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**Article**

## The golden age of the world economy and Portuguese economic growth: applied study, 1950-2018

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## GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

# The golden age of the world economy and Portuguese economic growth: applied study, 1950-2018

Ricardo Ferraz<sup>1\*</sup>

**Abstract:** During the Golden Age (1950–1973), Portugal stood out in the international scene, converging economically with the group of more industrialised economies. In this paper, we start by analysing the main factors that explain the extraordinary economic performance of Portugal during that crucial period of its history. Next, we construct and estimate a dynamic model to quantify the relationship between those factors and the Portuguese economic growth in the time horizon that stretches from the Golden Age to present days. The results obtained show that investment and international trade have been contributing positively to economic growth of Portugal in the last decades, 1950–2018. The conclusions of this paper, which are in line with the international literature, reinforce the importance for Portuguese decision-makers to adopt political measures to open the economy and to create favourable conditions for investment in order to obtain a faster economic growth that allows a robust convergence with the most industrialized nations.

**Subjects:** Macroeconomics; International Trade; Incl; trade agreements & tariffs; Political Economy

**Keywords:** golden age; Portugal; economic growth; international trade; investment

## 1. Introduction

Angus Maddison (1926–2010) presented a chronological division of modern economic growth (Maddison, 1977, 1995, 2001, 2003). This periodisation, which began in the first quarter of the nineteenth century, and which has been successively extended until the present day, became known as the “Phases of Capitalist Development”.<sup>1</sup>

It was precisely during one of those phases, specifically in the so-called Golden Age (1950–1973), that the Portuguese economy registered an extraordinarily favourable performance. In fact, in that period, the Portuguese GDP *per capita* grew at its highest rates ever, even surpassing the high growth rate of the world economy.

This article analyses the factors that explain the extraordinary behaviour of Portugal in that specific period, seeking furthermore to quantify the impact of those same factors on the Portuguese economic growth (measured by GDP *per capita*). The aim is therefore to answer the following fundamental questions: 1) What were the main reasons for the Portuguese performance during the Golden Age? 2) Did this extraordinary performance enable the country

to converge with the group of the world's most industrialised economies? 3) Has there been a statistically significant relationship between these variables and the Portuguese economic growth since the Golden Age and until the present day?

The answers to these questions are important. From an internal viewpoint, i.e., for Portugal, it makes sense to fully understand the factors underlying the period of greatest prosperity for the Portuguese economy. On the other hand, from a more international perspective, it is also important to emphasise that a growing interest is being shown in the study of the economic issues facing small and medium-sized economies, which have also played a decisive role in the construction of the history of the world economy (Eloranta et al., 2019).

After this introduction, in Section 2, the paper presents a framework for the different phases in the growth of the world economy, also approaching the Portuguese case from a global perspective. This is followed by Section 3, which examines the explanatory factors for the prosperity of the Portuguese economy during the Golden Age and analyses the path of Portuguese convergence with the more developed economies. In Section 4, a dynamic model is estimated in order to test the relationship between economic growth and some important variables. Finally, the main conclusions are presented in Section 5.

## 2. Framework: Maddison's phases of capitalist development

According to Maddison (1995), the different phases of the world economy also resulted in different rates of economic growth. Each was characterised by very particular events, as explained by the author.

Thus, the first phase (1820–1870) began after the end of several serious problems such as wars, revolutions and economic blockades, with economic growth benefiting from the effects of the ongoing industrial revolution. This phase ended when economic activity began to accelerate in different regions of the world, at the same time as a number of important events occurred, such as the end of slavery in the United States of America and the rise of Germany and Italy as modern nation-states.

In turn, the second phase (1870–1913), also known as the *Belle Époque*, corresponded simultaneously to a period of peace and relative prosperity in the world. Furthermore, at that time, a number of important inventions were made, such as the incandescent lamp by Thomas Edison (1847–1931), the electric train by Werner Siemens (1816–1892) and the internal combustion engine, which enabled Karl Benz to construct the first petrol-powered automobile. The *Belle Époque* ended on the eve of the First World War.

The third phase (1913–1950) was characterised by world wars and crises, resulting in the darkest period in twentieth-century history. This inevitably meant a reduction in the pace of growth of the world economy. Among the most remarkable and destructive events was the Great War (1914–1918), which killed fourteen million soldiers and civilians (on this war see, Gilbert, 2007 and Ferraz, Forthcoming). This conflict had dramatic consequences that gave rise to other catastrophes, and has led some authors to consider that its legacy still remains with us a century later (Ransom, 2018). The “Great Depression”, which began in the United States of America in 1929 and later spread to the most diverse countries during the 1930s, as well as the Second World War (1939–1945), which killed more than sixty million people and left several nations in complete ruins, were terrible consequences of undeniable historical importance (see, Galbraith, 2009; Gilbert, 2004).

As for the fourth phase (1950–1973), also known as the Golden Age, this was synonymous with a period of great prosperity. Angus Maddison sought to explain the reasons for the existence of such a remarkable period: 1) the creation of a new international order with strong and flexible institutions which enhanced cooperation between the various nations and favoured the development of international trade (e.g., the International Monetary Fund [IMF], the World Bank and the

Organisation for European Economic Co-operation [OECE]) 2) the adoption of economic policies in the different countries which were geared towards the promotion of high levels of demand and employment, while simultaneously keeping inflationary pressures at a low level; 3) the high potential for growth on the supply side due to the recovery from the war, while there was an acceleration of technical progress in the United States, which played an important interventive role in the global recovery; 4) the qualification and education levels in Western Europe and in Japan, which came close to those in the US and allowed for a rapid growth and efficient use of physical capital (see, Alvarez-Cuadrado & Pintea, 2008; Eichengreen, 1994; Temin, 1997, 2002). The end of the Golden Age can also be explained by several events, such as the collapse of the international monetary system agreed at Bretton Woods, the 1973 oil crisis and the high inflationary pressures worldwide (see, Bordo, 1993; Bordo & Eichengreen, 2007; A. P. Duarte, 2015).

Finally, the fifth and final phase, which began in 1973, relates to the most recent years in the world economy. This period has been characterised by more moderate and irregular economic growth than in the previous phase, having been interspersed with world crises, such as the oil shocks of the 1970s, or, more recently, the international financial crisis that began in 2007 (see, European Commission, 2009; Llewellyn, 1983).

Based on the most recent database published by the Maddison Project (see Maddison Project, 2020), it is possible to calculate and present for the different regions of the globe the evolution of the GDP *per capita* growth rates across the so-called Phases of Capitalist Development. This information is shown in Table 1.

It is thus possible to confirm that it was precisely during the Golden Age that this indicator presented its highest growth rate in most regions of the world. It is also worth highlighting the extremely favourable performance of East Asia and Western Europe, which registered average annual variations above 4% during that period. These two regions thus contributed decisively to the performance of the world economy in the Golden Age, when the GDP *per capita* grew at almost 3% per year, a value that has no comparable parallel in other periods of History.

