



Public policies, productivity and economic growth in OECD countries

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Public policies, productivity and economic growth in OECD countries

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Abstract

Since mid-1990s social sciences have re-started to give attention to the role played by the state in promoting economic growth, with important contributions from economists, sociologists and political scientists. This attention further increased after the economic and financial crisis of 2007/08, with a rising strand of research that is focusing on the institutional foundations of different growth models in advanced economies. This paper is related to this wide strand of research and analyzes how industrial policies can favor the emerging of institutional conditions that are conducive to economic growth. In particular, the paper analyzes the neglected relationship between public policies and labor productivity in OECD countries. The focus is on four policy arenas that have a direct impact on labor productivity: labor market, human capital, innovation and on the efficiency of public administration. The analysis underlines a strong association between labour productivity and public policies addressed to promote training and activation, the quality of educational institutions and inter-institutional networks in innovation. Other kind of policies, such as those addressed to flexibilise the labour market or to reduce labour costs or to increase the average number of years of schooling seem to play a minor role.

Keywords: Industrial Policies; Labour Market Regulation; Education; Labour Productivity; Economic Growth.

Introduction¹

Since mid-1990s social sciences have re-started to give attention to the role played by the state in promoting economic growth, with important contributions from economists (Acemoglu and Robinson 2013, Gordon 2016; Rodrik 2004), sociologists and political scientists (Liebfried et al. 2015; King and Le Galès 2017), comparative political economy scholars (Hall and Soskice 2001; Crouch 2015; Amable 2003; Hanckè et al 2007), etc. This attention further increased after the economic and financial crisis of 2007/08, influenced by the growing role played by the state in sustaining and defending national economies, with a series of policy interventions that can be defined as ‘economic patriotism’ (Clift and Woll, 2013). At the same time, a lot of attention has been dedicated to the main features and the institutional foundations of different growth models in advanced economies (Baccaro and Pontusson 2016; Hassel and Palier 2018).

This paper is related to this wide strand of research and analyzes how industrial and development policies can favor the emerging of institutional conditions that are conducive to economic growth. In particular, I would like to underline some aspects that have been neglected by the literature of comparative political economy (CPE)², namely the relationship between public policies and labor productivity: many comparative analysis have underlined the link between productivity and the forms of work organisation or the level of investment made by firms in technological innovation but the role played by public policies in sustaining labour productivity has been often overlooked.

In order to better understand the relationship between public policies and productivity, I will cluster OECD countries in three groups: high productivity growth, low productivity growth and catching up countries. Then, I will focus on three policy arenas that have a direct impact on labor productivity: labor market, human capital, innovation. At the same time, I will focus on a ‘mainstream’ variable, the efficiency of public administration that has a direct impact on the functioning of public policies in the three above-mentioned arena. The analysis of the role of the state in the different clusters at mid 90s’ will underline the importance of public policies addressed to sustain training and activation, the quality of educational institutions and different types of investments in innovation. Other kind of policies, such as those addressed to flexibilise the labour market, to reduce labour costs, or to increase the average number of years of schooling seem to play a minor role.

The paper is organized as follows. The second paragraph analyses growth path among OECD countries in two periods, 1995-2017 and 2008-2017. The third section briefly deals with some theoretical and empirical contributions that emphasize the importance of labour regulation, human capital and innovation in explaining economic and productivity growth. The fourth

¹ This work benefited from a period of visiting at the LIEPP and at the CEE of Sciences Po, in the spring/autumn 2018. I am extremely grateful to Bruno Palier, Patrick Le Galès and Tommaso Vitale for these invitations. During this period, I had the opportunity to discuss issues related to this paper with so many colleagues that it would be impossible to thank all of them singularly. I am also extremely grateful to an anonymous referee for his/her very useful comments and suggestions.

² With some relevant exception, see for example Amable 2016.

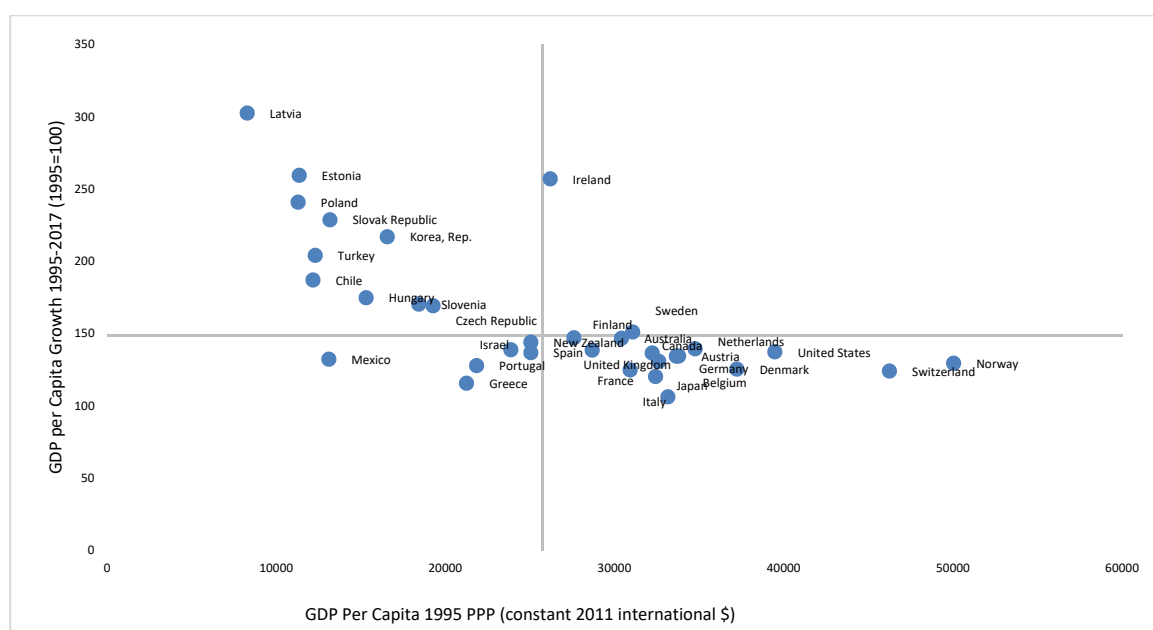
paragraph analyzes the relationship between a series of public policies in the three above-mentioned fields and labour productivity. The fifth part sets out the conclusions.

I. Economic growth and productivity in OECD countries

In order to identify which countries have grown more rapidly over the last three decades, we first need to define how to measure our "dependent variable", namely economic growth. As it is well known, this is a concept that can be defined in many different ways. I have chosen to consider one of the simplest definition that takes into account the dynamic of GDP per capita, an indicator that shows the capacity of a country to create economic prosperity. Obviously, the adoption of this indicator has a set of very well-known limitations. First, the level of GDP per capita tells us nothing about how this GDP is distributed and on income inequality, but only gives us information about a country's capability to produce economic wealth. Second, per capita GDP does not cover the contribution of those services and activities that are not exchanged for money, and the size of these activities varies greatly from country to country. Third, this is a measure that refers only to the production of economic prosperity and not of well-being as a whole, that is an extremely complex dimension strongly related to non-economic aspect. However, despite these limitations, there is no doubt that per capita GDP continues to be a simple but effective indicator to assess a country's economic growth.

A second important step is related to the explanation of why I decided to measure growth from the mid-1990s to the present. The main reason is that looking at a time frame of about a quarter of century allows us to adopt a non-conjunctural approach and helps to better evaluate changes in various growth models. At the same time, at mid-1990s a series of transformations emerged, ranging from the intensification of economic globalization, to the increase in international competition, to the rise of new global players such as China and India; in other words, the mid-1990s were an important critical juncture that had a relevant impact on competitive strategies and growth models of OECD countries.

Third, it is important to note that at the beginning of this period, OECD countries did not start from the same 'starting blocks': the level of GDP per capita was very different from country to country. This emerges clearly if we use a convergence plot, that shows for each country the trend of GDP per capita and its level in the mid-1990s (Fig. 1).

