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# The Role of Export Credit Agencies on Exports:

# An empirical analysis for Portugal

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Master in Economics

Supervisor:

PhD Sofia de Sousa Vale, Assistant Professor

ISCTE-IUL

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Department of Economics

Department of Political Economy

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*To my beloved mother Elisa, one day we will be together again.*

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*"Pain is temporary but quitting lasts forever."* – Lance Armstrong, 2009

# Resumo

O presente estudo aborda o contributo das garantias de crédito à exportação para o total das exportações portuguesas. A literatura existente mostra que este tipo de apoio dos estados impacta positivamente a economia, sobretudo as exportações e, para o caso de Portugal, ainda não havia sido conduzido nenhum estudo similar. O objetivo desta investigação foi avaliar se as garantias de crédito dadas pelo Estado português também têm efeito sobre o total das exportações. Para tal, foi utilizada uma amostra de 37 países, no período compreendido entre 2011 e 2015. Após a análise, concluiu-se quanto mais elevado o valor das garantias de crédito à exportação e do PIB dos países importadores, maior é o total das exportações portuguesas, e ainda que o aumento de um ponto percentual das garantias, mantendo todas as outras variáveis contantes, impulsiona as exportações em 9,96 ponto percentuais. Verificou-se, assim, que as Agencias de Crédito à Exportação e as garantias concedidas às empresas têm um papel importante no total das exportações em Portugal.

**Palavras-Chave:** Garantias Crédito Exportação, Agências, apólices de seguro

**Classificação JEL:** 93

# Abstract

This study addresses the contribution of export credit guarantees to total Portuguese exports. The existing literature shows that this type of state support has a positive impact on the economy, especially exports and, in the case of Portugal, no similar study had yet been conducted. The aim of this investigation was to assess whether the credit guarantees given by the Portuguese State also influence total exports. For this purpose, a sample of 37 countries was used, in the period between 2011 and 2015. After the analysis, it was concluded that the higher the value of export credit guarantees and the GDP of importing countries, the greater the total exports and even though the increase of one percentage point in guarantees, keeping all other variables constant, boosts exports by 9.96 percentage points. Therefore, that the Export Credit Agencies and the guarantees provided to companies play an important role in total exports in Portugal.

**Key-Words:** Export Credit Guarantees, Agencies, insurance policies

**JEL Classification System:** 93

# Index

## Tables Index



## Figures Index

# 1. Introduction

It is well known that international trade contributes to the sustainable development of the global economy. In an export transaction, a seller often offers the buyer credit for the sale of goods and services to finance such transactions. But when companies participate in international trade, they are likely to face greater risks than in domestic markets.

Export credit insurance policies cover political risks (risk of a transaction not being paid due to measures emanating from the government or authority of the buyer's own country) and commercial risks (risk of a transaction not being paid due to measures emanating from the government or authority of the buyer's own country).

However, the private export credit insurance sector is often unwilling to provide coverage for emerging markets and therefore the governments of exporting countries provide support through Export Credit Agencies (ECAs), assuming the risk of default of underdeveloped import markets by offering Export Credit Guarantees (ECG).

Many studies have been carried out on the role and impact of Export Credit Agencies on countries' exports, but so far nothing similar has been done in the case of Portugal, as it also has an ECA - COSEC - operating under its supervision State and support Portuguese companies export to riskier markets, providing them with a guarantee (in the form of an insurance policy) that in case of non-payment there will be compensation.

Thus, this dissertation aims to empirically analyse its effect on the performance of Portuguese exports, namely during the austerity years, when the International Monetary Fund (IMF) intervened and had a financial rescue program.

## 2. Literature Review

It is generally known that international trade contributes for the sustainable development of the global economy. In an export transaction, frequently a seller offers the buyer credit for the sale of goods and services to finance such transactions. But when companies engage in cross border trade, they are likely to face higher risks than in domestic markets.

