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**A Systemic Industrial Policy to Pave
a New Growth Path for Europe**

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The European Union is a successful integration experiment, with an increasing number of member countries and an unexpected depth of integration. According to many indicators, it is the largest economic region in the world, leading in many "beyond GDP" indicators representing well being including non material goals. The EU has, however, lost economic dynamic in the last decades and has failed to catch up with the USA in technology and per-capita GDP. Europe has internal disequilibria, its population is ageing and it did not follow its own innovation strategy. Three questions arise in this context: 1. whether Europe should try to go back to the core (deepening integration for a smaller homogenous group), 2. whether it should go for a low road strategy of competitiveness (lowering wages and taxes, forfeiting high quality specialisation and sophisticated standards), and 3. whether it should actively try to develop its own "European Model" and offer this model to its neighbors. A European research project was tendered by the European Commission in order to analyse options for Europe in the globalised world. This 7th Framework Programme project, with the acronym "WWWforEurope", will provide evidence-based research in support of the Europe 2020 Strategy in its four-year in-depth research to be carried out by WIFO and 32 international partners. One important aspect of this strategy is a new "Systemic Industrial and Innovation Policy" (SIIP) which is pulled by the vision of a new growth path of social development and higher emphasis on sustainability. SIIP is further pushed by internal and external competition, openness as well as new technologies and capabilities. This working paper provides some first tentative answers to the three raised questions above. It furthermore sketches the broader research question, challenges and research areas to be answered in the WWWforEurope programme.

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A systemic industrial policy to pave a new growth path for Europe*

Abstract

The European Union is a successful integration experiment, with an increasing number of member countries and an unexpected depth of integration. According to many indicators, it is the largest economic region in the world, leading in many "Beyond GDP" indicators representing well being including non material goals. The European Union has, however, lost economic dynamic in the last decades and has failed to catch up with the US in technology and per capita GDP. Europe has internal disequilibria, its population is ageing and it did not follow its own innovation strategy. Three questions arise in this context: (i) whether Europe should try to go back to the core (deepening integration for a smaller homogenous group), (ii) whether it should go for a low road strategy of competitiveness (lowering wages and taxes, forfeiting high quality specialization and sophisticated standards) and (iii) whether it should actively try to develop its own "European Model" and offer this model to its neighbors. A European research project was tendered by the European Commission in order to analyze options for Europe in the globalised world. This 7th Framework Programme project, with the acronym "WWWforEurope", will provide evidence-based research in support of the Europe 2020 Strategy in its four year in-depth research to be carried out by WIFO and 32 international partners. One important aspect of this strategy is a new "Systemic Industrial and Innovation Policy" (SIIP) which is *pulled* by the vision of a new growth path of social development and higher emphasis on sustainability. SIIP is further *pushed* by internal and external competition, openness as well as new technologies and capabilities. This working paper provides some first tentative answers to the three raised questions above. It furthermore sketches the broader research question, challenges and research areas to be answered in the WWWforEurope programme.

JEL: D78, L16, L52, N60, O25, O38, P51, Q50, Q57

Keywords: European socioeconomic model, EU-2020-Strategy, industrial policy, innovation strategy

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Karl Aiginger

A systemic industrial policy to pave a new growth path for Europe

A successful experiment

(1) The European Union has been a tremendously *successful* integration experiment, starting out with only six members fifty years ago. It has 27 members today with more countries applying for membership or neighbourhood contacts. The current EU-27 is the largest economic power in the world as measured by Gross National Product. Its share of world trade is more stable than that of the US, albeit slightly falling due to the impact of the newly industrialized countries. Europe has become an area of peace, of the proliferation of the rule of law, and it is known for its "soft" foreign policy (Sachs, 2008). Europe leads as regards the setting of environmental goals (Kyoto), and has promoted a system of emissions trading; it has lower shares of poverty and more social cohesion than other economic areas.

Nevertheless there are also indicators of weaknesses, namely slow growth, (internal) trade disequilibria and governance problems. Europe tends not to stick to its own strategies. This leads to lower dynamics, a persistently high unemployment rate, public deficits, undercapitalized banks and finally higher interest rates for sovereign debt (despite of lower debt/GDP ratios as compared to the US and Japan). Part of the European problem is that the institutions which were adequate for a small number of countries and for an integration process focussing on trade are no longer adequate for 27 countries, who also envision monetary integration, a common currency, and ever deeper integration.

Table 1: USA vs. EU: dynamics

	2000/2010		2007/2012		2010		EU 27 vs. US
	EU 27	USA	EU 27	USA	EU 27	USA	
	Percentage change p.a.				Level		
Real GDP	1.4	1.6	0.0	0.4	12247 ¹⁾	10898 ¹⁾	1.12 ¹⁾
GDP per capita at PPP	2.5	1.9	0.5	0.4	24422	36413	0.67
Population in 1000	0.4	0.9	0.3	0.8	501824	309625	1.62
GDP per worker at PPP	2.4	2.7	0.9	2.1	55042	79866	0.69

¹⁾ Nominal GDP in mill. €. - Source: Eurostat (AMECO).

Three overarching questions

(2) In this "midlife" crisis of the European Union three questions arise. The first is whether the European Union should, to some extent, go back to its original size, often called "Core Europe" or alternatively whether the EU should carry all 27 members with it on its future path and even

risk further enlargement. The second question is whether Europe should try to copy the current frontier economy (the US) or whether it can and should develop its own *economic model*. The third question is whether Europe should try to become more dynamic by cutting costs, social benefits and taxes, thus taking the *low road* of competitiveness or whether it should go *for the high road* by striving for the best education and innovation, trying to become the leader in new technologies, sustainability and the most sophisticated quality segments. The three questions are to some degree interrelated, but will be dealt with individually.