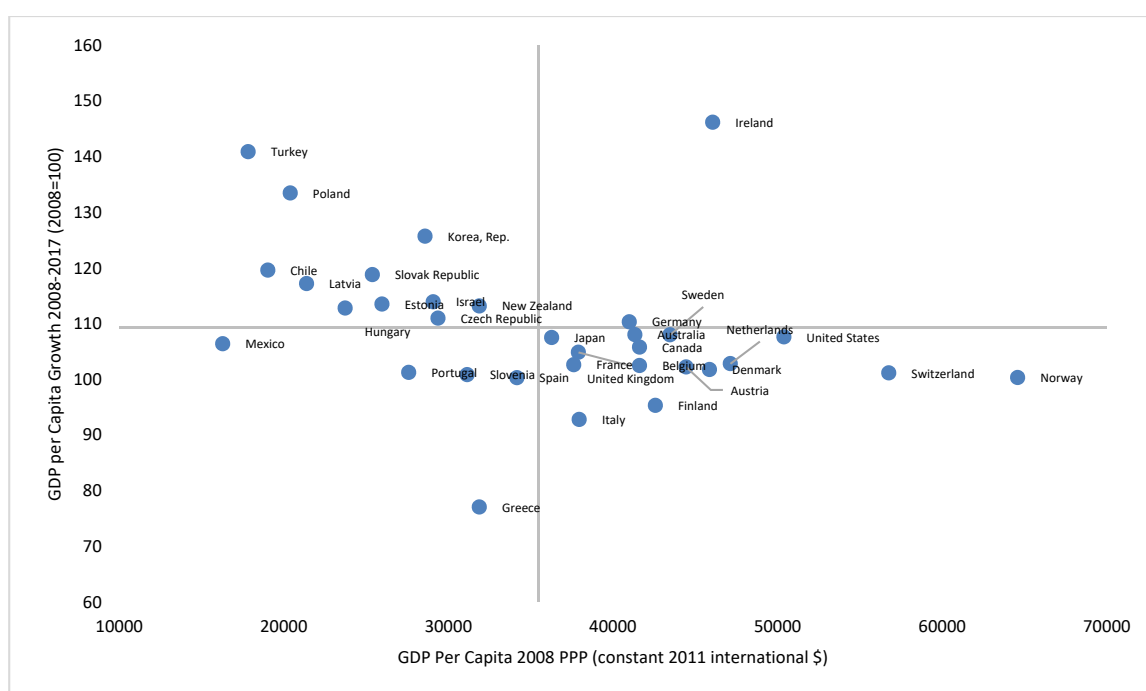
Figure 1. GDP per capita level and growth 1995-2017*

Source: *Processed data from OECD and World Bank database*

* GDP is measured with US dollars at purchasing power parity calculated for 2011

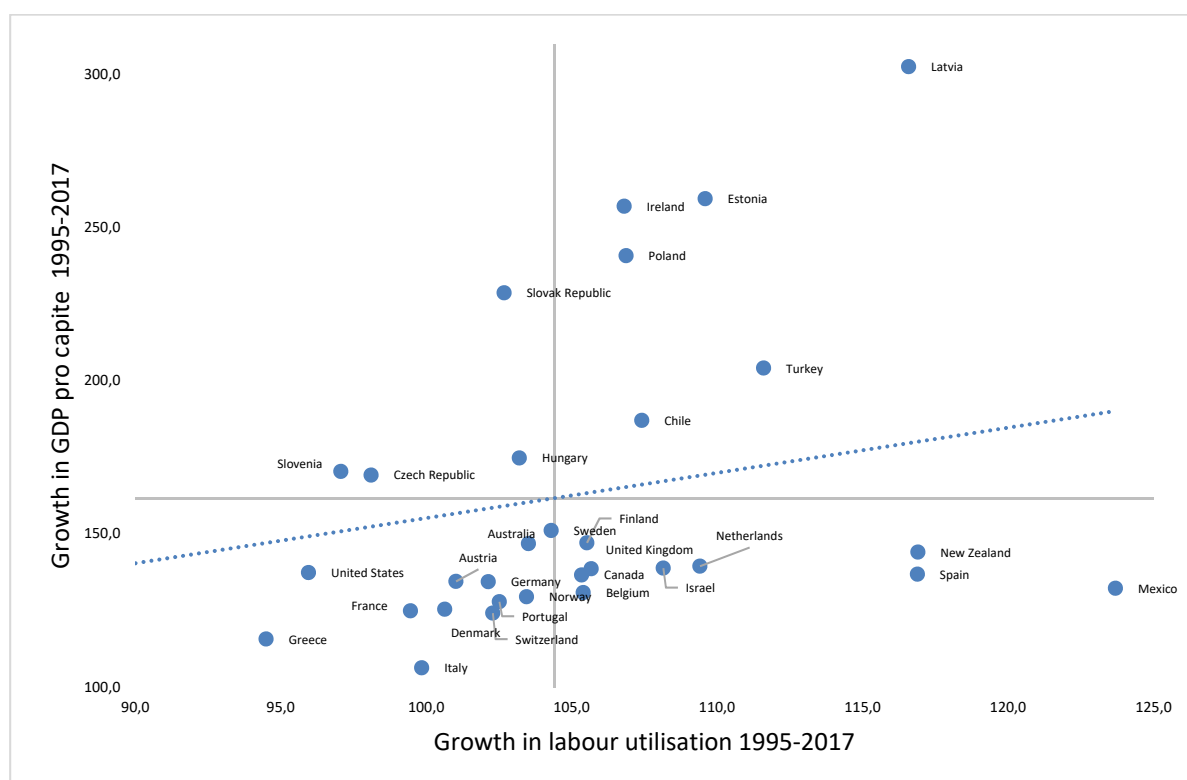
The analysis of levels and growth rates of per capita income shows some interesting trends (fig. 1). First of all, some countries started from a very low level of GDP per capita but progressively grown at a high rate over the entire period here analyzed. These countries are characterized by a growth path that can be defined as catching-up, a process that reduced the distances between the countries with high and low per capita GDP. In particular, high growth rates characterized the Baltic countries (Lithuania and Estonia) and the Visegrad group (Poland, Slovakia, the Czech Republic and Hungary). Ireland joined this group despite having a higher level of income per capita already at mid-1990s. This process of reduction of differences was particularly intense but not sufficient to eliminate inequalities in terms of per capita income between developing and advanced economies.

Among advanced economies, differences in terms of growth appear less pronounced, but this does not mean that they are irrelevant (fig. 1). Sweden, for example, increased the per capita GDP from \$ 31,000 in 1995 to 47,000 in 2017, while in the same period Italy increased the GDP per capita from \$ 33,100 to 35,200: at this rate, Sweden takes 43 years to double its per capita income while Italy takes 352 years. Among advanced economies, those that experienced a higher growth rate were Sweden, Finland, Australia, New Zealand. On the contrary, Greece and Italy are the two countries with the lowest growth. If we reduce the time span of the analysis to the post 2007 crisis, we note that the process of catching-up continues with the notable growth of Turkey, Poland, Korea, while the advanced economies with the highest growth rate are Ireland, Germany, Sweden, the United States and Australia. Greece and Italy are, with Finland and Spain, at the bottom of this ranking (Fig. 2).

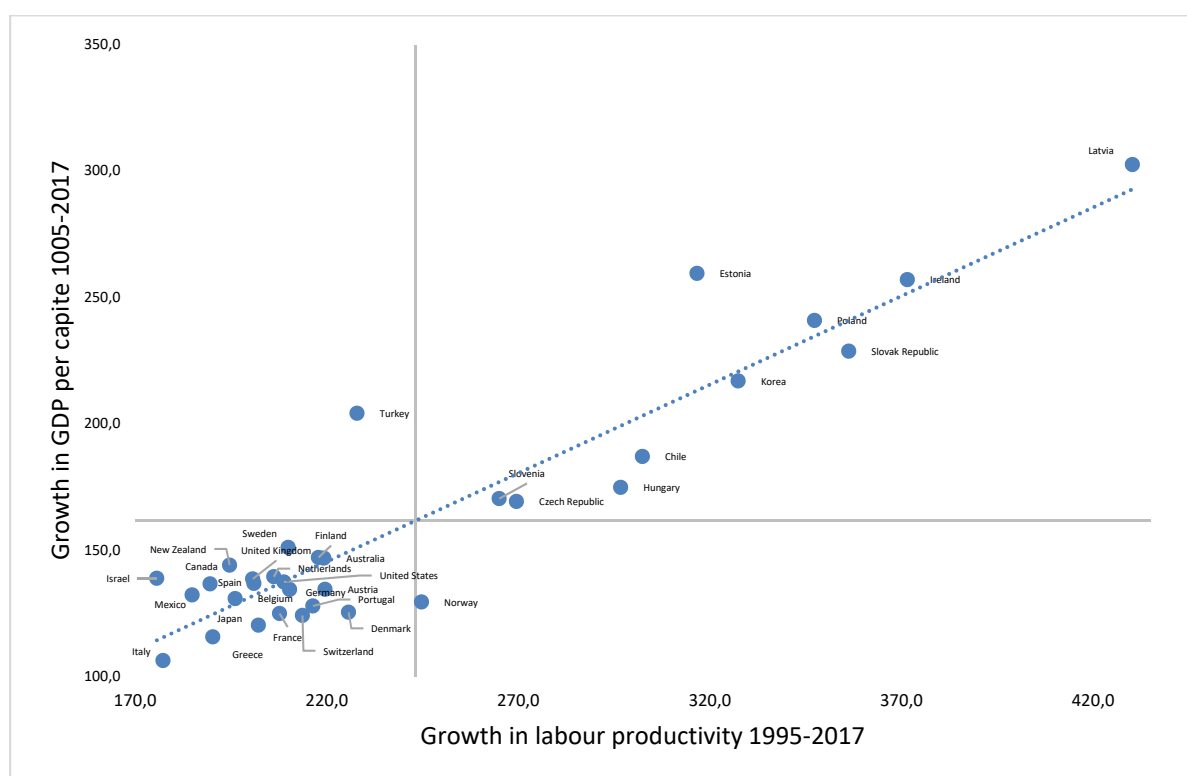
Figure 2. GDP per capita level and growth 2008-2017

Source: *Processed data from Stat-OECD*

This different rate of increase in GDP is the result of the combination of two process of change: on the one hand, the change in labour productivity, here defined as the ratio between the GDP produced and the number of hours worked in a country, on the other the change in labor utilization, the total amount of hours worked in a country. Thus, GDP growth can be the result of an increase in the number of hours worked or the result of an increase in labour productivity: if productivity doubles, even with the same number of hours worked, GDP will also double. Figure 3 and 4 show that during the period 1995-2017 the growth of per capita income in OECD countries has been more related to the effect of the increase in productivity rather than of an increase in the labour utilization: there is a positive association between labor productivity and GDP growth per capita, while there is no direct association between growth in labor utilization and per capita income growth.