These risks can be political and commercial risks and the level of risk is also different in different markets (Hilmarsson and Dinh, 2014). While commercial risk is related to the buyer's ability to pay for what has been purchased (Grath, 2008), the political risk is often defined as being the risk of a transaction not being paid due to measures emanating from the government or authority of the buyer's own country. Thus, export credit insurance protects exporting companies, or the financiers of trade, against the risk of non-payment by a foreign buyer due to insolvency or political measures of its government (Berne Union). Jones (2010) called trade credit insurance "a second pair of objective eyes when approving buyers, as well as an early warning system should things begin to decline so that existing exposure can be effectively managed".

However, since the private sector of credit insurance is not often willing to provide coverage for emerging markets, which are not usually considered creditworthy (Gianturco, 2001), exporting countries' governments provide support through Export Credit Agencies (ECAs) by assuming the risk of default of importing underdeveloped markets when offering Export Credit Guarantees (ECG).

According to Fitzgerald and Monson (1989) some rationales for export credit insurance are: domestic distortions, capital market failures, risk uncertainty and incomplete insurance markets; moral hazard and adverse selection, as well as industrial policies, export externalities, employment and balance of payments and matching other countries programs.

Although they have been around since the 20's, it is not surprising if one has never heard of ECAs before, and it is because they are supposed to intervene to fil the gap left by private credit insurance for exports in respect to risky markets transactions coverage, i.e., ECAs are oriented to higher value added goods/services or higher requiring amortization periods, as well as higher risk coverage, not available in the private export insurance companies (Catermol, 2008).

In 2018, the highly specialized institutions ECAs covered globally close to USD 2,7 trillion of exports (The Berne Union Industry Report 2018 YE); about 13,7% of the volume of exportations worldwide in the same year (STATISTA), and more 7% than in 2017. No wonder Gianturco (2001) described them as being the unsung giants of international and finance, arguing that no country managed to successfully export in the second half of the twentieth century without establishing an export credit agency and thus, serious analysts have been recently taking note of their enormous contribution to economic growth and development.

Also for Catermol (2008) export credit agencies play an important role for economic development, which might change over time; nonetheless it is effective and focused on the main objective of generating employment, income and foreign exchange for their countries. In fact, during the 2008-09 international trade collapse, the reduction in private insurance exposure explained about 5% to 9% of the drop in world export (Nederlandsche, Nv and Van Der Veer, 2010), while a World Bank survey of 402 firms and 75 banks and other financial institutions in 14 developing countries indicated that most governments used ECAs in order to mitigate the impact of the 2008 financial crisis, by creating more liquidity in the financial system and so alleviating pressure on domestic banks along with securing trade credit lines to trading firms (Malouche, 2009).

According to Heiland and Yalcin (2015), ECG can even attenuate financial constraints, as the State is more efficient dealing with risk than banks or other private financial institutions. Heiland and Yalcin (2015) also gathered three reasons on how the government can offer guarantees for risky projects at an equal or lower price premia than private capital markets without incurring losses in the long run: First, if there are costs in diversifying risk for private agents, then the government's "deep pocket" will have a cost advantage in financing or insuring projects with large amounts at risk. Second, in case of payment default, then the government will also have a cost advantage when it comes to asserting claims. And third, Heiland and Yalcin (2015) argue that the government has greater bargaining power in relation to the debts of foreign entities, which generally involve other foreign governments.

Herger and Lobsiger (2010) found that, between 2006 and 2008, export guarantees in Switzerland have led to an overall increase of exports in the manufacturing sector of around 1 per cent, where the main import countries were Russia, Iran, Turkey, Mexico or Indonesia.

For Wright (2011), ECG provided by ECAs facilitate international energy cooperation, so that this instrument have helped expand trade in energy-related goods and services and boosted the supply of energy in developing countries.

Regarding evaluation on ECAs' performance for policymakers, Young In (2014) found that from 1972 and 2010, the establishment of ECAs tend to increase exports by 4,69 percentage points and his results also indicate that domestic financial markets are encouraged by ECAs' credit guarantee supports. Due to ECAs' risk bearing capacity Young In (2014) analysis also suggests export credits may boost some export industries in the short-run, however such contribution becomes less noticeable in the long run.

Also, in 2007, aggregate German exports were higher than without ECG coverage by about 0,39 to 0,45 percent. In the referred scenario, a causal effect on employment of about 62,000 to 72,000 jobs for 2007 (Felbermayr, Heiland and Yalcin, 2014).