Still using the Maddison Project (2020) database, we can also calculate and compare the GDP *per capita* growth rates for a wide range of countries during the five phases of development. The results are shown in Table 2. It can be seen that it was during the Golden Age that the GDP *per capita* of most countries presented their highest growth rates. Japan, one of the belligerent countries torn apart by the

**Table 1. Real GDP per capita growth rates (%) in different regions of the world economy, 1820–2018**

	1820–1870	1870–1913	1913–1950	1950–1973	1973–2018
Western Europe	0.72	1.09	0.87	4.06	1.76
Eastern Europe	1.32	0.75	1.72	3.58	1.82
Western Offshoots	1.24	1.77	1.09	2.36	1.69
Latin America	0.65	1.35	1.25	2.69	1.62
Asia (East)	−0.19	-	-	5.20	3.42
Asia (South and South-East)	−0.18	0.79	−0.29	1.85	3.49
Middle East	0.36	-	-	3.66	2.74
Sub-Saharan Africa	0.00	-	-	2.01	1.17
<b>World</b>	<b>0.62</b>	<b>1.31</b>	<b>0.67</b>	<b>2.94</b>	<b>1.90</b>

Source: Own calculations, using data from the Maddison Project (2020).

Note: The growth rates were calculated from amounts expressed in 2011 USD.

**Table 2. Real GDP per capita growth rates (%) in different countries of the world economy, 1820–2018**

	1820–1870	1870–1913	1913–1950	1950–1973	1973–2018
Australia	3.75	1.06	0.99	2.43	1.99
Austria	0.85	1.45	0.18	4.94	1.97
Belgium	1.20	1.05	0.70	3.54	1.61
China	0.14	0.10	−0.56	2.81	4.91
Denmark	0.91	1.57	1.56	3.08	1.64
Finland	0.65	1.44	1.91	4.25	1.77
Former USSR	–	–	1.90	3.35	1.58
France	1.01	1.45	1.08	4.01	1.42
Germany	1.25	1.61	0.17	5.02	1.98
India	−0.19	0.54	−0.23	1.40	3.64
Italy	0.12	0.84	0.87	4.95	1.58
Japan	0.36	1.01	0.63	8.06	1.69
Mexico	0.08	1.52	1.53	3.41	1.74
Netherlands	0.77	0.88	1.07	3.45	1.85
Norway	0.91	1.66	1.84	3.25	3.49
Portugal	−0.14	0.58	1.39	5.45	1.97
Spain	0.25	1.24	0.33	5.41	2.24
Sweden	0.83	1.78	2.33	3.06	1.68
Switzerland	–	2.39	0.94	3.59	1.93
South Africa	0.16	0.89	2.16	2.19	1.35
United Kingdom	1.14	0.80	0.81	2.42	1.54
United States	1.18	1.75	1.12	2.45	1.64
<b>World</b>	<b>0.62</b>	<b>1.31</b>	<b>0.67</b>	<b>2.94</b>	<b>1.90</b>

Source: Own calculations, using data from the Maddison Project (2020).

Note: The growth rates were calculated from amounts expressed in 2011 USD.

war, was, without doubt, the economy that most stood out during that period. Regarding this case, Maddison (1995) highlights the fact that the Japanese total factor productivity grew at extraordinarily high rates. This was, in fact, due, on the one hand, to the correct transition of resources from the military sector to other more reproductive sectors, but also, as already mentioned, to the high levels of qualification, education and organisational experience of the Japanese population, which allowed for an efficient accumulation of physical capital that stimulated economic growth.

Table 2 also allows us to conclude that Portugal, which assumed a neutral position in the Second World War and did not suffer any destruction of its physical and human capital, was the second nation (and the first in the European context) to register the highest average growth rates of GDP *per capita* during the Golden Age. We can see that, while the world economy, which recorded its best performance in the Golden Age, grew by 2.9% a year, Portugal grew almost twice as fast, by 5.5%. But, specifically for the Portuguese case, what were the explanatory factors for such a remarkable economic performance?

### 3. The Golden Age and the Portuguese economic convergence

The literature presents several explanations for the Portuguese economic performance during the 1950–1973 period. It is generally agreed that the greater orientation of economic policy towards development and the integration of the Portuguese economy into the world economy were the main reasons for the country's growth (see, Lains, 2003a; Mata & Valério, 2003; Mateus, 2013).

With regard to the first factor (the orientation of economic policy), it is important to start by mentioning that this resulted in a very significant increase, in a context in which policymakers assumed the industrialisation of the Portuguese economy as their main goal.<sup>2</sup> Consequently, the so-called Development Plans (1953–1974) were created and implemented.<sup>3</sup> These initiatives decisively marked Portuguese economic policy in the third quarter of the twentieth century. It included a wide range of public and private investments in many different economic sectors, but the largest amounts were allocated firstly to the industrial sector, and, in second and third places, to the energy, transport and communications sectors, which together accounted for around ¾ of the total expenditure made under these initiatives (see, Ferraz, 2020a).

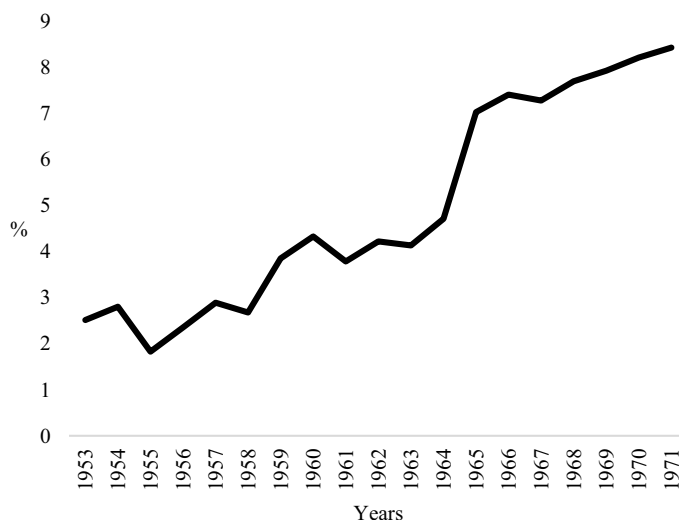
Figure 1 illustrates the evolution of the investment expenditure made under the Development Plans as a percentage of GDP.

Notwithstanding the obvious fluctuations, there was a steady increase in the importance of these investments in the Portuguese economy, which had risen to 8% of GDP by 1971—the last year for which full data are available about these initiatives. Indeed, if we analyse the growth of Portuguese GDP and the components of national expenditure, we can see that Gross Fixed Capital Formation grew at an extraordinarily high rate during the Golden Age, as shown in Table 3.

The value of investment was only surpassed by that of imports, a fact that is also related to Portuguese industrialisation, since the investments that were made involved the acquisition of various goods from abroad, such as, for example, machinery and equipment.

**Figure 1. Expenditure in the metropolis under the scope of the development plans, 1953–1971 (percentage of GDP).**

Source: Ferraz (2020a, p. 50).



**Table 3. Portuguese GDP growth rates and its components (%), 1913–2018**

	1913–1950	1950–1973	1973–2018
<b>GDP</b>	<b>2.79</b>	<b>5.71</b>	<b>3.72</b>
Private consumption	2.68	4.73	3.71
Public consumption	3.45	6.97	5.38
Gross Fixed Capital Formation	5.94	8.90	1.74
Exports	3.01	5.71	6.84
Imports	3.70	9.06	5.68

Sources: Own calculations, using data from Batista et al. (1997), Pinheiro (coord. 2001), Valério (2008), AMECO (2021), and INE (2021).

Note: The growth rates were calculated from amounts expressed at 1914 prices.

On the other hand, as far as the productive sectors of the Portuguese economy were concerned, it was the very favourable performances of the industrial and service sectors during the Golden Age that most stood out, as can be seen in Figure 2.

