Portugal in the Eurozone: Evolution and Expectations

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Abstract

At the time of joining the European Economic Community (precursor to the European Union) and the Eurozone, Portuguese agents were very optimistic about the level of development that the country would be able to achieve as a result of being a member of those economic areas. In this paper we describe the changes occurred in the Portuguese economy since joining the European Union and later the Eurozone. In addition, we provide estimates of the evolution of the expectations of Portuguese agents with respect to long-term real per capita GDP, based on a simple intertemporal macroeconomic model. Over the period under analysis, there was an impressive progress in standards of living. Before joining the euro, Portuguese agents were optimistic about long-term income. Expectations remained high until the onset of the debt crisis, at which time expectations collapsed. A slow recovery is visible in our estimates for the most recent years.

Keywords: development; euro; European Union; macroeconomic expectations; Portugal.

JEL classification: E64; F43; F45; O19.

1. INTRODUCTION

Twenty years have passed since the creation of the European single currency, the euro. Eleven countries adopted the euro as their official currency on 1 January 1999, and Portugal was one of those countries. Subsequently, a number of other countries joined the single currency, including Cyprus, Estonia, Greece and Slovenia. The path towards the adoption of the euro started much earlier. In the Portuguese case, it was necessary to undergo a nominal stabilisation process, to bring down inflation and interest rates on government bonds, and to ensure stability of nominal variables (stability of prices and of exchange rates, and low interest rates). The conditions for joining the Eurozone also required sustainable public finances.

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Along the way, the Portuguese banking system was modernised and access to credit became easier. At the same time, there was an increase in household consumption and greater access to public services, namely education and health services. Since the start of the process, much has changed in the standards of living of Portuguese citizens, as well as in the European integration architecture, perhaps the most obvious being that the control of monetary policy in the countries that adopted the euro was assigned to the European Central Bank.

However, in 2007-2009 the Eurozone was affected by the international financial crisis, which paved the way to a sovereign debt crisis in the Eurozone. Five countries (Greece, Portugal, Spain, Ireland, and Cyprus) were at the epicentre of the crisis and had to ask for external financial assistance. The crisis created enormous instability within the Economic and Monetary Union, and the possibility of a country (or a group of countries) leaving the euro came to the forefront of the debate around the European issues.

The aim of this paper is to describe the changes that occurred in the Portuguese economy since joining the European Union and especially since the adoption of the euro. The first 10 years of the European single currency were hailed as a success; the next 10 years were traumatic (J. S. Andrade and Duarte, 2013b; Reis, 2013; J. S. Andrade, 2014; Simões *et al.*, 2014). Imbalances – namely high levels of indebtedness – were at the centre of the crisis. However, indebtedness should reflect expectations: the expectation that the debtor will be able to meet the obligations stated in the debt contract. In fact, the act of joining the European Union (and later the Eurozone) was itself based on positive expectations about the gains from doing so. How did expectations evolve over the boom and bust phases that characterized the first 20 years of the euro? To fulfil these goals, our study is divided into two parts. In the first part, we provide a descriptive analysis of the evolution of the Portuguese economy and society, essentially based on development indicators. In the second part, we estimate how the long-run expectations of real per capita GDP evolved, based on a simple intertemporal macroeconomic model. In interpreting the data, we rely extensively on our previous work on the evolution of the Portuguese economy in recent decades.

The motivation for this research stems from the fact that 20 years after the adoption of the European single currency, it is important to carry out a reflection on what Portugal was before the euro and the European Union, what changed in the lives of the Portuguese, what are the new challenges facing the country, as well as the opportunities opened up by the European single market. For these reasons, we dedicate a section of this text to the description of some childhood memories, which may be an important reminder for younger, and future, generations of what Portugal was like in the 1970s and 1980s.

The data reported here shows that there was an impressive progress in the Portuguese standards of living. We are convinced that part of that progress represents the benefits to Portugal from membership of the European Union and of the Eurozone. In addition, our estimates indicate that Portuguese agents had high expectations before and after joining the euro. However, the expectations collapsed when the debt crisis began. In recent years expectations have been slowly recovering. Before the adoption of the euro, the expected relative gains were higher in Portugal than in Spain, but at the start of the international financial crisis expectations were much more optimistic in Spain.

The paper is structured as follows. Section 2 recalls childhood memories of how life in Portugal was like before joining the European Union. Section 3 describes the evolution of the Portuguese economy and society in recent decades. In Section 4 we present the

intertemporal macroeconomic model used for estimating long-term expectations, and we discuss the evolution of those estimates in Portugal and Spain. Finally, Section 5 provides concluding remarks.

2. CHILDHOOD MEMORIES…

Not many of us will remember what it was like to cross the main border between Portugal and Spain in the late 1970s-early 1980s. Our memory transports us to a reality not too distant in time, but far away in economic terms. Although crossing the border was not quite like a "mission: impossible" affair, it did have the aura of a "big adventure". In fact, in some ways it resembled the plot of a "cops-and-robbers" film, in which the "cops" were represented by the tax and border police forces of both countries, and the "robbers" naturally were the populations of the two neighbouring countries, who were separated by much more than a simple political border such as the ones existing today inside the Schengen Area.

