for industrial policy have been maintained at the national and regional levels. The report of the European Parliament (2015, table 4, p.61) summarises some common policies and approaches present in major countries. On the policies concerning R&D and innovation, the EU has produced annual 'RIO reports' for all countries, assessing national funding, horizontal actions, targeted innovation initiatives and other forms of public action that are generally relevant from an industrial policy perspective (see Nascia and Pianta, 2015 for the RIO report on Italy). A summary of the main policy areas present in most countries is provided below.

R&D tax credits and incentives. One of the main tools for "horizontal" industrial and innovation policy is the R&D tax credit, introduced by many EU countries in past decades with a wide variety of programmes. This represents the largest public financing of private activity associated with industrial policy currently available.

The Patent Box. The emphasis put in recent decades on the greater role and protection of intellectual property rights (IPRs) has brought to some countries the 'patent box', a specific tax benefit for firms' earnings coming from patents, trademarks, licenses and software. A deduction from the firm's tax base is provided for a share of the income from patents, trademarks, licenses and software. Patent boxes are indirect, semiautomatic incentives common in OECD countries. Their objective is to stimulate the production of patents and IPRs, but no empirical evidence on such an impact is available, as argued by Mazzucato (2013). In fact, the 'Patent box' plays a key role in the strategies of large firms to reduce taxation on their technology-related earnings. In particular, the global tax planning strategies of multinational companies often 'hide' profits in royalty payments for patents and IPRs, moving them to 'fiscal havens'. Often, the location of subsidiaries owning patents and earning royalties is chosen with consideration of the tax reductions offered – such as the 'Patent box'.

For the 'Patent box', as for R&D tax credits, serious evidence is lacking on the real additionality effect of such measures, especially when the international dimension is considered, including the potential shift of the same activities from one country to another.

Loan guarantees for SMEs. A growing emphasis has been put on improving access to financial markets for SMEs. The main tool in this regard is a system of loan guarantees. National programmes differ widely in this respect, and a variety of good practices in order to stimulate investment, reduce risk and support change has been developed.

Support for Start-up firms. In many countries, legislation has been introduced supporting the emergence of innovative "Start-up firms". They were defined as new small firms focusing on technological innovation, located in an EU country with some additional characteristics. Start-up firms are generally offered indirect incentives (tax holidays, lower administrative costs, some exceptions to labour laws and tax bonuses for investors), access to loan guarantees and support for their internationalisation efforts. Some results have been obtained in this regard, but it is too early to make a proper assessment of such policies. More generally, previous policy analysis on the impact of support for new firm creation has shown that the main problem is not the creation of new small firms *per se*, but rather their ability to survive in the medium term in less favourable market conditions.

ACTIONS AT THE REGIONAL LEVEL

Most countries and regions have programmes and tools for supporting local development, often using resources from EU Structural Funds. While national policies have scaled down their attention to industrial policy, a range of experiences have emerged in regions and large cities characterised by rapid economic change, deindustrialisation and the emergence of new dynamic activities. In some regions and cities with progressive local governments, a new policy space has been developed with novel actions that have brought industrial policy within the reach of their responsibilities.

The specific production structure of regions has led to tailor-made measures that could support current specialisations (including actions in the context of the EU 'smart specialisation' initiatives) or the emergence of novel economic activities building on existing competences and resources. The quality of employment, learning processes and environmental issues has generally been paramount in shaping such new local policies.

Such policies tend to focus on the key strengths of local economies, considering the presence of different models of local activities, in particular:

- 'Industrial districts' – a geographical concentration of a large number of small firms closely integrated in a highly specialised production system, often with a coordinating role played by a larger firm. They are typical of traditional industries in Southern Europe and have been deeply affected and transformed by the crisis (see Bianchi and Labory, 2011a).
- 'Anchor' organisations – large firms, major infrastructure or public institutions with large economic footprints. They are important 'nodes' of broader business networks, favouring local development through learning processes, procurement from suppliers, creation of employment, etc. They can include a large firm, universities, R&D centres, high technology hubs, advanced business services, etc. In France, they have centred on the 'pole de competitivité' initiatives. In these contexts, policies have aimed at specific actions supporting 'high-impact firms' whose dynamics could be assessed at the level of the local production system as a whole, rather than at the level of an individual firm.

Some of these policies have been developed by progressive local and regional governments and provide important lessons on how a generalisation of good local practices could integrate and support a broader European industrial policy.

