The European Union's 'Lisbon Strategy' One Decade On: Where Is Portugal on the Way to a Knowledge Society?

Demyan Belyaev
Universidade Lusófona de Humanidades e Tecnologias

Abstract

This article analyses the current socio-economic situation in Portugal from the perspective of the transition to a knowledge-based society postulated by the European Union's Lisbon Strategy. It provides a critical examination of the latest trends in the Portuguese economy, taking account of the twofold impact of EU financial assistance and discussing the extent to which the contemporary Portuguese economy may be characterised as knowledge-based. The article further turns to assessing present levels of human capital in the country. The challenge of enhancing human capital is studied within a broader scope of the production and spread of knowledge. Several kinds of institutions and their present performance are analysed to this end, including schools, higher education establishments, private sector enterprises and frameworks for importing human capital from abroad. In conclusion, the complex nexus of knowledge and development is addressed in terms of its general relationship with human capital and the economy, as well as providing some directions for further research that could contribute towards clarifying this linkage.

Keywords

Knowledge; Development; EU regional policy; Lisbon strategy; Portugal

IN 2010, PORTUGAL ENTERS ITS 25th YEAR AS A MEMBER OF THE EUROPEAN Union. It is widely asserted that EU membership, not least due to the resulting financial and organisational support, can prove instrumental in bringing about vitally important changes to the entrant's economy and society. In exchange, the entrant is expected to pursue economic convergence with the EU leaders and to demonstrate advancement in its development. Today, in some aspects of socio-economic development, Portugal still seems affected by the "curse" of centuries-long backwardness and peripheral status (Corkill 1999; Anderson 2000; Syrett 2002; Birmingham 2003). Simultaneously, in other aspects, the country gets praised as an example of rapid modernisation and 'catching-up' with the historically more developed part of Europe (Pinto 2003; Royo and Manuel 2004; Medeiros 2005; Barreto 2007a). Hence, on the whole, Portugal represents a controversial example as to whether, and to what extent, European integration brings the capacity to help less developed areas of the continent speed up the pace of their socioe-conomic progress, and to eventually reach the level of their wealthier counterparts.

The author gratefully acknowledges the support of the European Commission under a Marie Curie Intra-European Fellowship for Career Development ("SOCICULTKNOW" project).

Belyaev, D. (2010). 'The EU's 'Lisbon Strategy' One Decade On: Where Portugal Is en Route to a Knowledge Society', *Journal of Contemporary European Research*. Volume 6, Issue 3, pp. 353-375. Available at: http://www.jcer.net/ojs/index.php/jcer/article/view/242/233

The aim to become the most competitive and dynamic *knowledge-based economy* in the world was declared by the European Council as Europe's main long-term strategic goal. To some, in March 2000, it might have sounded somewhat ironical that this declaration was made precisely in Lisbon (and thereby the new policy plan became known as the 'Lisbon Strategy' or 'Lisbon Agenda') – the capital city of a country which continues to turn in some of the lowest figures in Europe on 'knowledge-related' fields of development. For example, as recently as 2008, citizens having successfully completed tertiary education in a science and technology field of study and employed in a science and technology occupation still made up only nine per cent of the Portuguese labour force, which is the lowest percentage in the EU-25 (OECD 2009c: 137; see also Eurostat 2007a: 66).

Now that an entire decade has elapsed since the Member States committed themselves to the Lisbon Strategy, it is particularly opportune to look at the host of the meeting that launched it – Portugal – with the following questions in mind: how has it been doing in following that Strategy? Where is it now on the way towards a knowledge-based economy and, taking a broader perspective, towards a knowledge society? And if there are any difficulties to progress *en route*, what are their potential causes?

Methodological considerations

The overall field addressed in the introduction – just how far the Lisbon Strategy has proven successful in the particular case of Portugal and how well the country advances towards a knowledge society and a knowledge-based economy – is quite broad and involves multiple dimensions, which are interconnected through complex interactions. Given the impossibility of analysing them all in a single article, we have chosen to discuss just a few core axes to this topic, which we consider to be of paramount importance not only for the future development of Portugal but also perhaps for other peripheral European countries.

In the last three decades, Portugal has experienced profound socio-economic transformations. Since the pace of these transformations has at times been quite fast, we shall focus on grasping the most recent state of affairs. This article, therefore, seeks to concentrate specifically on the developments that took place during the last decade, that is, precisely after the adoption of the Lisbon Strategy by the European Council. However, understandably, all kinds of social and economic change usually do not happen in isolation, but evolve over time as an uninterrupted process. That is why, even when focusing predominantly on the period since the announcement of the Lisbon Strategy, we inevitably draw in the occasional consideration of the impact of important preceding historical periods, in particular that between the political regime change in April 1974 and EU accession in January 1986, and that between EU accession and the adoption of the Lisbon Strategy.

Before we further specify our research questions, it would be useful to offer some clarifications as to the logic underpinning them. In our opinion, there are two key-notions incorporated into the general topic of our inquiry. One of them is obviously *economy* and the other is *knowledge*, on which this economy (ideally) should be based. Therefore, the analysis begins by looking at the Portuguese economy. Our particular focus will be concentrated around the question as to whether or not EU membership made any difference and if so, to what extent and in which areas. Then, the article moves onto knowledge, for the purposes of our analysis seen primarily in its linkage to the economy. It looks at the levels of human capital in the Portuguese labour force. The article will also examine the performance of the main institutions capable of enhancing human capital and producing knowledge in the country. In conclusion, the article will discuss how well the 'knowledge – development' nexus functions in the case of contemporary Portugal and what other factors might be affecting it, thus suggesting directions for further research.

Keeping this logical sequence in mind, two research questions have been formulated, each of which entails one or two additional minor sub-questions, in both cases closely related to the central question:

1. To what extent has Portugal converged economically with the European 'core'? (Additional sub-questions: What has been the impact of EU membership on this convergence? To what extent has the Portuguese economy already become knowledge-based?)

2. Does Portugal's labour force possess the human capital essential for a knowledge-based economy? (Additional sub-question: How well have the challenges of continuous human capital upgrading and knowledge production been met in Portugal by various institutions?)

Before dealing with these two questions (and corresponding sub-questions) individually, it would be helpful to briefly discuss a number of further methodological issues so as to pre-empt potential lines of critique of the approach taken in this article. The first question that might arise is how 'development' is measured and which indicators 'truly' reflect a country's progress *en route* to a 'knowledge society'. The article shares the perspective currently prevailing in the economic and social sciences understanding development as growth in human well-being, first of all, in terms of income, education and health (these are the three main areas underlying the "human development index" used by the United Nations Development Programme). Politics (the ability of a citizen to influence events in his or her own country) and the state of the environment are also often added to these three. Furthermore, one could measure people's 'subjective well-being', although this is somewhat less reliable since the results would highly depend on a society's level of awareness of the well-being of others, as well as on the kind of expectations about their own well-being (the latter might explain why World Values Surveys found people in most post-socialist countries to have a lower subjective well-being than in many countries in Africa).

As regards the concept of a 'knowledge society', it is acknowledged that one might well question the 'Western' scientific-technological model of development to which this concept is closely connected. One might point out that, in some countries, this leads to the destruction of local, 'indigenous' cultural knowledge and traditional ways of life. It is doubted, however, that this kind of argument could apply to Portugal, since this country has grown within and has continued to belong to the same Western 'civilisation'. For this reason, it is appropriate to use the indicators adopted by organisations like the European Commission and the World Bank, which imply understanding of 'knowledge' in the sense of Western-type science and its applied forms that include, for example, modern technology.

The second question that could be asked is whether it is 'just' to measure Portugal's performance against that of EU leaders (or against the EU average). If one considers that Portugal in principle can never catch up with the leaders, then one would rather opt for comparing Portugal with countries of similar socio-economic characteristics and that joined the EU at roughly the same time, such as Spain or Greece. Or one might even prefer comparing Portugal today with Portugal 30 (20? 10?) years ago and look for 'relative convergence'. The choice of the most appropriate reference values is also often conditioned by the availability of data for different countries and time periods. Furthermore, one needs to bear in mind that, after the Eastern enlargement, the EU average experienced a relative decrease in income-related indicators (and the automatic increase of Portugal's standing without any alteration in its performance). Hence, when comparing the Portugal and EU averages *over time*, we prefer deploying the EU-12/15 average and not the EU-25/27 average. Comparing Portugal now to Portugal earlier, though helpful on some questions, seems to us less fruitful for our topic, since, during the last decades and centuries, all

European countries have undergone profound social transformations, such as secularisation and demographical turns. While it is surely true that such transformations have taken place at different points in time and at different speeds in different countries, arguably they are neither country-specific *per se*, nor substantially related to Portugal's integration into the EU.