Once the journey to the neighbouring country was decided upon, the adventure began. Although only 100 km separated us from "nuestros hermanos", the journey often took two hours, via a tortuous route through mountains and rivers, across a seemingly unending rural landscape, where men and women, with the help of their faithful animals, sought all day long to reap from the earth the sustenance of a big family, often composed of more than half a dozen children, of whom only the most fortunate were able to continue their studies beyond the minimum four-year education requirement.

Before entering Spain, we needed to obtain Spanish Pesetas. We would stop at a coffee shop near the border and look for a dealer (usually a smuggler) – no banks or other financial institutions were around, and the costs of using them would be prohibitive (and would include taxes).

Contrary to what happens today, the price – i.e., the exchange rate between the currencies of the two countries – was not fixed. We must remember that at that time the exchange rate varied sometimes by large amounts. Over the course of ten years, the exchange rate between the Portuguese Escudo (PTE) and the Spanish Peseta (ESP) went from 1 PTE = 2 ESP to 1.3 PTE = 1 ESP. The high inflation rates (near 30%) in Portugal may help explain this evolution (Duarte, 2009).

With Spanish money in our pockets, we could continue towards Spain. However, the hardest part was to actually cross the border. A rigorous passport control usually signified a two-hour wait. But once this was behind us, we entered a new world. We would immediately notice the larger, better roads, where we could reach 120 kilometres per hour with our family car. We could also escape rationing and enjoy bigger and modern shops. These would be full of better, cheaper products (such as gasoline). In Spain we would also have access to goods and services that were unavailable in some regions of Portugal, such as medical services. The gains were larger than the costs, so much so that the endless hours of border control were quickly forgotten, at least for a while, until it was time to initiate the return journey.

As it happens, the return journey was even worse than the journey to Spain. Tax authorities would search your car inside and out looking for goods other than "first necessities". For instance, if we bought a basic musical instrument, such as a guitar, the attempt to bring it to Portugal would be considered illegal and therefore lead to confiscation and give rise to the payment of a punitive customs fee for such an "infraction".

On 1 January 1986, when Portugal and Spain joined the European Economic Community (EEC), everything changed, and the somewhat picturesque reality that we have just described remained in existence only as a part of our childhood memories. For some time, one would still need to obtain Spanish currency, but even that was about to become just a memory. Nowadays Portugal still lags Spain in terms of income. However, much progress has been made, as we describe in the next section.

3. ECONOMIC AND DEVELOPMENT INDICATORS

Portugal has undergone profound economic and institutional changes in recent decades. Although there had been transformations and progress in the later years of the dictatorial regime, the transformations became more pronounced and turbulent after the beginning of the democratization process in 1974. Steadier economic growth and development of the country only really occurred after Portugal joined the European Union (EU) in 1986. This was followed by the completion of the Internal Market and accession to the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) on 4 April 1992. This process of deepening European economic integration would lead to Portugal adopting the single currency, the euro, on 1 January 1999. Membership of the Eurozone has been marred by the debt crisis that led to a bail-out provided by the *troika* of the European Central Bank, the European Commission and the International Monetary Fund (IMF). However, it is important to remember that before between the restoration of a democratic regime and the joining of the European Union, Portugal had been through two IMF interventions, also associated with external imbalances, i.e., essentially a problem of lack of saving relative to investment.