Figure 3. GDP per capita growth and labour utilisation (1995-2017)

Source: *Processed data from OECD and World Bank database*

Figure 4. GDP per capita growth and labour productivity growth (1995-2017)

Source: *Processed data from OECD and World Bank database*

This brief analysis underlines five important issues. First, among advanced economies that experienced higher growth rates there are countries with different traditions of political economy, such as the coordinated capitalism of Sweden and Germany and the liberal capitalism of the United States and Australia. At the same time, there are countries of these two models that do not have a good performance, such as Japan among the coordinated market economies and the United Kingdom for the Anglo-Saxon countries. The second important aspect is that some countries are permanently in the group with greatest difficulty, such as Italy and Greece. Third, the growth rate is not constant for each country, there are countries that grow more in some phases and not in others: this is the case of Spain, that experienced a notable growth until the 2007 crisis when a long period of serious difficulty started; as it is well-known, this is also the case of Germany, that at the beginning of 2000s was defined ‘the sick man of Europe’ and in the following 15 years has been characterised by a very robust growth. This is why it is very important to look at countries that change trajectories and at their critical junctures. Fourth, as shown by a solid tradition of studies, in the last thirty years there has been an advantage for those countries which started from a situation of greater backwardness, which often grow at higher rates than advanced economies; however, the institutional architecture that supported growth processes in these countries is very much different from the one that supported growth in advanced economies. Fifth, in order to understand growth, it is particularly important to focus on the trend of labor productivity: for this reason, it is important to study the kind of institutional context that favors the increase of productivity.

II. Public policies and the three pillars of growth

Since the beginning of the 1990s, advanced capitalisms have been facing new challenges such as the rise of international competition, the liberalisation of products and financial markets, the increasing scope for international trade and the rise of competition over low labour costs from countries such as China or India. Given these global changes, which have reduced the possibility of advanced economies to compete on the cost of products and services, it became a necessity for many countries to restructure their competitive strategies. The so-called ‘low road of development’, based on low-quality products and low labour costs came to an end for advanced economies, while the ‘high road’, based on innovation, productivity and diversification became the viable competitive strategy for Western economies (Hall & Soskice 2001).

The theoretical and empirical contributions on this shift towards the ‘high road’ have highlighted the importance of three pillars, namely labour market regulation, investment in human capital and investment in innovation, and have underlined the importance of institutional complementarity – the effects of mutual reinforcement – between them. The action of the state has a notable influence on these pillars and they have a direct impact on labour productivity. For this reason, the analysis of the action of the state in these three fields can help us to understand how public policies contribute to the making of an institutional environment favourable to the rise productivity and more in general to economic growth.

To take the first pillar; at the beginning of the 1990s the low level of labour market flexibility – measured by the percentage of temporary employment or fixed-term contracts and by the

strictness of hiring and firing regulations for standard and non-standard employment - was identified as one of the main weaknesses of European capitalisms. The massive debate on the so-called Eurosclerosis, the economic stagnation which has characterised Europe in the 1970s and 1980s, emphasised that the high level of unemployment in European countries was directly created by the rigidity of the labour market (Esping-Andersen & Regini 2000; Korpi 1996). In particular, many scholars explained that labour flexibility helps to deal with a volatile demand for products (Esping-Andersen & Regini 2000; Streeck 2009). Since then, the main trends in labour market regulation have been the adjustment of the labour supply to the requirements of the market, deregulation and rising labour market flexibility. At the same time, many studies underlined that in order to promote a shift towards the high road model, investments in labour quality, skills and productivity were necessary. However, in many countries the process of labour market adjustment was characterised by a selective flexibility, mainly addressed towards specific groups of workers through atypical contracts, but without any attempt to promote employment quality, and as a result, a strong dual labour market emerged (Palier 2010; Esping-Andersen & Regini 2000). However, the link between the increase in labour flexibility and the increase in labour productivity or economic growth is not clear; as we will see, there are countries that promoted a notable process of flexibilization without having a notable economic growth. On the contrary, we will see that there is a more direct association between investment in active labour market policies and training and the rise of per capita income.

Another important strand of literature has underlined that competitiveness and productivity are related to a large extent to the availability of human capital, the second pillar described herein. At the beginning of the 1990s, Paul Romer and Robert Lucas studied economic growth and showed that productivity is linked to endogenous variables such as the skill levels of the workforce. Later, Robert Barro highlighted a clear relationship between the level of school attainment with economic performance, especially in the field of innovation (Barro 2001, Lucas 2015). More recent literature has explained differentials in the long-term economic fortunes of a nation with so-called knowledge capital, measured through the assessment of scientific skills (Hanushek and Woessmann 2015; Savvides and Stengos 2009). Over recent years, comparative research on European countries has shown the importance of education and training in the configuration of contemporary capitalism. Thelen (2014), for example, focused on vocational education and training in order to understand its impact on labour market outcomes; Busemeyer and Trampusch (2011) analysed professional training, identifying different mechanisms for the creation of skills, either based on the role of the state, such as in the French case, or, on the role of firms and social partners, such as in Germany, where specific institutions like the Fachhochschulen³ offer high levels of skills and specialisation that have been crucial in the rise in productivity of German firms. Overall, these scholars have shown that investment in education, training and skills have become a productive factor that enhances the economic competitiveness of advanced capitalism.

³ Tertiary education institutions specialised in applied sciences, primarily designed with a focus on technical and professional skills.

Third, there is a significant amount of literature on the importance of innovation policies⁴ for the competitiveness of high-tech sectors, as well as for the introduction of new technologies in medium- and low-tech sectors. Comparative political economy has emphasised that continental Europe and countries such as Germany have institutional contexts that are more favourable to incremental innovation, while Anglo-Saxon countries, such as the United States or the United Kingdom, are more prone to radical innovation. In both cases, the role of state policies is crucial in sustaining private innovation through direct policies or via indirect instruments such as public procurement (Mazzucato 2013; Block 2008). The role of the state also emerges as crucial in the literature on National Innovation Systems, which clarifies how different institutions contribute to the development and diffusion of technologies and innovation, influencing economic growth. Finally, analysis on the changing role of the state confirms that despite the reduced regulatory power in the economic sphere, national governments are particularly active in innovation policies, a domain where they maintain strong control (King & Le Galès 2017; Leibfried et al. 2015).

These three pillars are heavily dependent on national policies and this is one of the most important reasons why the path towards the ‘high road’ has been followed at different speeds in different advanced economies characterised by different models of political economy. At the same time, these policy fields have many possible interdependencies: all of them produce effects that can promote some sort of complementarity and a mutual reinforcement (Aoki 2001). Finally, their impact is strongly influenced not only by the quantity of funds dedicated to each area but also by the quality of their implementation and by the institutional capability of public administration; for this reason, it is particularly important to take into account the efficiency of public administration and its mainstream influence on the three pillars above mentioned.

III. Labour productivity and the role of public policies Conclusion

How to proceed to deepen the relationship between on the one hand the role of the state in these arenas and on the other productivity and economic growth? In order to study the impact of the action of the state on the three above-mentioned pillars I clustered OECD countries in

three main groups: those with high productivity growth, those with low productivity growth and the catching-up countries. For each of this group, I analysed a series of different public policies that have had a direct impact on the regulation of the labour market, human capital and innovation at the beginning of the period of observation (mid-90s). In this way it is possible to identify the kind of public policies that characterized the three group of countries during mid-90s’.