On the other hand, this figure also enables us to note the existence of a structural change in the Portuguese economy: Portugal finally became an industrialised nation in the 1960s (see, Coppolaro & Lains, 2013; Lains, 1994, 2003a; Mata & Valério, 2003; Silva Lopes, 1996). According to Lains (2003b), the shift of labour from agriculture to industry and services was a source of growth, as the labour of productivity in agriculture was about half that of other sectors of the economy. The author also concludes that investment in human and physical capital were important instruments for rapid economic growth.

As for the second factor that enabled the extraordinary performance of the Portuguese economy in the Golden Age (integration in the world economy), it should be noted that Portugal signed a series of agreements and joined various institutions that were formed immediately after the Second World War. First of all, on 16 April 1948, Portugal became a founding member of the Organisation for European Economic Cooperation (OEEC), whose goals were precisely: 1) to promote cooperation between member states for the reconstruction of Europe; 2) to develop intra-European trade by lowering tariffs and other customs barriers in order to expand trade; 3) to study the feasibility of creating a Customs Union or a Free Trade Area; 4) to study the multilateralisation of a payment system; and 5) to create the conditions for a better use of labour (OECD, 2021a).<sup>4</sup> An important initiative of the OEEC was the creation, on 19 September 1950, of the European Payments Union (EPU), whose aim was not only to eliminate restrictions on commercial and foreign exchange transactions in Western Europe, but also to create a scheme for the convertibility of European currencies. Portugal's participation in both the OEEC/OECD and the EPU was extremely important, as it allowed for a progressive internationalisation of the Portuguese economy, increasing both imports and exports (Bordo and Santos, 1995; Pinto, 2011).<sup>5</sup>

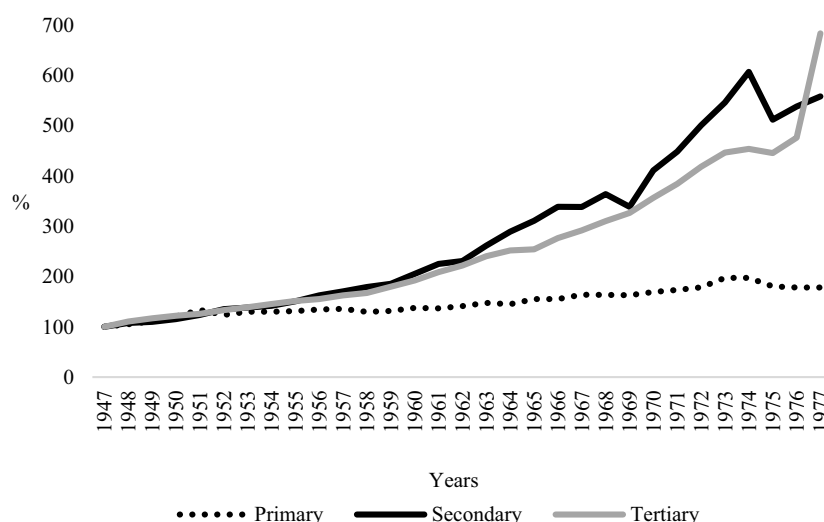
In the following year, on 4 April 1949, Portugal became a founding member of the North Atlantic Treaty Organisation (NATO). The motivation for joining this organisation arose from the threat of the Soviet Union and its advance into Europe (Teixeira, 1993). Some of the main advantages of Portugal joining NATO were: 1) the integration of Portugal into the Western Atlantic system; 2) the creation of a partial alternative to the English Alliance; 3) a political and strategic rapprochement with the United States; 4) the acquisition of techniques and methods that were typical of post-industrial societies; and 5) the modernisation of the national armed forces (Telo, 1999).

**Figure 2. Sectoral production of the Portuguese economy, 1947–1977 (1947 = 100).**

Source: Own calculations, using data from Neves (1994) and Valério (2008).

**Note 1:** The values were calculated from amounts expressed at 1914 prices.

**Note 2:** The primary sector includes activities such as agriculture and fisheries. The secondary sector includes the activities of industry, electricity and construction. The tertiary sector includes service





On 14 December 1955, Portugal was admitted as a member state of the UN, where it was confronted with various diplomatic problems due to the continued possession of its so-called overseas provinces.<sup>6</sup> Thus, from 1955 onwards, a battle began within the UN itself, with Portuguese interests being opposed to an anti-colonial current (Alexandre, 2017; A. Duarte, 1995). This battle intensified in the early 1960s—when the Portuguese Colonial War (1961–1974) broke out—and Portugal was consequently condemned in various resolutions made by that organisation (Ferraz, 2020b, 2022a).

Subsequently, on 4 January 1960, the Stockholm Convention established the European Free Trade Association (EFTA). Created by some of the members of the OEEC, among them Portugal, which followed Britain in joining the association, EFTA was not intended to function as a common market, but rather as a free trade area for industrial products (with certain exceptions). Portugal agreed a tariff dismantling schedule, with a notably slower timetable that was very advantageous for its economy, while its exports to EFTA countries increased after its accession to the association (Macedo, 1992).

Albeit somewhat belatedly, Portugal also adhered to the principles established at the Bretton Woods Conference (held in 1944 in New Hampshire in the United States of America). The agreements signed at this conference had not only established how the new international monetary system would function, thereby facilitating commercial exchanges, but had also set up a system to support the economies affected by the Second World War. This allowed Portugal to become a member of the International Monetary Fund (IMF) and the World Bank in 1961 (Bordo, 1993; Williamson, 1985).<sup>7</sup>

On 6 April 1962, Portugal signed the protocol of accession to GATT (General Agreement on Tariffs and Trade) in Geneva. The aim of this agreement was to promote the liberalisation of world trade through the abolition of tariffs and customs duties between the signatory countries. With GATT, Portugal was seeking to promote a greater openness in its international trade and the abolition of protectionism by progressively reducing its customs tariffs (Cunha, 1992). On 22 July 1972, a trade agreement was signed in Brussels between Portugal (then a member of EFTA) and the European Economic Community (EEC), together with another trade agreement signed between the member states of the European Coal and Steel Community (ECSC) and Portugal. These agreements specifically focused on industrial products, establishing progressive regimes for Portugal's lifting of its customs restrictions, although special privileges were, however, granted for a series of Portuguese products ("Ministério dos Negócios Estrangeiros," 2021).

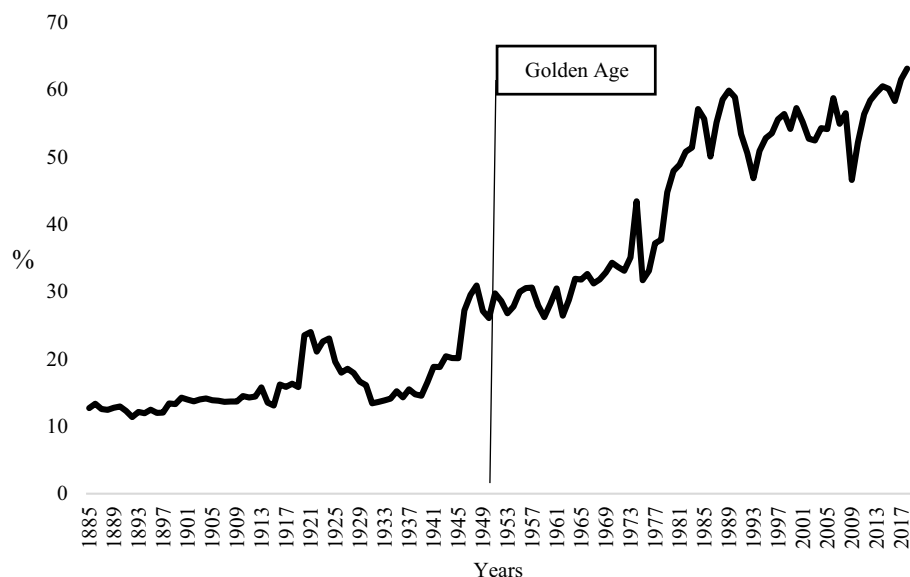
It was only on 12 June 1985 that Portugal signed the Treaty of Accession to the European Communities (EEC, ECSC and Euratom—the European Atomic Energy Community), which came into effect on 1 January 1986. Another more recent milestone in Portugal's European integration was its accession to the euro zone on 1 January 1999.