Using an input-output approach, Van Den et al., (2017) prove that the Dutch real GDP benefited from ECG in a range from 0,12 to 0,39 per cent, annually, in the period 2010 - 2014. The authors' results also showed that the employment induced by government backed exports largely aligns with the value added, with a contribution of 0,27 percent, accumulating to a total of 95,000 jobs in 5 years.

In Portugal, COSEC, a semi-private company for international trade insurance, and a member of the Berne Union, handles state guarantees since 1969, as an Export Credit Agency, providing support to the export and internationalization of Portuguese companies, in face of the failure or insufficiency of the private market, through the provision of insurance with the State Guarantee.

To this date, no study has been carried out to assess the extent to which Export Credit Guarantees contribute to the Portuguese economy. And so, this dissertation aims to empirically analyse its effect on Portugal's exports performance, especially during the austerity years, in which it was intervened by the International Monetary Fund (IMF) and had a financial rescue program.

# 3. Empirical Approach

## 3.1. Data

The data used consist of n = 37 countries (Algeria, Angola, Argentina, Azerbaijan, Belarus, Brazil, Cape Verde, China, Costa Rica, East Timor, Ecuador, Egypt, Georgia, Ghana, Hong Kong, India, Jordan, Kenya , Lebanon, Macau, Mexico, Morocco, Mozambique, Peru, Qatar, Russia, São Tomé and Príncipe, Saudi Arabia, Senegal, Serbia, South Africa, Tunisia, Turkey, Ukraine, UAE, Venezuela, Vietnam) throughout T = 5 years, from 2011 to 2015, providing a total of N = 185 observations. There are no missings, so the panel[1] is balanced, since each cross-section has the same number of temporal observations.

We opted for countries which had stored data value for each variable to be observed, and the years from 2011 to 2015 cover the period in which Portugal suffered most from austerity (although Portugal left the rescue program on May 2014).

The data provided by COSEC concerns the short-term policies, which guarantee the value of exportations up to a maximum of twelve months.

**Variables:**

Dependant Variable: Total value of Portuguese Exports (€)

Independent Variables:

- Export Credit Guarantees – value of issued Portuguese export risk guarantees
- Real GDP (USD) – assuming larger economies attract more trade
- Trade Barriers – trade costs (for instance, tariffs) are expected to reduce exports
- Distance – proximity between Lisbon and a foreign capital city increases trade
- Coastline – whether a foreign country is located by the coastline or in the interior
- Links – might facilitate the establishment and increase the probability of success in trade relationships

| Variable | Abbreviation | Description | Source |
|---|---|---|---|
| Total PT EXP (€) | EXP | Total value of Portuguese exports. | INE |

[1] the term “panel” is used for data that have a cross-sectional and temporal dimension, i.e., data with the same cross-section units over time.

| | | | |
|---|---|---|---|
| Export Credit Guarantees | ECG | Value of Portuguese export risk guarantees backed by the State. | Courtesy of COSEC |
| Real GDP (USD) | GDP | Gross domestic product of the importing country. | WorldBank.org |
| Trade Barriers | TB | Government restrictions of the importing country, such as tariffs and taxes. | Index of Economic Freedom |
| Distance | Dist | Proximity between Lisbon and the capital of an importing country. | DistanceFromTo.net |
| Coastline | CoastL | Delimitation, or lack thereof, in km of the sea coast of the importing country. | CIA World FactBook |
| Links | links | Distinguish whether there are colonial links and/or common language with Portugal. | CIA World FactBook |

## 3.2. Methodology

All calculations were performed in the R program, using packages such as stats (base package of R) (R Core Team, 2017), fBasics (descriptive analysis) (Wuertz et al., 2017), nortest (verification of normality of residuals) (Gross & Ligges, 2015), plm (panel data model) (Croissant & Millo, 2008), car (variance inflation factor) (Fox & Weisberg, 2011), lmtest (Breusch-Pagan test to verify homogeneity) (Zeileis & Hothorn, 2002) e gplots (heterogeneity graphs) (Warnes et al., 2016).

The level of statistical significance adopted was 5% ($\alpha$=0.05).