We believe that European integration contributed in two main ways for Portuguese economic growth and development. First, it provided a stable institutional framework to a country that had been through major upheavals following the overthrow of the dictatorship in 1974. The European institutional framework contributed to restoring confidence in the evolution of the economy, which is crucial for investment. Second, it provided access to very large amounts of European funds. According to Mateus (2013), between 1989 and 2013 Portugal was allocated 96 billion euros at 2011 prices (for reference, at 2011 prices, Portuguese GDP was 115 billion euros in 1989 and 176 billion euros in 2011, according to AMECO data). European structural funds were fundamental to provide the country with important infrastructures (road, rail, port and airport), contributing decisively to the shortening of distances, as well as to the development of the construction and tourism sector. Simultaneously, interest rates decreased substantially, contributing to a demand increase. The effects of the inflow of European funds and of the reduction of financial costs can be viewed as similar to the phenomenon known as Dutch Disease, distorting the agents' decisions and favoring certain sectors of the economy (J. S. Andrade and Duarte, 2013a). This may help explain the rise of the non-tradable sectors – the content of which usually overlaps that of the tertiary sector (see Figure no. 1 and Alexandre and Bação, 2013) – and the appreciation of the real exchange rate (according to Alexandre et al., 2009, between 1988 and 2006 the real effective exchange rate appreciated by more than 20%). Other factors also contributed to that change in the structure of the Portuguese economy, such as changing patterns in world trade (Alexandre et al., 2011).
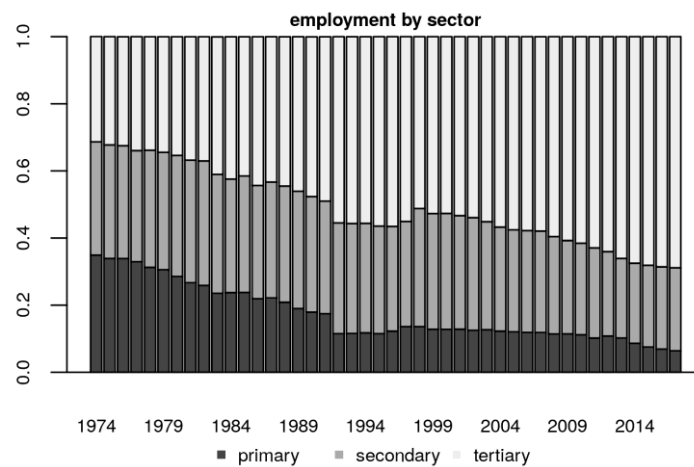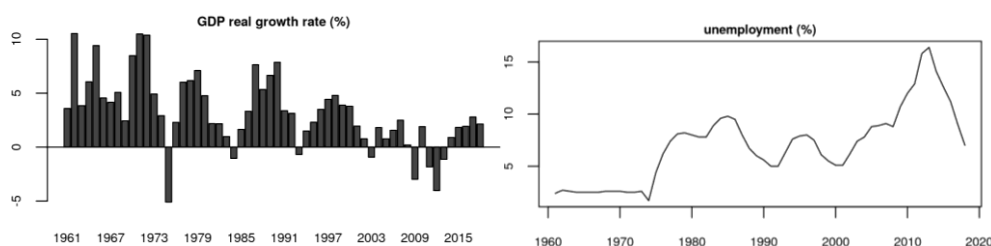
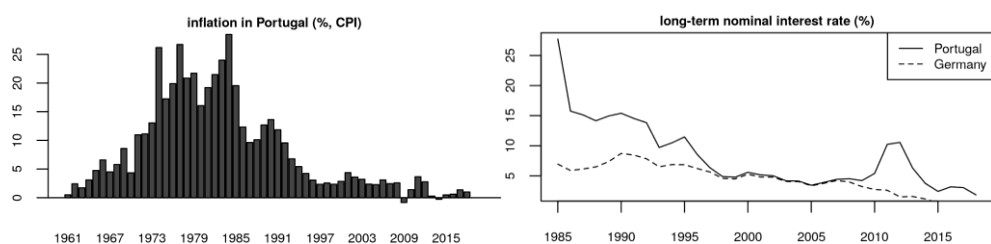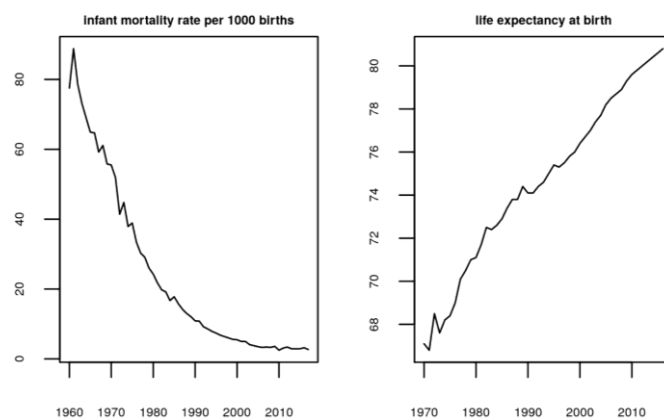**Figure no. 1 – Employment by broad sectors (%)**
Source: Pordata

Obviously, we cannot attribute to membership of the European Union all the progress that was observed in Portugal since joining the European Union, but we do believe membership of the European Union was important, especially at the time of joining. As a matter of fact, analyses based on simple VAR models (with the usual caveats) suggest that the growth rate declined (Bação *et al.*, 2013).

Nevertheless, while the first years of the euro were viewed as success, the period afterwards was very turbulent, to the point that the survival of the euro itself was deemed to be at stake. Regarding economic growth in Portugal, Reis (2013), J. S. Andrade (2014) and Simões *et al.* (2014) identify two periods. The first is the period between Portugal's accession to the EU and the eve of the adoption of the euro, 1998. The second spans the lifetime of the euro, from 1999 to the present.

From the point of view of the Portugal, the first period may be considered to be very successful. Portuguese standards of living approached those of the richest countries at a fast pace; Portugal converged in real terms with the main European economies – see Figure no. 2. The unemployment rate showed a favourable evolution (a negative trend), never exceeding 8% – Figure no. 3. There was also a nominal stabilisation process in the economy, achieving stability of prices, exchange rates and interest rates – see Figure no. 4 and Bação and Duarte (2014) as well as João Sousa Andrade and Duarte (2015). In 2005, the interest rate on Portuguese public debt was similar to that on German public debt. Not surprisingly given the circumstances, foreign direct investment also increased significantly.