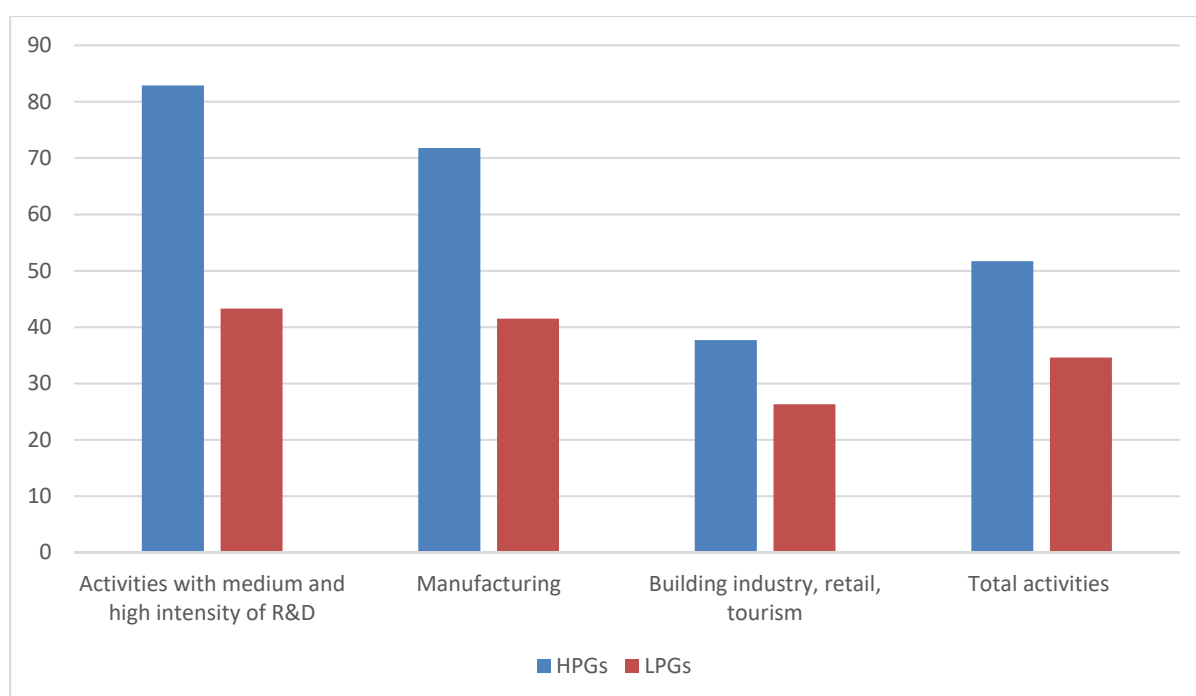
As for the three groups of countries, those that started from a very low level of GDP per capita and productivity grew at a much higher rate than the others for the so-called ‘advantage of backwardness’: they can easily adopt technologies developed elsewhere and apply them to

⁴ Policies for innovation represent a broad family of policies addressed towards promoting innovation in the economic system, through support to research and development activities, regional innovation clusters, collaboration between public organizations and businesses on research and development programmes, incentives and loans to single firms to introduce technological innovation, etc.

their productive cycle, or they can start cooperating with advanced economies - such as Hungary with Germany – strongly benefiting of this cooperation. For this reason, it is necessary to consider the countries that have undertaken catching-up processes as a group by themselves, where GDP grows as a result of a process of modernization of the economy that is very different from the dynamics of advanced economies. I define this group as catching-up countries (CUCs) and it includes Chile, the Czech Republic, Estonia, Hungary, South Korea, Latvia, Mexico, Poland, Slovakia, Slovenia, Turkey: the average per capita GDP of these countries in 1995 was just over \$ 14,000, while in advanced economies it was more than double, about \$ 32,000.

Moreover, I clustered advanced economies in two groups, one that gathers countries with higher growth in labour productivity (High productivity growth countries– HPGs – Australia, Austria, Denmark, Finland, France, Germany, Ireland, Norway, United States, Sweden and Switzerland) and the other that gathers advanced economies with lower level of productivity growth (Low productivity growth countries – LPGs - Belgium, Canada, Israel, Italy, Japan, Greece, New Zealand, Portugal, The Netherlands, Spain, United Kingdom). These two groups can be easily compared because they had a similar starting level in terms of GDP per capita and in terms of productivity as well as in terms of technological innovation, business organizational models, competitive strategies, etc.

As for the measure of productivity, I will refer to the ratio between GDP and hours worked. This is also called “apparent labour productivity”, an indicator that has some weaknesses: the term "apparent" is related to the fact that productivity depends on all the production factors – capital and labour - and on the way in which they are combined. Thus, growth in apparent labour productivity is not necessarily due to a higher efficiency of the labour but can also be related to higher growth in more capital-intensive sectors. For this reason, the sectorial specialization of a country influences the level of apparent labour productivity: a higher specialization in low added value and labour intensive activities such as construction or tourism will result in a lower level of productivity. For this reason, it is important to control what happens with the above-mentioned classification of countries when the analysis is carried out at the level of sector, where the relative intensity of use of the input factors (capital and labour) is similar. Figure 5 shows that the two group of countries are characterized by different degrees of productivity per sector: HPGs have higher levels of productivity independently by the kind of productive specialization that is taken into account. This means that even if the indicator of apparent labour productivity should be interpreted with care, the clusters of countries here analysed are consistent with an analysis of productivity at sectoral level.

Figure 5. Productivity per hour worked per sector in 2016

Source: *Processed data from OECD and World Bank database*

Then, I identified a series of indicators that covers public policies intervention in the three above mentioned arena plus some indicators on the efficiency of government. All these data refer to the mid-90s. In particular, as far as the labor market is concerned, I processed data measuring labor flexibility and labor market policies, taking into account the level of Employment Protection Legislation for standard employment, an indicator developed by the OECD which measures the rigidity/flexibility of the labor market, i.e. the procedures and costs that individual and collective dismissals entail; even if this indicator covers only one of the dimensions related to labor market flexibility, it is generally adopted as a proxy for external flexibility (a higher level of EPL results in a lower level of flexibility in the labor market). Second, I focus on the level of temporary employment; in this case it is important to consider that this is an indicator of the spread of forms of temporary work, but it does not automatically cover external flexibility: there are countries with a very high level of labour market flexibility and with a low level of regulation of standard employment where the use of forms of time-determined employment is less developed, such as the UK or Denmark. I take also into account the average level of taxation on dependent work, as a measure of the burden of taxes on employment (data source OECD). Two other indexes come from the archive of the Global Competitive Index of the database of the World Economic Forum: the first is a synthetic index that considers a broad set of dimensions of flexibility (wages, hiring and firing, etc.), the second refers to the investment of companies in training and lifelong learning. As for labor market policies, I focused on total investments in active policies (matching, job search assistance, training, etc.) and on labor policies that invest in training activities (data source OECD). Taking into account this broad series of dimension of flexibility and labour market policies will help us to understand if labor market policies that are most directly associated

with productivity and growth are those that have favored skills or those that have favored labor market flexibility.

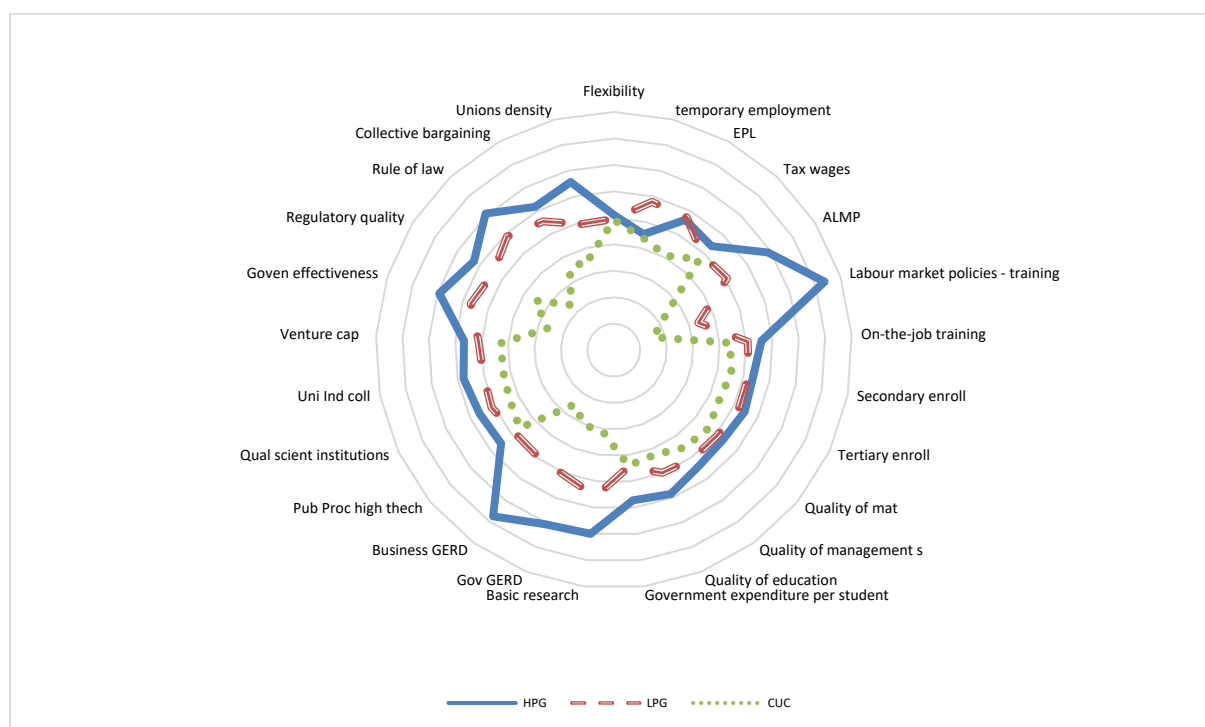
As regards human capital, I took into account the enrollment rates in secondary and tertiary education as well as indicators on the quality of the educational path, such as those which measure the quality of mathematical and scientific disciplines and of management disciplines, as well as those related to a more general evaluation of the quality of educational institutions. Finally, I analyzed the level of public spending per student in the tertiary cycle. With these data it is possible to better understand if growth is associated with policy strategy most focused on enlarging their stock of human capital increasing the average number of years of schooling, namely human capital broadening, or with policy strategy which improves the quality of schooling, namely human capital deepening (O'Brien and Williams, 2016).

