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"AN INDUSTRIAL POLICY FOR EUROPE"

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An industrial policy for Europe

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Abstract

After Europe's long stagnation, a debate is emerging on how industrial capacity could be reconstructed. The paper reviews current EU policies and provides the rationale for a new industrial policy at the European level. Such public action could help address current macroeconomic, industrial, innovation, cohesion and environmental problems and would be crucial for the recovery of countries of the "periphery" that have been hit hardest by the crisis. A range of proposals for organising, implementing and funding a new industrial policy – focusing on selected economic activities - are presented, combining action at the European, national and local levels.

Keywords
Industrial policy, Public policy, Europe

JEL Classification codes
E6, L5, O4

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1. Stagnation and polarisation in Europe

The crisis of 2008 has brought Europe to a stagnation. The continent has been divided between a slow-growing "centre" with financial and political power, and a "periphery" in depression, with no political influence, high public debt, high unemployment. This polarisation is evident in the data on real industrial production shown in Table 1. With 2008 values equal to 100, in 2013 only 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 alone, reaching 118. Ireland has returned to a 2013 value of 99 after dramatic losses in the midst of the crisis. Most countries in Central and Northern Europe failed to recover; France, the UK, Sweden, and Denmark have 2013 values equal to 89, Finland is at 83 (in Finland and the Netherlands GDP has been falling in 2012 and 2013). Southern Europe has experienced a dramatic loss of industrial production; 2013 values are 88 for Portugal, 79 for Italy, 76 for Spain, 73 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 a major destruction of economic activities in the Southers "periphery".

(Table 1 here)

The "centre" – Germany and few neighbours - has preserved its industrial base and increased its exports to the "periphery" and emerging countries. Current accounts of "periphery" countries have avoided major unbalances only because of the severity of the depression, resulting in large import reductions. As soon as a recovery arrives, the loss of domestic production capacity is likely to result in mounting trade imbalances for many EU countries; they could be addressed either by continuing austerity policies - depressing again incomes and imports - or by renewed capital inflows, further expanding private and public debt. In both cases, Europe's "periphery" is unlikely to avoid a spiral of losses of income, jobs, production and exports.

Such a reshaping of Europe's economy is driven by the restructuring of the international systems of production controlled by large firms and is affected by national and EU policies. Operating in the pursuit of short term profits, market power and financial rents – and with no attention to increasing environmental constraints - firms' responses to the crisis have included the following: drastic downsizing and plant closing; reduction of R&D, innovation and investment; emergence of hierarchical production systems with extensive outsourcing and offshoring both in Europe's "periphery" and in emerging countries with cost advantages and a large potential for growth in domestic markets; consolidation and acquisitions, leading to more oligopolistic market structures. These negative consequences have been concentrated in the countries of the "periphery" where the recession has hit hardest.[1]

In a context where European macroeconomic policies resist pressures to end austerity, stimulate new demand and redistribute income, a generalised return to growth is unlikely. Private investment continues to be negatively affected by expectations of low demand by firms; world export growth has not returned to pre-crisis levels and remains important for Germany and few other European countries only. This means that without a substantial increase in public demand an end of the current stagnation is unlikely.

With a prolonged stagnation, 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; 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 – with sluggish markets, a heavy environmental burden, cosmetic attention to climate change, and growing inequality - while other

[1] Analyses of the evolution of European industries in the recession include WIIW 2013; Simonazzi, Ginzburg and Nocella, 2013; Reinstaller et al. 2013; Aiginger, 2014.

advanced and emerging countries may move faster towards new knowledge, new products and processes, 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.

2. Five reasons for a new industrial policy

There is no need, however, to accept such an outcome as inevitable. Europe is now facing multiple challenges – ending the depression; upgrading its economic structure with new job creating activities; extending public action and public goods provision after decades of privatisations; reducing the polarisation between "centre" and "periphery" emerging from the crisis; moving towards an ecological transformation of the economy and society. An important, well known and effective tool that could contribute to address all these challenges is *a new Europe-wide industrial policy*.

In Europe, industrial policy has driven the highly successful expansion of production from the 1950s to the 1970s. Then industrial policy fell out of fashion as governments largely left decisions on the evolution of the economy to markets - that is, to large multinational firms - with waves of liberalisations and privatisation of public enterprises. The argument of such neoliberal policies was 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. Policies lost their selectivity and were limited to automatic "horizontal" mechanisms, such as across-the-board tax incentives for R&D or for the acquisition of new machinery, or incentives to producers and consumers of goods. The result has been a general loss of policy influence on the direction of industrial change and development in Europe.