GDP per head of population, 2010 prices (1000 euro)

GDP per head of population (PPS: EU-15 = 100)
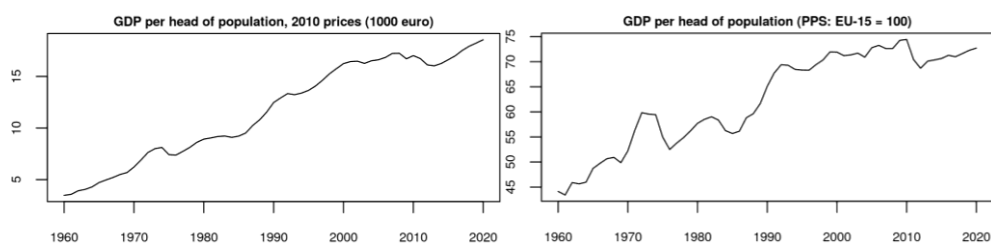
Figure no. 2 – Gross Domestic Product per head of population
Source: AMECO

GDP real growth rate (%)

unemployment (%)

Figure no. 3 – Growth and unemployment
Source: AMECO

inflation in Portugal (%, CPI)

long-term nominal interest rate (%)

Portugal
Germany

Figure no. 4 – Inflation and interest rates
Source: AMECO

infant mortality rate per 1000 births

life expectancy at birth

Figure no. 5 – Health indicators
Source: Pordata

Macroeconomic indicators were not the only ones to show improvements. Development indicators were also improving, namely in health and in education. In the case of infant mortality and life expectancy at birth, basically the trend from previous decades was maintained – see Figure no. 5. In the case of education indicators, there appears to be some flattening of the trend in the mid-1990s – see Figure no. 6 – although illiteracy has continued to decrease (from the very high levels of the 1970s).
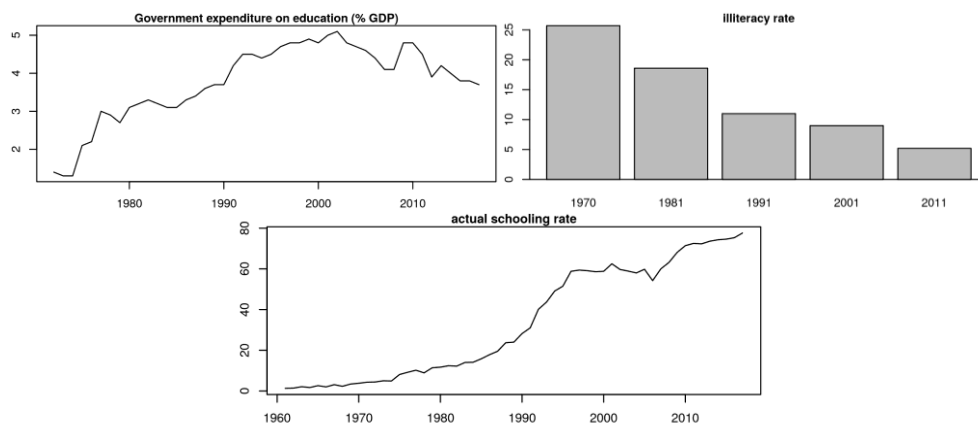

Figure no. 6 – Education indicators
Source: Pordata

The evidence present so far tells of improvement and success. However, the outlook changed significantly in the second period of European Union membership. This period coincides with Portugal's participation in Economic and Monetary Union (EMU) and with two economic and financial crises: the international financial crisis of 2007, and the sovereign debt crisis in Europe, since 2009. Growth became slower and unemployment drifted upwards. At the same time, debt stocks continued to increase, with an important contribution from the public sector (Bação and Duarte, 2011; J. S. Andrade, 2014; Ferraz and Duarte, 2015; Alexandre *et al.*, 2016; Ferraz and Duarte, 2016; Ferraz and Duarte, 2018). In order to meet the requirements for joining the Eurozone, the ratio of public debt to GDP had been reduced in the second half of the 1990s, but after joining the Eurozone the trend was reversed, especially after the start of the international financial crisis.

The recent downward trend in the unemployment rate – one of the largest in the Eurozone – is largely explained by the dynamics of labour-intensive sectors. Namely, we are referring to the construction and tourism sectors, which in recent years have become more dynamic and have been responsible for a substantial share of new jobs. A new wave of emigration, mostly of young graduates, may also help to explain the downward trend in the unemployment rate. Portugal is the European Union's country with more emigrants as a proportion of the resident population (if we consider only countries with more than one million inhabitants). According to the latest estimates by the United Nations, in 2015, the number of emigrants born in Portugal surpassed 2.3 million, which means that about 20% of Portuguese live outside the country (Observatório da Emigração, 2018). Nevertheless, from 2016 onwards emigration was considerably reduced, possibly as a result of the economic

recovery which began in 2013. The return to economic growth was associated with a good performance in the exporting sectors of the Portuguese economy, namely tourism and manufactured exports such as textiles, clothing and footwear; rubber and plastics; transport, storage and communications, and food and beverage products (Carvalho *et al.*, 2017; Nogueira and Duarte, 2019). This appears to have been essentially the result of productivity gains and increased external demand, rather than a growth strategy based on wage costs and on exchange rate depreciation (Bação *et al.*, 2018), which was the usual strategy before the adoption of the European single currency (Bação and Duarte, 2014).