As regards investment in innovation, I focused on indicators of the OECD and World Bank database on investments in basic research as a percentage of GDP, on the overall expenditure in support of public research and development (public financed GERD), on expenditure on research and development made by private companies, on the level of public procurement in high technology activities, on the availability of venture capital, on the quality of scientific institutions and the degree of collaboration between university and business.

Finally, data on the functioning of public administration: in this case, I analysed data from World Bank database that gathers indicators to assess the effectiveness of public administration, and in particular, a) data on the Rule of law, or the perception and trust of stakeholders that actors follow the rules of society, and in particular to the quality of the protection of contracts, property rights, police and courts, as well as the likelihood of crime and violence; b) data on Regulatory quality, or the perceptions of the government's ability to formulate and implement solid policies and regulations that allow and promote the development of the private sector and c) Government effectiveness, that is the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of the formulation and implementation of policies and the credibility of the government's commitment to of these policies.

For each of these indicators and for each country I considered the data at the initial period of observation (mid '90s) and considered the standardized value on the OECD average (OECD average =1,0) and then I identified the average value for each of the three groups (Fig. 6).

Figure 6. Public policies and the three pillars of growth in mid 90s' (OECD average=1,000)



Source: *Processed data from OECD and World Bank database*

For each indicator, data refer to 1995. When this was not possible because data were not available, I took into account the first available years after 1995.

Flexibility: *synthetic index on flexibility CGI – World Economic Forum*

- Temporary employment: *share of temporary employment on total employment - OECD*
- EPL: *Employment Protection Legislation in standard employment - OECD*
- Tax wages: *Average tax wedge Single person at 100% of average earnings, no child - OECD*
- ALMP: *Public expenditure in active labour market policies as a percentage of GDP - OECD*
- Labour market policies- training: *Public expenditure in active labour market policies as a percentage of GDP - OECD*
- On-the-job training: *On-the-job training - CGI – World Economic Forum*
- Secondary enroll: *Secondary education enrollment, gross % - CGI – World Economic Forum*
- Tertiary Enroll: *Tertiary education enrollment, gross % - CGI – World Economic Forum*
- Quality math: *Quality of math and science education, CGI – World Economic Forum*
- Quality of management: *Quality of management schools, CGI – World Economic Forum*
- Quality of education: *B. Quality of education, CGI – World Economic Forum*
- Government expenditure per student: *Government expenditure per student, tertiary (% of GDP per capita) - WorldBank*
- Basic research: *Basic research expenditure as a percentage of GDP - OECD*
- Gov-GERD: *Government-financed GERD as a percentage of GDP- OECD*
- Business-GERD: *Business-financed GERD as a percentage of GDP- OECD*
- Pub Proc High Tech: *Government procurement of advanced tech products (scale 1-7) CGI – World Economic Forum*
- Qual Scient Institutions: *Quality of scientific research institutions, - CGI – World Economic Forum*
- Uni Ind Coll: *University-industry collaboration in R&D,- CGI – World Economic Forum*
- Venture cap: *Venture capital availability, - CGI – World Economic Forum*
- Govern effectiveness: *Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.- WGI - World Bank*
- Regulatory quality: *Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.- WGI - World Bank*
- Rule of law: *Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. - WGI - World Bank*
- Collective bargaining: *Collective Bargaining coverage - OECD*
- Union density: *Trade unions density - OECD*

Looking at data on the labour market for the mid '90s, it clearly emerges that flexibility did not characterize countries that experienced notable economic growth. The difference in flexibility between HPGs and LPGs was not particularly relevant, temporary employment was more widespread in LPGs and the level of EPL was similar between the two groups. This is confirmed by data on individual countries: some of them had a high flexibility but have grown less than other, such as the case of the United Kingdom, which had the lowest employment protection indicator of all the OECD countries (except the United States) but a lower level of productivity growth in comparison with many other countries, and there were countries with high flexibility where productivity has grown significantly, such as Ireland or the United States. At the same time, there were countries with lower level of flexibility but high productivity growth, such as Germany. It is also interesting to look at taxation on wages: countries with a higher taxation were those that experienced a higher growth. Thus, as regards the labor market, a regulatory intervention by the state, aimed at making work more flexible and less expensive, had not characterized the countries with high growth in productivity, while countries with the largest constraints have had a greater growth, as Wolfgang Streeck had already shown regarding the role of beneficial constraints in German capitalism. On the contrary, policies aimed at increasing skills - such as active labour market policies related to training or policies aimed at favoring the matching between skills demand and supply - were widely adopted by HPGs during the 1990s. The same is true for lifelong training and for on the job training. Denmark and Sweden were heading in this direction, investing heavily in training and in active labour market policies, as well as Germany. The exceptions among countries with high productivity growth are the United States and Ireland, where essentially there were no active labour market policies but where there was a high level of on-the-job training. On the contrary, all low growth countries, invested much less in skills provision and training.

The positive association between productivity growth and skills emerges also looking at the indicators related to the second dimension: human capital. The level of schooling of the population – human capital broadening – at mid-90s was not strongly differentiated between HPGs and LPGs, neither for secondary nor for tertiary education. On the contrary, there was a clear difference in term of investment per student and in term of quality of the educational institutions – human capital deepening. For example, in the Greek case - which is one of the low-growth countries - there was a high level of education, both secondary and tertiary, but a very low level of quality both in scientific and mathematical subjects and in the management sector and in terms of overall quality educational offer; in other words, Greece is a low growth country with high schooling but low quality of educational institutions. Some HPGs such as France, Germany or Switzerland, on the other hand, had an average human capital broadening but with a very good human capital deepening. At the same time, Scandinavian countries benefited of a high level of schooling that went hand in hand with a high quality of educational institutions, and all four Scandinavian countries are in the HPGs group. All this means that productivity growth went hand in hand with policies aimed at raising the quality of educational provision and services for students, while there is not a clear association with policies aimed at increasing the average number of years of schooling.

Data on policies related to the support of innovation show a positive association with productivity growth. In particular, HPGs were characterized at mid-90s' by higher public and private R&D spending and support for basic research, as well as collaboration relationships between universities and private firms, the availability of venture capital and public procurement practices in high-tech activities. In this policy arena it is possible to make a division between two different types of instruments: on the one hand, those aimed at promoting collaboration between public organizations (universities, research centers, agencies specialized in the production of knowledge, etc.) and private companies, defined as 'collaborative RDI programs' (EC 2013) and, on the other hand, policy tools aimed at giving direct support to businesses through tax incentives, individual financing, or through loans.

As regards the first policy instrument, some countries of the HPG group such as Germany, Denmark and Sweden invest heavily in policies aimed at promoting cooperation between public organizations and private companies. In particular, they finance ITC development agencies, specific schemes to support businesses and to encourage public research co-financing, measures dedicated to technology transfer, and other interventions aimed at strengthening the relationship between public institutions and private actors and involve the latter in the knowledge production phase. Among the measures to promote competitiveness there are also those aimed at promoting territorial clusters, such as the German Top Cluster Program, an instrument that finances regional thematic clusters aimed at creating collaboration between public and private research (EC 2013). These policy instruments focus on the "connections" between actors, increasingly involving large companies and favoring their active participation and their embeddedness in a network of collaborative relationships with public institutions. By this point of view, the case of the United States is particularly interesting: in this country there are many policy tools aimed at favoring connections between public institutions and private companies in the field of R&D through the use of public procurement in activities related to innovation and R&D, such as defense: in the US 20% of all public procurement resources are directed to defense in comparison to 5% in Sweden, 4% in Denmark, 3.8% of Germany, the 0.7 of Ireland. As many contributions have already shown (see Block, Mazuccato, Weiss), a notable public investment supports innovation activities in the US.

