

Assessment and challenges of industrial policies in Portugal

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1. Introduction

Like most developed countries, the Portuguese economy was severely hit by the international crisis of 2008-2009, with GDP at constant prices dropping 2,9% in 2009 and unemployment increasing by 2,1 percentage points (p.p.) in the same year, affecting 10,6% of the workforce. As a combined result of the decrease in tax revenues, the rise in social transfers and, to a lesser extent, the countercyclical measures adopted by the government, gross public debt increased by 12 p.p., reaching 84% of the GDP in 2009.

Although the performance of the Portuguese economy in the immediate aftermath of the 'Great Recession' was not particularly distinctive in the European context, the country was soon to be caught in the so-called 'sovereign debt crisis', together with other countries of the EU's periphery. From the beginning of 2010, the interest rates demanded by international private investors on Portuguese sovereign debt started to decouple from the rates on German Federal bonds, ultimately reaching unsustainable levels and leading to the need to resort to international financial assistance in May 2011.

The growing reluctance of international investors in buying Portuguese debt has to be understood at the light of structural weaknesses which were already apparent prior to the outbreak of the international crisis in 2008-2009. In fact, between 2000 and 2008 Portugal experienced the second lowest GDP growth rate in the EU (averaging 1% per year, in volumes), slightly above Italy and half of the EU's average. Even more significantly, the country's external indebtedness, measured by its net International Investment Position, had been growing continuously since the middle 1990s, reaching 87% of the GDP in 2007, only parallel to those of Greece (111%) and Spain (79%), and well above the average of the euro area (17%). In other words, like those of other countries in the EU's periphery, the Portuguese economy was already rather vulnerable when the crisis hit in late 2008, creating doubts among international creditors regarding its capacity to fulfil its obligations in the future.

The adjustment program agreed between the Portuguese government and the troika composed of the IMF, the ECB and the European Commission, as a condition to access official financial assistance, included measures that aimed to curtail public expenditures and increase revenues in the medium term, producing a strong recessionary impact in the country. By the end of 2013, real GDP was down to its 2000 level (while the EU as a whole was gradually getting back to the pre-crisis level) and the unemployment rate was reaching a historical height of more than 18% (contrasting with the 4,5% registered in the turn of the century).

Besides the measures directly targeted to improve public finances in the medium term, the adjustment program included a number of 'structural reforms' aimed at improving the performance of labour and product markets. The program assumed that inefficiencies in those markets, together with inadequate budgetary practices, were largely responsible for the dismal performance of the Portuguese economy. In particular, excessive regulation in labour relations and weak regulation in some industries (e.g., energy distribution) were considered to have created negative incentives for productive investment. Accordingly, such 'structural reforms' were expected to unleash the forces for growth in the medium term.

While improvements in the functioning of labour and product markets may play a role in the performance of the Portuguese economy, the competitiveness problems of Portugal have deeper roots, which cannot go unnoticed. As we discuss in greater detail in section 2, the erosion of the country's external accounts during the past two decades results from the combination of a fragile specialization profile, societal obstacles to structural change, a macroeconomic framework which proved to be unfit with regard to the country's main challenges, and some unfavourable international developments. Simply put, the Portuguese economy was 'stuck in the middle': while insufficiently developed to compete in the most sophisticated markets, the price of its products in the international markets proved to be too high to compete with those of less advanced, emerging economies.

The strategy followed in the context of the adjustment program is expected to improve the cost-competitiveness of the Portuguese economy, through austerity-induced internal devaluation of prices and wages. Moreover, labour and product markets' reforms are expected to attract foreign investors, hopefully contributing to induce some upgrading of the country's specialization profile. Notwithstanding, the Portuguese economy and society will, in any case, still be facing essentially the same challenges mentioned above.

Such challenges were, to some extent, anticipated by policy makers more than two decades ago (i.e., even before the country's external imbalances started to accumulate). In fact, as we demonstrate in section 3, in the last 25 years or so Portugal has put in place a vast array of policy instruments that attempted to address the 'stuck in the middle' challenge of its economy, namely in the domains of R&D, innovation and internationalization. Although formulated in generic terms, in practice – and, often, purposely – many of such instruments produced asymmetric impacts across industries, allowing us to speak of a moderately active industrial policy being implemented at the national level¹. In spite of some shortfalls, the general assessment of such policies is globally positive (see section 4), having contributed to relevant improvements in the quality of products and the integration of Portuguese firms in the international markets.

Notwithstanding, the positive developments in the capacity to innovate and compete internationally were insufficient to overcome the main obstacles to sustained economic development. In the last section of this chapter we discuss how industrial policy design and

¹ We follow Rodrik (2008) by defining industrial policy as the set of policies instruments that stimulate specific economic activities (including manufacturing, as well as nontraditional agriculture and services) and promote structural change.

implementation at the national level can be improved in order to contribute to overcome the present hurdles of the Portuguese economy. We also discuss to what extent such improvements would be sufficient for that purpose, given the institutional and macroeconomic policy framework within which the Portuguese economy operates, in the context of the EU and the euro zone.

2. The structural challenges of the Portuguese economy

The Portuguese economy and society present two, interrelated structural weaknesses which, in spite of some improvements in recent decades, have persisted to the present: the low qualifications of the active population and the profile of economic specialization.

When Portugal joined the EEC the proportion of working age adults who had completed secondary education was below 20% (when the European average was already close to 60%). Investments in the qualification of both the younger population and adults have increased in recent decades, contributing to substantial improvements in this domain. However, such a significant gap could hardly be reversed in a short period. Typically, the growth in the overall educational level essentially depends on generational renewal, the impact of which is limited by the demographic structure of the population. Moreover, while there was a substantial reduction in school dropouts (from 50% of early school leavers among the population aged 18-24 in 1992, to 20,8% in 2012), its level is still well above the EU average (12,8%). Thus, despite all the efforts, it has not been possible to eliminate the backlog in education levels in Portugal: in 2012, 38,7% of the working population had completed secondary school, a figure which almost doubles the value registered in 1992 (20,2%), but which is still far from the EU average (70,8%) .