The analysis of the data focused on Mean (ξ), standard-deviation (*s*), minimum (Min) and maximum (Max) values. Regarding the variable Links, the calculation was performed in absolute (*n*) and relative (%) frequency, in a nominal dichotomous scale.

The study of the correlation between variables was performed using the Pearson correlation coefficient. The interpretation of the magnitude of the correlation was performed using the Pestana & Gageiro (2014, p.347) correlation interval, for whom regardless of the sign (+ or –), if:

$r \leq 0{,}19$ ⇒ Very Weak correlation

$0{,}20 \leq r \leq 0{,}39$ ⇒ Weak Correlation

$0{,}40 \leq r \leq 0{,}69$ ⇒ Moderate Correlation

$0{,}70 \leq r \leq 0{,}89$ ⇒ Strong Correlation

$0{,}90 \leq r \leq 1{,}0$ ⇒ Very Strong Correlation

A regression analysis with panel data was performed. Because the individual variables (Countries) with the time series (years) increase the complexity of the analysis, several possibilities arise:

(i) a regression model where the model's intercept and slopes are constant over time and space, i.e., a pooled model,

(ii) a model where the slopes are constant but the intercept varies across countries, i.e., fixed effects model

(iii) a model where the intercept assumes an average value between countries and the slopes vary with time and with countries, i.e., random effects model.

The modelling process was carried out in 8 phases:

► 1st phase: select the countries and the variables (dependent or response and independent, predictors, regressors or explanatory) likely to significantly contribute to the final model.
► 2nd phase: load the data.
► 3rd phase: transforming variables. We use logarithmization to transform the dependent variable (Total PT EXP) and the independent variables (Export Credit Guarantees and Real GDP), due to their high positive values.
► 4th phase: arrange the data for regression analysis with panel data, as it is necessary to define the individual attribute ("Countries") and time ("years") of the observations.
► 5th phase: carry out the descriptive analysis of the sample (mean, standard deviation, minimum and maximum values) in the case of quantitative variables, or the absolute and relative frequencies in the case of the qualitative variable "Links".
► 6th phase: graphically observe the heterogeneity between countries and between years.
► 7th phase: check the correlation between the variables.
► 8th phase: apply the modelling procedure with data in panels (Panel Data Model In this case, the estimation of the panel data model was performed in the following steps:

**1.** Estimation of regression coefficients for (1) pooled, (2) fixed effects and (3) random effects models. Several studies use this sequence of approach as a starting point (Wooldridge, 2002, 2008; Croissant & Millo, 2008; Croissant et al., 2017).
**2.** In each regression model, all predictor variables were entered into the model. The model was run and the level of significance of the predictors was observed. Those that were non-significant (i.e., with $p>0.05$) were removed, one at a time, in descending order of p-value, until only statistically significant predictors remained (i.e., with $p\leq 0.05$). The level of statistical significance of the coefficients was verified by the t test, whose hypothesis is of the bilateral type.
**3.** Compare the pooled model versus the fixed effects model using the Chow test.
**4.** Compare the pooled model versus random effects model using the Breusch-Pagan test.
**5.** Compare the random effects model versus the fixed effects model using the Hausman test.

Having chosen the most appropriate model, a diagnosis was made, checking the following assumptions:

– Overall significance of the model

– Normality of residuals

– Homoscedasticity of residuals

– Independence of residuals

– Multicollinearity

– Stationarity

# 4. Results

## 4.1. Descriptive Analysis

Table 1 presents the results of descriptive statistics (minimum, maximum, mean and standard deviation) for each country regarding the variables “total value of Portuguese exports”, “value of export risk guarantees” and “gross domestic product of the country importer".