A widespread rethinking on the importance of industrial policy – and of manufacturing industry itself - is now under way. In new industrialised countries 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. Chang (1994) has provided a restatement of the need for industrial policy; as argued by Rodrik (2008), the question is not whether industrial policy makes sense, but the way in which it can be carried out. Its relevance for emerging countries is discussed by Cimoli, Dosi and Stiglitz (2009) and by Stiglitz and Lin Yifu (2013); the case of Korea and Asia is investigated in particular by Lee (2013a, 2013b). The European context is examined by Coriat (2004), Pianta (2010), WIIW (2013) and Aiginger (2014). Mazzucato (2013) emphasises the need for a broad role of 'transformative' public action in innovation and industrial change. Even mainstream perspectives have paid attention to the mechanisms for controlling and targeting industrial policies (Aghion et al. 2011, 2012).

Building on such a debate, I would argue that, in the context of the current stagnation, there are five major reasons for developing a new industrial policy in Europe. The first one is rooted in macroeconomics. Exiting the current stagnation requires a substantial increase in demand, that could come from a Europe-wide investment plan driven by public policies, as argued by a growing range of voices (see below).

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. A EU-wide industrial policy could drive the rise of new environmentally sustainable, knowledge intensive, high skill and high wage economic activities. Specific activities that could be targeted include: a) the protection of the environment, sustainable transporation, energy efficiency and renewable energy sources; b) the production and dissemination of knowledge, applications of ICTs and web-based activities; c) health, welfare and caring activities.

Third, a new EU-wide industrial policy is needed in order to reverse the massive privatisations 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 level - in setting priorities, investing, 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, wellbeing, social integration and territorial cohesion.

The need for greater cohesion and reduced imbalances within the EU and individual countries is the fourth 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. A 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".

Fifth, a new EU-wide industrial policy could become a major tool for addressing the urgent need for an ecological transformation of Europe. 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 CO2 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.

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, as well as forms of democratic control with participatory practices. But let us consider first the current policies carried out by the European Union in this field.

3. Europe's missing industrial policy

Industrial policy has long had a marginal role in Europe's policies. European Union policies on the evolution of economic activities are now framed in the Europe 2020 strategy, approved in June 2010 by the European Council. It provides the new framework for economic policy in Europe, replacing the Lisbon Strategy that was supposed to inspire Europe's policies in the previous decade. In the Lisbon Strategy the EU set the goal "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), 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 follows this same trajectory identifying 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" through a wide range of actions at the national and EU level, but the specific policy tools for achieving such goals appear limited. Eight "flagship" initiatives are associated to priority themes for re-launching Europe (European Commission, 2010a).
The specific targets identified by Europe 2020 follow the footsteps of the Lisbon Agenda. The target of devoting 3% of EU GDP to R&D expenditure is maintained. In 2008, R&D in EU-27 amounted to 2.1%, with a highly uneven distribution across countries and no sign of convergence. Since then, the recession has led to falling expenditures and greater disparities. 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). Again, 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 on the levels of 1990 (enlarged to 30% "if the conditions are right"); 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 a rise of 20% in energy efficiency, with a move towards clean and efficient production systems the potential to create millions of jobs.
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.
As in the Lisbon agenda, industrial policy is based on a "horizontal" approach, where the main policy tools are the provision of infrastructures, the reduction of transaction costs across the EU, 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, to benefit from globalization. This strategy confirms the rejection by EU policy – first emerged in the 1980s - of targeted industrial policies and state action for developing particular sectors, choosing a market driven approach. Selective industrial policies continue to be considered ineffective by the EU, due to the difficulty of fine-tuning actions and evaluating results (Lerner, 2009).

When the crisis started in 2008 and austerity policies were imposed on Euro-area countries, the emphasis on fiscal consolidation and macroeconomic coordination has sidelined any serious discussion on industrial policy. Europe 2020 is now in line 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 more resources for "growth-enhancing items" such as education, R&D and innovation, at the expense of social expenditure, that is considered to be unsustainable (European Commission, 2010a, 2010c).
Such view has become explicit in the policy directives imposed in 2011 on weaker countries of the "periphery" of Europe - Greece, Portugal and Spain in particular – as conditions for granting them financial help facing their debt crisis. 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.

The major losses in industrial production since the start of the crisis - documented in Table 1 -, however, have led the European Commission to introduce in January 2014 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 described above. 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 already 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 towards the need to act at the EU level on climate change and energy, but again little additional resources are available and no change in the approach to industrial policy is in view (European Commission, 2014b).

A major policy development in Europe, however, has emerged in 2013 with the negotiations for the Transatlantic Trade and Investment Partnership (TTIP) with the United States. The Treaty would move Europe further ahead along the road of trade liberalisation – the very process that has led to a more unbalanced and hierarchical industrial stucture. More importantly, it would offer a very 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. In fact, TTIP is bringing back the agenda of the Multilateral Agreement on Investment that was discussed at the OECD in the late 1990s and was stopped by the opposition of France and by mounting global mobilisations.[2] TTIP has come under increasing criticism, and its future is uncertain. If it were approved, the scope for a European industrial policy would be definitely reduced, and the space for public action in the economy reduced to a minimum.