Finally, the third area of possible concern relates to the reliability of the sources used. The question of which sources may be deemed reliable enough to be drawn upon in scientific analysis is the most difficult to deal with. Social sciences are always constrained in their methodology by the fact that it is rarely possible to obtain firm statistical data on the *totality* of the objects subject to study. This is why, for example, representative surveys are used. However, for some research questions, representative surveys might not be feasible and/or not appropriate. For example, when seeking to capture only particular sections of a population, drawing up a truly representative sample can turn out to be a virtually impossible task. Statistics are usually gathered by official bodies and can be incomplete or unavailable. Some kinds of data, even where existing, may remain intentionally undisclosed, for example, those related to the performance of the public administration.

For these and similar reasons, researchers often have to employ the other methods that are at their disposal (see *e.g.* Douglas 1976; Schnell *et al.* 2008). Firstly, they can carry out as many direct observations as possible and then try to build generalised hypotheses on the basis of these observations. Secondly, they can analyse reports and discussions across all kinds of media, such as newspapers, television, Internet forums and blogs. Thirdly, they can use various participative methods, such as the recording of life stories or interviews with knowledgeable persons. Finally, they can rely on 'experts', which include other researchers. For quite obvious reasons, most work on Portugal is produced by Portuguese researchers and thus far very little has been written by 'outsiders'. When relying on the statements of others, one is advised to exercise caution for potential bias. In the case of Portugal, a significant judgement gap has been observed between the evidence provided by independent academic researchers publishing in peer-reviewed journals, on the one hand, and official government reports, on the other. In addition, those experts who regularly provide paid consulting services for governmental agencies also tend, despite their academic affiliations, to represent situations in ways that help in justifying and/or endorsing current government policies. In sum, when there is no access to the 'whole picture', it has to be deduced from casual facts or observations by way of finding similarities, tendencies and consistencies. Therefore, in compliance with contemporary practice in social sciences, it is considered that the kinds of sources identified above are an entirely legitimate basis for our analysis where there are no better alternatives and provided that there is awareness of their limitations.

Portugal as an EU member state: whither convergence?

Before addressing the question of how good Portugal has been at implementing the Lisbon strategy, that is, what has been the impact of EU policy settings on Portugal's transition to a knowledge-based economy, it is necessary first to examine what has been the impact of the EU on Portugal's economy in general so far.

Obviously, Portugal's accession to the EU could not leave the country unchanged. In fact, participation in the European Monetary Union required the adoption of financial liberalisation and stabilisation policies, sounder fiscal discipline, the privatisation of large public enterprises, and so on. Most importantly, however, the European Community has made vast financial contributions to numerous programs aiming at closing the development gap between the European 'core' and the European 'periphery'. Belonging to the latter, Portugal has been one of the major recipients of EU funding, especially up until the Eastern

Enlargement. In the 1990s, the EU-financed "Community Support Frameworks" accounted for almost one-tenth of Portugal's GDP (Andraz and Rodrigues 2008: 4-5). During the last decade this inflow of funds has continued at reduced, but still substantial, levels: €42 billion were spent by the EU in Portugal in 2000-2006 and 21 billion more will be disbursed in 2007-2013 (QCA n.d.; QREN n.d.).

Direct financial assistance from the EU

EU financial assistance was primarily meant to cause a multiplier effect, stimulating the economy in regions selected for funding, and not just subsidising them. It was supposed that the emergence of a new, modern infrastructure such as speed highways and bridges would fuel endogenously-driven economic activity in the country. The EU was not seeking to simply increase the consumption levels of the Portuguese population, but to bear the part of the burden of costly capital investments intended for common use, for which the Portuguese government lacked the financial capacity and which, due to their common-good nature, were not likely to be funded privately.

The evidence on the efficiency of this assistance is contradictory. For example, Garcia and Maria-Dolores (2001) argued in favour of positive results. In the same year, Boldrin and Canova (2001) maintained that the EU assistance did not in fact make much difference to economic development. To prevent 'free-riding' on its funds, the EU required that Portuguese regions had to bear between 20 and 40 per cent of costs for all regional development projects financed. However, as pointed out for example by Gomis-Porqueras and Garcilazo (2003), the EU is neither able to distinguish between good and bad projects submitted for financing nor can it be certain that there are no personal interests involved in a particular project. Consequently, the problems of 'adverse selection' and 'moral hazard' are inherent to most EU-funded projects in Portugal. Other authors, such as Mateus (2006), also warn against aid dependence and rent-seeking behaviour among entrepreneurs that high levels of fund transfers might have caused in Portugal.

EU regional funds seem to have brought about slight convergence in GDP per capita across Portuguese regions (Jimeno *et al.* 2000: 15-16). However, contrary to all expectations, wage inequality between the different regions of Portugal has in fact increased and not diminished (Gomis-Porqueras and Garcilazo 2003: 22, 24). Apparently, this happened because the intended multiplier effect has worked in different regions to a different extent. In other words, it has been much stronger in richer regions and weaker or non-existent in poorer ones.

Similarly, Koutalakis and Font (2006) have also questioned the scale of the impact of EU structural funding on the institutional and administrative convergence of the country, which was also one of the explicit objectives of the funding, even while falling beyond the scope of this article. The setting-up of companies in advanced technological sectors of the economy has been recognised as a necessary condition for upgrading a country's specialisation pattern and to implement its transition to a knowledge-based economy (Salavisa *et al.* 2009: 37). EU Structural Funds have specifically targeted the development of small and medium-sized innovative enterprises in Portuguese regions. However, these financial incentives have been found to produce little effectiveness in this regard, primarily due to the absence of an adequate customised and interactive innovation policy, managed at the regional level (Bateira and Ferreira 2002).

The two sectors that have undoubtedly benefited from EU financial assistance are the construction and tourism industries. In the 1990s, EU funds triggered many new construction projects, such as Expo, the Lisbon metro, the Alqueva dam, the national highway network, and so on. The growth of tourism was indirectly supported by the EU-funded renovation of

monuments, infrastructural development and the upgrading of cultural assets. In the last few years, EU funds have been increasingly used to finance municipalities and other public or semi-public bodies in Portugal's inner regions, in order to help them increase the attractiveness of these regions for visitors, thus stimulating the development of cultural and rural tourism.

In sum, the impact of direct financial assistance from the EU on the development of the Portuguese economy seems to have been more limited than had been expected. This conclusion suggests that a simple infusion of financial resources is not sufficient in itself for bridging the gap in development and generating economic convergence. It appears that, in order to achieve these goals, it is necessary to address some more deeply lying structures and factors of influence.

Indirect impacts of EU membership on the Portuguese economy

The main economic benefits of EU accession are usually expected to be an increase in its GDP per capita, a boost to incoming foreign direct investment as well as an increase in its trade with the other Member States. All three have indeed taken place since Portugal's accession. However, the principal positive consequence of these increases is believed to be a process of continuous convergence of the Portuguese economy with that of the EU 'core'. During the last 50 years, Portugal's *GDP per capita* has indeed slowly converged with the EU average. However, this convergence started as early as 1960. After the April Revolution of 1974, which ended an authoritarian political regime and led to the establishment of democracy, convergence halted for about a decade. Then, after 1986, convergence resumed until about 2000 (Mateus 2006), when it again stopped (at 68 per cent) and has not advanced a single percentage point since that time (author's own calculations based on the Eurostat table [tec00001]). Freitas (2005: 15, 8) also draws attention to the fact that the pace of convergence in 1986-2000 was roughly the same as in 1960-1974. Bearing in mind the huge scale of EU transfers, the GDP growth rates must be considered very modest, especially since the early 2000s (Andraz and Rodrigues 2008: 10). In short, Portuguese GDP per capita has increased over time and has converged with the EU 'core', but most likely not primarily because of EU membership - at least no such a correlation can be clearly proved.

Inflows of *foreign direct investment (FDI)* are normally considered beneficial for development, because they are expected to bring along new technologies and to stimulate innovative activities. Almost all FDI in Portugal has come from major European countries, mostly in the 1980s and 1990s. However, some suggest that it was not EU accession, but the overall increase in FDI related to the liberalisation of capital movements worldwide, that has been responsible for the FDI growth in Portugal after its EU accession (Jimeno *et al.* 2000: 13-14; Batista 2007: 8). In the 2000s, the trend in FDI has been unstable. In 'good' years (2006), it peaked at over 5 per cent of GDP, while, in 'bad' ones (2004), it fell back to the level before EU accession of just 1 per cent (AICEP 2009: 57).