Policy experiences in these cases have been reviewed, for example, by Bailey, Cowling and Tomlinson (2015) in the case of the UK, and by Bianchi and Labory (2011b) in the case of the Emilia Romagna Region in Italy. In addition, the transition to the environmental sustainability of local production systems has been addressed by Coffey and Thornley (2015).

The range of tools that have been used in progressive local and regional policies include:

- Public financial guarantees for the loans that small firms can obtain from local banks;
- Low-cost provision of business services to industrial district firms, ranging from technical aspects to design, internationalisation and marketing;
- Funding of research or design consortia among firms and with public research organisations;
- Support for the creation of local 'filières' with vertically integrated production systems;
- Support for diversification efforts in expanding activities;
- Local demand policies using public procurement;
- Support for diffusion of know-how, training, learning processes, business creation;
- Provision of appropriate local infrastructures in disadvantage areas;
- Employment creation programmes in public, environmental and socially relevant activities;
- Promotion of local agricultural and food production through locally sourced, coordinated buying;
- Specific programmes – in urban mobility, resource use, energy, waste reduction and recycling, etc. that can increase environmental sustainability.

The potential of local and regional policies for supporting economic development has been also at the centre of a growing number of US initiatives, which are analysed in detail by Rogers and Rhodes-Conway (2014). US experiences of progressive local and city governments have focused on the identification of critical industries and firms, the assessment of the value flows in the local economy, and the consideration of infrastructure, human resources and competences that are present. Specific policy actions have used urban planning tools, procurement contracts and local subsidies in order to obtain some improvements in the quality of local activities, higher wages and employment protection from key firms. Infrastructure investment and environmental improvements have also been financed by funding programmes involving firms and non-profit organisations. In some cities, a local land bank has been created in order to fund the transformation of abandoned properties into affordable housing, local businesses and parks.

Many of these regional approaches fall into the 'place-based policy' advocated in Barca (2009) in the context of the debate of the reform of EU cohesion policy. A discussion on such an approach has also been developed in the UK context (Bailey, Hildreth, De Propis, 2015). However, large resources available from EU Structural funds have not been really used as tools for advancing such local production systems, diversifying activities and upgrading their competences. With the crisis, the result in most areas has been a weakening of local system and a widening of regional disparities in Europe (Meliciani, 2015).

The need for the involvement of social actors, public participation and consensus building has long been an element in progressive regional policy experiences. Based on the Emilia-Romagna case, Bianchi and Labory (2011) argued that "a long-term and sustainable vision of industrial development can be effectively defined and implemented if this is done in a process involving local stakeholders and ensuring consensus". Along the same lines, the Eurofound (2013) report stressed the importance of social dialogue in the development of industrial policies.

AN OVERVIEW OF CURRENT EU POLICIES

At the end of this chapter on current EU policies and on the related debate, we present (Figure 7) a summary of the main policy actions by the European Union so far described, documenting the limited policy space for building industrial capacity. EU policy has continued to disregard the seriousness of industrial decline and continues to rely on a policy frame wherein priority is given to market liberalisation. Even after the dramatic effects of the crisis, 'horizontal' actions remain the main forms of 'allowed' public intervention, and no significant EU-wide resources have been made available to members states. Moreover, even the very mild tools of present EU industrial policies have lacked an adequate governance mechanism; industry lobbies exert major influence and there is a lack of democratic processes and broad participation in decision making – a weakness that, unfortunately, is found in all fields of the present model of European integration.

Moreover, while there is some opening for industrial policy in recent policies and debates, a set of other EU policies is likely to further reduce the space for such action; they include competition and State aid rules, the prospects for integration proposed by the Five Presidents' Report, TTIP negotiations, and Industry 4.0 strategies.

A SUMMARY OF CURRENT MAIN INDUSTRIAL POLICY ACTIONS IN THE EU

EU EUROPE 2020 GOALS	ANTI-TRUST, FREE TRADE	SMART SPECIAL. IND. COMPACT	STRUCTURAL FUNDS	EIB	REGULATION
Decisions imposed on countries	Intern. and ext. liberalisation. TTIP negotiat. protecting priv. investm.	Buil. critical mass of focused adv. activities Goal of 20% of GDP from industry No additional EU funds	Infrastruct., education, support for regional dev., spec., cohesion:0.4% of EU GDP	Funds for profitable investm. € 72 bn	Specific rules for industries, environm. etc.
Fund EU activities	EU prevents Natl. action	EU rules	EU rules / Natl. co-financing	Financial mkt logic	EU rules prevail
NATL. GOVERN-MENTS	STATE ENT. PROCUREM.	"OLD" IND. POL.	HORIZONTAL POL.	PUBLIC INVEST.	NATL. REGUL.
			R&D tax credits Infrastr., educat. regional pol. (little funds, little effects)	Major cuts in public investm. projects	Major probl. in food, environ., GMOs, media, culture, etc.