As we mentioned above, the process of meeting the requirements for accession to the Eurozone brought about price stability and also a very significant fall in the cost of credit, as a result of the decline in short and long-term interest rates. Economic agents in general, but households in particular were given the possibility of acquiring goods and services that in the past were not easily accessed by them because of the high cost of credit. This is true especially of durable goods, such as housing and automobiles. Not surprisingly, this increasing trend in private consumption was only interrupted by the international financial crisis (2008-9) – see Figure no. 7.

If Portuguese households consume more of their available income, they must be saving less, and this is evident from the data on households' saving rate shown in Figure no. 7. The problem is not just the reduction of the savings rate: it is the possibility that excessive consumption (relative to income) can ultimately lead to excessive household debt. In fact, this has been a reality for many Portuguese households since the introduction of the euro and the decrease in interest rates associated with increased availability of credit (Fernandes *et al.*, 2014; Henriques *et al.*, 2014). These two realities of increased consumption and high indebtedness of households, together with firms' and public administrations' indebtedness (see Figures no. 8 and no. 9, and Alexandre *et al.*, 2017), help explain the increasing trend in the net external debt as a percentage of GDP (Figure no. 10).
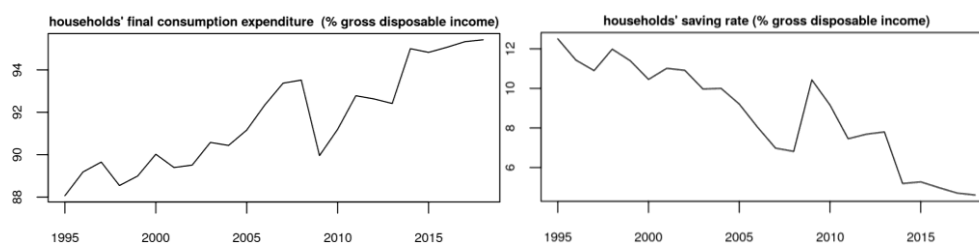

Figure no. 7 – Consumption and saving by households
Source: AMECO

Perhaps more worrying than the high level of debt is the challenge posed by the demographic evolution. The demographic indicators are shown in Figure no. 11. The ageing index is already above 100, i.e., there are more old than young people, which may signal problems for social security. Additionally the total fertility rate declined precipitously in the 1970s, and continued to decrease until the 2000s, placing Portugal among the countries with the lowest rate in the world.
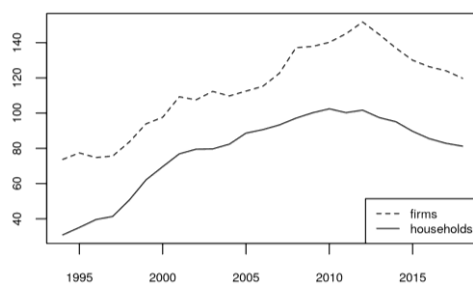
Figure no. 8 – Households and firms' debt (% of GDP)
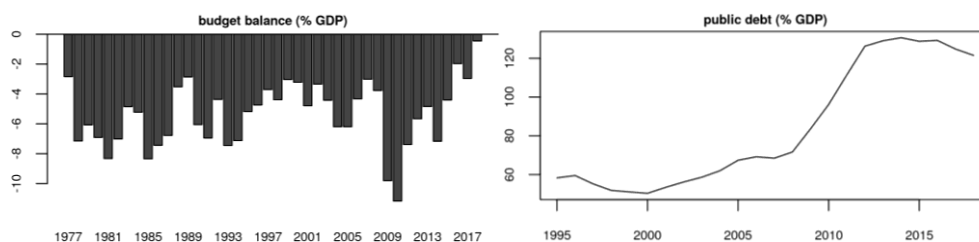*Source: Authors' computations based on data from Banco de Portugal*

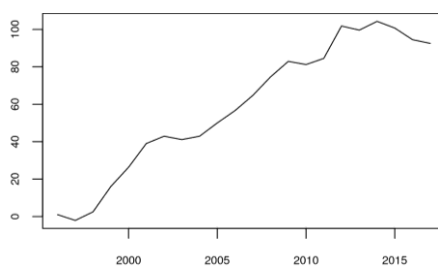**Figure no. 9 – Budget balance and public debt**
Source: AMECO

Figure no. 10 – Net external debt (% of GDP)
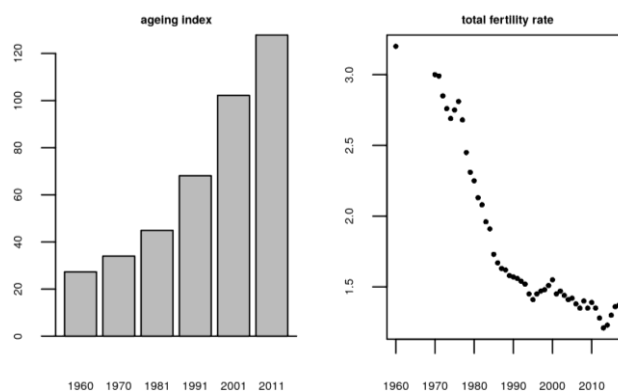*Source: Pordata*

Figure no. 11 – Demographic indicators
Source: Pordata

Membership of the European Union was associated, in the initial stage, with fast growth and improved standards of living. In the second state, the outlook was bleaker. Was this expected? More generally, how did expectations about future levels of income evolve since the eve of the creation of the Eurozone?