Table 1 – Minimum, maximum, mean, and standard deviation of log(Total PT EXP), log(Export Credit Guarantees) and log(Real GDP) variables.

| | **log(Total PT EXP)** | | | | **log(Export Credit Guarantees)** | | | | **log(Real GDP)** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Countries | Mín | Max | ξ | *s* | Mín | Max | ξ | *s* | Mín | Max | ξ | *s* |
| Algeria | 19,696 | 20,192 | 20,00002 | 0,209 | 12,578 | 16,486 | 14,55954 | 1,851 | 25,837 | 26,089 | 26,01673 | 0,103 |
| Angola | 21,465 | 21,879 | 21,71804 | 0,189 | 17,348 | 18,389 | 17,98469 | 0,425 | 25,440 | 25,705 | 25,56803 | 0,110 |
| Argentina | 17,627 | 18,322 | 17,95831 | 0,332 | 13,961 | 16,382 | 14,73414 | 0,962 | 26,989 | 27,111 | 27,03195 | 0,049 |
| Azerbaijan | 14,354 | 15,810 | 14,97317 | 0,554 | 11,513 | 12,429 | 12,10733 | 0,448 | 24,695 | 25,044 | 24,92959 | 0,141 |
| Belarus | 15,400 | 16,204 | 15,83540 | 0,357 | 11,983 | 13,346 | 12,66975 | 0,629 | 24,757 | 25,090 | 24,92989 | 0,139 |
| Brazil | 20,159 | 20,421 | 20,27544 | 0,108 | 15,482 | 16,499 | 15,92801 | 0,419 | 28,220 | 28,593 | 28,48240 | 0,149 |
| Cape Verde | 19,124 | 19,352 | 19,20691 | 0,086 | 15,098 | 15,510 | 15,33514 | 0,173 | 21,191 | 21,347 | 21,29979 | 0,067 |
| China | 19,798 | 20,549 | 20,33410 | 0,316 | 13,968 | 15,077 | 14,46987 | 0,459 | 29,653 | 30,034 | 29,86638 | 0,155 |
| Costa Rica | 15,188 | 16,100 | 15,63336 | 0,394 | 9,903 | 11,928 | 11,42142 | 0,857 | 24,467 | 24,727 | 24,60656 | 0,097 |
| East Timor | 15,405 | 16,127 | 15,79805 | 0,262 | 12,429 | 13,457 | 12,95870 | 0,395 | 20,777 | 21,190 | 20,99538 | 0,171 |
| Ecuador | 16,167 | 16,883 | 16,55266 | 0,269 | 11,579 | 13,010 | 12,26143 | 0,629 | 25,096 | 25,346 | 25,24827 | 0,101 |
| Egypt | 17,998 | 18,452 | 18,20187 | 0,177 | 14,786 | 15,357 | 14,99140 | 0,257 | 26,187 | 26,520 | 26,37913 | 0,124 |
| Georgia | 15,274 | 17,114 | 16,35799 | 0,874 | 9,616 | 11,462 | 10,43010 | 0,718 | 23,428 | 23,593 | 23,51058 | 0,075 |
| Ghana | 16,298 | 17,404 | 16,93200 | 0,399 | 10,463 | 13,459 | 11,88516 | 1,266 | 24,395 | 24,857 | 24,60158 | 0,189 |
| Hong Kong | 18,529 | 18,689 | 18,63086 | 0,064 | 11,513 | 13,346 | 12,59349 | 0,710 | 26,239 | 26,458 | 26,34627 | 0,086 |
| India | 18,183 | 18,576 | 18,36139 | 0,142 | 12,278 | 14,452 | 13,30285 | 0,953 | 28,232 | 28,375 | 28,28672 | 0,067 |
| Jordan | 16,999 | 17,480 | 17,17843 | 0,182 | 10,127 | 14,896 | 12,63143 | 1,694 | 24,108 | 24,376 | 24,25103 | 0,109 |