It is clear that Portugal actively participated in the construction of the new international order following the Second World War, thus contributing to the very significant opening up of its economy from the Golden Age onwards, as can be seen in Figure 3. It can be seen that the degree of openness of the Portuguese economy to the outside world increased significantly after the Second World War. While, in 1950, the value of this indicator was only 26%, by 1973 it was 35%, having continued to increase after the end of the Golden Age and reaching a maximum value of 63% in 2018, the last year in the series.<sup>8</sup>

In short, in a highly favourable international environment, Portugal successfully geared its economic policy towards stimulating economic activity, largely through investment, while, at the same time, adopting measures to internationalise its economy. Such measures resulted in a trajectory of economic convergence with the group of the world's most industrialised nations (G7), as can be seen in Figure 4. It was also after the Second World War that GDP per capita grew,

**Figure 3. Degree of Openness of the Portuguese Economy (as a percentage of GDP), 1885–2018.**

Sources: Own calculations, using data from Fontoura and Valério (2001), Valério (2008), AMECO (2021), and INE (2021).



in a sustainable fashion, above the G7 group average, especially from the 1960s onwards. While, in 1950, the Portuguese GDP *per capita* represented only 38% of the G7 value, this figure had risen to 55% by 1973, and 64% by 2018.

Portugal has been following a path of economic convergence with the group of the world's most industrialised nations since the 1950s. The structural transformation that Portugal underwent during the Golden Age—when it experienced a strong industrialisation process—and the internationalisation of its economy seem to have been important factors in triggering a sustainable trajectory of convergence

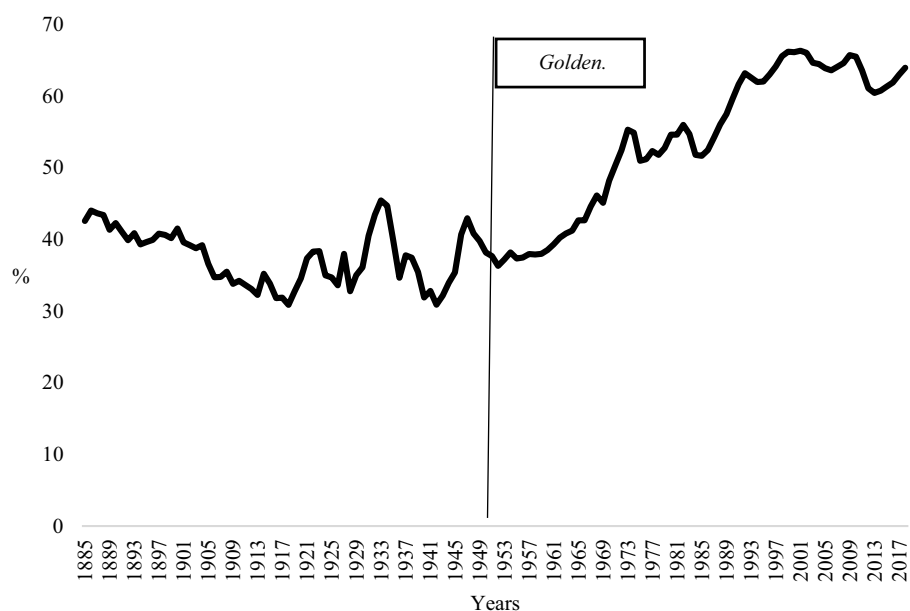
An important question therefore arises: is it possible to find evidence of a statistically significant relationship between the Portuguese GDP *per capita* growth and the variables of investment and the degree of openness of the Portuguese economy since the Golden Age?

**Figure 4. Portuguese GDP per capita as a percentage of the G7's average GDP per capita, 1885–2018.**

Sources: Own calculations, using data from the Maddison Project (2020).

**Note 1:** G7 = Canada, France, Germany, Italy, Japan, United Kingdom and United States

**Note 2:** The values were calculated from amounts expressed in 2011 USD.



## 4. Econometric research

### 4.1. Model

The determinants of economic growth have been extensively studied in recent years, making it possible to identify a wide range of works that have tested the impact of different variables on the GDP *per capita* of the most diverse economies in specific time horizons (see, for example, Awunyo-Vitor et al., 2018; Barro, 2013; Edwards, 1998; Harrison, 1996; Mariana, 2015; Mhlaba et al., 2019; OECD, 2003; Wolde et al., 2022; Yanikkaya, 2003; Yusuf et al., 2021).

Equation (1) thus presents a dynamic model constructed from previous works, such as those by Barro and Lee (1994), Huchet-Bourdon et al. (2018) and Ferraz (2022a,b) which contains our variables of interest:

$$GDPpc_t = c_0 + \sum_{i=1}^a \alpha_i GDPpc_{t-i} + \sum_{i=0}^w \Omega_i INVESTMENT_{t-i} + \sum_{i=0}^k \theta_i TRADE_{t-i} + \sum_{i=0}^q \beta_i HIGHER_{t-i} + \sum_{i=0}^b \lambda_i LIFE_{t-i} + \sum_{i=0}^x \Phi_i Labour_{t-i} + c_1 t + u_t \quad (1)$$

In this ARDL model, the variables are represented in terms of growth rates in order to guarantee its stationarity (a relevant property in time series). Consequently: 1) *GDPpc* is the real growth rate of Portuguese GDP *per capita*, which also appears with lag(s) as an explanatory variable, since its past values may be useful in evaluating the impact of initial conditions; 2) *INVESTMENT* is the real growth rate of Gross Fixed Capital Formation *per capita* that represents the total investment (public and private) made in the Portuguese economy; 3) *TRADE* is the real growth rate of trade openness *per capita*, which allows us to assess the impact of the integration of the Portuguese economy in the world economy; 4) *HIGHER* is the growth rate of the Portuguese population completing a higher education course, expressed as a percentage of the total population, which is also an important variable since it is expected that a population with a higher academic level will be more productive, thus making a better contribution to economic growth; 5) *LIFE* is the growth rate of life expectancy at birth in Portugal, which represents a health indicator, in that a healthier society tends to be more productive; 6) *LABOUR*<sup>9</sup> is the growth rate of active population, expressed as a percentage of the total population, which represents the workforce of the economy; 7) *t* is the time-trend, which enables us to capture specific effects. The parameters to be estimated are  $c_0$ ,  $c_1$ ,  $\alpha_i$ ,  $\Omega_i$ ,  $\beta_i$ ,  $\theta_i$  and  $\lambda_i$ , with  $u$  being the error term.

### 4.2. Data

Data on GDP *per capita*, exports, imports, total population and price index were taken from Valério (2008), AMECO (2021), and INE (2021). The number of students who had completed higher education were taken from Valério and Domingues (2001) and Pordata (2022). Data on Gross Fixed Capital Formation can be consulted in Pinheiro (Pinheiro & coord, 2001) and INE (2021). For life expectancy at birth, the statistics were taken from HDM [Human Mortality Database] (2017). The number of active population were taken from Nunes (2001), Pinheiro (Pinheiro & coord, 2001) and Pordata (2022).