The main limitation of FDI as a potential contributor to the development of a country is that it tends to be concentrated in the most developed regions, which already have the necessary infrastructure and skilled human resources, with most FDI going into Portugal being concentrated in the Lisbon Metropolitan Area. Furthermore, FDI may not bring about the expected technology spillovers, when not accompanied by corresponding domestic industrial development, as seems to have happened in Portugal (Flores *et al.* 2007). For our purposes, it is important to note that only a lesser part of FDI in Portugal has been related to high-skill sectors of the economy. Among the main barriers to further increasing foreign direct investment, such factors as a lack of qualified workers with good knowledge of foreign

languages and competences in finance and information technology are mentioned (Andraz and Rodrigues 2008: 5, 13, 25-26). In summing up, the hope that FDI might drive economic development seems to be unjustified in the Portuguese case. Investors looking for abundant cheap labour for manual labour occupations no longer feel attracted to the country because now, in a globalised world, they can find much cheaper labour in Asia. At the same time, investors looking for abundant highly skilled (but still relatively cheap) labour also draw a blank in Portugal.

Another strong impulse for Portuguese economic development might derive from its *foreign trade.* In the last two decades, the share of intra-EU trade in total international trade has stabilised at around 75-80%. More important, however, is the fact that Portugal demonstrates a stable *trade deficit.* In the period between 1990 and 2007, Portugal's exports fluctuated in the range of 60-70 per cent of total imports. The trade deficit itself does not necessarily characterise the level of a country's economic well-being. For example, the USA has a huge trade deficit and China has a huge trade surplus. However, China prefers to save rather than to spend its surplus and has a much lower standard of living than the USA. However, in the case of Portugal, the presence of a constant and deep trade deficit begs the question of how Portugal has managed to maintain it, in other words, to fill the huge gap in its current account (-10.5 per cent of GDP in 2008, as calculated by the author from OECD StatExtracts online data). The possible sources of funds here are building up external debt, which grew from 11 per cent to 97 per cent of GDP in 1996-2008 (OECD 2009b: 211), émigré remittances (Peixoto 2008) and again, the continuing inflow of EU cohesion funds (Yilmaz 2008: 18). From this point of view, Portugal's trade deficit remains an essentially negative factor.

As late as fifteen years after Portugal's accession to the EU, there was no sign that the country was abandoning its traditional, that is, its pre-EU, labour-intensive product *export specialisation*, with low wages serving as a basis for its international competitiveness. In this way, international trade helped sustain the employment share of low-skilled and low-paid workers (Jimeno *et al.* 2000: 39). In the 1990s, Portuguese exports experienced growth due to upgrades in technology and the associated increase in productivity, but ran into serious trouble as early as the beginning of the 2000s, when low-wage Asian countries started taking market shares traditionally occupied by the Portuguese industry, especially in such sectors as clothing and footwear (Andraz and Rodrigues 2008: 11, 25). As a result, we see that now the trade deficit is registered not only in the aggregate trade balance, it is manifest in practically all major categories of trading goods and especially high in machinery and other capital goods, but also in food and beverages. The share of high technology products in the total exports remains extremely low (under 7 per cent in 2007 - INE 2008: 348-350).

In the last few years, the technology balance of payments has become marginally positive (+0.04 per cent of GDP in 2007 – OECD 2009c: 119). This might mean that Portugal has come to sell more technology, but it could also result from a failure to adopt foreign technology. For example, Switzerland and Finland show some of the highest levels of technology revenues as a percentage of GDP, but they also have a strongly negative technology balance of payments because they import even more technology than they export. Differently, Portugal has established markets in former colonies to which it sells its own technology; then, in turn, it imports some more advanced technology from more developed countries (compare a similar pattern for trade in capital goods - INE 2008: 350), but just up to the limit of what it earns. In fact, this resembles Portugal's old model of trade dating back to colonial times, when earnings accruing to Portugal from Brazil and elsewhere overseas were used to pay for British industrial goods.

Another important point to consider is that Portugal might well have in fact begun producing more domestic technology. Nevertheless, what matters for international competitiveness is

the quality of this technology, which does not directly appear in the national accounts. According to the author's observations, the introduction of new technologies in Portuguese enterprises often seems to be carried out for the sake of 'appearing technological', rather than for achieving real efficiency improvements. A good example to illustrate this is the suburban railway company in the Lisbon metropolitan area.

In late spring 2009, it decided to upgrade its ticket vending machines, changing from single-use paper tickets to rechargeable tickets that had to be validated at special access points. New machines were installed for selling and recharging these new kinds of tickets. However, this new domestic-made technology turned out to perform poorly and the situation has not visibly improved as of January 2010. Firstly, too few machines have been installed, considering the amount of daily commuter traffic – probably because the new machines are more expensive. Secondly, the new machines seem to be of poor quality, since they repeatedly (every few days or so) go out of order at the same spots. On several occasions, all machines located at the main suburban terminal (*Cais do Sodre*) stopped functioning during rush hour, causing widespread passenger chaos (Coelho 2009). Thirdly, by every recharge operation the new machines quickly spit out a paper receipt which falls directly on the ground. Hence, instead of presumably saving paper, the new ticket system uses more of it as a local environmental organisation has recently indicated in their letter of protest (Assembleia Municipal de Lisboa 2009). Finally, the new cards intended for "multiple use" are made of simple thick paper (not of plastic) and contain a micro-chip inside. Where the ticket is bent or exposed to some humidity, the chip becomes unreadable and the entire credit loaded on the card gets lost. As one reporter puts it, "the declared validity of one year [for these cards] just makes one laugh" (Cruses 2009).

In sum, Portugal has been losing competitiveness in sectors of former comparative advantage without developing such advantages in any new sector. The best-performing sector of the Portuguese economy in recent years has been the production of ceramics, cement, crystal, glass and construction materials (which is perhaps not unrelated to the construction boom mentioned above). The retail trade takes second place, which probably reflects increased consumption. On the other hand, the agriculture, fishing, transportation and distribution sectors are in sharp decline (Augusto *et al.* 2005: 126). The financial sector, even after extensive privatisation, still remains relatively inefficient. In the course of the 1990s, the number of banks in Portugal more than tripled, but none of them is competitive internationally, not even in neighbouring Spain (Chislett 2004: 12-13; Figueira and Nellis 2007). Not surprisingly, a growing number of analysts have spoken of alarming tendencies in the Portuguese economy as a whole saying that the country is living 'beyond its means' (Blanchard 2006; The Economist 2007; Carreira and Dâmaso 2009). Their argument leads us to suggest that Portugal might not have taken full advantage of the opportunities offered by EU accession and funding and may be facing a new downturn. Not surprisingly, the global financial crisis hit the country especially hard. The GDP was likely to contract by 4.5 per cent in 2009 with a further decrease expected (OECD 2009a).

Is Portugal evolving towards a knowledge-based economy?

The 'knowledge society' is a now widely accepted paradigm that denotes the most promising way for the further development of modern civilisation towards a more sustainable and prosperous well-being. One of the crucial concepts underpinning this paradigm is that of a so-called 'knowledge-based economy'. In such an economy, knowledge and information are supposed to become a more important factor of production than the traditional ones, such as land, labour or capital.

Influenced by these forecasts, in the mid-1990s, the Portuguese government announced (again with EU support) a so-called "national initiative for the information society" foreseeing an intensified introduction of information technology in various areas of life (Rodrigues *et al.* 2003: 90, 95, 101). Today's official reports boast of overwhelming success in this field (Ministério da Ciência 2009a). Indeed, computers and mobile phones can be seen everywhere, high speed broadband connections are available, and by many indicators related to electronic business and electronic commerce, Portugal even maintains it is above the EU average (Ministério da Ciência 2009b). However, evaluations produced by academic experts sound much less optimistic. "Political discourse wants us to believe that we are on top, but the truth is that we are, as most Southern European countries, at the bottom", writes Pinto (2006: 20). In 2005, 53 per cent of Portuguese people had never used a computer (one of the highest scores in the EU-25). Many of them do not access the internet simply because they "do not see any use in it", which prompts Pinto (2006: 24, 20-21) to speak of persisting "information illiteracy" in the country.

One might rebut this by saying that these 53 per cent must all be elderly or rural citizens and therefore this says little about the country's progress towards a knowledge economy, especially if there are big development gaps between central and peripheral areas. In fact, the number of those aged 16-74 who access the internet at least once in three months grew from 26 per cent to 40 per cent in just four years (2003-2007). However, in our view, it is more important to assess progress such as the reason for the use of information technology (such as, for example, the internet). One aspect is its use for pure curiosity, entertainment or attaining status, and completely another thing to use it for increasing the efficiency of economic activities, for example, of economic transactions such as sales. Here, we find that, even a few years ago, only 6 per cent of the Portuguese had purchased something online, against the EU-27 average of 23 per cent (Eurostat 2008: 193). This fact is not surprising, considering that less than 9 per cent of large and medium-sized Portuguese businesses were found to have electronic commerce platforms and those who did have them, they rarely ran well (Quaresma 2006: 306-307). Alves (2005: 5-6, 18) examined the 250 most profitable Portuguese companies and discovered that less than half of them had an internet website. It could be argued that such data are already too old and that, in 2010, the situation with internet-related services might be substantially different from what it was in 2005-2006.