| Kenya | 15,886 | 16,203 | 16,06259 | 0,130 | 10,463 | 13,598 | 12,51734 | 1,195 | 24,460 | 24,882 | 24,71188 | 0,169 |
| Lebanon | 17,139 | 17,499 | 17,29085 | 0,136 | 13,092 | 14,409 | 13,54568 | 0,516 | 24,410 | 24,634 | 24,54428 | 0,088 |
| Macao | 16,561 | 17,091 | 16,84351 | 0,212 | 12,206 | 13,313 | 12,79078 | 0,411 | 24,326 | 24,737 | 24,55044 | 0,160 |
| Mexico | 19,095 | 19,950 | 19,27231 | 0,379 | 12,612 | 13,653 | 13,21599 | 0,467 | 25,311 | 25,424 | 25,36242 | 0,046 |
| Morocco | 19,776 | 20,412 | 20,13216 | 0,267 | 16,293 | 16,823 | 16,52855 | 0,252 | 27,790 | 27,905 | 27,83590 | 0,051 |
| Mozambique | 19,195 | 19,688 | 19,50864 | 0,191 | 15,197 | 15,921 | 15,68989 | 0,287 | 23,389 | 23,598 | 23,51045 | 0,079 |
| Peru | 16,581 | 17,346 | 17,06299 | 0,298 | 11,562 | 14,257 | 13,49303 | 1,094 | 25,869 | 26,027 | 25,97515 | 0,064 |
| Qatar | 16,359 | 16,764 | 16,54734 | 0,173 | 10,820 | 12,821 | 12,20360 | 0,829 | 25,809 | 26,052 | 25,93521 | 0,105 |
| Russia | 18,754 | 19,388 | 19,03387 | 0,244 | 14,543 | 15,077 | 14,86533 | 0,237 | 27,941 | 28,461 | 28,30504 | 0,209 |
| Sao Tome & Principe | 17,646 | 17,867 | 17,75097 | 0,105 | 12,625 | 13,951 | 13,09433 | 0,512 | 19,260 | 19,663 | 19,47116 | 0,167 |
| Saudi Arabia | 18,348 | 18,837 | 18,61950 | 0,185 | 13,710 | 14,270 | 13,94890 | 0,213 | 27,207 | 27,352 | 27,29085 | 0,066 |
| Senegal | 17,369 | 17,788 | 17,60810 | 0,174 | 10,597 | 13,122 | 12,06228 | 0,992 | 23,601 | 23,709 | 23,63755 | 0,048 |
| Serbia | 15,466 | 16,037 | 15,69942 | 0,244 | 12,737 | 13,528 | 13,15977 | 0,344 | 24,404 | 24,620 | 24,53857 | 0,090 |
| South Africa | 18,268 | 18,896 | 18,61490 | 0,267 | 13,521 | 14,455 | 14,10380 | 0,379 | 26,484 | 26,755 | 26,63131 | 0,106 |
| Tunisia | 18,558 | 18,929 | 18,73924 | 0,138 | 14,964 | 15,532 | 15,28848 | 0,214 | 24,488 | 24,587 | 24,54226 | 0,036 |
| Turkey | 19,522 | 19,816 | 19,69901 | 0,111 | 13,883 | 15,291 | 14,45828 | 0,547 | 27,455 | 27,588 | 27,52003 | 0,056 |
| Ukraine | 16,761 | 16,925 | 16,85751 | 0,075 | 12,468 | 13,911 | 13,10051 | 0,623 | 25,234 | 25,934 | 25,69936 | 0,287 |
| United Arabic Emirates | 18,316 | 18,952 | 18,54171 | 0,259 | 13,017 | 14,913 | 13,97367 | 0,854 | 26,583 | 26,723 | 26,64972 | 0,058 |
| Venezuela | 18,713 | 19,563 | 19,06803 | 0,325 | 14,187 | 18,022 | 16,97839 | 1,641 | 26,481 | 26,902 | 26,71815 | 0,182 |
| Vietnam | 15,879 | 16,676 | 16,19311 | 0,309 | 9,616 | 11,813 | 10,53280 | 0,797 | 25,633 | 25,987 | 25,84161 | 0,143 |