Table 2: Beyond GDP

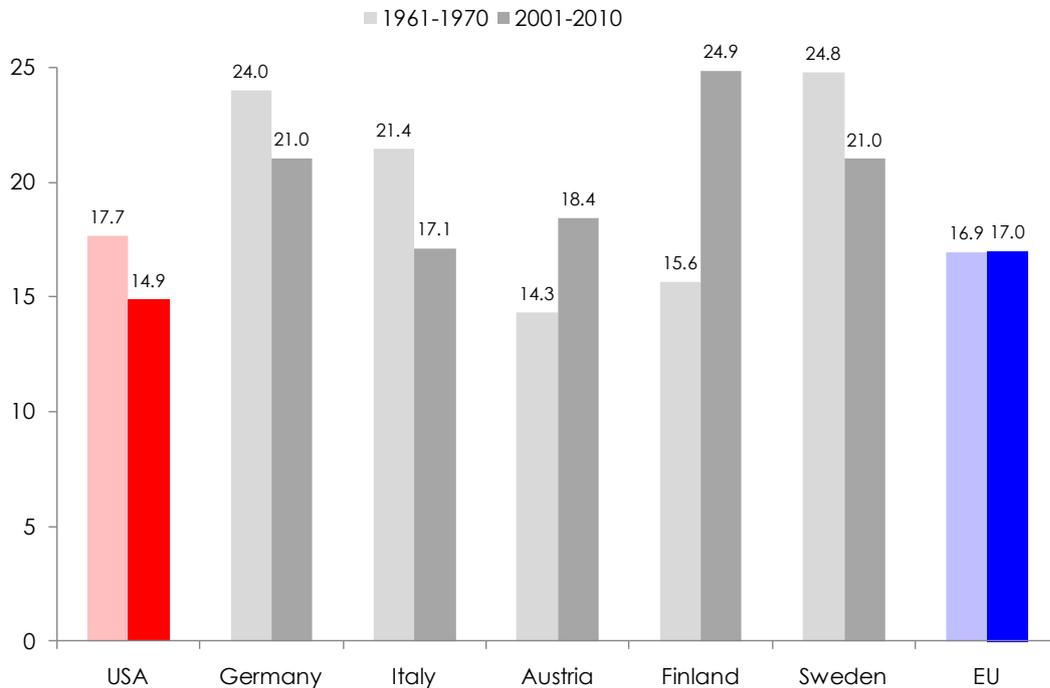
	2000		2010		2000/2010		2010 EU 27 minus US
	EU 27	USA	EU 27	USA	EU 27	USA	
	Absolute change						
Employment rate	71,1	77,6	73,5 ³⁾	74,2 ³⁾	2,4 ³⁾	-3,3 ³⁾	-0,7
Unemployment rate	8,7	4,0	9,8 ³⁾	8,9 ³⁾	1,1 ³⁾	4,9 ³⁾	0,9
Energy/GDP ¹⁾	187,3	211,0	144,7 ⁴⁾	216,4 ⁴⁾	-42,7 ⁴⁾	5,4 ⁴⁾	-71,8
Greenhousegas/GDP ²⁾	554,6	817,6	393,6 ⁴⁾	474,1 ⁴⁾	-161,0 ⁴⁾	-343,5 ⁴⁾	-80,5
Debt/GDP	61,9	54,8	84,9 ³⁾	105,6 ³⁾	23,0 ³⁾	50,8 ³⁾	-20,7
Budget position/GDP	0,5	1,5	-3,9 ³⁾	-8,5 ³⁾	-4,5 ³⁾	-10,1 ³⁾	4,6 ⁶⁾
World export share	12,5	12,3	11,0	8,6	-1,5	-3,7	2,4
Current account/GDP	-0,6	-4,2	0,3	-3,2	0,9	1,0	3,5
Manufacturing/GDP	16,8	14,8	13,5	11,4	-3,4	-3,5	2,1
R&D/GDP	1,9	2,7	2,0	2,8	0,1	0,1	-0,8
Education/GDP	5,0	5,0	5,0 ⁵⁾	5,4 ⁵⁾	0,0	0,4	-0,4

1) toe/mill. GDP. – 2) t/GDP. – 3) 2012. – 4) 2009. – 5) 2008. – 6) Smaller deficit in EU. – Source: Eurostat.

Plus and minus relative to US

(3) Past reports on the competitiveness of Europe (*European Commission, 2000 ff.*) arrived at some conclusions we will further elaborate. Europe's long-term growth is lower than that of the US. The productivity catch up stalled in the mid nineties. The population is increasing less than that in the US and ageing faster (leading to a declining population even today in some countries and in most European countries to a decreasing work force after 2020). The gap compared to the US in per capita income remains at 30% without any sign of closing. Europe's share in world exports, however, is not declining (or at least declining more slowly than compared to the US). Europe has a balanced current account (the US a persistently large deficit). Government debt and deficit is lower than in the US. The share of manufacturing is stable in Europe, but declines sharply in the US. There the financial sector is gaining shares in production at great speed, while at the same time the share of manufacturing is falling towards 10% (2010: 11% in US, 14% in EU 15). Income distribution is widening in Europe but the spread between high and low income is less than in the US, and the poverty rate is lower in Europe. Emissions and energy consumption are absolutely and per output lower in Europe.