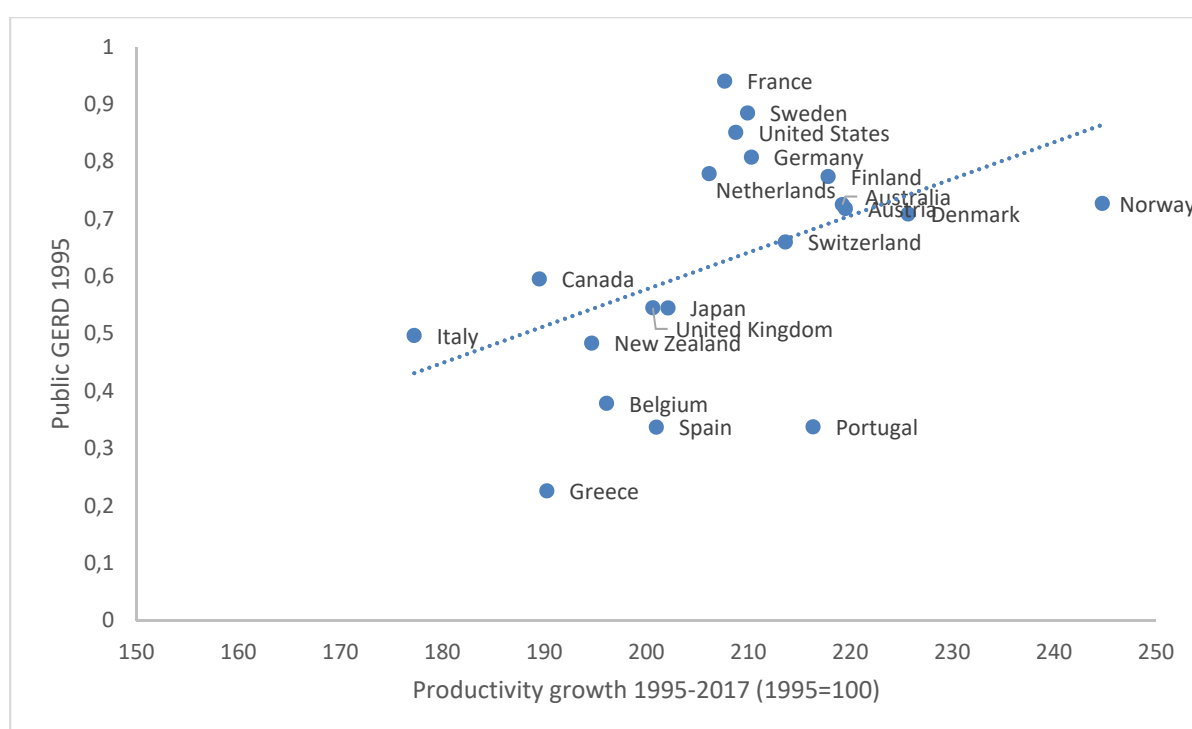
As for the second policy tools, France, Ireland and Hungary, are among the countries with a higher support to innovation through tax incentives. The sum of direct and indirect interventions in favor of companies is much higher in France and in Ireland than in Sweden, Denmark and Germany; Ireland and France are the two countries in which tax incentives weigh the most: around 80% in Ireland and 79% in France of total financing are tax incentives. At the same time, France is the OECD country where incentives have the highest share of GDP. However, there is also a difference among these three countries: in France, but not in Hungary and Ireland that rely on FDI-based growth, a substantial part of these incentives is addressed to large national companies, with a small share addressed to the promotion of foreign direct investments: in 1990 the flows of FDI in France were equal to 1% of GDP, in the 2016 were 1.4%; in Ireland the flows of FDI in 1990 was 1.3% of GDP and it grew to 26% in 2016.

An interesting path of research could focus on the analysis of the different outcomes of the two above mentioned policy tools, but that is beyond the scope of this paper. On the contrary,

what is particularly important for this analysis is that all these cases show that, even if through different policy instruments, the intervention of the state and its support to R&D activities play a notable role in supporting productivity and economic growth.

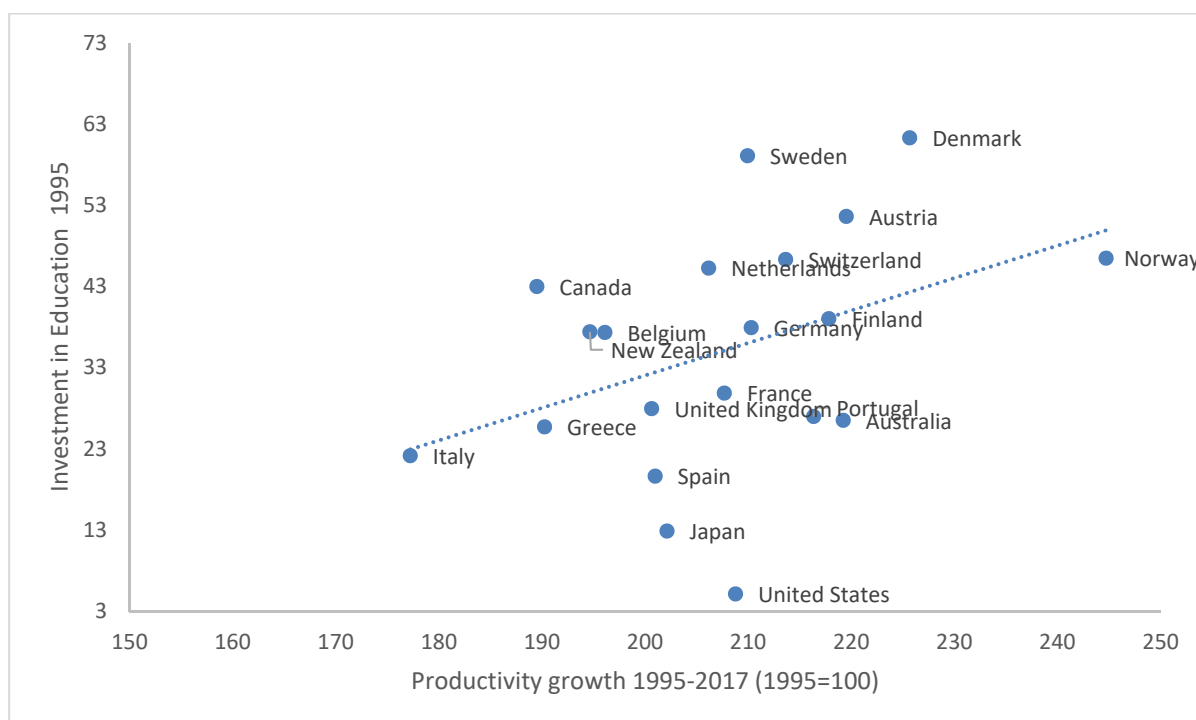
The above-mentioned relationships are confirmed if we take into account the links between three indicators and the growth of productivity in the period 1995-2016: the level of GERD financed by the state, the expenditure in active labour market policies related to training and the expenditure for student at the tertiary level: countries with the higher level of investment in these three kinds of policy at mid 90s' are those with a higher productivity growth (fig. 7, 8, 9).

Figure 7. Public financed GERD in 1995 and growth in productivity for the period 1995-2017



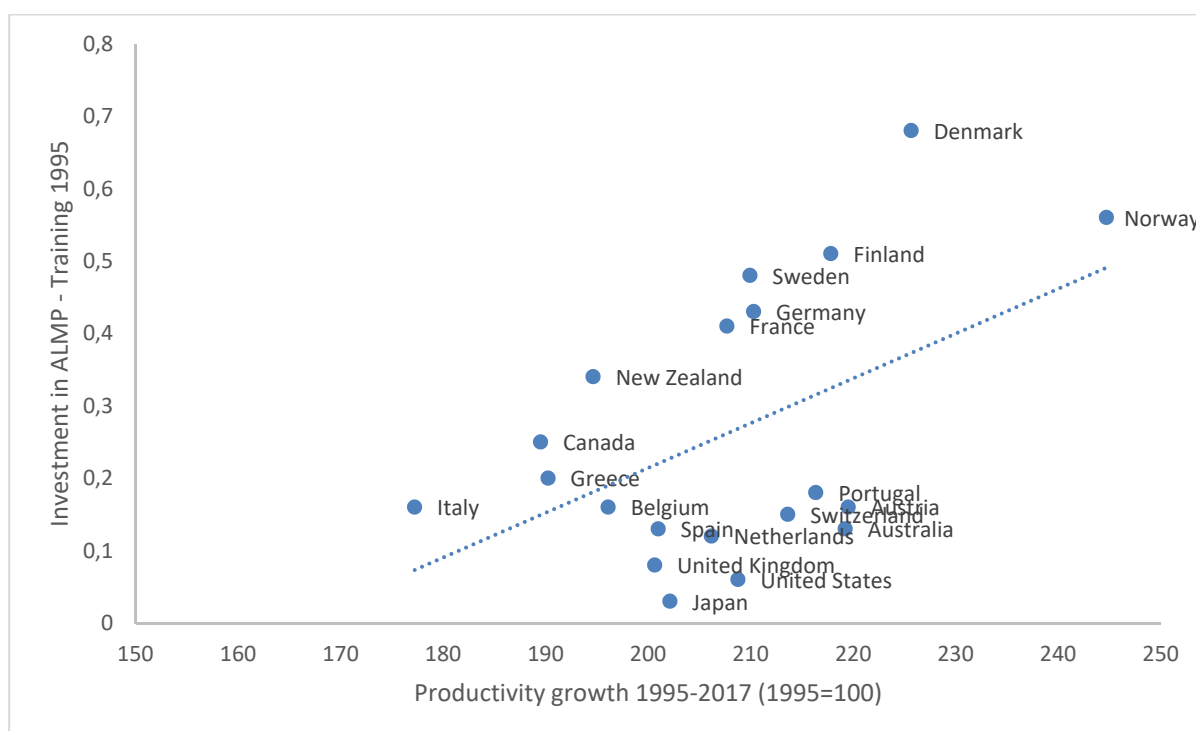
Source: *Processed data from OECD and World Bank database*