The low educational levels have several negative consequences, in terms of productivity as well as social progress. In particular, the delay in qualifications is both a cause and consequence of the second domain of structural weaknesses mentioned above – the specialization profile of the Portuguese economy.

The Portuguese economic fabric is historically characterized by a large proportion of activities with low added value and low technological intensity. The process of industrialization of the country had been driven since 1960 by successive waves of foreign direct investment (FDI), which were based on – and helped to deepen – that specialization profile. In the late 1980s, Portugal's EEC membership and the prospect of participation in the European Single Market made the prevailing industrial tradition (and the corresponding low wages) even more attractive to international investors, giving rise to a new wave of FDI. However, the rapid pace of globalization of production – allowed by advances in information and transport technologies, as well as by the international agreements of trade and investment liberalization signed by the EU – soon begun to put increasing competitive pressure on domestic products based on low labour costs.

By the same time, Portugal started to prepare its participation in the European Economic and Monetary Union. 'Nominal convergence' with the EU average – and, in particular, exchange

rate stability – became a top priority in macroeconomic policy agenda, putting an end to the prevailing ‘crawling-peg’ exchange rate regime, which had been recurrently used in the past to compensate for losses in competitiveness. In practice, this translated into a significant real exchange rate appreciation², further hindering the competitiveness of traditional sectors of the Portuguese industry.

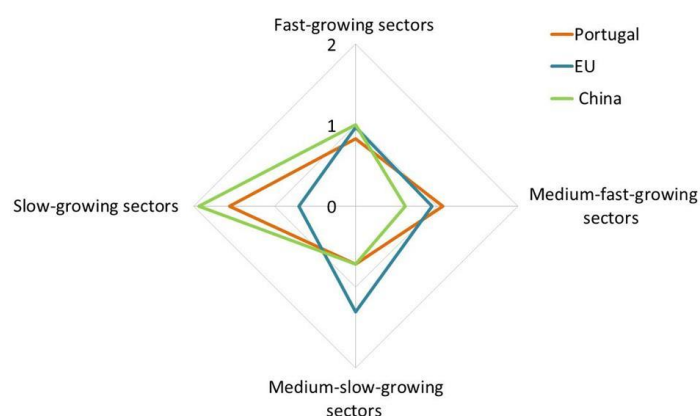
The increasing difficulty of domestic producers in competing on the basis of price could have acted as an incentive to shift the specialization profile of the Portuguese economy towards higher added value activities. However, this route for structural change was faced with two types of obstacles. On the one hand, the skills required for a rapid development of the most advanced sectors were scarce, thus limiting the expansion of new, more sophisticated activities. On the other hand, the macroeconomic environment that prevailed during most of the 1990s – marked by the sharp drop in real interest rates, the deregulation of financial activities, the growth of the internal market, the privatization of companies in regulated industries, in addition to the aforementioned appreciation of the real exchange rate – created incentives for the expansion of non-tradable activities, to the detriment of (traditional or otherwise) tradable goods sectors³. During this period, investment was largely geared towards activities such as financial services, transports, energy distribution, telecommunications, construction, and retail trade, while the indebtedness of firms, households, and the State grew, fostered by the flows of financial capital from abroad (in the context of the liberalization of capital movements within the EU).

Thus, the overspecialization of Portuguese manufacturing industry in activities with low value added and low technological intensity remained unchanged until the entry into force of the euro, in 1999. Such traditional industries would be faced with three significant shocks in the subsequent period: China's entry into the WTO, the EU enlargement to the East, and the strong appreciation of the euro against the dollar between 2002 and 2008. The latter development further eroded the price competitiveness of domestic exports, while the first two events have increased significantly the exposure of the Portuguese industry to foreign competition, due to the substantial overlap in industry structures (illustrated in figure 1, for the case of China).

² According to IMF data (International Financial Statistics), between 1986 and 1992 the Real Effective Exchange Rate appreciated 27%.

³ The share of non-tradable activities in VA rose from 43% in 1991 to 49% in 2000 and 53% in 2007.

Figure 1. Revealed comparative advantages by groups of growth intensity of world exports of goods, 2005-2009



Source of data: EC (2011)

These developments had a disproportionate impact on the traditional sectors of Portuguese industry – notably textiles, clothing and footwear – whose weight in manufacturing exports fell from 40% in 1986, to 28% in 1999, and to 16% in 2006.

The fall in traditional exports was partially compensated by an increase in the exports of services, as well as of some commodities (which were in high demand from emerging economies in the years that preceded the international crisis). However, this was insufficient to reduce the Portuguese trade deficit from its chronic high levels, averaging -8,8% of the GDP between 2000 and 2007. Incapable of generating enough revenue through exports to compensate for the repayment of the external debt accumulated since the 1990s, Portugal experienced a fast deterioration of its current account (from an average annual deficit of nearly 5,6% of the GDP between 1986 and 1999, to an average of 9,5% between 2000 and 2007).

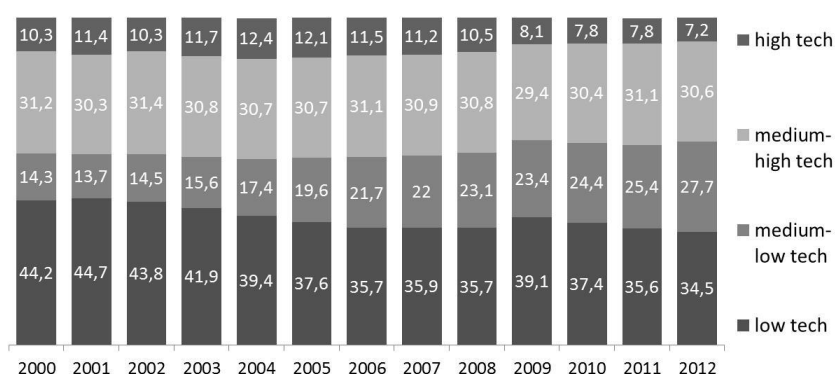
In sum, in the aftermath of the Great Recession, the Portuguese economy was characterised not only by weak public finances, but – more importantly – by high external indebtedness and evident competitiveness problems, accruing from the structural weaknesses of its productive structure. The discussion above has shown that such structural weaknesses are twofold. On one hand, the overspecialization in low value added and low technology intensive activities, which face fierce competitive pressures from emerging economies, has prevented the domestic economy from reverting its chronically high trade deficit. On the other hand, partly as a result of the competitiveness hurdles in traditional export industries, the share of tradable activities in the economy was substantially reduced, further hampering the capacity to generate revenues through international trade.