Figure 1: Share of manufacturing larger and stable in Europe, declining in US
Real terms, share in GDP



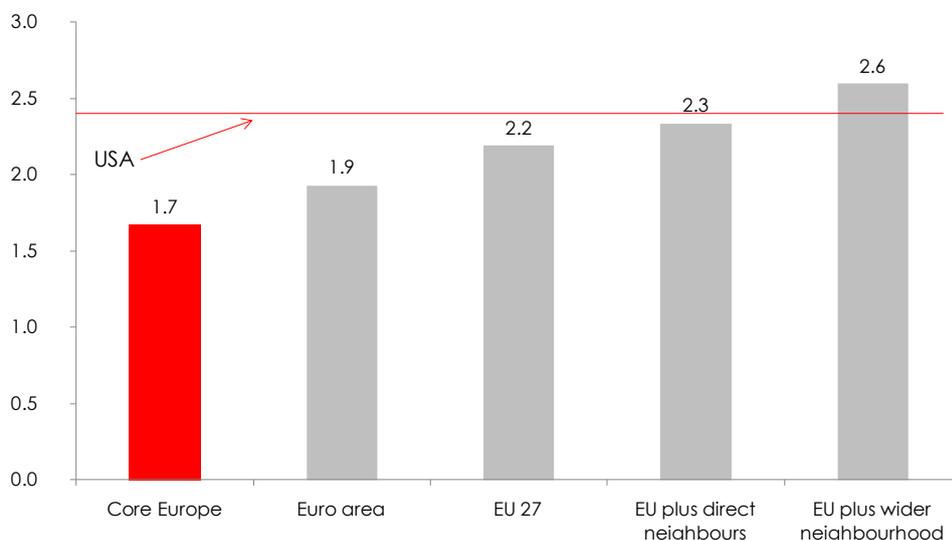
Back to the core implies low dynamics and diminishing world market shares

(4) Regarding the question *back to the core vs. further enlargement*, we find that a European core (defined as Germany, France, Finland, the Netherlands, Austria and Luxemburg) had a pre-crisis growth rate of 1.7% while EU 27 grew by 2.2%, and Europe including its neighbouring countries (Black Sea, ex Yugoslavia, Russia and North Africa) enjoyed a growth of 2.7 %. Europe plus its neighbouring countries¹ grows thus faster than the US (2.4%), "core Europe" less. The economic power of core Europe as measured by its share in world GDP was 13% in 2009, that of Europe plus its neighbours 35%. Again the share of core Europe is *smaller*, and that of Europe and its neighbours *higher* than the US (24%). The larger share for Europe in world output holds even for the current EU 27.

The European Union in its current size is a large economic area and enjoys very dynamic neighbours. Europe has the chance to remain the largest economic power if and *only* if it can cooperate with its neighbours (which does not necessarily mean a larger Monetary Union but openness and partnership). Partnership should be offered to direct and indirect neighbours with preferential treatments and common rules first. It should be a cooperation that intensifies over time.

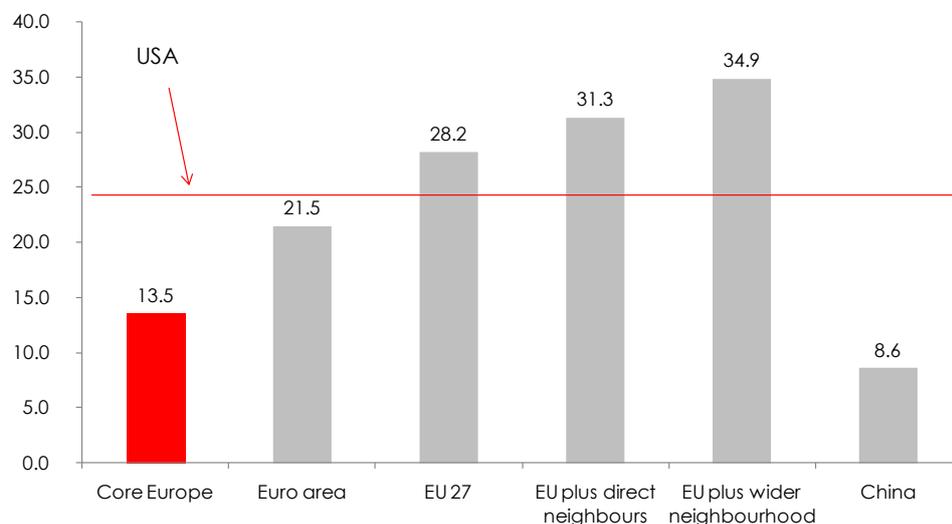
¹ Direct neighbourhood includes Albania, Bosnia/Herzegovina, Kosovo, Croatia, Macedonia, Montenegro, Serbia; Armenia, Azerbaijan, Georgia, Moldova, Ukraine, Turkey; Switzerland, Norway; Wider neighbourhood includes Russia, Belarus, Israel, Northern Africa.

Figure 2: "European" growth 2000/2009 lies between 1.7% and 2.6%
Real terms



Source: Eurostat (AMECO).