The overall policy by the European Union has continued to disregard the seriousness of industrial decline and to rely on a policy frame where the 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 a 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.

4. How can we change what is produced?

A different policy perspective is needed, addressing at the European level the joint needs to end the depression and rebuild sustainable economic activities in a less polarised continent. Decisions on the future of the industrial structure in Europe have to be brought back into the public domain. A new generation of Europe-wide industrial policy has to overcome the limitations and failures of past experiences - such as collusive practices between political and economic power, heavy bureaucracy, and 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.

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

The general principles of industrial policy are simple enough. It should favour the evolution of knowledge, technologies and economic activities towards directions that improve economic performances, social conditions and environmental sustainability. It should favour activities and industries characterised by learning processes – by individuals and in organisations -, rapid technological change, scale and scope economies, and a strong growth of demand and productivity. An obvious list would include activities centred on the environment and energy; knowledge and information and communication technologies (ICTs); 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; 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. However, ICTs and web-based activities are reshaping the boundaries between the economic and social spheres, as the success of open source software, copyleft, Wikipedia and peer-to-peer clearly show. Policies should encourage the practice of innovation as a social, cooperative and open process, easing the rules on the access and sharing of knowledge, rather than enforcing and restricting the 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 of 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. But how could Europe change its economic activities in such directions?

Industrial policy has long relied on different mechanisms. On the supply side, public funds have supported selected R&D, innovation and investment efforts. Public investment banks and public enterprises – as well as non profit foundations – have supported business start-ups in key fields with credits and venture capital and managed the restructuring of major production activities. Public, community and cooperative enterprises have a role in fields - such as knowledge-based activities, environmental and local services - where public goods and public procurement are prevalent.

On the demand side, far-sighted public procurement, the organisation and regulation of markets with high growth potential, and support and incentives for early users of new technologies have helped “pull” innovation and investment through “mission oriented” policies (see Mazzucato, 2013, for a comprehensive review of recent initiatives). Similar policy tools have in some cases shifted production and consumption towards more sustainable patterns; in Europe the diffusion of wind and

solar energy is the result of the use of such instruments. In fewer cases policies have "empowered the users", letting them define specific applications of existing technologies that may lead to new goods and services with large markets. Finally, policies have aimed at building closer relationships among all actors of national and European systems of innovation - firms, financial institutions, universities and policy makers - helping to coordinate decisions of public and private actors.
The funding for such policies have generally come from national public expenditures, the granting of public capital to state banks and enterprises, and from financial markets through bonds with various degrees of public guarantee. Austerity policies, EU constraints and pressure for fiscal consolidation on national public budgets mean that different types of funding have now to be developed, with a focus on European-level initiatives.

5. A proposal for a new Europe-wide industrial policy

The need for rebuilding and restructuring economic activities in Europe has recently led to a series of policy proposals. The German trade union confederation DGB has proposed "A Marshall Plan for Europe" (DGB, 2013), envisaging a public investment plan of the magnitude of 2% of Europe's GDP per year over 10 years. Along the same lines the European Trade Union Confederation has developed the proposal of "A new path for Europe" (ETUC, 2013). Previous proposals were developed in Pianta (2010), Lucchese and Pianta (2013), EuroMemo Group (2013).
Building on such a debate – and on previous experiences in Europe - we can argue that an ambitious but realistic proposal for a new industrial policy in Europe could be developed on the basis of the following institutions, governance mechanisms and funding arrangements.

The institutional arrangements

The new industrial policy has to be firmly set within the European Union and – if required – within the institutions of the Euro-zone. This is needed in order to coordinate industrial policy with macroeconomic, monetary, fiscal, trade, competition and other EU-wide policies, providing full legitimation to public action at the European level for influencing what is being produced (and how). Major changes are required in current EU regulations, in particular the ones that prevent public action from "distorting" the operation of markets. The expansion of economic activities that markets are unable to develop should become an explicit objective of EU policy. The EU level is crucial also for funding such policy (see below). 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.
A 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 to the development of new economic activities.
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 – either a European Public Investment Bank, or a European Industrial Agency - coherent with the mandate of reshaping economic activities in Europe.
A system could be envisaged where EU governments and the European Parliament agree on the 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, either a National Public Investment Bank, or a National Industrial Agency – 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 a flexible status but 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 spending decisions, identifying the private firms to be supported – either with low interest loans of with a share of ownership -, the projects to be developed, the new public activites that are required. And they would be subject to the strict monitoring described below.