### 4.3. Time horizon

The period starts in 1950 and ends in the year 2018, thus making it possible to assess whether the variables of interest have displayed any statistical significance in the regression from the beginning of the Golden Age until the present day.

### 4.4. Estimated results

The results of the estimations of equation (1) are documented in Table 4. Considering that all variables are stationary and, in a context in which the basic assumptions of OLS are not violated, it is possible to see that all regressors are jointly significant and that there is parameter stability. It is

also possible to confirm that the explanatory power of the model is moderate (the adjusted  $r$ -squared is 58%).

Table 4 shows that there are only a few regressors that are statistically significant. This is the case with *TRADE* and *INVESTMENT*, our variables of interest.

It can therefore be seen that, in the period 1950–2018, an increase of 1 percentage point (pp) in *Trade* in a certain year ( $t$ ) was associated, on average, with an increase of 0.08 pp in *GDPpc* in that year ( $t$ ). More importantly, it can also be seen that an increase of 1 pp in that same variable *Trade* in a certain previous year ( $t-1$ ) contributed, on average, to an increase of 0.01 pp in *GDPpc* in the following year ( $t$ ). These results match our expectations since, over the last few decades, Portugal has progressively opened its economy to the outside world, thereby stimulating the country's economic growth and consequently promoting its convergence with the group of the world's most industrialised economies.

The information documented in Table 4 shows that an increase of 1 pp in *INVESTMENT* in a certain year  $t$  was associated, on average, with an increase of 0.17 pp in *GDPpc* in that same year ( $t$ ). Furthermore, an increase of 1 pp in *INVESTMENT* in a previous year  $t-1$  caused an

**Table 4. Results of the estimations (OLS method with Robust Standard Errors)**

Explanatory variables	Coefficients k Estimation (2)
<i>Const</i>	1.73 (0.91)
<i>GDPpc</i> <sub><math>t-1</math></sub>	−0.07 (0.10)
<i>INVESTMENT</i> <sub><math>t</math></sub>	<b>0.17 (0.05) ***</b>
<i>INVESTMENT</i> <sub><math>t-1</math></sub>	<b>0.07 (0.04) **</b>
<i>TRADE</i> <sub><math>t</math></sub>	<b>0.08 (0.06) **</b>
<i>TRADE</i> <sub><math>t-1</math></sub>	<b>0.01 (0.04) *</b>
<i>HIGHER</i> <sub><math>t</math></sub>	0.01 (0.02)
<i>HIGHER</i> <sub><math>t-1</math></sub>	−0.02 (0.01)
<i>LIFE</i> <sub><math>t</math></sub>	<b>0.49 (0.24) **</b>
<i>LIFE</i> <sub><math>t-1</math></sub>	0.37 (0.37)
<i>LABOUR</i> <sub><math>t</math></sub>	0.45 (0.37)
<i>LABOUR</i> <sub><math>t-1</math></sub>	<b>0.54 (0.25) **</b>
$t$	0.00 (0.02)
Adjusted $R$ -squared	0.58
$P$ -Value ( $F$ )	0.00
$P$ -Value of LM test for autocorrelation	0.89
$P$ -Value of Durbin-Watson test for autocorrelation	0.33
$P$ -Value of White test for heteroskedasticity	0.66
Variation Inflation Factors (VIF)	Values $\leq 3.0$
$P$ -Value of CUSUM test for Parameter Stability	0.33
CUSUMSQ test for Parameter Stability	All values fall within the critical bands of the 5% confidence intervals.

Note 1: “\*”, “\*\*” and “\*\*\*” represent the statistical significance of the regressor at the 10%, 5% and 1% levels, respectively. Figures in parentheses are standard errors.

Note 2: The tests were performed using Gretl (2021).

Note 3: The appropriate ARDL lag order was chosen using the Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQC) and Schwarz-Bayesian Criterion (SIC/BIC).

Note 4: For the results of the stationary tests, see Table A1, A2 and A3 in the Appendix, which enables us to conclude that the variables are stationary.

average increase of 0.07 pp in GDPpc in the next year ( $t$ ). These results are also in line with our expectations, showing that investment is a crucial variable in increasing the productive capacity of an economy. In the Portuguese case, this variable grew significantly in the context of the industrialisation that structurally transformed the Portuguese economy in the 1960s.

Overall, it can be confirmed that, since the Golden Age, international trade and investment have been statistically significant variables in determining Portuguese economic growth. These results are in line with the findings of international literature which shows the importance of investment and trade (see, for example, Keho, 2017; Lawal et al., 2016; Malefane, 2014; Sadiq et al., 2021; Sothan, 2017).

## 5. Conclusion

The Golden Age (1950–1973) was the period in which the GDP *per capita* of the world economy grew the most. Of the world regions, East Asia and Western Europe were those that registered the most favourable performances, growing, respectively, at rates of 5.2% and 4.1% per year.

In a country-by-country analysis, Japan was, without doubt, the nation that stood out the most, having grown at 8% a year, following the destruction caused by the Second World War (1939–1945). According to the literature, the explanatory factors for the extraordinary behaviour of the Japanese economy are related to an adequate transition of resources from the military sector to other more reproductive sectors and also to the fact that the population of that country already had high levels of qualification, education and experience, which allowed for an efficient accumulation of physical capital.

Portugal, which assumed a neutral position in the Second World War and thus did not suffer any destruction to its territory was also a nation that performed better during the Golden Age, with its GDP *per capita* growing at 5.5% per year (far above the growth of the world economy itself). According to the literature, Portugal's success at this stage was, in turn, due to the greater orientation of the country's economic policy towards development—which translated into a high rate of investment that led to the strong Portuguese industrialisation process—as well as to the greater integration of the Portuguese economy into the world economy, which was reflected in a significant increase in its degree of openness to the outside world.

It can also be seen that, during the Golden Age, Portugal managed to initiate a trajectory of sustainable economic convergence with the group of the world's most industrialised nations (G7). Indeed, the Portuguese GDP *per capita*, which in 1950 represented only 38% of the average value of this group, had risen to 55% by 1973 (the year that marked the end of the Golden Age) and, by 2018, the value had reached the level of 64%.

From an applied perspective, using an ARDL econometric model, it was also possible to conclude that over the last few decades there has been a statistically significant relationship between GDP *per capita* and the variables of investment and the degree of openness of the Portuguese economy.

The main results show that increases of 1 percentage point in the real growth rate of trade openness *per capita* (TRADE) and in Gross Fixed Capital Formation *per capita* (INVESTMENT) in a certain previous year  $t-1$  resulted respectively in average increases of 0.01 pp and 0.08 pp in GDP *per capita* growth rate in the next year  $t$  during the period 1950–2018. These estimated results are in line with the international literature on the subject, which has stressed the importance of international trade and investment in determining the economic growth of a country.

The conclusion of this paper reinforces the importance of Portugal continuing to open its economy to the outside world, while also liberalising it and creating favourable conditions for investment, in order to obtain a faster economic growth that allows a robust convergence with the most industrialized nations. In future investigations, it would be interesting to use this same

econometric model to ascertain the importance of international trade and investment in other economies during the same period, which would enable us to establish some comparisons.