The adjustment program designed by the IMF, the ECB and the European Commission in 2011 is expected to address these problems by means of internal devaluation and fiscal austerity. By shrinking the size of the domestic market, the program is expected to reduce the share of non-tradable activities, while the reduction in wages and in the costs of non-tradable goods and services is expected to improve the competitive performance of tradable products. However, even if successful in reducing the external imbalances of the Portuguese economy in the

short/medium term⁴, such strategy can hardly be sufficient in providing a sustainable basis for development of the Portuguese economy in the longer run.

As figure 2 shows, the substantial drop in the exports of traditional products during the 2000s has not translated into the expansion of more sophisticated products. In the post-2008 period there was even a small contraction in the share of high tech and medium-high tech products in the exports of goods, showing that the crisis has not hit less severely the domestic producers of more technologically intensive goods. This is all the more worrisome, considering that low tech and medium-low tech industries clearly underperformed with regard to the remaining industries at the EU level since 2009, according to Eurostat's index of production (Eurostat, 2013).

Figure 2. Exports of goods by technology intensity group (%)



Source: GEE (2013)

In other words, Portugal will need to upgrade its productive structure if it is to avoid falling into a debt-trap of prolonged dismal growth and high unemployment. While some ingredients of the adjustment program in place since 2011 may contribute to such goal – namely, by increasing the attractiveness of the Portuguese economy for qualified foreign direct investment –, the policy mix should not dismiss measures that specifically target the structural change of the productive fabric. That is, industrial policy has to be part of the development strategy of the country. In fact, to a large extent, this has already been the case in recent decades, as we discuss in the following section.

⁴ The current account deficit fell from 10,6% of the GDP in 2010 to 1,5% in 2012, and is expected to be eliminated by the end of 2013. Note, however, that this adjustment is also explained by the sharp decrease in imports, partly resulting from an unsustainable drop in investment levels. For a critical assessment of the Portuguese adjustment program and its results see Abreu et al. (2013).

3. Industrial policies in Portugal in recent decades

It is now widely accepted that the public support to the emergence and expansion of the most dynamic economic sectors was a key factor in the success of many of the richest countries (e.g., Chang, 2006), as well as of those instances of successful industrialisation in recent decades (e.g., Wade, 2003). However, the rules and institutions governing international economic relations today are different than they were in the past, altering the space of possibilities for public action (Rodrik, 2007).

In fact, international institutions such as the WTO and the EU have seen their powers strengthen in fixing and enforcing the rules governing international flows of goods and capital. Policy measures such as imposing constraints on foreign investment (e.g., demanding minimum local contents or the transfer of technology to local producers) or protecting domestic producers against foreign competition are now strongly limited by the WTO. The EU, evoking the principle of 'free and undistorted competition' within the European common market, requires even stricter limits on the pursuit of policy instruments targeting specific sectors (such as State-owned enterprises, public procurement, or various forms of State aid to businesses). In short, many of the instruments deployed by the State when today's richest countries and many emerging economies developed are now greatly reduced in scope by international rules and institutions.

Besides the restrictions imposed by such rules, policy options within the space of possibilities have often been adverse to the desirable structural changes. At times, the economic policy followed in Portugal (as in other members of the euro area) has been a kind of 'reverted industrial policy', fostering the structural change of the economy towards less – and not more – promising activities. As we mentioned in section 2, during the 1990s the Portuguese government has given top priority to fulfilling the conditions for participating in the euro since its inception, which was reflected in a real exchange rate appreciation and a substantial drop in real interest rates. Together with the wide-scope privatization program and the deregulation of financial activities, this fostered the expansion of the non-tradable goods sector, which not only absorbed a large share of the investment resources, but was also able to attract most of the (scarce) highly skilled workers in the Portuguese economy. As discussed before, this has contributed to hinder the development of productive activities targeting the most promising segments of the world markets.

In spite of the aforementioned restrictions and the priority attached to 'nominal convergence' with the EU in the 1990s, industrial policies did have a place in the Portuguese policy mix in recent decades. In particular, the availability of EU's Cohesion Policy funds since the late 1980s has fostered the development of several programs and support mechanisms which aimed at promoting the upgrading of the productive fabric and improving the productivity of the Portuguese industry. Besides education and training (already mentioned in section 2), EU structural funds have benefited the science and technology system, as well as innovation in and internationalization of the business sector.

During the 1990s the Community Support Framework programmes have contributed decisively to the creation of technological transfer centres in specific industries, to the development of

interface organisations and infrastructures in the science and technology system (institutes for new technologies, research infrastructures, science parks, incubators, etc.), and to the expansion of higher education. Since the late 1990s the priority in this domain has been geared towards the encouragement of R&D activities by business firms and cooperative R&D projects involving different types of institutional players, as well as the further development of the research system.