Figure 8. Government expenditure per student, tertiary (% of GDP per capita) in 1998 and growth in productivity for the period 1995-2017



Source: *Processed data from OECD and World Bank database*

Figure 9. Investment in Active labour market policies Training (% of GDP) in 1995 and growth in productivity for the period 1995-2017



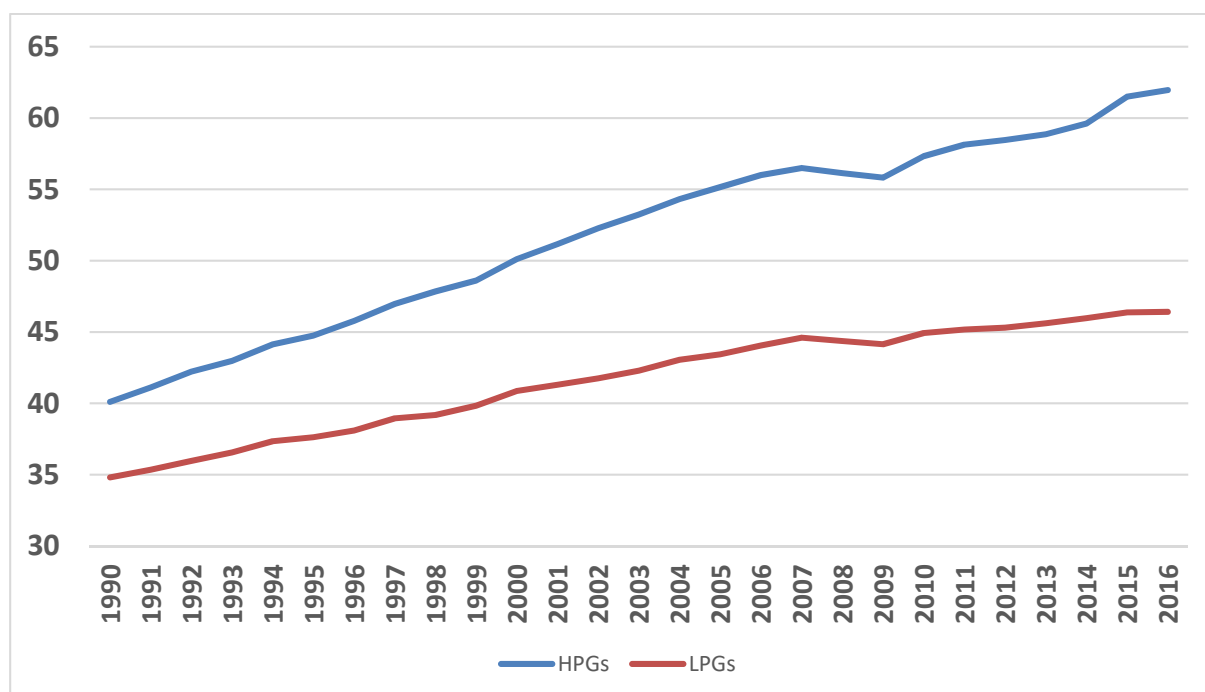
Source: *Processed data from OECD and World Bank database*

Finally, there is a positive association between a better quality of governance and a higher rise of productivity: this positive association is valid for all three dimensions taken into consideration, namely the regulatory quality, the government effectiveness and the rule of law (fig. 6).

This analysis shows that there is an association between some public policies and productivity and through this relation public policies may influence economic growth (Burroni 2016).

Of course, in the long period 1990 - 2017 many things have happened, in particular the 2008 crisis; in this case, financial shocks and demand effects have certainly played an important role influencing growth trajectories of the countries here analysed. However, it should not be underestimated that the institutional choices made during the 1990s influenced the capability of countries to face with the dynamics of the crisis. A greater investment in human capital, in the quality of training institutions as well as in innovation policies may have strengthened the competitiveness of high technology sectors and supported competitive strategies that partly protected firms by the impact of the crisis. Not surprisingly, if we look at the trend in the GDP of the two groups of countries - HPGs and LPGs - we note that the gap between them follows a relatively constant pace, gradually expanding after the crisis (fig. 10). In other words, the financial crisis has created a series of conditions for responding to which HPGs countries were better equipped, and a part of this comparative advantage can be found in the choices of political economy and the policy tools chosen by the mid-1990s.

Figure 10. Productivity growth in the period 1990-2016



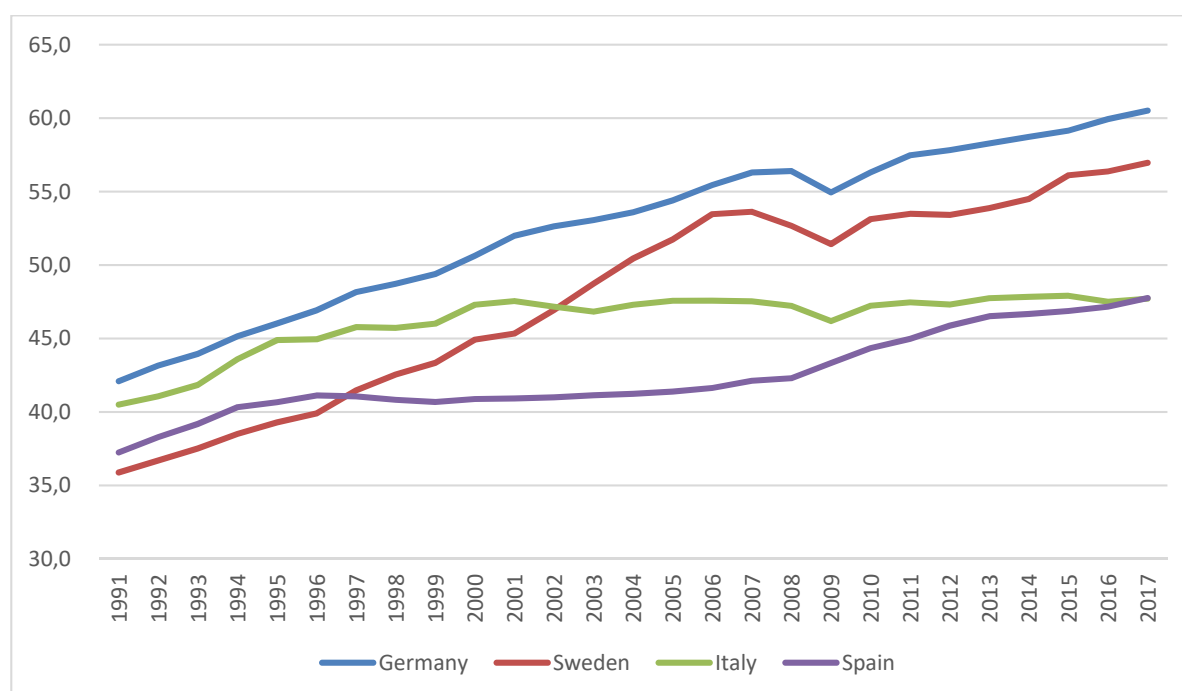
Source: *Processed data from OECD and World Bank database*

An example of these trends comes from the comparison between two high-growth cases, Germany and Sweden, and two low-growth cases, Italy and Spain. There is no doubt that, as many scholars have shown, the institutional architecture of the Eurozone negatively

influenced the latter and favored the former, and that this also influenced their ability to respond to the crisis. But at the same time, the differences in the institutional context at mid 90's between the four countries was impressive.