Source: Pianta (2014)

FIGURE 7

4

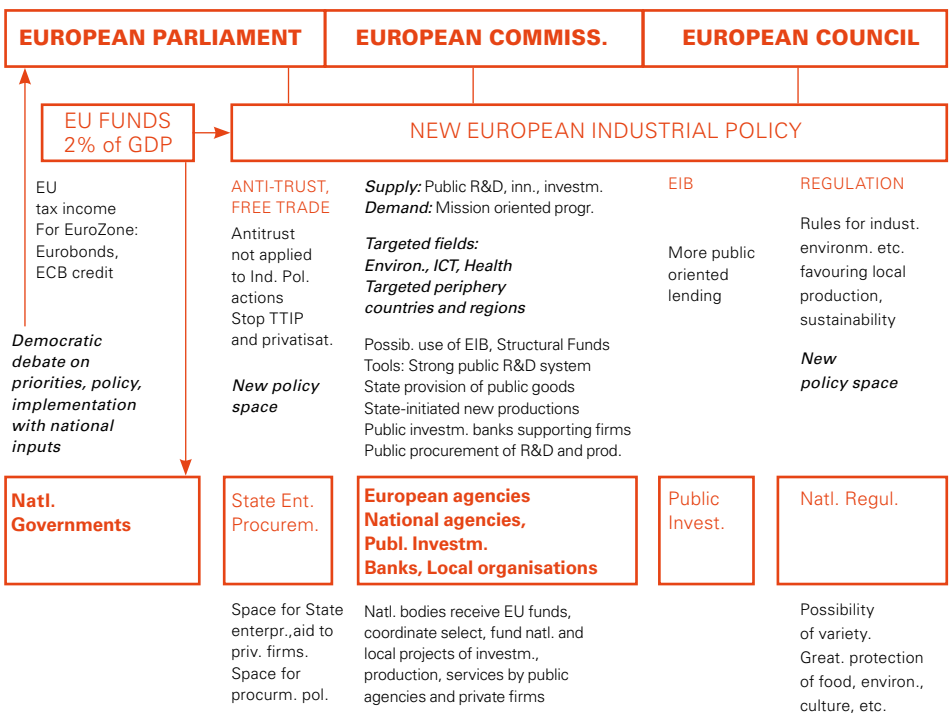
IV

OPTIONS FOR A PROGRESSIVE INDUSTRIAL POLICY IN EUROPE

HOW INDUSTRIAL POLICY COULD BE INTRODUCED

The specific proposal that is advanced in this section builds on the conceptual arguments of chapter 2 and on the existing policy space provided by European institutional arrangements and policy actions discussed in chapter 3. The major components of an industrial policy are addressed in this chapter, proposing a 'preferable' model of progressive industrial policy that takes into account the constraints for short-term action and the obstacles to political change. In addition, a longer-term course of action, and a variety of policy options that could be pursued in particular contexts are also proposed. Figure 8 summarises the new framework for European institutions, funding and policy-making that could be associated with the new European industrial policy.

A SUMMARY OF THE NEW EUROPEAN INDUSTRIAL POLICY PROPOSED



Source: Pianta (2014)

FIGURE 8

A EUROPEAN POLICY, NOT JUST NATIONAL ONES

The analysis of the previous chapters has shown that a full, integrated European industrial policy is needed. The new industrial policy has to be firmly set within the European Union and – if required – within the institutions of the Eurozone. This is needed in order to coordinate industrial policy with macroeconomic, monetary, fiscal, trade, competition, regulatory and other EU-wide policies, providing full legitimation to public action at the European level for influencing what is being produced (and how). Changes in some rules and interpretations are required in current EU regulations, in particular those on competition, State aid and trade, which prevent public action from "distorting" the operation of markets. As this policy is likely to meet opposition by some EU countries, a "variable geometry" EU policy could be envisaged, excluding the countries that do not wish to participate.

Close integration has to be developed between the European dimension (providing policy coherence, overall priorities and funding), the national dimension (where public agencies have to operate and an implementation strategy has to be defined), and the local dimension (where specific public and private actors have to be involved in the complex tasks associated with the development of new economic activities).