Personal experience certainly runs counter to this hypothesis. For example, experience of the email system of a major university which is said to have one of the best IT infrastructures in the country's academia does not provides either the technical possibility of changing a user's password, which is an obvious threat to security, the POP3 download of messages into an external mail program or the proper handling of HTML format correspondence. In addition, the mail server has frequent downtimes, especially during evenings and weekends. This is no surprise given that, for example, investment in software (including its own) as a percentage of non-residential gross fixed capital formation in Portugal is the lowest in the OECD (1 per cent in 2005 against 15 per cent in Sweden or the UK - OECD 2009c: 49). Another common 'everyday' observation is that many websites are not regularly updated and/or not well-served. Even on the sites belonging to well-established companies, government entities or universities, numerous pages return errors on access or are 'under construction'. One good example would be the state-run Agency for Investment and Foreign Trade (AICEP), established by the Portuguese Ministry of Economy and Innovation. It has set up a web-portal designated as of assistance to potential foreign investors as well as Portuguese businessmen seeking partners abroad (www.portugalglobal.pt). The system was tested when someone posed as a potential foreign investor and requested some statistical data the portal says to have readily available to all interested parties. The query was indeed answered and the information requested, but no earlier than three weeks after the original request. With such efficiency, it would be no wonder at all if potential investors gave up on their intentions to invest in the country.

Here is a possible explanation for the presence of this contradictory evidence. Portugal might have in fact adopted the latest technology in some sectors. Nevertheless, the size of these sectors and their share in overall economic activity in the country remain low. And more importantly, Portugal has made more progress on the way to an *information* society than to a *knowledge* society. An extensive debate on the substantial differences between 'knowledge' and 'information' is summarised, for example, in Meusburger (2008). Knowledge can be in a simplified form defined as digested, understood information (Tomé 2007: 339), information that one can use productively. Arguably, while information can be stored in computers and other technical devices, the main carriers of knowledge are human beings. This is why the knowledge stored in people and that can be used for economic purposes is often referred to as 'human capital'. Increasing human capital (skills, qualifications) is expected to lead to an increase in individual productivity (output per worker) and, consequently, in the productivity of the economy as a whole. The next section analyses the levels of available human capital in Portugal.

How fit is Portugal's labour force for a knowledge-based economy?

Usually, the processes of economic modernisation are associated with the evolution from the agricultural to industrial, and then from the industrial to post-industrial phase. In a post-industrial phase, most people are employed in the tertiary sector (services), while those few remaining in the agriculture or industry thanks to the use of efficient and highly productive technologies manage to provide the rest with food and industrially produced consumption goods.

Portugal did not follow this 'classical' pattern. It is exactly the interesting particularity of the Portuguese economy that it never passed through the industrial phase, that is, the majority of the Portuguese were never employed in the manufacturing industry. The decade of the 1980s saw a major transition of population from agriculture directly into the service sector, while the share of those employed in manufacturing has remained almost unaltered since the 1970s (see Table 1). Apparently, this major change in the employment structure happened rather independently from EU accession.

Table 1: Share of the total civilian employment by sector of the economy (%)

Year	Primary sector	Secondary sector	Tertiary sector
1975	34	34	32
1985	24	34	42
1995	12	32	56
2005	12	31	57

Source: OECD Labour Force Statistics (online database).

There has been a convergence in wage levels since EU accession, which can be attributed to EU membership and especially to having joined the Eurozone. Price-adjusted wages of unskilled workers in Portugal as compared, for example, to France grew from 50% to 67% in the period 1985-1994. Wages of skilled workers (that is, those with a university degree) grew even stronger: from 72% to 93%; EU-transfers were shown to have contributed to this

growth (Batista 2007: 2, 24). However, in the 2000s, this wage convergence slowed down. Reports are available saying that child labour is still being used in manufacturing, paid as little as €20 a day (Eaton and Goulart 2009). Cheap illegal and semi-legal migrant labour is also widely used in construction, hotels and restaurants and paid about the same (Barreto 2007e: 39; Vieira and Trindade 2008: 40; Fonseca 2008: 532).

However, as we have already mentioned, what matters most for a successful transition towards a knowledge-based economy is not growth in wages, but the increase in labour productivity. The latter is supposed to rise when human capital increases. We find that convergence in labour productivity with the EU core has been much smaller than convergence in GDP per capita (see Table 2).

Table 2: Labour productivity: Portugal *vs.* the EU average

Year	GDP per person employed (of EU-15)	GDP per hour worked (of EU-15)
1986	52 %	-
1996	55 %	-
2000	61 %	52 %
2008	65 %	55 %

Source: Jimeno et al. 2000: 5; author's calculations from Eurostat [tsieb030; tsieb040].

These data confirm the observation made above that, as Barreto (2007b: 9) puts it, the Portuguese economy had basically lived from low wages and, when these were gone, it did not manage to substitute this gradually lost advantage by productivity growth.

The central question that arises here is whether the low productivity we observe is related to the levels of human capital, and if so, whether the possible solution to the difficulties that Portugal has been shown to encounter in its advancement to a knowledge-based economy lies in enhancing human capital in the country. Such opinion has been recently voiced, for example, by OECD analysts (Guichard and Larre 2006; see also Tavares 2002). We will analyse this hypothesis in the next section of the article, turning our attention to the institutions expected to produce knowledge and enhance human capital so as to find out whether they function efficiently.

Schools as places of enhancing human capital

"Though having become different from what we used to be, we still continue to be small, poor and peripheral… and above all, uneducated – which is a form of poverty", writes prominent Portuguese sociologist Antonio Barreto (2007a: 40). He argues that, in spite of very high spending on education, its quality continues to be mediocre. The education system is inefficient in preparing professional elites, but not because of any lack of resources: the pupils per teacher ratio is the best in Europe: 7.5 to 10.6 pupils per teacher depending on school level, in 2006, as calculated by the author on the basis of Eurostat: [tps00054, educ_iste], which is in fact the lowest or second lowest figure in the EU-27 for every school level.

The results of both national and international evaluations of competences of secondary school students in Portugal have consistently been very disappointing. Fernandes (2008: 285-287) reports that Portuguese students are rather good at knowing concepts, proceedings, facts and other forms of 'mechanical' reproduction of information, but perform poorly when it comes to applying their knowledge to new, previously not discussed situations, when they are prompted to exercise interpretative, analytical thinking or to synthesise known facts to produce new information. Quite interestingly, Ramalho (2002: 43) point outs that, at least for the case of a well-known OECD-designed Programme for International Student Assessment (PISA) that evaluates competences of 15-year-old school students, Portugal's results could be no worse than elsewhere in Europe if only those students who had never repeated a year were taken into consideration. In reality, more than half of all 15-years-olds have done so. Having failed to pass to the next grade once, students develop frustration and lack of self-confidence, which increase their probability of further failures (Fernandes 2008: 292).

It could be again supposed that marginal education levels involve mostly older people, but this is not true. In 2005, of young people aged 18-24 nearly 39% (15% in the EU-25) had left secondary education without having completed it (Eurostat 2007b: 29). Fonseca and Conboy (2006: 89) have observed that both teachers and students demonstrate passive acceptance of failure through characteristically self-defeating attitudes. Teachers openly complain about their students' lack of previous preparation and students in turn adopt these comments as a convenient, self-protecting excuse for continuous failure. According to these researchers, Portuguese schools lack a culture of high expectation, supportive environments and effort promotion strategies. The widespread practice of hiring and promoting teachers for the "wrong reasons" and "motives unrelated to teaching proficiency" must be curtailed (Fonseca and Conboy 2006: 91-92). Since 2000, the Portuguese government has been trying to introduce a system of external evaluation of schools and teachers (Ventura and Costa 2002). However, the outcome of this new policy is still uncertain in view of the mass opposition on the part of teachers: in March 2008, a hundred thousand filled the streets of Lisbon to demonstrate against the reform process (Stoleroff and Pereira 2008).

With regard to school facilities which are commonly run-down and functionally obsolete, an ambitious program of modernising around 70% of the country's public secondary schools was announced by the government in 2007 with a total budget of almost €1 billion, co-funded by the EU (Heitor 2008). In 2008, the government promised to sponsor a purchase of half a million inexpensive domestic-made laptops for all students enrolled in public primary schools in Portugal. Whether this is a populist political move or an action capable of bringing long-term benefits remains controversial (Lusa 2009). The critics see in this policy a mere tender-free subsidy of a Portuguese company that assembles (since the chips themselves are reported to be from Intel and not domestically produced) low-quality equipment. They question the efficiency of computer usage in lower school grades where mostly basic knowledge is to be learned (Carreira and Dâmaso 2009). According to critics, this measure, instead of promoting learning, might instead contribute towards spreading computer game addictions among children and, since the display quality is low, to a deterioration of their vision (Meireles 2009; Vampire 2009; Jornal de Notícias 2009).