Figure 3: The share of "Europe" in the world: smaller or larger than US
GDP, 2009, current currency

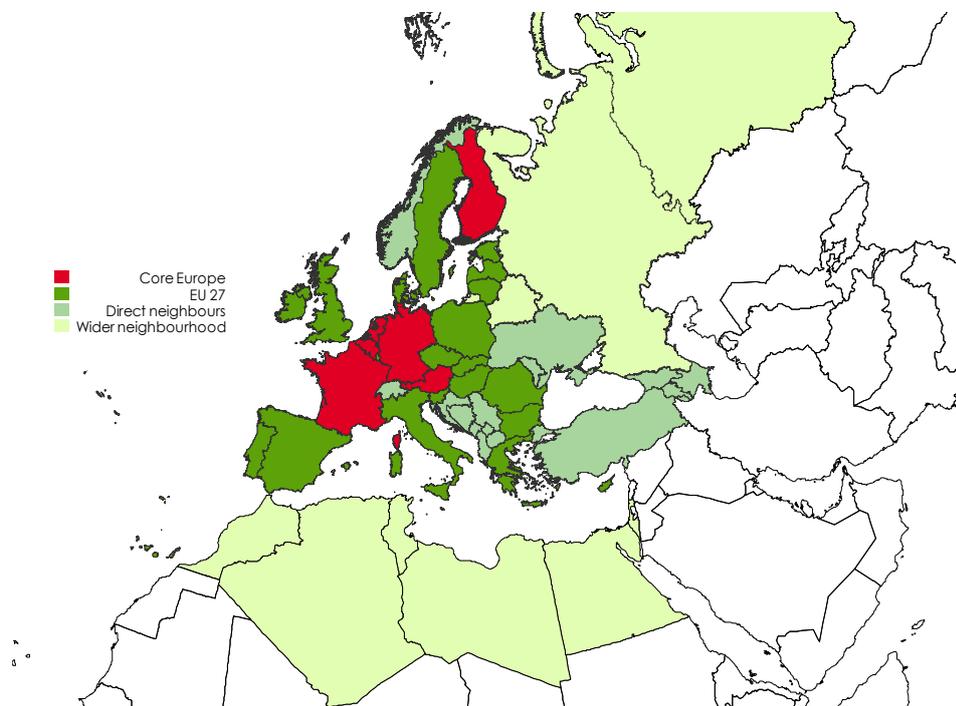


Source: Eurostat (AMECO).

Extending the horizon to 2050 the share of the countries in world production defined as core Europe will shrink to less than 10% of world GDP, while Europe including its neighbours will keep its share of more than 30% of world output and remain number one as regards world GDP in the globalised world.

This wider perspective implies that Europe should abandon concepts of a North vs. South Euro and any "Core Europe Nostalgia". A Core Europe strategy will not work anyway: The North Euro would appreciate and make exports more difficult, while the South Euro would not exist, since the southern countries all have more intense economic relations to western and central Europe rather than with each other. Furthermore, the south is the bridge to many of the neighbouring regions, and Greece especially is important as the ex Yugoslavian countries strive to become EU-members, and for Europe to build bridges towards Asia. Italy and Spain are essential for cooperation with North Africa, Spain and Portugal for Europe's cooperation with South America.

Figure 4: How China looks at Europe: The red one or the green one?



High road vs. low road

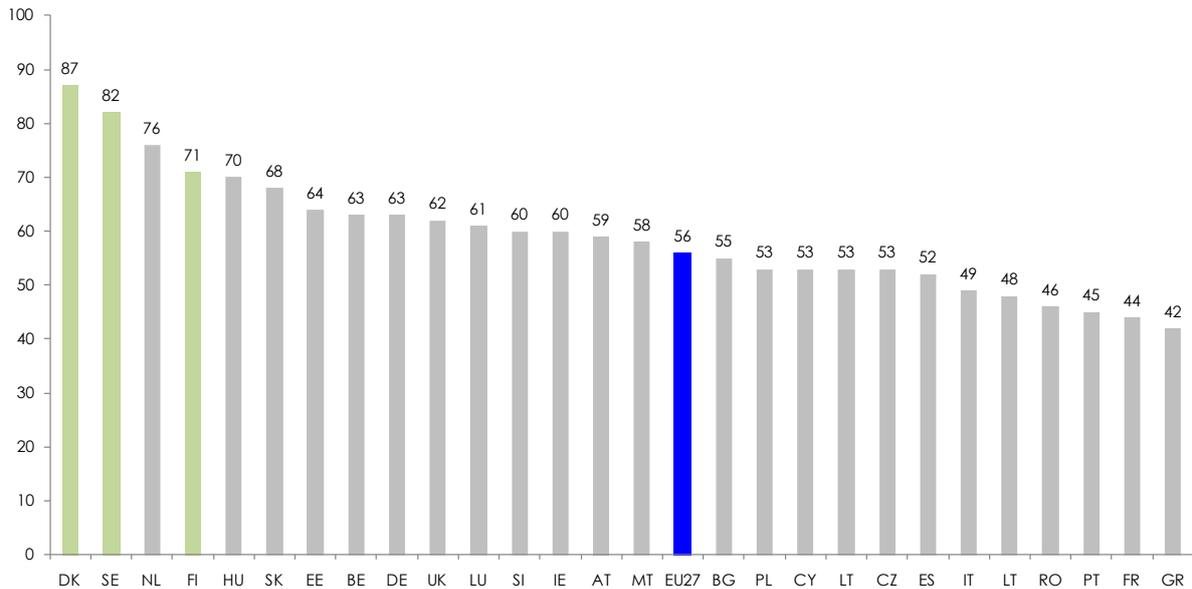
(5) The dynamics of Europe can be fostered either by a *low road strategy* or a *high road strategy*. A *low road strategy* could mean moderating wage increases and fostering irregular contracts so as to become price competitive and mitigate competition from emerging economies ("compete with Beijing"). It could mean less social inclusion, lower taxes and social contributions and benefits. The low road strategy would imply less stringent environmental rules and the abandoning of climate goals (at least as long as low price competitors in Asia do not curb their own emissions).