At mid 90's world Bank rated the quality of the education system 4.9 in Germany, 5.2 in Sweden 3.8 in Spain and 3.4 in Italy (1-7 best); the collaboration between University and Industry was rated 5.3 in Germany, 5.6 in Sweden, 3.4 in Spain, 3.0 in Italy. The government expenditure per student in tertiary education as % of GDP per capita was 38% in Germany, 59% in Sweden, 20% in Spain and 22% in Italy. The government financed GERD as % of GDP was 0.8 in Germany, 0.9 in Sweden, 0.3 in Spain and 0.5 in Italy. Expenditure in ALPM related to training as % of GDP was 0.5% in Germany, 0.9% in Sweden, 0.1 in Spain, 0.2 in Italy. At the same time, in Italy and Spain specific policies to support low productivity manufacturing in the former and low productivity sector such as construction industry were implemented since the beginning of the nineties (Burroni et al. 2017 and 2019). Focusing on productivity growth in the four countries, it emerges that the two Mediterranean countries followed a particular trajectory, flattening out well before the crisis and even before entering the euro. The institutional environment implemented in the 1990s therefore influenced the different growth trajectories and then amplified the effects of the crisis.

Figure 11. Productivity growth in Germany, Sweden, Spain and Italy in the period 1990-2016



Source: *Processed data from OECD and World Bank database*

The level of productivity and sectorial specialization of the four countries show that in 2016 the activities with a high intensity of R&D - which require long-term investments in research and development and innovation - were much less developed in the two Mediterranean countries and it is worth noting that the level of productivity is much higher in Germany and Sweden regardless of the productive sector taken into consideration. It seems plausible that

there is a 'systemic' effect related to the presence of an institutional context that favors high productivity in the two HPGs and a low productivity in the two LPGs, and that this was influenced by economic policy choices made in previous years.

Table 1. Added value, labour productivity and specialization in Germany, Sweden, Spain and Italy (2016)

	% of added value on total added value			Productivity per hour worked			
	<i>Activities with medium and high intensity of R&D</i>	<i>Manufacturing</i>	<i>Building industry, retail, tourism</i>	<i>Activities with medium and high intensity of R&D</i>	<i>Manufacturing</i>	<i>Building industry, retail, tourism</i>	<i>Total activities</i>
Italy	8,9	16,2	25,0	42,8	34,4	24,5	33,5
Spain	7,9	13,9	29,6	44,4	37,1	24,5	31,2
Germany	18,3	23,4	20,1	83,3	53,9	29,5	42,7
Sweden	17,1	15,1	24,1	80,8	52,7	36,2	43,3
OECD average	10,5	16,6	25,3	51,4	43,6	25,9	35,1

Source: *Processed data from OECD and World Bank database*

This main feature is confirmed also taking into account the two groups of countries – HPGs and LPGs – and can be related to fact that public policies can contribute to the emerging of some kind of sectorial specialisation: in particular, public policies that support the development of human capital and innovation can trigger the emerging of sectors characterized by high level of innovation. The high-growth countries are characterized by activities that have a higher intensity of research and development: among HPGs these activities exceed 10% of national added value in Germany, Sweden, Ireland, Finland, Denmark, Austria, United States, confirming that both cases of coordinated and liberal market economies that experienced a notable growth are specialized in innovation. At the same time, these countries score an intermediate specialization in manufacturing and low specialization in low value-added activities. It is also interesting to note that HPGs have an average hourly productivity that is much higher than other groups for all economic activities. In particular, productivity in R&D activities in HPGs is almost double than in LPGs and almost four times that of CUCs. The productivity of HPGs in manufacturing activities is also much higher, in particular compared to CUCs (tab. 2).

Table 2. Added value, labour productivity and specialization in 2016

	% of added value on total added value			Productivity per hour worked			
	<i>Activities with medium and high intensity of R&D</i>	<i>Manufacturing</i>	<i>Building industry, retail, tourism</i>	<i>Activities with medium and high intensity of R&D</i>	<i>Manufacturing</i>	<i>Building industry, retail, tourism</i>	<i>Total activities</i>
HPGs	12,7	16,6	22,7	82,9	71,8	37,7	51,7
LPGs	7,4	13,1	24,9	43,3	41,5	26,3	34,6
CUCs	10,6	19,4	28,1	21,3	17,0	12,4	15,1

Source: *Processed data from OECD and World Bank database*

If we look at the LQ (location quotient) ⁵ indicator, which specifies the weight of productive specialization, we note that the difference between HPGs and LPGs countries is higher both in terms of specialization and in terms of productivity in high value-added activities, showing that the most notable difference between high and low growth countries in terms of specialization lies in the different specialization in high value added activities. On the contrary, advanced economies that grow at lower rates have a greater specialization in activities with low added value that coexists with a lower specialization both in manufacturing activities and in R&D intensive activities; moreover, productivity in all three sectors is much lower in LPGs than in HPGs (tab. 3).

Table 3. LQ in productivity and added value

	% of added value on total added value			Productivity per hour worked			
	<i>Activities with medium and high intensity of R&D</i>	<i>Manufacturing</i>	<i>Building industry, retail, tourism</i>	<i>Activities with medium and high intensity of R&D</i>	<i>Manufacturing</i>	<i>Building industry, retail, tourism</i>	<i>Total activities</i>
HPGs	1,322	1,042	0,900	1,686	1,653	1,480	1,530
LPGs	0,661	0,741	0,987	0,881	0,955	1,033	1,024
CUCs	1,017	1,218	1,114	0,433	0,391	0,487	0,447
Difference between HPGs and LPGs	0,661	0,301	-0,087	0,805	0,698	0,448	0,506
Difference between HPGs and CUCs	0,305	-0,176	-0,214	1,253	1,262	0,993	1,083

Source: *Processed data from Stat-OECD*

Thus, many countries with higher growth have a prevalent specialization in research and development activities, such as Denmark and Sweden; others have a multiple and integrated specialization, like the case of Germany or Ireland, specialized in R&D activities and manufacturing. Then, some countries have a "polarized" specialization, such as the United States, which have a specialization in R&D activities but also in low productivity activities. Finally, there are countries that have a prevalent specialization in low-productivity activities both in terms of added value and employment, that is compatible with a sort of low productivity equilibrium, as in the case of Spain up until the 2007 crisis.

Conclusion

The first part of this paper focused on GDP per capita growth in OECD countries over the past 25 years. A process of catching-up between developing countries and advanced economies emerged and narrowed the distance between rich and poor countries. Among advanced economies that experienced a notable growth there are cases of coordinated capitalism, such as Germany and Sweden together with the United States and Ireland for Anglo-Saxon capitalism : at the same time, cases of coordinated capitalism can be found also

⁵ The location quotient (Lq) is calculated as: $Lq = (e/n)Y/(E/N)Y$, where the ratio between e and n is the quota of national added value accounted by activity Y, while the ratio between E and N for the quota of added value accounted by activity Y at the OECD level.

among countries characterized by low growth – such as Japan – along with Anglo-Saxon economies – such as the UK. All this means that there is not a model of capitalism with “silver bullet”, but their dynamics depend on the role played by their institutional architecture and in the making of this architecture the action of the state play a notable role. In particular, data shows that labour productivity is particularly important to explain growth trajectories.

For this, reason, it is important to focus on the role played by the state and in particular on the set-up of public policies that are directly related to the growth of productivity. In order to understand this role, I analyzed the action of the state at the beginning of the period of analysis (mid 90s') in labour market regulation, human capital and innovation in countries characterized by high and low productivity growth (HPGs and LPGs). This analysis shows that there is a positive association between some types of public policies and the rise of labour productivity.

In particular, as for the regulation of labour market, countries with higher rate of growth (HPGs) were characterized by higher level of investment in skills and in active labour market policies, while higher level of flexibility or lower labour costs are not a specific feature of HPGs. As for human capital, HPG countries were characterized by a high level of quality of education – human capital deepening – while policies aimed at increasing the average number of years of schooling – human capital broadening – were not a typical characteristic of HPGs. Moreover, quality of research institutions, support for innovative forms of credit, the promotion of forms of cooperation between public and private sectors, the overall level of investment in R&D, both public and private, were important part of an institutional environment that was prone to the rise of labour productivity. Finally, the positive association between the quality of public administration and high productivity growth is confirmed: HPGs countries were those that in the mid-1990s had higher values in the three indicators here analyzed, i.e. rule of law, government effectiveness and regulatory quality. This particular institutional asset, characterized by high public investments in human capital and innovation, went hand in hand with the rise of specialization in high added value activities: in some HPG countries, such as Sweden and Denmark, there is a prevalent specialization in this kind of activities, in other cases the specialization in R&D goes hand in hand with other kind of specialization such as advanced manufacturing (Germany or Ireland) or in low added value activities (such as the US).

This path allows us to identify a 'basic grammar' of the relationship between the state, its policies and productivity growth, and this grammar implies that if comparative political economy wants to explain why some countries grow more than other should take seriously into account that public policies in some specific fields matter.

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