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#### Notes

1. Maddison's work has been updated since his death through the so-called Maddison Project. According to the Maddison Project (2014) "The Maddison Project, initiated in March 2010 by a group of close colleagues of Angus Maddison, aims to develop an effective way of cooperation between scholars to continue Maddison's work on measuring economic performance in the world economy".
2. It is important to note that Almodovar and Cardoso (1998) identified significant changes in the economic thought in Portugal, precisely from the 1950s onwards, and, more specifically, they noted the assimilation of Keynesian principles, as, for example, the need to promote employment through an increase in aggregate demand. The acceptance of these new ideas resulted in a compromise between the conservatism that still lingered from the 1930s and the adoption of the economic theories associated with Keynesianism after the Second World War.
3. These investments had a significant impact on Portuguese public finances (Ferraz, 2017).
4. At the end of that year, Portugal presented a long-term economic programme to the OEEC, in order to obtain North American aid under the scope of the Marshall Plan. Portugal needed to resort to this aid due to the deterioration of the economic situation (e.g., inflationary pressures, reduced exports of highly valued products during the war and poor agricultural harvests) as well as the need to import machinery and equipment for the industrialisation of its economy (Rollo, 1994).
5. In December 1960, Portugal signed the Convention of the Organisation for Economic Co-operation and Development (OECD), established on 30 September 1961, which replaced the OEEC.
6. At that time, the Portuguese nation consisted of the "metropolis" and the "overseas provinces", a reality that remained in place until 1974. The "metropolis" was the Portuguese mainland, together with the islands of Madeira and the Azores. "Overseas" and the "overseas provinces" were terms that were adopted after the Second World War to replace the words "colonial empire" and "colonies", respectively. The overseas provinces were Cape Verde, Portuguese

Guinea, São Tomé and Príncipe, Angola, Mozambique, Macao, Timor and the Portuguese State of India (the latter only until 1961). At that time, Portugal was also governed by a dictatorship known as the *Estado Novo* (1933–1974).

7. On 1 June 1962, parity with the dollar was officially defined, with a value corresponding to 28.75 escudos being declared (A. P. Duarte, 2015).
8. According to the OECD (2021b), trade openness benefits all levels of development and has "contributed to lifting hundreds of millions of people out of poverty" by delivering unprecedented access to goods and services.
9. I thank an anonymous reviewer for their comment that led me to include this important variable.

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#### References

- Alexandre, V. (2017). *Contra o Vento – Portugal, o Império e a Maré Anticolonial 1945–1960*. Círculo de Leitores.
- Almodovar, A., & Cardoso, J. (1998). *A history of Portuguese Economic Thought*. Routledge.
- Alvarez-Cuadrado, F., & Pintea, M. (2008). A quantitative exploration of the golden age of European growth. *Journal of Economic Dynamics & Control*, 33(7), 1437–1450. <https://doi.org/10.1016/j.jedc.2009.02.004>
- AMECO. (2021). *Macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs*. Accessed 1 October 2021: [https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/macro-economic-database-ameco/ameco-database\\_en](https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/macro-economic-database-ameco/ameco-database_en)
- Awunyo-Vitor, D., Samanhyia, S., Bonney, E. (2018). Do oil prices influence economic growth in Ghana? An empirical analysis. *Cogent Economics & Finance*, 6(1), 1496551. <https://doi.org/10.1080/23322039.2018.1496551>
- Barro, R. (2013). Inflation and economic growth. *Annals of Economics and Finance*, 14(1), 85–109. <http://aeconf.com/Articles/May2013/ae140105.pdf>
- Barro, R., & Lee, J. (1994). Sources of economic growth. *Carnegie-Rochester Conference Series on Public Policy* 40, 1–46. [https://doi.org/10.1016/0167-2231\(94\)90002-7](https://doi.org/10.1016/0167-2231(94)90002-7)
- Batista, D., Martins, C., Pinheiro, M., & Reis, J. (1997). *New estimates of Portugal's GDP: 1910–1958*. Lisboa.
- Bordo, M. (1993). The gold standard, bretton woods and other monetary regimes: a historical appraisal. *NBER Working Papers* 4310. National Bureau of Economic Research (NBER). [https://files.stlouisfed.org/files/htdocs/publications/review/93/03/Gold\\_Mar\\_Apr1993.pdf](https://files.stlouisfed.org/files/htdocs/publications/review/93/03/Gold_Mar_Apr1993.pdf)
- Bordo, M., & Eichengreen, B. (2007). *A retrospective on the bretton woods system: lessons for international monetary reform*. The University Chicago Press.
- Bordo, M., & Santos, F. (1995). Portugal and the bretton woods international monetary system. In J. Reis (Ed.), *International Monetary systems in historical perspective* (pp. 181–208). Macmillan Press.
- Coppolaro, L., & Lains, P. (2013). Portugal and European Integration, 1947–1992: An essay on protected openness in the European Periphery. *e-journal of Portuguese History*, 11(1), 61–81. [https://digitalis-dsp.uc.pt/bitstream/10316.2/30719/1/EJPH11-1\\_artigo3.pdf](https://digitalis-dsp.uc.pt/bitstream/10316.2/30719/1/EJPH11-1_artigo3.pdf)