A *high road strategy* on the other hand would suggest basing competitiveness on the best-trained labour force, on innovation and on excellent universities. It would imply taking the lead in technologies for alternative energy, for energy efficiency and clean production. Countries ahead in sustainability will have lower costs in reducing emissions and a large export potential of ecological products and solutions (*Stern, 2007*) and far less costs as opposed to trailing countries. Social innovations, ending gender differences, upgrading skills even in the lowest segment may become a productive force enabling firms to charge higher prices for higher quality. Increased wages will be countered by productivity increases, leaving unit labour costs constant or even declining.

A new European growth path

(6) Given the fact that the US is the economy with the highest productivity and with a lead in many technologies it could be attractive for Europe to copy their socioeconomic system. However, it may be difficult to catch up with or pass the US in technologies where they have enjoyed a lead over a long period of time. It will prove more promising to become leader in technologies with environmental or health focuses, to promote social innovations, and new models of societal cooperation.

Figure 5: Attitude to globalisation: A chance for high growth?



Source: Eurobarometer.

It would not be recommendable to follow the model of BRICs and other emerging economies either. It is difficult to impose a model of state promoted industrialization and limits on individual freedom in Europe. The welfare function of Europeans gives a higher value to

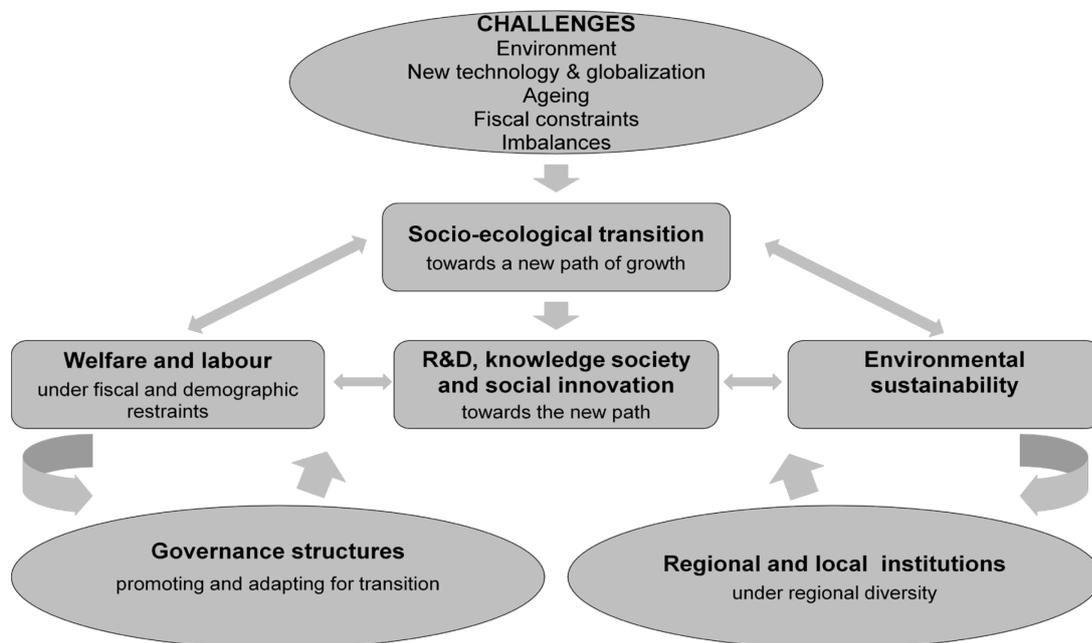
social inclusion and to sustainability than do that of citizens in the USA and in Asia. Therefore it is advisable that Europe looks for its own socioeconomic model (following the Beyond GDP discussion). This has been started already in the Europe 2020 strategy, which calls for *smart, inclusive and sustainable growth*.

A strategy needs analytical background

(7) A strategy paper like EU-2020 is one thing; following the strategy is another. The Lisbon strategy has not been followed, inter alia because it was a top down strategy designed by the commission as a stand-alone strategy not connected with other EU strategies. The EU 2020 Strategy is more bottom-up and better integrated with other priorities; member countries define their specific targets (within some range and knowing the EU target). The growth strategy is monitored jointly with the budget strategy in the so-called "European Semester". Nevertheless the budget crises and debt burden has endangered the pursuit of the strategy. In many countries consolidation is the overarching priority and investment into innovation, education and green jobs has been postponed (and this was not criticized in the evaluation of national strategies at the end of the 1st European Semester by the EU Commission). Budget consolidation in peripheral countries has been defensive only (cutting wages and deficits), without any vision for the post-consolidation period and without promotion of industrial production or high quality services. This leads to a long and painful recession period. Even in countries with less debt burden, fostering innovation, education and sustainable technologies have not been given the necessary priority. Germany has been falling back according to all sets of social or ecological indicators (*Aiginger – Leoni, 2011*) over the past decade, France has a trade deficit, stagnant R&D expenditures and military spending higher than R&D (*Aiginger, 2011*).