The funding of industrial policy

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. The order of magnitude of the funding for an industrial policy programme that could address the challenges identified in section 2 above is the one suggested by the DGB plan and by the ETUC proposal – 2% of EU GDP over a period of 10 years, that is about €260 billion per year. As terms of reference, we can note that the European Central Bank provided in the period December 2011-March 2012 alone €1,000 billion of special funds to private banks at 1% interest rate, with no success in turning them into real investment; EU Structural Funds in the period 2007-2013 reached €347 billion; annual lending by the European Investment Bank is €65 to 70 billion per year. 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.

Different funding arrangements could be envisaged. As suggested by the DGB proposal "A Marshall Plan for Europe" (DGB, 2012) - 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.

An alternative may come from a deeper European fiscal reform, introducing a EU-wide tax on corporations, thus effectively eliminating fiscal competition between EU countries. Perhaps 15% of proceedings 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.

For the group of Euro-zone countries, financing through EMU mechanisms could be considered. Eurobonds could be created to fund industrial policy; a new European Public Investment Bank could borrow funds directly from the ECB; the ECB could directly provide funds for industrial policy to the spending agencies concerned.

Moreover, funding arrangements could be different 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 public capital for new activities in emerging sectors;

c) public support could stimulate financial markets to invest in private firms and nonprofit organisations developing "good" 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, more diffused growth at the European level have to be considered, and the costs have to be shared accordingly.

The governance system

The different options outlined above are associated to different governance arrangements of EU-wide industrial policy. As an example, we can assume that a European Public Investment Bank or Agency – let us call it *European Public Investment* (EPI) – is created and similar organisations – *National Public Investment* (NPI) – act in each country. The European institution should be accountable to the European Parliament, who appoints its board where representatives from business, research organisations, trade unions, environmental civil society organisations should be included. No "revolving door" between industrial policy institutions and private firms and banks would be allowed. The European institution should engage in consultation with EU political, economic and social actors for developing its proposed industrial policy, that should be approved by the European Parliament. Funds would then become available, and could be assigned to national institutions and specific targets and activities. Funds could be used for a variety of activities, possibly in combination with private investment that could be attracted to the creation of new economic activities and markets. In particular, in each country the *National Public Investment* organisation could use the EU funds - for the economic activities outlined in section 4 - in the following ways:

- fund R&D in universities, public and private institutions;
- fund innovation and its diffusion in private and public organisations;
- procurement programmes for innovative products relevant for public services;
- minority ownership of new start-up firms in high risk, high innovation fields; the shares could then be sold if the start-ups are successful and attract private finance;
- fund and organise networks of innovators, producers and users in new activities, in order to consolidate economic relationships and create markets;
- continue to provide 'horizontal' support to firms with the existing policy instruments.

The lessons from successful experiences outside Europe, such as ARPA-E in the US, the Brasilian Development Bank BNDES – discussed at length by Mazzucato (2013) – could lead to a more specific and effective forms of public action. Transparency in decisions would be required, monitoring and evaluation procedures – similar to those required by EU Structural Funds - would be arranged.

The same governance system could be introduced in the implementation of activities at the country level. The *National Public Investment* organisation could identify partners - both private, nonprofit and public – operating at the local level and in specific policy fields, who could become key players in the implementation of specific investment programmes. The fields that could be eligible for such industrial policy programmes can be identified within the broad areas outlined in section 4 above.

In order to reduce the scope for 'pork barrel politics', the countries and regions where such investments could be carried out have to be defined in advance, with the explicit aim to reduce the polarisation that is weakening the industrial base of Europe's "periphery". For instance, 75% of funds could go to activities located in "periphery" countries (Eastern and Southern Europe, plus Ireland); at least 50% of them should be devoted to the poorer regions of such countries; 25% could go to the poorer regions of the countries of the "centre".

These criteria for operation, transparency in decision making, accountability to the EU Parliament and citizens may contribute to overcome the collusion between industrial policy and economic and political power that has characterised past European and national experiences. Extensive public consultations and a democratic debate about what and how we produce could support these policy initiatives, building consensus and credibility for a EU-wide industrial policy.

Opening up a debate on industrial policy in Europe is an urgent task. A wide range of ideas and proposals have to be shared and discussed. The political obstacles for such a new industrial policy are indeed huge, and 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, greater democracy in economic decision making.

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Table 1

Real Industrial Production in Europe in 2013
Pre-crisis data for 2008 = 100

Germany	98
Austria	101
Poland	118
Netherlands	99
Ireland	99
France	89
United Kingdom	89
Sweden	89
Denmark	89
Finland	83
Italy	79
Portugal	88
Spain	76
Greece	73

Real output in mining, manufacturing, public utilities. Construction is excluded. Source: Eurostat, Unece.