- Cunha, L. (1992). A Adesão de Portugal às Comunidades Europeias e as Relações Comerciais com os Países Terceiros. *Gestão e Desenvolvimento*, 1(1), 87–115. <https://doi.org/10.7559/gestaoedesenvolvimento.1992.167>
- Dickey, D., & Fuller, W. (1979). Distribution of the estimators for time series regressions with a unit root. *Journal of the American Statistical Association*, 74(366), 427–431. <https://doi.org/10.2307/1913237>
- Duarte, A. (1995). “O litígio entre Portugal e a ONU (1960–1975). *Análise Social*, 30(130), 5–50. <https://www.jstor.org/stable/41011078>
- Duarte, A. P. (2015). *O Sistema Monetário Internacional – Uma Perspetiva Histórico-Económica*. Actual Editora.
- Edwards, S. (1998). Openness, productivity and growth: what do we really know. *The Economic Journal*, 108(447), 383–398. <https://doi.org/10.1111/1468-0297.00293>
- Eichengreen, B. (1994). Institutional prerequisites for economic growth: Europe after world war II. *European Economic Review*, 38(3–4), 883–890. [https://doi.org/10.1016/0014-2921\(94\)90124-4](https://doi.org/10.1016/0014-2921(94)90124-4)
- Elliott, G., Rothenberg, T., & Stock, J. (1996). Efficient tests for an autoregressive unit root. *Econometrica*, 64(4), 813–836. <https://doi.org/10.2307/2171846>
- Eloranta, J., Hedberg, P., Moreira, M., & Golson, E. (2019). Introduction. In J. Eloranta, E. Golson, P. Hedberg, & M. Moreira (Eds.), *Small and medium powers in global history: trade, conflicts, and neutrality from the 18th to the 20th centuries* (pp. 1–26). Routledge.
- European Commission. (2009). Economic Crisis in Europe: causes, consequences and responses. *European Economy*, 7. <https://doi.org/10.2765/84540>
- Eviews. (2021). EViews Version 11 for Econometric Analysis. Accessed 19 October 2021: [www.eviews.com](http://www.eviews.com)
- Ferraz, R. (2017). The Sustainability of Portuguese Fiscal Policy in the Period of the Estado Novo, 1933–1974. *The Journal of European Economic History*, 46(1), 37–68. <https://www.jeeh.it/articolo?urn=urn:abi:abi:RIV.JOU:2017;1.37>
- Ferraz, R. (2020a). The Portuguese development plans in the postwar period: how much was spent and where? *Investigaciones de Historia Económica – Economic History Research*, 16(1), 45–55. <https://doi.org/10.33231/jihe.2019.09.001>
- Ferraz, R. (2020b). *Grande Guerra e Guerra Colonial: Custos para os Cofres Portugueses*. Lisboa.
- Ferraz, R. (2022a). The Financial costs of the Portuguese Colonial War, 1961–1974: Analysis and Applied Study. *Journal of Iberian and Latin American Economic History*, 40(2), 243–272. <https://doi.org/10.1017/S0212610921000148>
- Ferraz, R. (2022b). The Portuguese military expenditure from a historical perspective. *Defence and Peace Economics*, 33(3), 347–365. <https://doi.org/10.1080/10242694.2020.1818424>
- Ferraz, R. (Forthcoming). The Portuguese budgetary costs with First World War: A comparative perspective. *European Review of Economic History*.
- Fontoura, M., & Valério, N. (2001). Relações Económicas Externas. In N. Valério (Ed.), *Estatísticas Históricas Portuguesas* (pp. 657–712). INE.
- Galbraith, J. (2009). *Crash 1929*. Lisboa.
- Gilbert, M. (2004). *The second world war: a complete history*. H. Holt.
- Gilbert, M. (2007). *The first world war: a complete history*. OWL Books.
- Gretl. (2021). *Gnu regression, econometrics and time-series library*. Accessed 10 October 2021: <http://gretl.sourceforge.net/>
- Harrison, A. (1996). Openness and growth: A time-series, cross-country analysis for developing countries. *Journal of Development Economics*, 48(2), 419–447. [https://doi.org/10.1016/0304-3878\(95\)00042-9](https://doi.org/10.1016/0304-3878(95)00042-9)
- HDM [Human Mortality Database]. (2017). *Life expectancy at birth*. Accessed 8 March 2019: <http://www.mortality.org/>
- Huchet-Bourdon, M., Mouel, C., & Vijil, M. (2018). The relationship between trade openness and economic growth: some new insights on the openness measurement issue. *The World Economy*, 41(1), 59–76. <https://doi.org/10.1111/twec.12586>
- INE. (2021). *Contas Nacionais*. Accessed 1 October 2021: <https://www.ine.pt/>
- Keho, Y. (2017). The impact of trade openness on economic growth. The case of Cote d'Ivoire. *Cogent Economics & Finance*, 8(1). <https://doi.org/10.1080/23322039.2017.1332820>
- Kwiatkowski, D., Phillips, P., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root. *Journal of Econometrics*, 54(1–3), 159–178. [https://doi.org/10.1016/0304-4076\(92\)90104-Y](https://doi.org/10.1016/0304-4076(92)90104-Y)
- Lains, P. (1994). O Estado e a Industrialização em Portugal, 1945–1990. *Análise Social*, 29(128), 923–958. <http://analisesocial.ics.ul.pt/documentos/1223378018L3yZD2mf6Tb49RB6.pdf>
- Lains, P. (2003a). *Os Progressos do Atrás – Uma Nova História Económica de Portugal*. Lisboa.
- Lains, P. (2003b). Catching up to the European core: Portuguese economic growth, 1910–1990. *Explorations in Economic History*, 40(4), 369–386. [https://doi.org/10.1016/S0014-4983\(03\)00042-1](https://doi.org/10.1016/S0014-4983(03)00042-1)
- Lawal, A., Nwanji, T. I., Asaleye, A., & Ahmed, V. (2016). Economic growth, financial development and trade openness in Nigeria: An application of the ARDL bound testing approach. *Cogent Economics & Finance*, 4(1), 1258810. <https://doi.org/10.1080/23322039.2016.1258810>
- Llewellyn, J. (1983). Resource prices and macroeconomic policies: lessons from two oil price shocks. *Economic Studies*, 1, 197–212. <https://www.oecd.org/economy/outlook/35552323.pdf>
- Macedo, J. (1992). Convergência na economia europeia: O contributo português. *Análise Social*, 27(118–119), 623–654. <http://analisesocial.ics.ul.pt/documentos/1223054569H1eEZ2lh9Uf93ST5.pdf>
- Maddison, A. (1977). Phases of capitalist development. *Banca Nazionale Del Lavoro Quarterly Review*, 28, 103–137. <https://doi.org/10.13133/2037-3643/11372>
- Maddison, A. (1995). *Monitoring the world economy*. OECD.
- Maddison, A. (2001). *The world economy – a millennial perspective*. Paris.
- Maddison, A. (2003). *The world economy – historical statistics*. OECD.
- Malefane, M. . (2020). Trade openness and economic growth in Botswana: Evidence from cointegration and error-correction modelling. *Cogent Economics & Finance*, 8(1), 1783878. <https://doi.org/10.1080/23322039.2020.1783878>
- Mariana, D. (2015). Education as a determinant of the economic growth. The case of Romania. *Procedia – Social and Behavioral Sciences*, 197, 404–412. <https://doi.org/10.1016/j.sbspro.2015.07.156>
- Mata, E., & Valério, N. (2003). *História Económica de Portugal – Uma Perspectiva Global*. Editorial Presença.
- Mateus, A. (2013). *Economia Portuguesa: Evolução no Contexto Internacional (1910–2013)*. Cascais.
- Mhlaba, N., Phiri, A. . (2019). Is public debt harmful towards economic growth? New evidence from South Africa. *Cogent Economics & Finance*, 7(1), 1603653. <https://doi.org/10.1080/23322039.2019.1603653>