A POLICY MOBILISING 2% OF EUROPE'S GDP

This policy has been significant in terms of the size of new resources that are mobilised, which should be about 2% of Europe's GDP for 10 years, about EUR 260 billion per year. This is the order of magnitude of most proposals that have emerged so far, and such an amount would make an impact in all the aspects, from macroeconomic to technological considerations, which defined in chapter 2 above the rationale for an industrial policy. As a term of reference, we can note that EFSI envisages an investment plan of EUR 315 billion over several years; the European Central Bank provided in the period December 2011-March 2012 alone EUR 1,000 billion in special funds to private banks at a 1% interest rate, with no success in turning them into real investment; EU Structural Funds in the period 2007-2013 reached EUR 347 billion; and lending by the European Investment Bank was EUR 72 billion in 2013. An investment effort of about 2% of EU GDP appears to be feasible, considering the size and power of European institutions, and would be big enough to compensate (at the macroeconomic level) for the lack of private investment and low exports, effectively ending Europe's stagnation. This integrated European industrial policy has to go well beyond the specific, modest, disparate actions on investment, innovation, environmental protection, etc. that are currently carried out in Europe. Industrial policy has to include an important investment programme but cannot be reduced to the setting up of an investment fund such as EFSI (see below on funding sources).

GREATER NATIONAL POLICY SPACE AND A 'GOLDEN RULE' FOR PUBLIC INVESTMENT

At the same time, national governments should be provided with a much greater policy space, relaxing the constraints on public investment through some form of 'golden rule' (Truger, 2014). Such a policy change could spur countries to invest annually the equivalent of at least 1% of Europe's GDP for the next ten years, also taking advantage of the current extremely low interest rates. The mobilisation of national resources in addition to the ones made available by European industrial policy could have a major impact on Europe's recovery.

REDUCING THE DIVERGENCE BETWEEN EUROPE'S CENTRE AND PERIPHERY

A fundamental objective of industrial policy in the present European context is the reduction of the divergence in economic activities among European countries and regions that brings with it the danger of a disintegration of Europe. Industrial policy will have to focus on the reconstruction of production capacities in the regions and countries that have been most affected by the current crisis. A practical way of assuring this is to pre-determine a criteria for regional and national distribution of resources. For instance, 75% of industrial policy funds could go to activities located in "periphery" countries (Eastern and Southern Europe, plus Ireland). At least 50% of the funds should be devoted to the poorer regions of such countries and 25% could go to the poorer regions of the countries of the "centre". This approach would ensure that industrial policy has a positive impact in the reduction of disparities among regions within countries and Europe as a whole.

PUBLIC INVESTMENT, PUBLIC ENTERPRISES, SUPPORT OF PRIVATE FIRMS AND OTHER POLICY TOOLS

An investment programme is at the core of the proposed European industrial policy, but other policy tools should be used with an integrated approach, as pointed out in chapter 2. In particular, the policy tools to be adopted by European industrial policy should include the following:

- A public investment programme providing public infrastructure and public goods;
- Support for existing public enterprises and creation of new ones for the provision of public services and public interest activities;
- Participation with capital shares in the creation of new private firms in key areas;
- New public-private partnerships;
- Public procurement programmes for the goals of industrial policy;
- 'Mission-oriented' innovation programmes guiding R&D and technological change.

Within the available resources assigned to each country, national governments should be able to decide the most appropriate combination of these policy actions.

A POLICY TARGETED TO SUSTAINABILITY, ICTS, PUBLIC SERVICES

The activities developed by European industrial policy should be highly targeted to a selected number of fields, identified in chapter 2 above: activities related to environmental sustainability, appropriate diffusion of ICT, and development of health and welfare services.

AN INVESTMENT PROGRAMME FOR SUSTAINABLE, INNOVATIVE, SOCIALLY INCLUSIVE ECONOMIC ACTIVITIES

The nature of the investments carried out and of the economic activities set in motion by the new European industrial policy should be characterised by high environmental sustainability and 'social quality', combined with innovativeness and economic efficiency. The quality of labour involved, the wages paid, and the working conditions offered are all crucial aspects in shaping the proposed industrial policy. Public action should also consider overall economic and social effects, and aim to reduce unemployment and income inequality.