Box 1. The NITEC initiative⁵

The NITEC initiative (NITEC stands for Research and Technological Development Nuclei in Companies) was launched in 2003. Its main objectives were presented as follows: (i) supporting, through grants, the setting up of in-house R&D competencies in Portuguese companies, as well as encouraging companies to enhance such competencies; (2) fostering company efforts aimed at improving design and process capabilities and the assimilation of foreign technological knowledge; and (3) encouraging the development of technologically innovative products and solutions. The main purpose was to enhance companies absorptive capacity (Cohen & Levinthal, 1990) through the creation (or 'formalisation') of small R&D groups in companies which had already shown a proclivity to engage into R&D activities or which were already undertaking R&D activities but lacked a formal R&D unit. In the wake of the Barcelona objectives established at the EU level, it was felt that the low levels of R&D expenditures as well as the weak in-house capabilities inhibited Portuguese firms from providing appropriate responses to the competitive challenges associated with globalisation. An additional concern was the weakness of the linkages among the various players in the innovation system. Companies' low in-house R&D capabilities constrained the development of co-operation with Universities and other scientific and technological organisations. In its initial design, the initiative has been in force until 2006.

In 2007 it has been revised and re-launched, under the new Competitiveness Factors Operational Programme (CF Programme) of the 2007-2013 National Strategic Reference Framework (NSRF). In the new policy context, the former NITEC initiative gave rise two sub-programmes: one similar to the 'old' NITEC, addressed to SME without specific R&D units; and another (called CITEC – Centres for Research and Technological Development), focused on companies which already carried out "continuous and [organizationally] structured" R&D activities. Thus, the CITEC sub-programme was envisaged as an instrument for supporting companies to go a step further, assuming some kind of a 'ladder' in the process of developing in-house R&D capabilities. CITECs should have, until the end of the project, a minimum of five full time people assigned to R&D activities, including at least one PhD holder, an R&D to sales ratio above EU average in the industry concerned, and an operational R&D and innovation management system, certified according to the Portuguese standard on that regard.

At present, Portugal puts in place virtually all the usual ingredients of an innovation policy mix, including: tax benefits for R&D, grants and soft loans for business R&D investment, support for R&D and innovation infrastructures, R&D and innovation vouchers, incentives for knowledge-based entrepreneurs, support for TTOs in universities, publically financed risk capital funds, public procurement of innovative projects, training and counselling for SMEs, competitive grants for research and advanced training, support for clusters and innovation networks, etc.

⁵ This box is based on Simões, 2002 and 2008.

Formally, most of these policy instruments assume a horizontal nature, potentially benefitting almost all productive activities. In practice, however, support is not evenly distributed across industries.

Mamede and Feio (2012) analyse the industry distribution of public support granted to firms through tax benefits for large investments, tax benefits for R&D, and direct support to firms (including both soft loans and grants) .

The analysis of tax credits granted during the period 1999-2008 reveals that they tend to concentrate on a limited number of industries. 96% of the tax credits approved in the period (corresponding to 118 investment projects) were directed to manufacturing, more than half of which in just three industries: pulp and paper, chemical and pharmaceutical, and electronic products. Although low and medium-low tech industries predominate (beyond pulp and paper, other relevant beneficiaries of this policy are found in oil industries, basic metals and food), the weight of high and medium-high tech industries in the tax credits approved is particularly striking when compared with the relative importance of this type of activities in the Portuguese economy. In fact, high tech industries account for no more than 4% of gross value added (GVA) and 1% of Portuguese companies, but they absorbed nearly two fifths of such tax benefits.

The goal of promoting sectors of activity that do not correspond to the traditional comparative advantages of Portugal is not only visible in the weight of the electronics industries, chemicals and pharmaceuticals in tax credits approved for large investment projects. Among the projects supported in this context it is possible to identify various investments associated with the automotive industry and related components (e.g., metal products, rubber and plastics), denoting the purpose of promoting the automotive cluster in Portugal (more on this below).

The asymmetric distribution of public funds across industries is even clearer in the case of tax incentives for R&D. Close to half of the tax benefits granted between 2006 and 2008 under this system were concentrated in just six industries – IT services, pharmaceuticals, automotive industry and components, telecommunications, and electronic products. Altogether, these industries account for no more than 9% of the GVA and 1% of domestic enterprises.

Also in the case of direct support to firms, even though this instrument is in principle accessible to the majority of industrial enterprises and several services activities, its implementation denotes a bias in favour of activities aligned with the objective of promoting structural change. As in the case of tax benefits for large investments, manufacturing industry is here the main beneficiary, absorbing two thirds of the incentives approved between 2007 and 2012 (whereas its weight in GVA Portuguese does not reach 20%). The more technology intensive industries absorb a proportion of incentives which is five times its weight in GVA.

The selective nature of public policies in the domains of technology and innovation is even more pronounced in the case of other policy instruments, such as the public procurement of innovative projects, which has largely benefited producers working in the fields of ICT applications for education and health, or solutions for electrical mobility. In some instances, public policy has explicitly targeted specific industries through various mechanisms, as is the case of the automotive industry or the renewable energies (see box 2 below, and box 4 in the

following section). The former case is illustrative of how public policy has evolved in recent decades, according to the institutional and macroeconomic context.

Box 2. The case of the automotive industry

The history of the automotive industry in Portugal is the result of an inter-action process involving different players (the State, car assemblers, component manufacturers, and car importers) that has changed as time went by. The most important have clearly been the first two: the State established (or intended to establish) industrial policies addressed to the industry; and automotive multinational enterprises (MNEs) have responded to such policies, while contributing to shape them.

Drawing a brief time-line of the industry in Portugal since the 1960s, five main stages may be identified. The 1960s were marked by the so-called 'assembly law'. This defined the conditions for the imports of automotive vehicles, making this conditional upon the setting up of manufacturing facilities in Portugal (Guerra, 1990). The underlying logic was one of import substitution (Simões, 2003). The second phase stems from the 1972 agreement with the then European Economic Community. It was characterized by an 'import offsetting' policy: imports could only be increased to the extent that they were offset by exports of manufactured products. This change led, in 1980, to the first significant and integrated (though not fully) investment in the automotive sector in Portugal: the Renault project. This heralds a third phase, by and large covering the 1980s (Simões, 2000). Although there is no agreement about the merits of the Renault project (Féria, 1999; Santos, 1996; Schmidt and Almeida, 1987), there is little doubt that it entailed a key push towards the modernization of the industry. As a result of the local value added commitments, Renault had to develop Portuguese component manufacturers, while trying to attract foreign ones. As one manager put it, "they [Renault] supported us in learning and in enhancing our credibility" (Simões, 2003: 220).