- Neves, J. (1994). O crescimento económico português no pós-guerra: Um quadro global. *Análise Social*, 29 (128), 1005–1034. <http://analisesocial.ics.ul.pt/documentos/1223378178X8sYF6cn2Bl69AP4.pdf>
- Nunes, A. (2001). Actividade Económica da População. In N. Valério (Ed.), *Estatísticas Históricas Portuguesas* (pp. 149–195). INE.
- OECD. (2003). *The Sources of Economic Growth in OECD Countries*. Paris.
- OECD. (2021a). “Organisation for European Economic Co-operation”. 30 July: <https://www.oecd.org/general/organisationforeuropeaneconomicco-operation.htm>
- OECD. (2021b). “Why open markets matter”. 6 November: <https://www.oecd.org/trade/understanding-the-global-trading-system/why-open-markets-matter/>
- Perron, P. (1989). The great crash, the oil price shock, and the unit root hypothesis. *Econometrica*, 57(6), 1361–1401. <https://doi.org/10.2307/1913712>
- Pinheiro, M. coord. (2001). *Séries Longas para a Economia Portuguesa pós II Guerra Mundial*. Banco de Portugal. Accessed 5 July 2021: <https://www.bportugal.pt/publicacao/series-longas-para-economia-portuguesa-pos-ii-guerra-mundi>
- Pinto, F. (2011). *A Integração de Portugal nas Comunidades Europeias* [Master’s thesis, Faculdade de Letras da Universidade de Coimbra]. <https://estu.dogeral.sib.uc.pt/handle/10316/19158>
- Pordata. (2022). *Base De Dados Portugal Contemporâneo*. Accessed 07 September 2022: <https://www.pordata.pt/Ministerio-dos-Negocios-Estrangeiros> [Portuguese Ministry of Foreign Affairs]. (2021). *Portal Diplomático*. Accessed 20 May 2021: <https://www.portaldiplomatico.mne.gov.pt/>
- Project, M. (2014). *Maddison project board*. Maddison Project (university of groningen). Accessed 28 September 2021: <https://core.ac.uk/display/79272974>
- Project, M. (2020). *Maddison project database, version 2020 – Bolt. J. & Van Zanden J.* Maddison Project (university of groningen). Accessed 30 September 2021: <https://www.rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020>
- Ransom, R. (2018). *Gambling on war: confidence, fear, and the tragedy of the first world war*. Cambridge University Press.
- Rollo, M. (1994). *Portugal e o Plano Marshall: Da rejeição à solicitação de ajuda financeira norte-americana (1947-1952)*. Lisboa.
- Sadiq, M., Usman, M., Zamir, A., Shabbir, M. S., & Arif, A. (2021). Nexus between economic growth and foreign private investment: Evidence from Pakistan economy. *Cogent Economics & Finance*, 9(1). <https://doi.org/10.1080/23322039.2021.1956067>
- Schwert, G. (1989). Tests for unit roots: a monte carlo investigation. *Journal of Business and Economic Statistics*, 7(2), 147–159. <https://doi.org/10.2307/1391432>
- Silva Lopes, J. (1996). *A Economia Portuguesa desde 1960*. Lisboa.
- Sothan, S. . (2017). Causality between foreign direct investment and economic growth for Cambodia. *Cogent Economics & Finance*, 5(1), 1277860. <https://doi.org/10.1080/23322039.2016.1277860>
- Teixeira, N. (1993). Da neutralidade ao alinhamento: Portugal na fundação do pacto atlântico. *Análise Social*, 28(120), 55–80. [https://research.unl.pt/ws/portalfiles/portal/4268777/NST\\_Neutralidade\\_Alinhamento\\_PactoAtlantico\\_1993.pdf](https://research.unl.pt/ws/portalfiles/portal/4268777/NST_Neutralidade_Alinhamento_PactoAtlantico_1993.pdf)
- Telo, A. (1999). Portugal e a Nato (1949–1976). *Nação e Defesa*, 89, 43–84. <https://comum.rcaap.pt/handle/10400.26/1515>
- Temin, P. (1997). The golden age of European Growth: A Review Essay. *European Review of Economic History*, 1(1), 127–149. <https://doi.org/10.1017/S1361491697000063>
- Temin, P. (2002). The golden age of European Growth Reconsidered. *European Review of Economic History*, 6(1), 3–22. <https://doi.org/10.1017/S1361491602000011>
- Valério, N. (2008). Avaliação do Produto Interno Bruto de Portugal. *GHE-ISEG, Working papers* 34. Gabinete de História Económica e Social (Lisbon School of Economics & Management). <https://www.repository.utl.pt/handle/10400.5/812>
- Valério, N., & Domingues, A. (2001). Educação e Investigação. In N. Valério (Ed.), *Estatísticas Históricas Portuguesas* (pp. 463–468). INE.
- Williamson, J. (1985). On the system in bretton woods. *The American Economic Review*, 75(2), 74–79. <https://www.jstor.org/stable/1805574>
- Wolde, M., Sera, L., Merra, T. . (2022). Causal relationship between income inequality and economic growth in Ethiopia. *Cogent Economics & Finance*, 10(1). <https://doi.org/10.1080/23322039.2021.1956067>
- Yanikkaya, H. (2003). Trade openness and economic growth: a Cross-Country empirical investigation. *Journal of Development Economics*, 72(1), 57–89. [https://doi.org/10.1016/S0304-3878\(03\)00068-3](https://doi.org/10.1016/S0304-3878(03)00068-3)
- Yusuf, A., Mohd, S. . (2021). The impact of government debt on economic growth in Nigeria. *Cogent Economics & Finance*, 9(1). <https://doi.org/10.1080/23322039.2021.1946249>



## Annex (Unit Root and Stationary Tests)

**Table A1. ADF tests**

Test with constant and without trend			
Variable	Lags	Test statistic	Conclusion
$GDPp_{Ct}$	3	-4.80 ***	I (0)
$INVESTMENT_t$	0	-6.14 ***	
$TRADE_t$	0	-7.41 ***	
$HIGHER_t$	1	-4.93 ***	
$LIFE_t$	0	-13.39 ***	
$LABOUR_t$	1	-5.23 ***	

Note 1: ADF (Dickey & Fuller, 1979) tests were performed using Gretl (2021).

Note 2: In the ADF tests, \*, \*\* and \*\*\* denote the rejection of the null hypothesis ( $h_0$ ) of a unit root at the 10%, 5% and 1% levels. The maximum number of lags was chosen using the rule provided by Schwert (1989). The actual lag was obtained by testing down in order to optimise the Schwarz/Bayesian information criterion (SIC/BIC).

**Table A2. ADF-GLS tests**

Test with constant and without trend			
Variable	Lags	Test statistic	Conclusion
$GDPp_{Ct}$	0	-4.21 ***	I (0)
$INVESTMENT_t$	1	-4.48 ***	
$TRADE_t$	0	-4.80 ***	
$HIGHER_t$	3	-2.60 **	
$LIFE_t$	1	-2.30 **	
$LABOUR_t$	0	-4.90 ***	

Note 1: ADF-GLS (Elliot et al., 1996) tests were performed using Gretl (2021).

Note 2: In the ADF-GLS tests, \*, \*\* and \*\*\* denote the rejection of the null hypothesis ( $h_0$ ) of a unit root at the 10%, 5% and 1% levels. The maximum number of lags was chosen using the rule provided by Schwert (1989). The actual lag was obtained by testing down in order to optimise the Schwarz/Bayesian information criterion (SIC/BIC).

**Table A3. KPSS tests**

Test with constant and without trend			
Variable	Lags	Test statistic	Conclusion
$GDPp_{Ct}$	3	0.38 *	I (0)
$INVESTMENT_t$	3	0.58 **	
$TRADE_t$	3	0.23	
$HIGHER_t$	3	0.13	
$LIFE_t$	3	0.54 **	
$LABOUR_t$	3	0.07	

Note 1: KPSS tests (Kwiatkowski et al., 1992) were performed using Gretl (2021).

Note 2: In the KPSS test, \*, \*\* and \*\*\* denote the rejection of the null hypothesis ( $h_0$ ) of stationarity at the 10%, 5% and 1% levels. The optimal lag was obtained using the Newey-West automatic bandwidth selection.

**Table A4. Unit root tests with a break point**

<b>“Innovational Outlier Tests”</b>				
Test with constant and without trend				
<b>Variable</b>	<b>Break date</b>	<b>Lags</b>	<b>Test Statistic</b>	<b>Conclusion</b>
<i>GDPpc<sub>t</sub></i>	1975	0	−6.40 ***	I (0)
<i>INVESTMENT<sub>t</sub></i>	1975	0	−7.06 ***	
<i>TRADE<sub>t</sub></i>	1974	0	−9.22 ***	
<i>HIGHER<sub>t</sub></i>	2003	0	−12.40 ***	
<i>LIFE<sub>t</sub></i>	1956	0	−16.64 ***	
<i>LABOUR<sub>t</sub></i>	1975	0	−6.42 ***	

Note 1: Unit root tests with a breakpoint (Eviews, 2021, following Perron, 1989) were performed using Eviews (2021).

Note 2: In the unit root tests with a breakpoint, \*, \*\* and \*\*\* denote the rejection of the null hypothesis ( $h_0$ ) of a unit root with a possible break at the 10%, 5% and 1% levels. The maximum number of lags was chosen using the rule provided by Schwert (1989). The actual lag was obtained by testing down in order to optimise the Schwarz/Bayesian information criterion (SIC/BIC).



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