THE EIB FIRST, A PUBLIC INVESTMENT BANK SECOND

Existing institutions could be renewed and integrated in such a new industrial policy, including – at the EU level – Structural Funds and the European Investment Bank (EIB). However, their mode of operation should be adapted to the different requirements of the role here proposed. While, in the short term, adapting existing institutions is the most effective way to proceed, in the longer term, there is a need for a dedicated institution – possibly a European Public Investment Bank – coherent with the mandate of reshaping economic activities in Europe.

EUROPEAN POLICY, NATIONAL AND REGIONAL IMPLEMENTATION

A system could be envisaged where the EU Council and the European Parliament agree on the objectives, tools, guidelines and funding of industrial policy, calling the EU Commission to implement appropriate policy tools and spending mechanisms. In each country, a specific institution – either an existing or a new one, possibly a National Public Investment Bank – could assume the role of coordinating the implementation of industrial policies at the national level, interacting with the existing national innovation system, policy actors, the financial sector, etc. More specific agencies, consortia or enterprises, with flexible institutional arrangements but with a strong public orientation, could be created (or adapted, if already in place) for action at the local and regional level and for initiatives in particular fields. The institutions at the national and local level would take responsibility for the selection of the new public activities that are required, of the appropriate policy tools, of spending decisions and projects to be developed. They would be subject to the strict monitoring described below. National initiatives would be able to use assigned resources from European industrial policy and will be encouraged to combine them with additional national public funds and private capital that could be attracted to invest in key areas identified by industrial policy.

DEMOCRATIC PROCESSES, NOT JUST TECHNOCRACY

Europe's industrial policy cannot be reduced to financially-based investment decisions as currently done by the EIB. It has to be rooted and legitimised by a broad democratic process centred in the European Parliament, where key decisions on objectives, tools, guidelines and funding of industrial policy will have to be made. Rebuilding and re-orienting Europe's economies requires technical competences, but is not a job that can be left to technocrats. The political process and democratic participation have to take centre stage in the shaping of Europe's industrial policy. A key role has to be played by the European Parliament in debating and deliberating the objectives, tools and guidelines of industrial policy. The European institutions of industrial policy should be accountable to the European Parliament, who appoints its board, where representatives from business, research organisations, trade unions, environmental groups, civil society organisations should be included. No "revolving door" between industrial policy institutions and private firms and banks would be allowed. European institutions should engage in consultation with EU political, economic and social actors for developing the proposed industrial policy.

AN INTEGRATED POLICY PROGRAMME, NOT JUST BUDGET LINES

Current EU policies are often 'split' between strategies without budget and budget lines without strategies. An industrial policy has to integrate objectives, policy programmes and the resources available. It has also to integrate the use of different, complementary policy tools and spending programmes.

EUROPEAN PUBLIC FUNDS, NO NATIONAL FUNDS

Funds for a Europe-wide industrial policy should come from Europe-wide resources. It is essential that troubled national public budgets are not burdened with the need to provide additional resources and that national public debt is not increased. For the group of Eurozone countries, financing through EMU mechanisms could be considered. Eurobonds could be created to fund industrial policy; the EIB or a new European Public Investment Bank could borrow funds directly from the ECB; the ECB could directly provide industrial policy funds to the spending agencies concerned.

An alternative may come from a deeper European fiscal reform, introducing an EU-wide tax on corporations, thus effectively eliminating fiscal competition between EU countries. A share of proceedings – perhaps 15% – could go to fund industrial policy, public investment, knowledge generation and diffusion at the EU level; the rest could be transferred to the countries' treasuries. Other sources of EU funds could include an extended Financial Transaction Tax or a Europe-wide wealth tax such as the one proposed by Thomas Piketty (2013). All these measures, however, are more difficult to design and implement.

LONG-TERM, HIGH-RISK PUBLIC CAPITAL FIRST, PRIVATE CAPITAL SECOND

The public nature of many activities that industrial policy is called to support means that public funds have to play a crucial role in financing such initiatives. The economic activities targeted by industrial policy tend to be characterised by high-uncertainty, high-risk, low short-term private returns and potentially high long-term public benefits. Some investment, however, may involve also private capital. In fact, funding arrangements could differ according the relevance of the 'public' dimension:

a. The priority of public funds should go to public investment in non-market activities, such as public goods provision, infrastructures, knowledge, education and health;
b. Public funds and long-term private investment should be combined in funding new 'strategic' market activities, such as the provision of capital for new firms in emerging sectors;
c. Public support could stimulate financial markets and private actors to invest in firms and non-profit organisations developing "desirable" market activities that could more easily repay the investment.