In short, not only are elderly people poorly educated and without educational qualifications, the lack of human capital at the level of secondary education seems to be passed on from generation to generation. Arguably, the essence of this vicious circle lies in the fact that parents might not give sufficient value to education and do not provide a family background that could encourage and secure their children's success at school. On the government side, once again it looks like superficial reforms are being introduced instead of addressing the core problems.

Higher education establishments as places of enhancing human capital

Portugal cannot boast a long university tradition. The country's only medieval university is located in Coimbra. A true explosion of higher education did not take place until after the April 1974 Revolution, when there were just four universities as compared to about 30 public universities and polytechnics today. Since the late 1980s, these have increasingly experienced competition from private universities, whose expansion has caused extensive public debate. Private universities have been blamed for the lack of quality since they mostly attract students who did not qualify for a public institution. They are also accused of undermining the quality of diplomas awarded to the graduates of public universities. The private sector responds that it provides access to education for those not admitted by the state. Besides, it claims to achieve lower costs per student thanks to more efficient financial management. Students who pay for their education are supposed to be more demanding of their professors, which theoretically leads to a higher quality of education as compared to public universities (Seixas 2000: 61, 67-68, 70-71).

Public universities, however, also charge tuition fees. For Bachelor studies, these are lower than at private universities, but for Master and Ph.D. studies about the same or higher, depending on the field of study. In a situation where public universities enjoy higher prestige than private entities, such a fee system implies that Master and Ph.D. studies are not considered a recognition of merit and ability, but rather a way of obtaining a 'prestigious' title worth a financial investment. It can be argued that such a policy is likely to significantly reduce the potential of the Portuguese postgraduate study system to produce highly qualified research professionals.

Barreto (2007b: 50) points out that since the Portuguese Higher Education system experienced such a rapid expansion within only one or two decades, there was, at least at the initial stage, a lack of lecturers and many of them did not possess adequate qualifications. He argues that this led to low quality education, graduates in name but not in competences, a waste of resources, deficient research and a lack of connection between universities on the one hand and businesses and society on the other. Indeed, given that Portugal's total public expenditure on education as a percentage of GDP has continuously registered as above the EU-27 average, while educational results continue to be one of the lowest in Europe, there must be some considerable inefficiency throughout the system.

The latest data do indeed show that the share of doctoral degree holders within a certain age range has tripled in Portugal from 2000 to 2006, becoming the highest in the OECD. However, given the percentage of graduates at the first university degree level has not kept pace with this development, it implies that it is not necessarily education that is growing, but those who manage to attain their Bachelor qualification are increasingly going on to continue and study for Master's degrees or PhDs. This may provide high payoffs to society were this trend accompanied by growth in highly skilled employment opportunities, that is, by growth in RandD investment in the private sector. In the absence of the latter (only 36% of all RandD investment was financed privately against 55% in EU-27 – OECD 2009c: 29), the increase in share of advanced degree holders in the population results in nothing beyond 'degree inflation' when employers would start demanding high qualifications for jobs that require only a medium skill level.

Higher education establishments as places of creating knowledge

The productivity of the research sector in Portugal has grown in recent years, but is still (2008) the lowest in the EU-15 as measured by the number of scientific publications per million inhabitants (calculations of this have been based on: SCImago 2009). These

statistics might have a bias favouring English-speaking countries since publications in languages other than English may be underrepresented in international publication indexes. However, they are still indicative of Portugal's performance compared to other non-English-speaking countries. The applied scientific output is also weak: Portugal made only seven European patent applications per million inhabitants against the EU-25 average of 137 (2003 - Eurostat 2007a: 80-81).

Pereira (2002) praised Portugal as one of the industrialised countries with the most internationalised research systems in terms of co-authored scientific publications. Indeed, over a half of all scientific publications in natural sciences and engineering by Portuguese authors in 2006 had international co-authors, which is significantly higher than in other European countries (Patricio 2009). However, this evidence can be also interpreted in a different manner, namely that most Portuguese scientists take the role of junior partners in research projects led by scientists from other countries. In the long-term, this trend can perpetuate Portugal's marginality in world science.

The peripheral position of the Portuguese scientific community had traditionally been attributed mostly to exogenous factors such as its relatively small population and limited financial resources (for example, Jesuíno 1995: 181). It is true that resources really matter in the contemporary situation faced by world science when, for example, most academic books and journals are published by a handful of UK and Netherlands-based publishing houses whose prices may be prohibitive for research institutions in poorer countries. Only very recently did the Portuguese government negotiate with leading academic publishers a special agreement and pay for unlimited access to a series of international journals, which have now become available at public universities (Ministério da Ciência 2009a). Nevertheless, it has been observed that Portuguese university libraries are visibly poorer in their book stock than those in countries of Northern and Central Europe. Another serious weakness is infrastructure. Despite government investment in recent years, computers and other IT equipment are still too few and outdated; they often work slowly and have a high incidence of failure. Furthermore, as an academia-based interview partner put it, "what does it change to have a brand new computer on one's desk, when the ceiling still leaks on rainy days and the office space remains overcrowded?"

However, there might also be other important factors at work that go beyond the lack of resources. Hence, access to academic literature does not yet mean that researchers take full advantage of it. Most Portuguese researchers are employed as lecturers at public universities and have to spend most of their time on teaching and administrative duties, which is likely to have a negative effect on their published scientific output. Furthermore, the Portuguese university research community has been blamed for inter-institutional rivalries and corresponding low levels of interdisciplinary cooperation (Pacheco 2004: 64). At private universities, academic staff have no tenure and are paid per hour of lecturing. Therefore, all research work, if any, is done on a voluntary basis.

No doubt there are significant numbers of talented young researchers in Portugal, but there is no adequate institutional support for the development of their activities (Canário 2008). Postdoctoral research is not considered work, but rather a continuation of study, for which modest scholarships (around 1,350 euros monthly) are available on a competition basis (Brito 2008). Therefore, brain drain remains a real threat for Portugal in the medium term (Ozden and Schiff 2006; Peixoto 2006). A recent survey of Portuguese scientists working abroad revealed that those who intended to return to Portugal would mostly do so for "family reasons" (80%). On the other hand, over a half of 'émigré' scientists listed the difficulty in doing quality research in the country and the lack of opportunities for career advancement as the main reasons for non-return (Delicado 2008: 121).

Most of the research funding comes to Portuguese institutions from the state-financed Foundation for Science and Technology. Every five years the Foundation evaluates all existing research centres in order to decide which of them receive funding. However, as with most state-administered procedures in Portugal, there are obvious efficiency problems with these evaluations: the results of the 2007 evaluation appeared no earlier than 2009. Besides, there have been critiques of evaluation bias in favour of well-established centres co-operating with governmental agencies.

As early as 1901, a decree on the reorganisation of the University of Lisbon postulated that university research is there to pursue scientific goals free "from every kind of practical empiricism". But even a hundred years later the output of researchers is still not free from political influence (Pacheco 2004: 62-63, 60). In recent years, an increasing presence of scientific discourse could be observed in the production and circulation of political texts and legislative documents. However, analysis of the latter from an academic perspective often concedes leadership to ideology and political action. In order to obtain financing for their research projects, scientists find themselves constrained to choose from subject areas declared a priority in public grant tenders. Furthermore, in order to obtain more financing in the future, they are prone to structuring their research so that it supports and justifies the policies either already carried out by the administration or envisaged by it (Lima and Afonso 2002: 9).

This increasing search for the endorsement of public policy by scientific expertise recently observed in Portugal can be partly explained as a response to EU legislation which requires, for example, a professional environmental impact assessment for public works and major industrial projects. For similar reasons, the government feels obliged to involve non-state actors in the policy-making process, but their role remains marginal because of highly unequal distribution of power within such partnerships (Koutalakis and Font 2006: 33-34). In the case of interaction between government and science, the judgements issued by dissenting researchers often get dismissed as "lacking in scientific authority": scientific expertise in Portugal is not sufficiently protected from political interference (Gonçalves and Delicado 2009: 235, 238).

Enhancing human capital and creating knowledge in private sector enterprises

Lifelong learning in the workplace is a common way of spreading knowledge outside the education system. However, as illustrated, for example, by Almeida (2007: 54-56), human resource management policies in Portugal do not place much value on enhancing human capital and do not favour investing in training other than that related to acquiring skills needed in the short-term. In 2006, only about 10% of Portuguese workers upgraded their skills in the last twelve months, compared with 50% in the Nordic countries. The odds of non-professionals receiving in-work skills training as compared with managerial occupations were also 10%, against 50% in the UK or 65% in France (European Social Survey 2008: 18-19). Additionally, some experts question whether the training that is being provided will actually pay off in improved productivity, since effective training evaluation practice is almost non-existent: fewer than five per cent of all private sector enterprises in Portugal are certified in training evaluation (Velada *et al.* 2009: 636).