The fourth stage corresponds to the first two decades of the Auto-Europa (AE) plant. After a long process of negotiation, involving the consideration of alternative locations in Europe, AE was established in Palmela, achieving full speed in 1995, with a capacity of 180 thousand vehicles per year, initially focused on the manufacturing of a multi-purpose vehicle (MPV). The setting up of AE marks a new phase, in which three main players have inter-acted: the State, public authorities playing a key role in negotiating the project and promoting alliances between Portuguese and foreign component manufacturers to enhance local value added; MNEs, initially Ford and VW; and component manufacturers, Portuguese and foreign. AE is *prima facie* a plant: its main function is manufacturing, not on research and development (R&D), purchasing or marketing. This led to relationship patterns significantly different from Renault. Simões (2000 and 2003) identified 4 patterns of relationships between the VW group and its component suppliers: (1) Inter-MNE supply, encompassing two interaction channels, that is, between headquarters and between subsidiaries in Portugal; (2) Direct dialogue from Portugal, in which Portuguese suppliers directly inter-act with VW's headquarters in R&D and other issues (3) Wolfsburg dialogue, in which the Portuguese supplier locate product engineering and development units in Germany to facilitate inter-action with VW's headquarters, and supply in Portugal; and (4) Intermediation by AE, in which AE plays a facilitating role (Vale, 1999), namely through the concept of 'relevant part'. It should be underlined that the extent of the supply by Portuguese firms has been undermined by three main factors: the sheer size of orders (especially in the initial phase), the limited autonomy of AE; and the distrust of VW towards the product engineering and development capabilities of Portuguese suppliers (Velooso et al., 2000). The most successful suppliers seem to have been those which followed pattern (3): having a presence in Germany was important, since sometimes what matters "is not so much development [capabilities], but rather being close" to Wolfsburg and "speaking German language" (Simões, 2003: 223). In spite of several ups and downs, AE keeps running and is still by large the main automotive plant in Portugal and one of the country's largest exporters.

In sum, while the macroeconomic context and policy priorities have not been particularly favourable to the upgrading of the industrial fabric towards more advanced, tradable sectors, the policy mix followed in Portugal did include several measures which aimed at promoting the desirable structural change in the economy. In the following section we try to assess the main elements of such measures.

4. Assessing industrial policies in Portugal

As figure 2 illustrates, the Portuguese productive structure did not change significantly since the beginning of the century. While the export share of traditional industries has dropped considerably, this did not translate into a significant increase in the sophistication of domestic tradable production, weakening the prospects of substantial improvements in the competitive performance of the country.

The unsatisfactory pace of structural change in the Portuguese economy, however, does not necessarily imply that the industrial policies in place were essentially misplaced or ineffective. At least three other reasons can account for the relative rigidity in the industrial profile. First, as we discussed earlier, the negative incentives deriving from the macroeconomic context (marked by a real exchange rate appreciation, growing indebtedness, and harsh competitive pressures from emerging economies) may have cancelled the effects of policies aiming to promote the expansion of more sophisticated, tradable industries. Secondly, the low levels of the education of the workforce (including both workers and managers) may have hampered the potential for structural change. Finally, it may be the case that there was not enough time for industrial policies to translate into significant changes in the production structure before the advent of the Great Recession – and that the conditions for such changes to occur have deteriorated further in the recessionary context that prevailed thereafter.

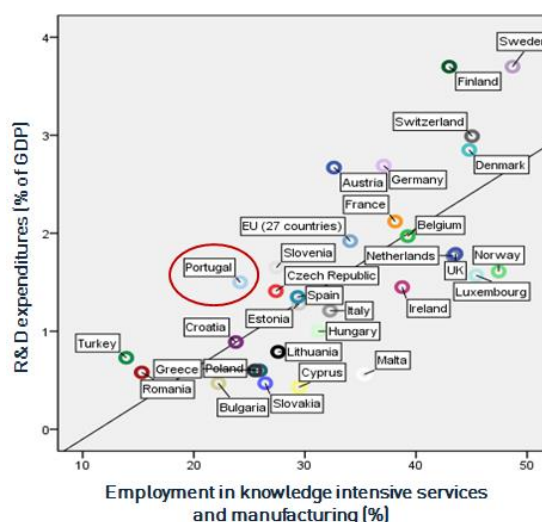
In fact, most evaluation studies which were conducted in the last decade on the subject provide a generally positive assessment on the adequacy and pertinence of the competitiveness and innovation policies implemented in Portugal during the period (e.g., Augusto Mateus e Associados et al., 2005 and 2011; IESE/Quatenaire, 2010; Mamede and Fernandes, 2013).

In particular, R&D and innovation policies have helped to put in place all the basic elements of a functioning national innovation system: research institutions, education and training organisations, interface organisations, risk capital agents, R&D and innovation performing firms, etc. Overall, the priorities and criteria that guided the implementation of support mechanisms to those agents have been considered adequate and essentially aligned with the goal of upgrading the production fabric (CTC/QREN, 2012).

The direct results of such policies are, to some extent, evidenced by the performance of Portugal in R&D and innovation indicators. For example, according to the Innovation Union Scoreboard⁶, Portugal has been catching-up with the EU average in innovation performance every year since 2003, being often among the countries with the fastest growth in the innovation index used in this publication. Three types of indicators typically stand out as contributing to such performance: new postgraduate degree holders, scientific outputs (in particular, international co-publications), and R&D expenditures (both public and private). While this reflects, to a large extent, the continuous and substantial investment in the Portuguese science system (both in training and research) since the 1990s, it also encompasses changes in the business sector. In fact, R&D expenditures in the business enterprise sector in percentage of GDP have increased from 0,11% in 1995 to 0,78% in 2009, accounting for nearly a half of the country's total expenditures in R&D (1,64% of the GDP, which compares to 0,55% in 1995). Largely as result of the economic crisis, in 2011 total expenditure in R&D in percentage of GDP had dropped to 1,49% and business expenditures to 0,69%.