In all cases, the rationale for financing industrial policy cannot be reduced to the financial logic of the "return on investment". The benefits in terms of environmental quality, social welfare, greater territorial cohesion, and more diffused growth at the European level have to be considered, and the costs have to be shared accordingly.

REINVENTING THE GOVERNANCE OF PUBLIC INTEREST ECONOMIC ACTIVITIES

A major challenge for the effective functioning and legitimation of a European industrial policy is the development of a new governance system that overcomes the problems of lack of efficiency, collusion between political and economic power and corruption that have emerged in the past. A practical arrangement could be that monitoring and evaluation procedures similar to those required by EU Structural Funds would be introduced in the case of industrial policy activities. More generally, the public interest activities that will be supported in various ways by industrial policy will have to be managed in a way that assures inclusive and participatory decision making, takes into account the diversity of social interests involved, is accountable to democratic processes, assures transparency in all steps, using also the tools now made available by open data systems.

BOTTOM-UP COMPETENCES AND PROJECTS FIRST

The targeting of selected areas for European industrial policy has to be implemented, as much as possible, with a bottom-up approach that is able to allow the potential for new production capacities to emerge at the local level. The approach developed by the EU 'smart specialisations' strategy could be extended in this context in order to identify effective initiatives with a critical mass and a significant local impact.

SUSPENDING EUROPEAN COMPETITION AND STATE AID RULES

The specific objectives and targeted activities of Europe's industrial policy should be temporarily exempted from the norms on competition, restrictions on State aid and EU Single Market rules for a period of five years. The very objective of industrial policy, in fact, is to develop activities that markets are unable to carry out and expand. This includes the possibility that targeted firms – with either private or public ownership – could be supported in various ways, including public procurement, in order to restructure economic activities and reshape market competition. The emergence of new forms of organisation for the new activities could also be supported.

FAVOURING COORDINATION AND PERVASIVE EFFECTS IN THE ECONOMY

The transformation envisaged by Europe's industrial policy requires coordination at the European, national and regional levels among the different aspects of economic and social activities. For example, moves toward a sustainable economy have to coordinate changes in production and in consumption patterns, favouring more sober and responsible lifestyles. Institutions will have to evolve alongside economic activities. Education, welfare, distribution and many other policies will have to interact with the changes emerging in production systems. The activities targeted by industrial policy tend to have pervasive effects throughout the economy and society; this process has to be favoured in order to obtain all the potential benefits from industrial policy.

A POLITICAL AND SOCIAL CONSENSUS ON REBUILDING EUROPEAN ECONOMIES

Finally, a new major European policy requires a wide consensus from European citizens, social forces, and political parties. The concrete benefits of ending Europe's stagnation, providing jobs and wages, and improving environmental sustainability and social justice could make the challenge of mobilising broad support around the proposal of a European industrial policy easier.

AN APPROPRIATE POLICY CONTEXT

A FAIR DISTRIBUTION OF THE BENEFITS OF INDUSTRIAL POLICY

Industrial policy aims, among other things, at increasing innovation and productivity growth. When new products and industries do emerge as a result of these efforts, however, the new markets are dominated by firms, often with monopoly power, that are in the position to appropriate huge 'Schumpeterian' profits. Such developments have often had a strong financial dimension, with high-risk investments involved and booming stock values for high technology firms. The gains from this have been highly concentrated in top incomes, while the funding of the research that made such innovations possible has largely come from public sources, and the public sector has often had to cover the losses when new projects fail (Mazzucato, 2013). A more balanced distribution of the benefits of technology between public and private interests has been proposed through changes that would assign a greater share of the gains to the public organisations that have shaped the emergence of new technologies and to the workers involved. Tools that have been proposed include granting State institutions shares of the high technology firms benefitting from public R&D; creating and expanding public investment banks that could fund risky projects and obtain the benefits of success; and modifying intellectual property rights rules to emphasise the public dimension of knowledge created through public R&D. Greater resources flowing to public organisations would limit the rise of top incomes and, moreover, provide greater resources for underfunded basic R&D and public education that are essential for the innovation process itself (Lazonick and Mazzucato, 2013; Lazonick, 2015).