In order for the situation to change, traditional ('taylorist-based') forms of work organisation need to be replaced by new techno-economic paradigms based on horizontal communication, employee participation in decision-making and encouraging innovation in production processes. However, this seems difficult given the generally low educational level of those employed in subordinate positions and Portugal's historical specialisation in production by means of cheap labour (Almeida 2007: 54-56; Tomé 2007).

Silva *et al.* (2009: 61-62, 67-68) did a survey of Portuguese entrepreneurs which found them to be quite risk-averse and not very prone to competition (a high 'collectivist values' score on Hofstede's cultural dimensions scale). As the main obstacles to innovative business activities, survey participants identified an excess of formalism and bureaucracy, which are seen by researchers as a consequence of similar risk-averseness on the part of the state and also as closely connected to the Catholic legacy of the country. Parreira (2004: 37) reports that many Portuguese businessmen themselves have low levels of education, feeling mistrustful towards new technologies and are reluctant to invest in hiring external technology experts. In this context, it is not surprising that most research and development activities in Portugal are financed by public money.

Attracting human capital from abroad

Given that Portugal has become a destination of interest for international migrants, its government might have considered designing a policy of attracting highly-qualified specialists to settle in the country as has happened in the US, Canada or some European countries. However, this has not been the case. Though immigration regulations have a special section of "rules of entry for highly-qualified professionals", there is no substantial difference in these rules (or application processing times) as compared to the requirements set for the low-skilled work migrants.

Some authors such as, for example, Patricio (2009: 7-8) claim that Portugal has become an attractive destination for international students and researchers, supposedly because of improvement in the teaching and research quality at its universities. However, her own data contradict this assumption. The figure she presents shows that the increase in the number of foreign students enrolled as regular students in Portuguese universities achieved in the 2000s is due exclusively to the 50% increase in the number of African students who account for almost two thirds of all regular foreign students, and Brazilians make up most of the rest. In other words, it is likely that only students from Portuguese-speaking countries who are not willing (or not able) to pursue education in a foreign language get attracted to Portugal. The total percentage of foreign students (regular plus visiting) looks favourable in the EU-context only because of huge numbers of Erasmus students from North and Central European countries that come to spend a semester on the Iberian Peninsula due to its reputation of 'joyful life' and 'human warmth'.

Regarding foreign researchers, in 2006 the Portuguese government launched the ambitious "Commitment to Science" program, which foresaw, among other measures, the promotion of scientific research in Portugal, and a hiring of one thousand postdoctoral researchers to work at Portuguese research institutions on five-year contracts with an internationally competitive salary. The job announcements had to be advertised in English in order to attract foreign applicants. One can perhaps assume that one further objective of the initiative was to combat academic 'inbreeding' (hiring of the institution's own doctoral graduates for permanent positions at the same institution), which is as high as 80% in Portuguese academia (Heitor and Horta 2004; Horta 2008). Once again, this seemingly promising initiative was very inefficiently implemented. Personal experience indicates that those applicants selected for jobs in October 2008 were given no definite employment starting date and received an actual contract offer as late as June 2009 – a delay which might well have pushed foreign applicants to look for opportunities elsewhere, while it was precisely the 'inbred' staff who could take most advantage of the program. Besides, it would be more logical to hire a smaller portion of researchers, but on an annual basis (as more scientifically advanced countries do it). However, already in 2009 the further hiring of researchers was suspended, leaving the impression that the Portuguese government dropped the initiative as

soon as they felt that the statistical relationship of researchers per capita had reached an 'internationally presentable' level.

Another example of policy failure in the area of efficient use of knowledge from abroad is the difficulty in recognising foreign (non-EU) university degrees. Many immigrants, especially those coming from Eastern Europe and Brazil, experience downward social mobility. Even when their levels of education and training are relatively high, most of them perform underpaid, low-status tasks. In order to maintain its labour force at the 2000 level, Portugal needs around 50,000 immigrants every year. Especially for regions with a strong population loss, attracting immigrants might be the only solution, but there has been no institutionalised support for such development so far (Peixoto 2004; Fonseca 2008). As an example one might recall the situation of Brazilian dentists. There was an intergovernmental agreement allowing them to work in Portugal. In reality, however, this right was contested. Now their diplomas need to be first recognised by a dentistry department at a Portuguese university (Machado 2000). These are very few and normally deny such recognition on the basis of alleged minor curricula differences. The only way for a foreign (non-EU) dentist to get his dentist diploma recognised in Portugal is in fact to re-enter the respective department as a student. Portugal always had and still has one of the lowest ratios of dentists per inhabitant in the EU (Barreto 2007d: 30; 43 per 100,000 in 2004 according to the WHO data), so one can hardly speak of an excess of dentists. The true rationale behind such practices might be that Portuguese professional lobbies are afraid to lose their privileged position in their home market (Barreto 2007c: 34).

It is also interesting to note that Portuguese legislation does not support entrepreneurship and independent work among immigrants in general. Until 1998, foreign entrepreneurs even had to recruit 90% of their staff from among the Portuguese. The new law on immigration adopted in 2007 does not foresee immigrants changing from salaried work to an independent or entrepreneurial activity, if their residence permit was originally issued for salaried work as is the case with the overwhelming majority of immigrants (Oliveira 2008: 121).

How well the 'knowledge-development' nexus functions in the case of Portugal: some concluding remarks

This article has shown that accession to the EU helped Portugal to significantly upgrade its infrastructure and, to some extent, gave an impulse for the modernisation of its institutions. However, economic convergence as well as an increasing opening to foreign trade and capital all started before this accession and even before the transition from authoritarian rule to democracy.

Economic growth does not seem to have been accompanied by a commensurate increase in labour productivity or, disregarding few exceptions, by switching to a more knowledge-intensive specialisation of the economy. The EU-supported infrastructure renewal created a shortage of low-skilled workforce, which, together with overall wage growth, led to a reversion of migration trends and made the country an immigrant destination. Immigrants, however, are not welcomed to enter into the high-skilled sector.

The Portuguese education system, the research community, as well as on-the-job learning have shown signs of improvement, but their performance is still far from satisfactory so that it would be too early to say that Portugal has come close to a 'knowledge society'. Therefore, it seems more adequate to hope for 'further reducing the gap' between Portugal and Europe's most advanced countries than to speculate if it may attain their level of development in the foreseeable future.

Reflecting upon the complex and ambiguous relationship between knowledge and development, one almost inevitably arrives at the question that has been puzzling the minds of social scientists for a long time: knowledge or development - which of them actually comes first? Is it that the countries and regions that manage to foster knowledge attain higher levels of development as a consequence of possessing more of and better human capital, technologies, equipment, etc.? Or is it that the wealthier have more resources at their disposal and using these resources buy better technologies, can afford to dedicate more time to learning, etc.? In other words, which is the chicken and which is the egg?

The proponents of the first point of view highlight the fact that countries that become rich 'by a gift of nature', such as oil-rich countries of the Persian Gulf or the Russian Federation, do not manage to build a knowledge economy similar to that currently emerging in the most advanced Western countries. The proponents of the second point of view argue that countries which are poor cannot do much for transition to a knowledge economy since they can neither afford to buy new technologies nor have the ability to develop them from scratch and are thereby forever caught up in the trap of backwardness.

A third possible line of argument maintains that what matters in the first place are neither levels of aggregate wealth, nor levels of aggregate human capital, but the structure of the economy itself. Indeed, it does not help in producing highly skilled graduates if there are no jobs requiring high qualifications: these people will have to emigrate or satisfy themselves with medium-skilled occupations. On the other hand, even if we are faced by a wealthy economy, but which lives primarily from rent-seeking activities, it would not be a stimulating environment for the enhancement of human capital either, since in such cases the latter simply is not essential for producing wealth.

In the context of these controversies, some recent studies from the area of cross-cultural research such as Minkov (2007) seem quite promising as the means of shedding some new light on these debates, in that they advocate dedicating more attention to the role of the so-called 'socio-cultural context' that may help or hinder development. This context is composed of the prevailing forms of social structures, as well as of value systems common to a certain area. For example, a lack of social capital or excessive risk-averseness may account for the persistence of difficulties in socio-economic development even when necessary levels of human capital are achieved.

It is, therefore, considered that this might be a fruitful direction for further research aiming to explain the nexus between enhancing knowledge and advancing development. Depending on future findings in this area, it may be advisable to shift the focus of reform efforts towards the socio-cultural domain, which is possibly capable of yielding long-term benefits for the successful development of Portugal and other peripheral countries in Europe that face similar challenges.