Although Portugal still lags behind the EU average⁷ in R&D expenditures, it is not clear whether a greater effort should have been put in expanding R&D activities. As figure 3 shows, R&D expenditures as a percentage of the GDP are strongly correlated with the economic structure of each country (measured, in this example, as the weight of knowledge-intensive services and manufacturing industries in the economy). And, even though R&D expenditures in Portugal are below the European average, they are higher than would be expected, given the structure of the Portuguese economy.

Figure 3. Relation between R&D expenditures and economic structure



Source: CTC/QREN (2012), based on Eurostat data

⁶ Previously known as “European Innovation Scoreboard”, this publication by the European Commission provides comparative assessments of EU Member States’ innovation performance since 2000. See: <http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/>.

⁷ From 2009 to 2011, the last year for which data are available, total expenditure in R&D in percentage of GDP has been close to 2% and business expenditures around 1.25%.

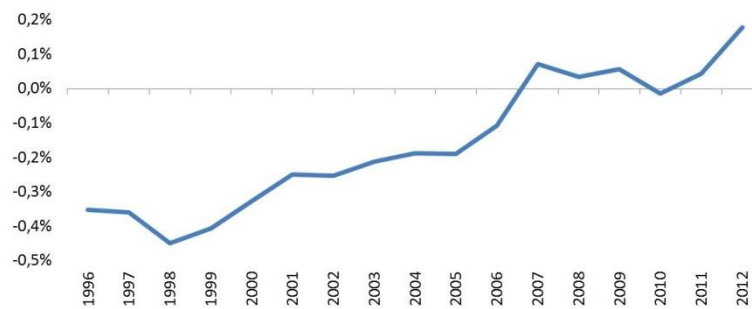
Without a significant change in the domestic productive structure (which can hardly take place in a short period of time), further policy-induced increases in R&D expenditures bear increasing risks of ineffectiveness and/or undesirable results.

An illustration of such risks is given by the distribution of business R&D expenditures across industries: in 2009, ICT and financial services accounted for 40% of such expenditures in Portugal, whilst the average in 15 EU countries for which data are available was no more than 11%. This disproportion is less explained by the weight of those services activities in the Portuguese economy than by the relative absence of some of the most R&D intensive industries (e.g., computer, electronic and optical products, or motor vehicles). In other words, if a country has few productions which rely heavily on R&D, the abundance public incentives for R&D expenditures will tend to be disproportionably allocated to activities in which the rationale for public support for R&D – and its potential impact in economic performance – is less obvious.

As Bilbao-Osorio and Rodríguez-Pose (2004) show, the impact of R&D investment on innovation and growth is contingent on the socio-economic structure of each economy. Factors like the initial wealth, the availability of skills or the presence of high technology sectors play an important role in the capacity of an economy to transform R&D into innovation. At this light, it is not surprising that the growth in R&D expenditures in Portugal – or, for that matter, in scientific training and research – is not overwhelmingly reflected in the evolution of many innovation indicators related to economic outputs, such as international patent applications and revenues, or the export share of knowledge-intensive activities. Simply put, the prevailing economic structure of Portugal does not allow a substantial increase in the efficiency of R&D in terms of economic results.

Notwithstanding, several indicators suggest that the efforts to strengthen the national innovation and research systems have not be in vein. The number of firms conducting R&D activities on a permanent basis has been steadily increasing, collaborative R&D projects between companies and research institutions became a common feature in important segments of the economic, and some of the innovation output indicators mentioned show signs of improved, although still modest, performance (FCT, 2013). The most illustrative case of the latter is the evolution of the technologic balance of payments, which became positive for the first time in 2007 (see figure 4), as a result of the increasing external performance of technical services (including R&D). Note, however, that the weight of this type of transactions in the Portuguese GDP is still rather modest, with the technologic balance of payments registering a surplus of 0,18% of the GDP in 2012.

Figure 4. Technological Balance of Payments



Source: Banco de Portugal

Although the promotion of research, advance training, and business R&D in Portugal attracted considerable attention during the 2000s, the industrial policies followed in Portugal in the last two decades have not been exclusively focused on the most knowledge-intensive segments of the economy. On the contrary, there are important elements of a DUI (Doing, Using, Interaction) approach (Jensen et al., 2007) to innovation policy, namely in promoting the upgrading of technical, organizational and marketing competences among SMEs, or in fostering interactive learning among firms (calling on science and technology organization if and when necessary). This is evident in traditional industries, where the adoption of more sophisticated design, marketing approaches and organisational practices is gradually spreading (Simões, 2008a).

The assessment of public procurement initiatives targeting the innovative projects, or programs envisaging the promotion of specific technologies, is less clear-cut. Boxes 4 and 5 present two specific cases – renewable energies and electrical mobility – which have been flagship instances of industrial policies in Portugal in recent years, but the results of which are more ambiguous than in the case of other policy initiatives.

Box 4. The case of renewable energies⁸

The bet on renewable energy was perceived as an essential part of a national strategy for sustainability and innovation. Basically, this policy was based on the development of the wind energy sector together with the construction or expansion of existing dams.

From 2003-2004, there was a huge boost in the introduction of wind power. By 2012 its weight in electricity consumption raised to 17%, with the country being just behind Denmark and ahead of Spain, Ireland and Germany on this indicator. This fast growth was largely induced by public policies that stimulated private investment through grants provided out of joint government and EU funds. Further, there was a commitment that electricity from renewable sources would benefit from subsidized prices until production costs dropped to be competitive with conventional energy sources.

This growth was very much a story of subsidized capital goods imports until late in the development of the sector. Only by 2009 there was a significant upgrade in domestic equipment production capacity, with the setting up of four factories by Enercon, the German producer that leads the wind power

⁸ Note: This box is partially based in Godinho (2013).

technologies market. Further 29 companies located around those factories to provide goods and services necessary to fully supply wind farms. This industrial complex also includes a transport and logistics centre, a unit for maintenance of wind turbines, a vocational training centre and a R&D centre. A total of €180 million were invested, leading to the creation of 1,850 direct jobs and a further 3,150 indirect ones, it is estimated.