A second way technological change has affected income distribution is through the direction taken by innovations. Considering the functional distribution of income, profits have increased much more than wages as a result both of new products that offer temporary monopoly power and as a result of new processes that replace labour. The latter have often the effect of reducing the quantity (and sometimes also the quality) of employment used, weakening labour in its relationship with capital. Technology and industrial policies could be introduced and expanded in order to orient innovation in a direction that could have less unegalitarian effects, as argued by Atkinson (2015), and expand (rather than replace and reduce) the quality of labour used, especially in services where human activity remains important. Public organisations could directly introduce labour-enhancing innovations; tax incentives and R&D support could primarily go to firms that give priority to new products, rather than new processes; and labour-intensive activities where labour skills and wages are higher than average could be encouraged. As pointed out above, the fields and missions where resources should go could include environmental sustainability, appropriate ICT applications, health and welfare services.

Technological change is a major driver of productivity growth in firms, which draws from a variety of other factors – increased education, organisational change, better work practices, etc. Considering the wide gap that has opened in recent decades between productivity and wage growth, it is important to design better institutional arrangements that may allow productivity increases to be equally shared between capital and labour, and among all workers (see ILO, 2015; Franzini and Pianta, 2016). It is important that a discussion on the distribution of the envisaged benefits of industrial policy defines from the start the conditions for a distribution between profits, rents and wages (and within wages) capable of reducing inequalities and increase social justice.

POLICIES IN OTHER FIELDS THAT ARE SUPPORTIVE OF INDUSTRIAL POLICY GOALS

Several policies in other fields – from education to public infrastructure – have an indirect effect on the ability to carry out industrial policies and on the possibility of success. We concentrate here on only a few aspects that have a direct impact on the strategies and governance of firms that could be involved in industrial policy actions.

Labour rights, wages, social insurance. Providing more jobs with high skills, security and wages is a major objective of industrial policy. This is in direct contrast with current 'structural reforms' pushed by the EU in most countries, which aim to reduce workers' protection and increase flexibility in labour markets. Labour market and social policies that stop the current rise of 'non-standard' employment, especially among youth, and that assure higher wages through a greater role of national collective contracts and minimum wage rules could be complementary to industrial policy in improving employment and wages. EU-wide unemployment benefits and new norms on the full portability of social rights, social insurance and pensions all over the EU would also play an important role. The connection between Europe's industrial policy and improved labour rights could also be made in a more direct way. As industrial policy envisages an expansion of high-skill, high-wage labour, specific guidelines – stricter than national legislation – on limits to 'non-standard' employment, on the types of contracts used, on labour protection, wage levels etc. could be defined as part of industrial policy for the activities and firms that are funded by EU industrial policy. These guidelines should be mandatory within the public sector. Private firms could be required to adopt such guidelines in order to receive industrial policy funds, access public procurement and other forms of support, on the grounds that improved labour conditions and a fair distribution of the benefits are key goals of industrial policy.

Tax harmonisation. Tax harmonisation within the EU – especially taxation on corporations, capital income and wealth – is a crucial complement to industrial policy. The current lack of tax harmonisation creates incentives to firms' location, investment and production that are worsening the problems of divergence within the EU and make the notion of 'fair' competition among European firms meaningless. The 2007 Treaty on the Functioning of the European Union (TFEU) does not specifically cover tax harmonisation, though articles 110-113 under the unanimity of the Council makes the harmonisation of indirect tax

possible. This has resulted in the lack of harmonisation of taxation policy in Europe, but action has become urgent in this regard. This would make the implementation of industrial policy easier and reduce the extent of divergence across EU countries. The notion of State aid has to consider the tax treatment of economic activities, since taxation is a factor of bias in the competition among countries. However, a fully harmonised corporation tax is still far from the agenda of the EU Commission, especially for capital income taxation. Tax competition has been a major tool used to attract foreign investments and has led to a reduction of tax rates. In the period 1996-2015, top statutory corporate income tax rates recorded a general fall across EU28 member states. In 1996 the average corporate income tax rate was 35%, as opposed to 22.8% in 2015. In the same period, top statutory personal income tax also rates recorded a general downturn, from 47% to 39.3%.

Regulating finance. The regulation of finance is an issue at the heart of Europe's problems that can deeply influence the behaviour of firms and therefore the success of an industrial policy for reconstructing economic activities. The specific measures in this field – proposed by a very large pool of literature – include a return to a division between commercial and investment banking; a generalised tax on all financial transactions to limit speculative trading; and strong limitations on financial derivatives. In more radical versions, some regulations on capital movement are proposed. Such a downsizing of finance would put less pressure on profit maximisation in firms and leave more room for real investment and higher wages.