***

References

AICEP. (2009). *Portugal: Country Profile*, obtained from AICEP.

Almeida, A. J. (2007). 'Employability, Work Contexts and Labour Market in Portugal', *Sísifo: Educational Sciences Journal*, 2, pp. 51-58.

Alves, S.R. (2005). 'Relato financeiro na Internet em Portugal', *Journal of Information Systems and Technology Management*, 2 (1), pp. 3-20.

Anderson, J. (2000). *The History of Portugal*. Westport: Greenwood.

Andraz, J.M. and Rodrigues, P.M. (2008). 'What Causes Economic Growth in Portugal: Exports or Inward FDI?', *Centre for Advanced Studies in Economics and Econometrics,* University of Algarve: Discussion Papers, 7.

Assembleia Municipal de Lisboa. (2009). 'Promoção da Intermodalidade na Cidade de Lisboa'. Available at http://pev.am-lisboa.pt/index.php?option=com_content&task=view&id=264& Itemid=36, last accessed on 23 September 2009.

Augusto, M., Figueira, J., Lisboa, J. and Yasin, M. (2005). 'An Application of a Multi-criteria Approach to Assessing the Performance of Portugal's Economic Sectors: Methodology, Analysis and Implications', *European Business Review*, 17 (2), pp.113-132.

Barreto, A. (2007a). *Gente diferente: quem somos, quantos somos e como vivemos*. Lisboa: Público.

Barreto, A. (2007b). *Ganhar o pão: o que fazemos*. Lisboa: Público.

Barreto, A. (2007c). *Cidadãos: direitos políticos e sociais.* Lisboa: Público.

Barreto, A. (2007d). *Um país como os outros: uma sociedade europeia.* Lisboa: Público.

Barreto, A. (2007e). *Nós e os outros: uma sociedade plural*. Lisboa: Público.

Bateira, J. and Ferreira, L.V. (2002). 'Questioning EU Cohesion Policy in Portugal: A Complex Systems Approach', *European Urban and Regional Studies*, 9, pp.297-314.

Batista, C. (2007). 'Joining the EU: Capital Flows, Migration and Wages', paper presented at the Norface Programme Seminar II "FDI and the Globalisation of European Labour Markets", Munich, 24-25 October 2008.

Batista, C. (2008). 'Why Doesn't Labour Flow from Poor to Rich Countries? Micro Evidence from the European Integration Experience', preliminary document prepared at the Trinity College of Dublin.

Bedford, N. (2001). 'Portugal, A Second Engine Within the EU?', paper presented at the International Conference at the Academy of Business and Administrative Sciences, Brussels, 23-25 July 2001.

Birmingham, D. (2003). *A Concise History of Portugal*. Cambridge: Cambridge University Press.

Blanchard, O. (2007). 'Adjustment Within the Euro: The Difficult Case of Portugal', *Portuguese Economic Journal*, 6, pp. 1-21.

Boldrin, M. and Canova, F. (2001). 'Inequality and Convergence: Reconsidering European Regional Policies', *Economic Policy*, 32, pp. 207-253.

Brito, B. (2008). 'Investigação cientifica em Portugal e no Mundo'. Available at http://blog.brunobrito.net/2008/03/investigao-cientifica-em-portugal-e-no, last accessed on 23 September 2009.

Canário, A. (2008). 'A peculiaridade da investigação científica portuguesa'. Available at http://w3.ualg.pt/~acanario/a_peculiaridade_da_investigacao_.htm, last accessed on 23 September 2009.

Carreira, M. and Dâmaso, E. (2009). *Portugal, Que Futuro? O tempo das mudanças inadiáveis.* Lisboa: Objetiva.

Chislett, W. (2004). 'Spain and Portugal: From Distant Neighbours to Uneasy Associates', *Real Instituto Elcano Working Paper Series*, 46.

Coelho, A.F. (2009). 'Sistema de bilhetes Viva lançam caos em Lisboa'. Available at http://sol.sapo.pt/PaginaInicial/Sociedade/Interior.aspx?content_id=133626, last accessed on 23 September 2009.

Corfu, A., Berda, Z. and Costa, C. (2006). 'EU Integration and Tourism Destination Management: The Case of Portugal', *Amfiteatru Economic*, 20, pp. 20-29.

Corkill, D. (1999). *Development of the Portuguese Economy: A Case of Europeanization.* London: Routledge.

Cruses, A. (2009). 'Ana Cruses'. Available at http://anacruses.blogspot.com/2008/04/viva-o-porto.html, last accessed on 23 September 2009.

Delicado, A. (2008). 'Cientistas portugueses no estrangeiro: factores de mobilidade e relações de diáspora', *Sociologia, Problemas e Práticas*, 58, pp.109-129.
Douglas, J.D. (1976). *Investigative Social Research.* Beverly Hills: Sage.
Eaton, M. and Goulart, P. (2009). 'Portuguese Child Labour: An Enduring Tale of Exploitation', *European Urban and Regional Studies,* 16, pp. 439-444.
European Social Survey. (2008). *Exploring Public Attitudes, Informing Public Policy: Selected Findings from the First Three Rounds*.
Eurostat. (2007a). *Science, Technology and Innovation in Europe.* Luxembourg: Eurostat.
Eurostat. (2007b). *Living conditions in Europe.* Luxembourg: Eurostat.
Eurostat. (2008). *Key figures on Europe.* Luxembourg: Eurostat.
Fernandes, D. (2008). 'Algumas reflexões acerca dos saberes dos alunos em Portugal', *Educação Social*, 29 (102), pp. 275-296.
Figueira, C. and Nellis, J. (2007). 'Banking Efficiency in Non-core EU Countries: A Comparative Analysis of Portugal and Spain', *Cranfield School of Management Research Paper Series*, 2.
Flores, R., Fontoura, M.P. and Santos, R.G. (2007). 'Foreign Direct Investment Spillovers in Portugal: Additional Lessons from a Country Study', *European Journal of Development Research*, 19 (3), pp. 372-390.
Fonseca, J.M. and Conboy, J.E. (2006). 'Secondary Student Perceptions of Factors Affecting Failure in Science in Portugal', *Eurasia Journal of Mathematics, Science and Technology Education*, 2 (2), pp. 82-95.
Fonseca, M.L. (2008). 'New Waves of Immigration to Small Towns and Rural Areas in Portugal', *Population, Space and Place,* 14, pp. 525-535.
Freitas, M.L. de. (2005). 'Portugal-EU Convergence Revisited: Evidence for the Period 1960-2003', *Núcleo de Investigação em Políticas Económicas - Universidade do Minho: Working Papers*, 10.
Garcia, J. and Maria-Dolores, R. (2001). 'The Impact of European Structural Funds on Economic Convergence in European Countries and Regions', in W. Meeusen and J. Villaverde (eds), *Convergence in the European Union*. Cheltenham: Edward Elgar.
Gomis-Porqueras, P. and Garcilazo, E. (2003). 'EU Structural and Cohesion Funds in Spain and Portugal: Is Regional and National Inequality Increasing?', *University of Miami:Jean Monnet/Robert Schuman Working Paper Series*, 3 (11).
Guichard, S. and Larre, B. (2006). 'Enhancing Portugal's Human Capital', *OECD Economics Department Working Papers*, 505.
Heitor, M. and Horta, H. (2004). 'Engenharia e Desenvolvimento Científico: o atraso estrutural portugues explicado no contexto histórico', in M. Heitor, J. Brito and M. Rollo (eds.), *Momentos de Inovação e Engenharia em Portugal no século XX*. Lisbon: D. Quixote.
Heitor, T. (2008). 'Modernising Portugal's Secondary Schools', *PEB Exchange, Programme on Educational Building*, 1.
Horta, H. (2008). 'On Improving the University Research Base: The Technical University of Lisbon Case in Perspective', *Higher Education Policy*, 21, pp.123-146.
INE – Instituto Nacional de Estatística. (2008). *Statistical Yearbook of Portugal 2007*. Lisbon: INE.
Jesuíno, J. (1995). *A comunidade científica portuguesa nos finais do século XX.* Oeiras: Celta.
Jimeno, J., Canto, O., Cardoso, A.R., Izquierdo, M. and Rodrigues, C.F. (2000). 'Integration and Inequality: Lessons from the Accessions of Portugal and Spain to the EU'. Available at http://siteresources.worldbank.org/ECAEXT/Resources/publications/Making-Transition-Work-for-Everyone/paper1.pdf, last accessed 27 August 2009.
Jornal de Notícias, (2009). 'Distribuição do Magalhães "praticamente concluída"'. Available at http://jn.sapo.pt/PaginaInicial/Nacional/Interior.aspx?content_id=1320522, last accessed on 21 September 2009.