4. THE EVOLUTION OF EXPECTATIONS

In this section we present estimates of the expected evolution of real GDP per capita in Portugal since just before joining the Eurozone. For comparison, we also do the same computation for Spain. The expected evolution of real GDP is estimated by means of a macroeconomic model. An alternative would be to resort to published survey data concerning the same series (real GDP per capita, or a similar measure), but, to the best of our knowledge, no such data is available for Portugal (or Spain). Our macroeconomic model will combine two elements. The first element is, at its core, a standard representative-agent model, to which we added additional simplifying assumptions. The second element is what Barro (2015) called the "iron law of convergence" (see also Barro, 2015, for a note on the origins of the phrase). According to this law, in a country where real per capita GDP is below its potential level, real per capita GDP will converge to the long-run path at the rate of 2 percent per year. In other words, on average, each year 2 percent of the gap will be eliminated.

Our starting point is therefore the assumption that a representative agent maximizes expected utility. The representative agent is assumed to have an infinite horizon, i.e., the country's population is not expected to shrink to zero in the foreseeable future. The lifetime utility function takes the usual additively separable form:

$$E_0\left[\sum_{t=0}^{\infty}\beta^t u\left(\frac{C_t}{N_t}\right)\right] \tag{1}$$

In equation (1), E_0 denotes expectations given the information available in the current period, β is the discount factor (a number between zero and one, with low values representing impatience), C_t is total consumption, N_t is total population and C_t/N_t is per capita consumption. Therefore, we assume that the flow of utility in each period depends only on average current consumption, and the weight given to future flows of consumption declines geometrically over time – see Frederick *et al.* (2002) for a presentation of the psychological issues that surround utility functions based on the "discounted-utility" framework. By using average consumption as the argument of the period utility function, we are assuming linear scale effects on consumption, that is to say, we are assuming that to maintain the same level of utility of the representative agent when total population doubles, total consumption should also double, regardless of whether the age distribution of the population remains the same or not – see, e.g., Fernandez-Villaverde and Krueger (2007) for a list of alternative scale measures for household consumption and a discussion of the impact of scaling on estimates of the life-time consumption profile of US households.

The periodic utility function takes the constant relative risk aversion form:

$$u(c) = \frac{c^{1-\sigma}}{1-\sigma} \tag{2}$$

Parameter σ is the degree of relative risk aversion, which is the inverse of the elasticity of intertemporal substitution in consumption. This conflation of the two behavioural traits may constitute a disadvantage of this functional form. Thimme (2017) provides a discussion of this and other issues related to the concept of intertemporal substitution. Nevertheless, the CRRA functional form is very convenient analytically and there are empirical studies (such as Chiappori and Paiella, 2011) that find support for the assumption of constant relative risk aversion.

The representative agent maximizes expected life-time utility subject to a sequence of period budget constraints (as well as a transversality condition, to rule out Ponzi games, which will be implicit in the intertemporal budget constraint, presented below). We write the period budget constraint, in per capita terms, as:

$$c_t + b_t = y_t + f_t b_{t-1} \tag{3}$$

where the compounding factor, f_t, is adjusted for population growth:

$$f_t = \frac{1 + r_t}{1 + n_t} \tag{4}$$

In equation (3), b_t is real per capita net foreign assets at the end of period t (beginning of period $t+1$) and y_t is real per capita GDP. In equation (4), r_t is the real interest rate and n_t is the growth rate of the population. Importantly, we do not allow for a separate role for investment in our model. The reason for this is that a separate role for investment will possibly bring with it additional agents, assumptions, equations and, especially, data requirements. Given that we put real per capita GDP (because that is the focus of the paper and is also the subject of the "iron law of convergence") in the right-hand side of equation (3), but omit capital accumulation from the left-hand side, as well as government consumption (which would also impose additional requirements on our analysis, similarly to investment), we need to interpret consumption (c_t) in a broad sense. Namely, "consumption" will include private consumption, government consumption and investment. Consequently, the expectations derived from our model should not be viewed as specific to domestic households, but rather as reflecting the expectations of all domestic agents (and also foreign agents, to the extent that the expectations of foreign agents affect the observed outcomes, namely in terms of the interest rate and the level of credit to domestic agents).