The European Commission, with the Directorate of Research in charge of large integrated research programmes, has tendered a project for a "*New growth path in Europe with higher emphasis on social inclusion and sustainability*". This "Framework Program" initiates research on the changes needed for a new growth path, on how institutions have to be reformed, on how the goals of transforming the growth path can disseminate to the regional level. It should be analyzed where examples of transition already exist, and what the obstacles for transition to a new growth path are. The *competitive tender was won by WIFO*, which had gathered a team of 32 partners, a scientific board with excellent researchers in Europe and outside, and a policy board which includes industry representatives, trade unions, non-governmental experts and even a former commissioner and a prime minister as advisors. It is a four year programme and it will start in April 2012. It should increase the chances that the EU-2020 Strategy will be adhered too, that Europe will choose a high road path and progress as a model different from other existing models. Europe will invite its neighbours to go with its socioeconomic model.

Figure 6: The project in a nutshell

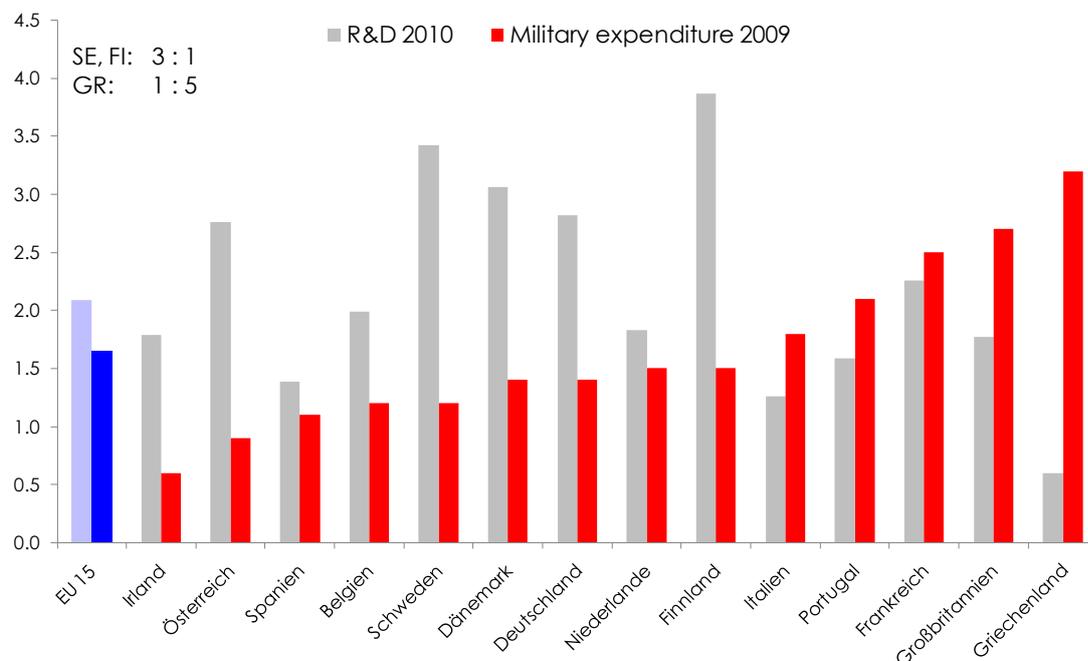


Past diversity and renewed interest in industrial policy

(8) Industrial Policy had been performed in Europe differently across countries (e.g. German vs. French vs. Scandinavian style). It started with the Community for Iron and Steel, then for a long time Industrial Policy remained primarily a national policy. It was not even mentioned in the European treaties up to the nineties. Then came a period of horizontal policies for competitiveness; general "measures" were applied not discriminating between sectors. It even looked in the nineties as if industrial policy was a dying breed (Aiginger, 2007). Empirical analyses of past strategies reveal that countries relying on state aid and regulation as main instruments of industrial policy had inferior macroeconomic performance (as measured by a set of indicators on economic dynamics, employment and stability of the economy), while countries focusing on an industrial policy based on promoting positive externalities had superior macroeconomic result (Aiginger – Sieber, 2006). A group of Scandinavian countries (Sweden, Finland, Denmark) invested heavily into R&D and education and specifically focused on ICT industries creating a knowledge driven economy. These Nordic countries could be the benchmark for a future-oriented industrial and innovation policy. French style policy focusing on priority sectors or "Grand projects" had some successes (Airbus, Ariane) but many failures too (Minitel, French Google). Southern European countries had experienced a period of successful catching up to the European average but forgot to invest into the innovation and education system. They did not upgrade their industrial base, but kept a very large military sector. The five countries with the largest

share of military spending relative to GDP have now large trade deficits, indicating that synergies between the military sector and the civil technology sector have ceased to exist. Military expenditures prevent civil innovation capacities.