In September 2009 the Portuguese government announced the intention of reinforcing the undergoing investments in renewable energy. According to the then Ministry for the Economy the expectation was that over 2007-2015 investments in renewable energy would total € 15.5 billion, creating 23,000 new jobs. These intentions, however, did not materialized it their full extent, and the renewable energies policy has been somewhat reverted in the most recent years.

Several reasons may account for such U-turn. First, the national wind potential may be reaching its full potential: by April 2013 a total of 4,460MW in 224 wind farms had been licensed, while available estimates indicate the potential is around 5,000 MW. Second, as the potential for further growth is exhausted, investments in the domestic production capacity of wind power equipment become less attractive (whereas the export potential of such industries is hampered by high transport costs). Third, there is a question mark around the technological benefits the country may be reaping of the model that was adopted (e.g., the ENERCON factories seem not to be generating significant spill-overs). Fourth, the government elected in 2011 has been battling against severe financial hardship, thus not being able to provide the extra funds needed for new projects; the economic downturn has also led to a severe decrease in electricity consumption in Portugal, thus making less urgent new investments. Fifth, the raise in the domestic supply of oil from tar sands in the US, has led to a deflation in the international oil and coal prices, with a negative impact on the renewable energy sector worldwide. Sixth, investments in renewable energy also became unpopular to the Portuguese consumers, as they identify it with extra taxes added to their electricity bills. Finally, and more importantly, a clear social cost-benefit analysis seems to be missing, to convince all stakeholders of the actual benefits of this policy.

In a country highly dependent of energy imports, reducing the energy deficit through domestic production has certainly a high social benefit. Further improvements in environmental performance have also to be accounted for. It could also be important to understand what these investments may bring in technology absorption and capability acquisition by local firms. Unfortunately, there was no ability to achieve consensus around a strategy for renewable energy. This situation reveals the inability of the national innovation system to develop long-term visions, shared by the relevant stakeholders, enabling the country to pursue a sustainable industrial upgrading.

Box 5. The case of electrical mobility⁹

The prospect of replacement of vehicles using petroleum products for electric vehicles has a huge potential – not only economic, but also political and environmental – especially for countries heavily dependent on imported oil and where electricity generation is done with little use of fossil fuels. An increased use of electric vehicles reduces the need for oil imports, with beneficial effects on the trade balance, as well as in terms of security of energy supply. In addition, electric vehicles help to make better use of renewable energy by providing a storage form for the energy produced during the night (when the level of energy consumption tends to be small). Finally, the large-scale diffusion of electric vehicles would significantly reduce CO2 emissions, contributing to meet the targets set by international rulings, as well as improving environmental quality. Electric vehicles are thus very appealing for a

⁹ The text of this box is drawn from Mamede and Feio (2012).

country like Portugal, which is heavily dependent on imported fossil fuels, with worrying imbalances in the current account, and with an ambitious program of renewable energies.

Accordingly, in the late 2000s, the Portuguese government has promoted a national electrical mobility program – Mobi.E. A consortium was formed between Inteli (a semi-public think tank) and Novabase, EFACEC and EDP – three leading national companies in IT services, electro-mechanics, and electricity, respectively. The consortium developed the Mobi.E system, consisting of a network of electric charging stations distributed throughout the country, with global management system of energy flows and related financial transactions. This is essentially a non-proprietary solution – it ensures the separation of ownership of charging stations, electricity distribution and energy supply services – and has as distinctive feature the underlying business model for the management of energy and financial flows in the system. As in the management of ATM networks, all Mobi.E's charging stations are all alike in the eyes of users, regardless of the operator who owns them. In particular, this system allows different companies to offer their commercial packages of energy supply - price lists, discount schemes, etc. - without consumers being forced to fill up at specific loading stations. This presupposes, in turn, the existence of a compensation system that distributes the revenues among the various players.

The installation of a pilot network of charging stations across the country was indirectly supported by the Portuguese government, through the Innovation Support Fund – a public fund created as a counterpart for the granting of wind power licenses.

The State's role in the development of the Portuguese Mobi.E is not limited to such indirect financing. Its action was visible in the regulatory domain (classifying legal entities and the governance of the network, and setting the rules during the trial period), but also the mobilisation of various levels of State administration for the paradigm of the electric vehicle. The latter involves measures such as the creation of tax incentives and subsidies for the purchase of electric cars, the renewal of public bodies' car fleets and the adoption of municipal regulations in favour of using electric vehicles in cities (e.g., preferential parking areas); promoting research networks linked to the theme, the creation of incentives for the involvement of national industry in developing solutions for charging batteries and construction of electric vehicles, the attraction of major manufacturers of electric vehicles and components, as well as the concerted action of the Portuguese economic diplomacy to promote the project Mobi.E. The growing visibility of the Portuguese electric mobility project has attracted international interest, opening business opportunities to companies, as well as contributing to the involvement of large multinational companies and major research centres in international projects associated with Mobi.E.

As the sovereign debt crisis developed, austerity measures were implemented, and a new government was elected (expressing doubts on the program), the electrical mobility policy was largely put on hold. Notwithstanding, the Mobi.E consortium became very active in selling abroad (including the US, China, and several other countries) the technological solutions developed in the context of this program.

5. Conclusion: the future challenges for industrial policies in Portugal

As we have discussed in this chapter, Portugal urgently needs to enhance the competitive performance of its economy in the world markets, in order to reduce its external imbalances and improve the prospects for a sustainable improvement of living conditions. Such goal can hardly be achieved without upgrading the specialization profile of the economy, towards more sophisticated, tradable products. While some of the 'structural reforms' implemented under the adjustment program agreed in 2011 with the troika of international creditors (the IMF, the ECB, and European Commission) may have a role in improving the cost-competitiveness of the

country, this is probably insufficient – or even counter-productive – for inducing the necessary changes. Clearly put, Portugal should not dismiss the role of policies which specifically aim at enhancing productivity through structural change.