Assuming, for simplification, that the compounding factor is expected to be constant in the future ($f_t = f$) and imposing the transversality condition that the present value of net foreign assets tends to zero, the intertemporal budget constraint can be written as:

$$\sum_{t=0}^{\infty} \frac{c_t}{f^t} = \sum_{t=0}^{\infty} \frac{y_t}{f^t} + f_0 . b_{-1} \tag{5}$$

Maximization of life-time utility given by equations (1) and (2), subject to the sequence of period budget constraints given by equation (3) or the intertemporal budget constraint given by equation (5), yields the usual consumption Euler equation:

$$c_t^{-\sigma} = \beta E_t(c_{t+1}^{-\sigma} f) \tag{6}$$

Recall that we will use the "iron law of convergence" to determine expected real per capita GDP. We assume that the representative agent acts as if future real per capita GDP follows a strict version of that law, namely, that convergence at 2 percent per year does occur every year, and not just on average. Together with the assumption of a constant compounding factor, this implies that the representative agent behaves as if there was no uncertainty. This allows us to ignore the expectations operator in equation (6). Therefore, in the process by which the representative agent decides how much to consume, current and future consumption are related by the following equation:

$$c_{t+k} = (\beta f)^{\frac{k}{\sigma}} c_t \tag{7}$$

Substituting (7) in the intertemporal budget constraint yields

$$\sum_{t=0}^{\infty} \frac{(\beta f)^{\frac{t}{\sigma}} c_0}{f^t} = \sum_{t=0}^{\infty} \frac{y_t}{f^t} + f_0 . b_{-1} \tag{8}$$

Solving equation (8) for c_0 gives current consumption as a function of future real per capita GDP, the compounding factor and initial wealth, besides the utility function parameters β and σ:

$$c_0 = \left(\sum_{t=0}^{\infty} \frac{(\beta f)^{\frac{t}{\sigma}}}{f^t} \right)^{-1} \left(\sum_{t=0}^{\infty} \frac{y_t}{f^t} + f_0 . b_{-1} \right) \tag{9}$$

In order to be able to use equation (9) for computing current consumption it is necessary to have values for future (besides current) real per capita GDP (y_t). This is where we make use of the "iron law of convergence", or rather a strict version of it, in which 2 percent of the gap between current real per capita GDP and its equilibrium level will be eliminated each year. Mathematically, this corresponds to the following equation:

$$\ln y^* - \ln y_1 = (1 - 0.02)(\ln y^* - \ln y_0) \tag{10}$$

In equation (10), y_0 is current real per capita GDP, y_1 is real per capita GDP in the next year, and y^* is equilibrium real per capita GDP, i.e., the value to which real per capita GDP will converge. From equation (10) one can compute y_1 as follows:

$$y_1 = e^{\ln y^* - (1 - 0.02)(\ln y^* - \ln y_0)} \tag{11}$$

More generally, equation (10) implies that expected real per capita GDP t years ahead (y_t) is given by:

$$y_t = e^{\ln y^* - (1-0.02)^t(\ln y^* - \ln y_0)} \tag{12}$$

We can then substitute the expression given by equation (12) in equation (9) to obtain current consumption as a function of current real per capita GDP and the equilibrium level of real per capita GDP, alongside initial wealth, the compounding factor, and the parameters of the utility function. Current consumption, current GDP, current compounding factor (f_0) and initial wealth constitute the data inputs. Recall that "consumption" in this case is actually consumption plus investment, both private and government. Therefore it can be computed as the difference between GDP and the external balance of goods and services (i.e., exports of goods and services minus imports). We collected the data for nominal and real GDP, the external balance of goods and services, and population from Eurostat. We used these series to compute our measure of real per capita "consumption", using the GDP implicit price level as the deflator. In our model, initial wealth corresponds to real per capita net foreign assets at the end of the previous year. We also retrieved from Eurostat the data on net foreign assets, and used population and the deflator to compute our measure of initial wealth. As for the compounding factor, our estimate of it was obtained through the following process:

1. We estimated $f_t.b_{t-1}$ as the difference between final wealth (next period's initial wealth) and the external balance of goods as services (all series in real, per capita terms).

2. We divided that estimate by the period's initial wealth to obtain the estimate of the compounding factor in each year.

3. We filtered the resulting series to eliminate "outliers". Outliers were defined to be values outside of the interval $]1,1.1[$.

4. The estimate of the compounding factor f is the average of the filtered series.

The estimated compounding factor was also used to obtain an estimate for the parameter β in the utility function. In order to obtain a constant value for consumption in the long-term equilibrium (consistently with the assumption that real per capita GDP will be constant and equal to y^* in the long term), we set $\beta = 1/f$. The other parameter in the utility function (σ) was set according to the estimates found in the meta-analysis reported by Havranek *et al.* (2015). Namely, we employed the inverse of the estimates of the mean elasticity of intertemporal substitution presented in Table A1 of Havranek *et al.* (2015). The estimates reported in Havranek *et al.* (2015) are 0.152 for Portugal and 0.504 for Spain. Finally, as an approximation to the infinite summations in equation (9), we summed the terms until the index t reached 1000. Given the data collected from Eurostat and the estimates of the parameters, we used equation (9), with the truncated summations, and equation (12) to compute the implicit long-term value of real per capita GDP (y^*) in each year, from 1997 until 2017 (the period for which data was available). The resulting series is our estimate of the evolution of expectations concerning future standards of living.