Figure 7: R&D vs. military spending



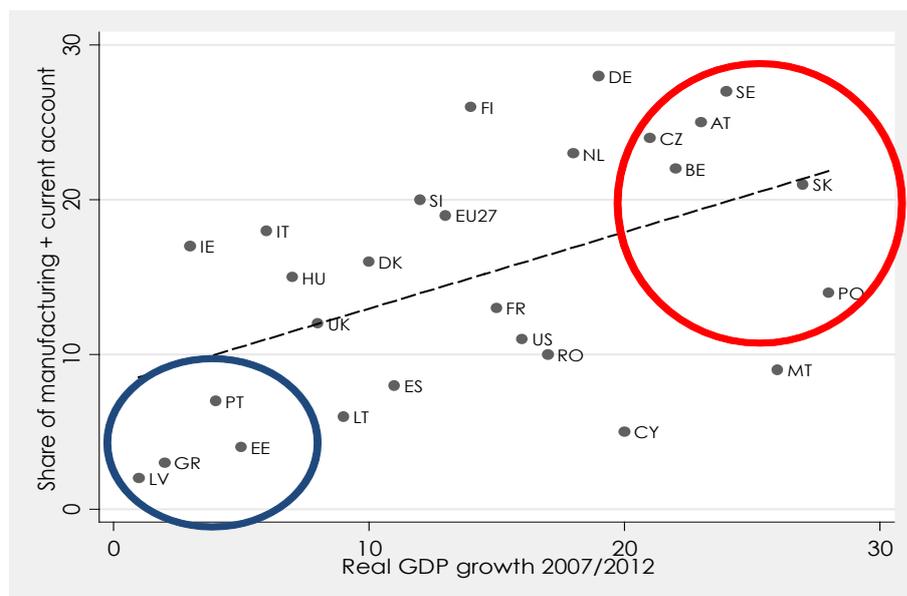
Source: Eurostat, SIPRI.

After 2000 a first wave of a renewed interest in industrial policy came up due to the competitive pressure from emerging countries (globalization), and maybe also due to increasing unemployment and the persistent technology lead of the US. Industrial policy and innovation policy are merging, partly because subsidies were only allowed for small firms/start-ups and for technology related projects. New European initiatives emphasized the priority of horizontal measures, acknowledging however that all horizontal measures have a different impact in high tech and low tech sectors (e.g. innovation) and the horizontal measures have therefore to be complemented in specific industries by sector related measures (like standardisation). This new type of industrial policy was labelled *matrix oriented policy* (Aiginger – Sieber, 2006) because the strategy can be described in rows (industries) and columns (measures).

Industrial policy had a second wind during the recent financial crisis. First empirical data show that countries were more hit by the crisis *the lower the manufacturing base had been*, the more this sector had eroded over the past years and the larger the current account deficit had been at the start of the crisis (Aiginger, 2011). In Greece the industrial sector had declined from 11% (2000) to 7%, and the current account deficit reached 15% of GDP (2008). Similar developments for Portugal, Spain and Latvia exist.

Countries with a large and stable industrial base and positive current accounts like Sweden and Austria had less deep declines in GDP². Periods of crisis are the cradle of protectionism, while technological superiority leads industries and countries to recovery more quickly (see premium car industry in Germany). Furthermore interest in Industrial Policy increases since new challenges and societal need are pressing. This holds for environmental problems, climate change, resource shortages (peak oil), health issues and ageing.

Figure 8: Depth of the crisis vs. industrial base
Ranks for performance and industrial base



Remark: industrial base = share of manufacturing/GDP 2007 plus share of current account; the sum is ranked (low rank = 1); output performance = change in real GDP growth (lowest rate = 1).- Source: Eurostat (AMECO).

A systemic industrial policy: Driven by vision, pushed by competition and openness

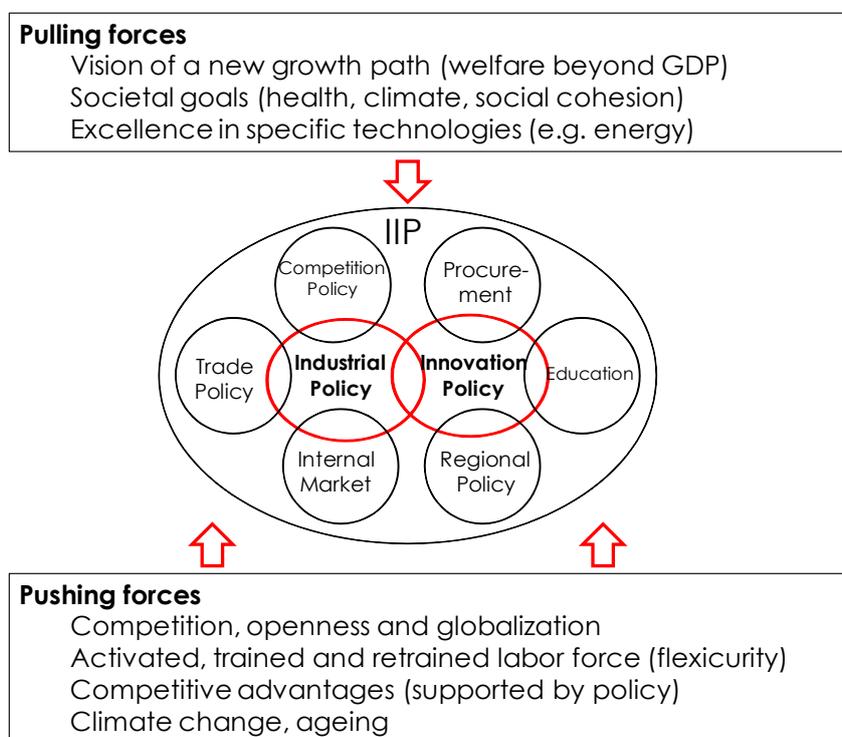
(9) A future oriented Industrial Policy has to start from the challenges revealed by globalisation and those in the financial crisis. It has to be based on research and education, and industrial policy merges with innovation policy. It has to encompass small as well as large firms, and promotes close relations between firms and universities and cooperation between firms and universities (clusters); the education policy needs to be able to provide equal opportunities at the outset as well as to promote lifelong learning. Innovation systems are superior if they actively draw from the common international knowledge pool, thus integrating international researchers and also migrants and newcomers are important. The manufacturing sector remains competitive if an economy is open to imports and inward FDI so that it can make use of the division of labour along the value chain. A new industrial and

² Budget deficits and debt/GDP ratio were far less able to explain country differences during the crisis.

innovation policy fosters competition and grasps the advantages of globalization. Eagerness to understand different cultures, languages and business attitudes are all essential.