We have also shown that industrial policies have been part of the policy mix in Portugal in recent decades. In spite of some shortfalls, such policies have contributed effectively to the development of innovation capacities and, thereby, to the gradual upgrading of traditional industries and the development of non-traditional ones.

Three main challenges remain, however, for industrial policies in Portugal. These are: clarifying priorities, improving governance, and overcoming the problems related with the crisis and the adjustment program.

There is a wide consensus in the Portuguese society regarding the need to upgrade the economic fabric, both by increasing the value content of traditional products, and by expanding non-traditional activities which rely on existing resources and competencies. To a large extent, this is presently reflected in the design and implementation of several policy programs and instruments, from tax incentives for innovative business projects to investments in the context conditions for business development (e.g., transport infrastructure).

Notwithstanding, beyond that generic formulation, policy priorities are often ill-defined, either in terms of support mechanisms, beneficiaries, or expected results. The lack of clear priorities for industrial policy in recent years results from several factors: the state of exception resulting from the international crisis of 2008-2009, the sovereign debt crisis starting in 2010, and the adjustment program in place since 2011 (which have consumed most of the attention of top decision makers); the political instability resulting from those events, reflected in the early elections and change of government in 2011, as well as in the succession of swaps in ministerial positions; the free-market stance of some decision-makers (who tend to oppose any policy intervention that is seen as ‘distortive of the price mechanism’); the fear of making choices that may create enemies among some constituencies; the dilapidation of institutional capacity in the public sector due to budget cuts; among others.

Although the risks involved in fixing priorities are real, there are at least two good reasons for making selective policy choices. First, the harsh financial constraints associated with the post-2008 economic hurdles increased dramatically the need to allocate public funds in a thoughtful way; even though not all industrial policy actions require significant amounts of public resources, governments cannot escape the need to make choices, preferably in an informed and legitimate fashion. Secondly, in a time of crisis and political instability, the attention span of all the relevant agents involved in the policy process – from legislators to executors and monitoring bodies – is highly constrained, making it advisable to focus their efforts on a short number of decisive initiatives.

Clearer priorities must be accompanied by improvements in the governance of industrial policies. Portugal has made significant progress in the institutional framework for implementing and monitoring industrial policies in several domains. Together with the access to funds, improvements in governance (related both with regulatory requirements and institutional capacity building) have been a central result of EU’s Cohesion Policy in Portugal.

For example, Mamede and Feio (2012) show how the prevailing governance system for direct support to firms (mainly funded by the EU structural funds) fosters institutional learning while reducing the scope for capture by interest groups, thereby contributing to the efficacy and legitimacy of such policy interventions. The authors also show, however, that the same conditions do not hold in every domain of industrial policy in Portugal, which means that there are still many opportunities for improvement.

Even more important, there is the need to enhance the coordination of policies that are relevant for structural change. For example, research and innovation policies in Portugal have traditionally been carried out, respectively, by the ministries in charge education and science and in charge of the economy, with very weak links between them (Caraça, 1999; Godinho and Simões, 2005 and 2009; Henriques, 2006). In spite of several attempts since the early 2000s to promote the coordination between the two ministries, none was successful in ensuring a sustained and integrated approach to research and innovation policies until recently. As a result, research policy was carried out autonomously without having in mind enterprise policy, and vice-versa. This lack of coordination often reduces the transformative potential of public interventions, for several reasons: researchers and businesswomen are treated as stakeholders of separate policy domains, lacking the incentives to interact with each other; the partial overlapping of responsibilities among ministries in some areas occasionally lead to the duplication of efforts; the success of some policy initiatives that rely on the involvement of more than one ministry may be hampered by lack of political commitment; etc. The solution to these problems would require decisive choices at the highest level of government regarding coordination and distribution of power between ministries, which are yet to be taken.

Beyond clarifying priorities and improving governance, the most immediate challenge for industrial policy in Portugal is to help overcoming the problems related with the financial and economic crisis and the adjustment program. The highly unfavourable financing conditions faced by SMEs since 2010 are arguably the most urgent obstacle for the development of the Portuguese economy.

The combination of high levels of indebtedness with the simultaneous de-leveraging of all institutional sectors (households, non-financial firms, banks and the government) has led to high costs of credit, the main source of financing for Portuguese firms. The interest rate on new bank loans (with 1 year maturity) to non-financial companies in Portugal was about 5,5% by the end of 2013 – nearly 200 basis points of similar rates in the case of Spain, Ireland and Italy, and more than 350 basis points above the interest rates by German and French firms. As Mazzucato (2013, p. 864) put it, “the short-sighted bond (financial) markets that are determining the recipe for the solution to the Eurozone crisis means that the proposed solutions for the weaker EZ countries (...) are not allowing the much needed productive investments to happen: investment in skills, technology, and other determinants of productivity.”

Thus, industrial policies in Portugal face the immediate challenge of assuring that the needed financing is available for investment projects that have the greatest potential for inducing structural changes in the desirable direction. However, this may conflict with the need to

respond to the prevailing high levels of unemployment, which can often be done more effectively by investing in less promising activities (e.g., construction).

Such conflict draws attention to the need to find new ways of dealing in the crisis in the periphery of the euro area. If the goal is to prevent the accumulation of strong macroeconomic imbalances between EU member countries in the future, the adjustment programs being deployed in countries like Portugal should probably have in greater consideration the measures needed to foster structural change.

Moreover, our previous discussion has also shown that many policy options that are deemed appropriate at the EU level – regarding international trade agreements, financial regulation, monetary policy, competitiveness policy, etc. – may have deleterious effects on the development prospects of some member states. In the sense, fostering structural change and productivity growth in Portugal is, at least, as much a matter of making the right policy options at the national level, as of finding solutions at the EU level that are conducive to a balanced development of each member state.

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