Our estimates of the evolution of expectations in Portugal and Spain are presented in Figures no. 12 and no. 13. By 1997, expectations in Portugal were already high, implying a 20 percent increase in real per capita GDP in the long run. By contrast, the corresponding number for Spain was only about 5 percent. Possibly, expectations in Portugal at that time

were influenced by the fact that in previous years – since joining the European Economic Community in 1986 – economic growth had been very strong in Portugal. Expectations became even more optimistic, until they reached a peak in the year 2000. During the following three years, expected growth declined. Nevertheless, at the trough in 2003 (when there was a recession in Portugal) expected long-term growth still exceeded 20 percent. In the following years, before the start of the Portuguese debt crisis in 2011, expected long-term growth remained in the range 25-30 percent, with the exception of 2008, when it surpassed 30 percent. Even in 2009, at the height of impact of the international financial crisis in Portugal, the expected long-term growth was still 25 percent. The debt crisis brought with it a significant cut in expectations: to under 20 percent in 2011, to about 10 percent in 2012 and to little more than 5 percent in 2013. Although the expected relative long-term increase has been relatively stable since 2013, the expected level of future GDP has been slowly increasing. Real per capita GDP in 2017 was already higher than before the international financial crisis, but the expected long-term level is still clearly below the value at the 2008 peak.
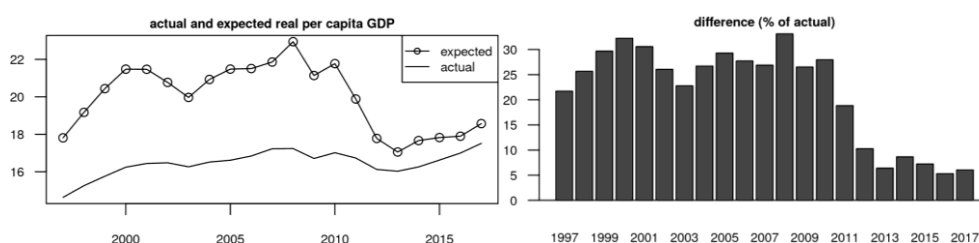

Figure no. 12 – Actual and expected real per capita GDP in Portugal
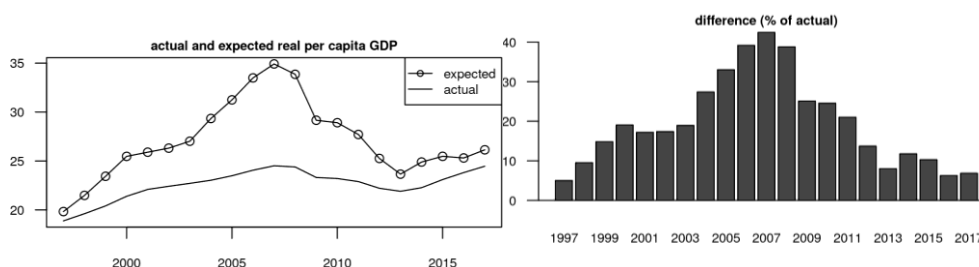*Source: Eurostat and authors' computations*

Figure no. 13 – Actual and expected real per capita GDP in Spain
Source: Eurostat and authors' computations

The Spanish case, in this later period, presents a very similar evolution to that described for Portugal. However, the evolution of expectations in Spain before 2009 – the year when the centre of the crisis moved from the USA to the Eurozone – was very different. Expectations in Spain jumped up in 2004, possibly accompanying the rise in housing prices. In fact, the Spanish crisis was associated with a housing boom, unlike the crisis in Portugal, where housing prices actually declined in real terms in the pre-crisis period (Alexandre *et al.*, 2017). Spanish housing prices peaked in 2007, and the same is true for the expectations about long-term growth, according to Figure no. 13.

To summarize, around the time of the launch of the euro, expectations in Portugal were much more optimistic than in Spain. However, at the height of the pre-international financial crisis euphoria expectations of long-term growth in Spain were much higher than in Portugal (where expectations were high but relatively flat). Growth expectations moved to a lower level in 2009-2010, after the international financial crisis hit Europe. From 2011 until 2013 expectations were in a downward trend, before stabilizing in recent years. Expectations about the level of future GDP have been slowly increasing.

5. CONCLUSION

In this paper we described in broad terms the changes that occurred in the Portuguese economy since joining the European Union, in particular since the adoption of the euro. The progress in standards of living is undeniable. What is not certain is the contribution of European integration, namely the adoption of the single currency, for that progress. We argue that it contributed to stabilize a country that was coming from a turbulent transition to democracy, creating conditions for high growth and real convergence during the initial period of membership of the European Union. According to our estimates, when the euro was introduced, expectations of Portuguese agents were still optimistic. The spread of the crisis in Europe drastically changed the outlook, but there has been some recovery in recent years. It is important to recall that our estimated expectations should not be understood as the expectations of households, but rather as an aggregate of the expectations of all domestic agents. Future research may investigate whether relaxing some of our assumptions makes a difference for the conclusions, or, perhaps more interestingly, attempt to disentangle the expectations of households, firms and public administrations.

Happy birthday to the euro!

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