Koutalakis, C. and Font, N. (2006). 'Coping with Accession: The Application of New Modes of Governance in the Adoption of and Adaptation to EU Environmental Policies in Greece, Spain and Portugal', paper prepared for the ECPR Standing Group on EU Politics at the Third Pan-European Conference, Bilgi University, Istanbul, 21-23 September 2006.

Lima, L. and Afonso, A. (2002). *Reformas da educação pública: Democratização, modernização, neoliberalismo.* Porto: Afrontamento.

Lusa, (2009). 'Governo em peso nas cerimónias de entrega dos primeiros Magalhães a crianças do 1º ciclo', Público, 23 September 2008. Available at http://ultimahora.publico.clix.pt/noticia.aspx?id=1343663, last accessed on 4 September 2009.

Machado, I. (2000). 'Dentistas brasileiros em Portugal'. Available at http://www.comciencia.br/entrevistas/igor.htm, last accessed on 23 September 2009.

Mateus, A. (2006). 'Portugal Convergence Process: Lessons for EU Accession Countries', in L. Balcerowicz and S. Fischer (eds), *Living Standards and Wealth of Nations*, Cambridge: MIT Press.

Medeiros, C.A. (2005). *Geografia de Portugal: sociedade, paisagens e cidades*. Lisboa: Círculo de leitores.

Meireles, A. (2009). 'O Magalhães, os outros netbooks, e o estado do país'. Available at http://otecnocas.blogspot.com/2009/03/o-magalhaes-os-outros-netbooks-e-o.html, last accessed on 21 September 2009.

Meusburger, P. (2008). 'The Nexus of Knowledge and Space', in P. Meusburger, M. Welker and E. Wunder (eds), *Clashes of Knowledge. Orthodoxies and Heterodoxies in Science and Religion.* Heidelberg: Springer.

Ministério da Ciência, Tecnologia e Ensino Superior (2009a). 'Ciência, Tecnologia, Sociedade da Informação e Ensino Superior. Principais medidas e resultados: 2005-2009'. Available at http://www.umic.pt/images/stories/sumula_c_prefacio_16Jun__2_.pdf, last accessed on 29 August 2009.

Ministério da Ciência, Tecnologia e Ensino Superior (2009b). 'Segundo Relatório da UE Portugal é um dos Líderes em eBusiness, eCommerce, eGovernment para Empresas', available at http://www.umic.pt/index.php?option=com_content&task=view&id=3287&Itemid=61, last accessed on 29 August 2009.

Minkov, M. (2007). *What Makes Us Different and Similar: A New Interpretation of the World Values Survey and Other Cross-Cultural Data*. Sofia: Klasika y Stil.

OECD. (2009a). 'Country Summary: Portugal', *OECD Economic Outlook*, 85, pp. 151-153.

OECD. (2009b). *OECD Economic Outlook,* 86.

OECD. (2009c). Science, Technology and Industry Scoreboard 2009.

Oliveira, C.R. (2008). 'The Determinants of Immigrant Entrepreneurial Strategies in Portugal'. Available at http://www.oi.acidi.gov.pt/docs/Revista_3_EN/Migr3_Sec2_Art1_EN.pdf, last accessed on 27 August 2009.

Ozden, Ç. and Schiff, M. (eds) (2006). *International Migration, Remittances and the Brain Drain*. Washington, DC: IBRD/World Bank.

Pacheco, J.A. (2004). 'Dos tempos e lugares do campo educacional: uma análise dos percursos de investigação em Portugal (1900-2000)', *Revista Brasileira de Educação*, 25, pp. 53-66.

Parreira, D. (2004). 'Portugal auf dem Weg zum High-Tech-Land?!', *Praxis Geographie*, 3, pp. 36-37.

Patricio, M.T. (2009). 'Science Policy and the Internationalisation of Research in Portugal', *Journal of Studies in International Education*, published online as doi:10.1177/1028315309337932.

Peixoto, J. (2004). 'Highly Skilled Migration in Portugal: An Overview', *SOCIUS Working Papers*, 3.
Peixoto, J. (2006). 'O impacto da imigração qualificada na Agenda de Lisboa'. *Colóquio "Uma Nova Política de Imigração*. Lisbon: Ministério da Administração Interna.
Peixoto, J. and Fonseca, A. (2008). 'Migration, development and remittances in Europe: mixed impacts and the role of institutions', *SOCIUS Working Papers*, 2.
Pereira, T.S. (2002). 'International Dimension of Research in Portugal: The European Research Area and Beyond', *Science and Public Policy*, 29, pp. 451-461.
Pinto, A.C. (2003). *Contemporary Portugal: Politics, Society, and Culture*. New York: East European Monographs.
Pinto, M. (2006). 'Portugal e a 'sociedade da informação': alguns números', in M. Pinto and J. Fidalgo (eds), *Anuário 2006: A comunicação e os media em análise*. Minho: Instituto de Ciências Sociais.
QCA (n.d.). 'Quadro Comunitário De Apoio III, Portugal, 2000-2006'. Available at www.qca.pt, last accessed on 20 December 2009.
QREN (n.d.). 'Quadro de Referência Estratégico Nacional, Portugal, 2007-2013'. Available at www.qren.pt, last accessed on 20 December 2009.
Quaresma, R.F, Huertas, P.L. and Castillo, J.C. del. (2006). 'Análise do comércio electrónico em Portugal: prática de negócios ou ficção comercial?', *Journal of Information Systems and Technology Management*, 3 (3), pp. 291-314.
Ramalho, G. (2002). 'Portugal no PISA 2000: Condições de participação, resultados e perspectivas', *Revista Portuguesa de Educação*, 15 (2), pp. 25-50.
Rodrigues, J.M., Simão, J.B. and Andrade, P.S. de. (2003). 'Sociedade da Informação no Brasil e em Portugal: um panorama dos Livros Verdes', Ci. Inf., Brasília, 32 (3), pp. 89-102.
Royo, S. and Manuel, P.C. (eds) (2004). *Spain and Portugal in the European Union: The First Fifteen Years.* London: Routledge.
Salavisa, I., Videira, P. and Santos, F. (2009). 'Entrepreneurship and Social Networks in IT Sectors: The Case of the Software Industry in Portugal', *Journal of Innovation Economics*, 2 (4), pp. 15-39.
Schnell, R., Hill, P., and Esser, E. (2008). *Methoden der empirischen Sozialforschung*. 8. Aufl. München: Oldenbourg Wissenschaftsverlag.
SCImago. (2009). 'SJR - SCImago Journal & Country Rank'. Available at http://www.scimagojr.com, last accessed on 28 January 2010.
Seixas, A.M. (2000). 'O ensino superior privado em Portugal: políticas e discursos', *Revista Portuguesa de Educação*, 13 (2), pp. 53-79.
Silva, M.A. da, Gomes, L.F. and Correia, M.F. (2009). 'Cultura e Orientação Empreendedora: uma Pesquisa Comparativa entre Empreendedores em Incubadoras no Brasil e em Portugal', *Revista de Administração Contemporânea – Curitiba*, 13 (1), pp. 57-71.
Stoleroff, A. and Pereira, I. (2008). 'Teachers' Unions and the Transformation of Employment Relations in Public Education in Portugal', *Transfer: European Review of Labour and Research*, 14, pp. 313-331.
Syrett, S. (ed.) (2002). *Contemporary Portugal: Dimensions of Economic and Political Change.* Aldershot: Ashgate.
Tavares, L.V. (2002). 'Development Policies in the EU and Technology Foresight: An Experiment in Portugal', *Foresight*, 4 (2), pp. 33-45.
The Economist. (2007). 'A new sick man of Europe: Portugal's sluggish economy', 12 April 2007.
Tomé, E. (2007). 'Employability, Skills and Training in Portugal (1988-2000): Evidence from Official data', *Journal of European Industrial Training*, 31 (5), pp. 336-357.
Vampire, (2009). 'As primeiras imagens de Magalhães, o primeiro portatil português'. Available at http://www.madeiragay.org/index.php?topic=204.0, last accessed on 21 September 2009.

Velada, R., Caetano, A., Bates, R. and Holton, E. (2009). 'Learning Transfer: Validation of the Learning Transfer System Inventory in Portugal', *Journal of European Industrial Training,* 33 (7), pp.635-656.

Ventura, A. and Costa, J.A. (2002). 'External Evaluation and the Organizational Development of Schools in Portugal', *International Journal of Educational Management,* pp. 169-175.

Vieira, R. and Trindade, J. (2008). 'Migration, Culture and Identity in Portugal', *Language and Intercultural Communication*, 8 (1), pp. 36-49.

Yilmaz, B. (2008). 'Foreign Trade Specialization and International Competitiveness of Greece, Portugal, Spain, Turkey and the EU 12', *Harvard University Centre for European Studies Working Paper Series*, 166.

***