Controlling top managers' compensation. In the top 350 US firms, the ratio of the compensation of managers to that of average employees rose tenfold, from 30 to 1 in 1978 to 296 to 1 in 2013 (Mishel and Davis, 2014). This creates obvious problems of inequality, social justice, legitimation and efficiency. A reduction of top managers' incomes in private firms cannot be legislated and enforced, but several actions can be taken that would make the current behaviour socially unacceptable. A European, national or regional policy for reducing income disparities within firms and organisations could define guidelines on acceptable ratios between to best-paid, average-paid and worst-paid workers. These guidelines could be enforced within the public sector. They could then state that private firms violating such guidelines will be penalised in access to public procurement, incentives and tax relief, on the grounds that extreme disparities burden society with unacceptable social costs, which eventually have to be met by public expenditure. This would create incentives within firms among responsible managers, shareholders, employees, and stakeholders to change the current model of corporate governance that has led to such disparities, also introducing (when possible) greater accountability and democracy in corporate governance.

CONCLUSIONS

This report has shown how urgent (and at the same time) complex the task to develop a progressive European industrial policy is. The goal is to develop new economic activities that are socially desirable and environmentally sustainable, as well as economically efficient, filling the investment gaps left by the operation of markets. These activities should be located in the poorer countries and regions of the EU, so that the worst effects of the crisis started in 2008 and the current divergence within the EU can be reversed. The industrial policy of the European Union should target relevant areas of new economic activities and provide funds for a variety of policy tools: public investment, public enterprises, support to private firms, procurement programmes, mission-oriented innovation programmes, etc. Such initiatives could set in motion a new trajectory of European development, orienting R&D and technological change, attracting private investment, and reshaping business organisations and the use of labour. A European industrial policy could create and organise markets that the short-sighted, risk-averse decisions of private firms and banks are unable to develop. In order to allow major expansion of environmentally sustainable activities, appropriate ICT applications and public health and welfare services, important new, public resources at the European scale have to be directed towards such activities. A public investment bank has to fill the gap currently left by the finance-driven allocation of investment, thus the current EU regulations on competition, State aid and the Single Market have to be temporarily suspended. Industrial policy could become a major force supporting cohesion objectives within the EU, driving a new process of convergence that could lead to a rethinking of Structural Funds use.

A progressive European industrial policy would introduce a major change of direction in the process of European integration. In the last three decades, neoliberal views on the ability of markets to operate efficiently and regulate themselves and on the liberalisation of finance have dominated the process of European integration. Eight years ago, the 2008 crisis showed that finance and markets do fail, and they have proven to be unable to pull Europe out of a long stagnation. In this context, the introduction of a European industrial policy would be a concrete step toward introducing much needed corrections in the way markets and finance operate, re-orienting their activities towards a new trajectory of sustainable and equitable development for Europe.

This new policy would require an important political change in the views of Europe's political élites and public opinion. The failure of austerity policies to end Europe's stagnation and the risks of disintegration to Europe are important factors that may encourage a change of views in governments, parliaments, political parties and European institutions. Investment plans that expand the quantity and quality of employment, raise wages, reduce inequality and make Europe's development more sustainable could encourage a change of views among European citizens, workers, trade unions and civil society organisations.

The fact that all this could only be possible in a European context, and cannot be reached by national policy alone, would provide a new legitimation for a European Union based on the principles of solidarity, social justice and sustainability. Moreover, the launch of a European industrial policy could be the opportunity for extensive public consultations and a democratic debate about what and how we produce, building consensus for such an EU-wide action.

Opening up such a debate on industrial policy in Europe is indeed an urgent task. A wide range of ideas and proposals have to be shared and discussed. Major changes would be required in order to implement it. But the results of such efforts could be very important: ending stagnation, creating new high-wage jobs where they are most needed, greater EU cohesion and public action, progress towards an ecological transformation of Europe, and greater democracy in economic decision-making.

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Is it unwise to work on a progressive industrial policy in times of climate change and COP21? *Au contraire!*, we'd like to answer. A truly progressive industrial policy is one of the basic pillars which a sustainable future society will be built on. Only if we endow our societies with an ecologically sustainable infrastructure as well as regional and circular economic relations we won't destroy the environment. But a progressive industrial policy does not only take into account the ecological imperatives and the burning gender question, which has become even more severe due to the crises and the following cultural backlash. Far more: progressive industrial policies acknowledge the fact that democracy is based on the economic independence of citizens. Only if citizens have good permanent jobs they have the power and socio-psychological resources to build up hospitable societies. These material foundations provide the bases for social movements, trade unions and left parties.

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