Industrial policy has to be systemic in the sense, that it is derived from the goals of the society. If the welfare function of European citizen gives a large weight so rising incomes, more social inclusion (less wage dispersion), regional equilibria, a stable financial system and sustainability, then industrial policy has to promote these goals e.g. shifting innovation towards social and ecological innovation, while keeping competitiveness and the potential for rising incomes. And industrial policy should make use of those forces which promote change, and foster higher incomes, like competition and globalisation. Thus a Systemic Industrial Policy is pulled by vision and pushed by competition (see figure 9).

Figure 9: The Systemic Industrial and Innovation Policy (SIIP) in a nutshell



A new European growth path assisted by industrial policy

(10) The renewed interest in industrial policy came up first from the inability of Europe to close the productivity gap relative to US and from the increasing pressure from emerging economies in the globalising world. It was then fuelled further by the financial crisis and the empirical fact that countries with smaller industrial base and with deficits in trade and current account had experienced stronger crisis (Aiginger, 2011).

Europe has reacted to the disappointing application of the Lisbon Strategy with the Europe-2020-Strategy for smart, inclusive, sustainable growth. The sovereign debt crisis then again shifted priority away from strategic goals towards the need of fiscal consolidation. The European summit in January 2012 tried to shift back the emphasis towards growth and employment. It is extremely important in such a situation of conflicting goals and unfavourable short-term prospects to stick to long-term goals. It becomes vital to have an analytical base for the new strategies. This is the task of the WWWforEurope project by WIFO and partners. It has to analyse the necessity, the obstacle and the conditions for this transition (where the development of a Systemic Industrial and Innovation Policy is one of the five core research areas).

In the context of the sweeping changes needed in Europe the *systemic character* of Industrial Policy becomes ever more important. Industrial Policy has to be consistent with the answer we give on the three overarching questions for the future of Europe. It has to be consistent with the Europe's strive to be a *large open Europe* including the south and open to its neighbours, it has to promote manufacturing specifically in areas with a small industrial base and a large current account deficit (e.g. Greece and Portugal). It has to promote the *change from a low road strategy* (and is the main driver of that transition) *to a high road strategy* by promoting excellence in education, technology, universities. SIIP has to follow the *vision of a new European Model (growth path)*, with smart growth, more social inclusion and the highest level of sustainability. A SIIP is no standalone policy, no national policy but a driver of change to Europe 2020.

References:

- Aghion, Ph., Boulanger, J., Cohen, E., Rethinking Industrial Policy, Bruegel Policy Brief, 04/2011.
- Aghion, Ph., Cetto, G., Cohen, E., Lemoine, M., Crise et Croissance: une stratégie pour la France, Paris, 2011.
- Aiginger, K., "Competitiveness: From a Dangerous Obsession to a Welfare Creating Ability with Positive Externalities", Special Issue on Competitiveness, Journal of Industry, Competition and Trade, Vol. 6, No 2, June, 2006, pp. 161-177.
- Aiginger, K., "Industrial policy: a dying breed or a re-emerging phoenix", Special issue on the Future of Industrial Policy, Journal of Industry, Competition and Trade, Vol. 7, No 3+4, December 2007, pp. 297-323.
- Aiginger, K., "Industrial policy: past, diversity, future", Journal of Industry, Competition and Trade, Vol. 7, No 3+4, 2007, pp. 143-146.
- Aiginger, K., Evaluation of the Finnish National Innovation System - Policy Report, 2009.
- Aiginger, K. (2011A), The inefficiency of Industrial and Innovation Policy in France, VOX, 3.10.2011.
- Aiginger, K. (2011B), "Why Growth Performance Differed across Countries in the Recent Crisis: the Impact of Pre-crisis Conditions", Review of Economics and Finance, No.4 /2011, S 35-52.
- Aiginger, K., Leoni, Th., Strukturpolitik für Soziales Wachstum, mimeo, Friedrich Ebert Stiftung, Berlin, 2011.
- Aiginger, K., Sieber, S., "The Matrix Approach to Industrial Policy", International Review of Applied Economics, Vol. 20, No.5, December 2006, pp. 573-603.
- Competitiveness Reports of DG Enterprise; Background Reports by WIFO-team.
- European Commission, An Integrated Industrial Policy for the Globalisation Era, Putting Competitiveness and Sustainability at Centre Stage, COM(2010) 614.
- European Commission, Competitiveness Reports of DG Enterprise; Background Reports 2000 – 2011 (Lead by WIFO-team, Michael Peneder).
- Peneder, M., Technological regimes and the variety of innovation behavior: creating integrated taxonomies of firms and sectors, Research Policy 39, 2010, pp. 323-334.
- Sachs, J., Europe as a soft power, Financial Times 19.08.08.
- Stern, Stern Review: The Economics of Climate Change, HM Treasury, 2007.
- WWWforEurope: Europe moving towards a new path of economic growth and social development, 7th Framework Programme.