Table 2 presents the results of descriptive statistics (minimum, maximum, mean and standard deviation) for each country regarding the variables “governmental restrictions of the importing country”, “distance between Lisbon and the importing country” and “Coastline of the importing country”.

Table 2 – Minimum, maximum, mean and standard deviation of Trade Barriers, Distance and Coastline variables.

| | **Trade Barriers** | | | | **Distance** | | | | **Coastline** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Countries | Mín | Max | ξ | *s* | Mín | Max | ξ | *s* | Mín | Max | ξ | *s* |
| Algeria | 48,9 | 52,4 | 50,540 | 1,352 | 1558 | 1558 | 1558 | 0,00 | 998 | 998 | 998 | 0,00 |
| Angola | 46,2 | 47,9 | 47,160 | 0,706 | 6241 | 6241 | 6241 | 0,00 | 1600 | 1600 | 1600 | 0,00 |
| Argentina | 44,1 | 51,7 | 47,020 | 3,056 | 1033 | 1033 | 1033 | 0,00 | 4989 | 4989 | 4989 | 0,00 |
| Azerbaijan | 58,9 | 61,3 | 60,120 | 1,001 | 4688 | 4688 | 4688 | 0,00 | 0 | 0 | 0 | 0,00 |
| Belarus | 47,9 | 50,1 | 48,960 | 1,006 | 3143 | 3143 | 3143 | 0,00 | 0 | 0 | 0 | 0,00 |
| Brazil | 56,3 | 57,9 | 57,080 | 0,694 | 7487 | 7487 | 7487 | 0,00 | 7491 | 7491 | 7491 | 0,00 |
| Cape Verde | 63,5 | 66,4 | 64,860 | 1,339 | 3088 | 3088 | 3088 | 0,00 | 965 | 965 | 965 | 0,00 |
| China | 51,2 | 52,7 | 52,060 | 0,586 | 9158 | 9158 | 9158 | 0,00 | 14500 | 14500 | 14500 | 0,00 |
| Costa Rica | 66,9 | 68,0 | 67,280 | 0,432 | 8081 | 8081 | 8081 | 0,00 | 1290 | 1290 | 1290 | 0,00 |
| East Timor | 42,8 | 45,5 | 43,700 | 1,056 | 14332 | 14332 | 14332 | 0,00 | 706 | 706 | 706 | 0,00 |
| Ecuador | 46,9 | 49,2 | 47,900 | 0,935 | 8435 | 8435 | 8435 | 0,00 | 2237 | 2237 | 2237 | 0,00 |
| Egypt | 52,9 | 59,1 | 55,980 | 2,495 | 3859 | 3859 | 3859 | 0,00 | 2450 | 2450 | 2450 | 0,00 |
| Georgia | 69,4 | 73,0 | 71,520 | 1,547 | 4283 | 4283 | 4283 | 0,00 | 310 | 310 | 310 | 0,00 |
| Ghana | 59,4 | 64,2 | 61,720 | 1,897 | 357 | 357 | 357 | 0,00 | 539 | 539 | 539 | 0,00 |
| Hong Kong | 89,3 | 90,1 | 89,720 | 0,303 | 10904 | 10904 | 10904 | 0,00 | 733 | 733 | 733 | 0,00 |
| India | 54,6 | 55,7 | 54,940 | 0,498 | 834 | 834 | 834 | 0,00 | 7000 | 7000 | 7000 | 0,00 |
| Jordan | 68,9 | 70,4 | 69,540 | 0,602 | 4124 | 4124 | 4124 | 0,00 | 26 | 26 | 26 | 0,00 |
| Kenya | 55,6 | 57,5 | 56,700 | 0,886 | 6409 | 6409 | 6409 | 0,00 | 536 | 536 | 536 | 0,00 |
| Lebanon | 59,3 | 60,1 | 59,680 | 0,390 | 3943 | 3943 | 3943 | 0,00 | 225 | 225 | 225 | 0,00 |
| Macao | 70,3 | 73,1 | 71,640 | 1,009 | 10882 | 10882 | 10882 | 0,00 | 41 | 41 | 41 | 0,00 |
| Mexico | 65,3 | 67,8 | 66,660 | 0,915 | 8718 | 8718 | 8718 | 0,00 | 9330 | 9330 | 9330 | 0,00 |
| Morocco | 58,3 | 60,2 | 59,560 | 0,757 | 852 | 852 | 852 | 0,00 | 1835 | 1835 | 1835 | 0,00 |
| Mozambique | 54,8 | 57,1 | 55,740 | 1,113 | 7894 | 7894 | 7894 | 0,00 | 2470 | 2470 | 2470 | 0,00 |
| Peru | 67,4 | 68,7 | 68,120 | 0,563 | 873 | 873 | 873 | 0,00 | 2414 | 2414 | 2414 | 0,00 |
| Qatar | 70,5 | 71,3 | 71,020 | 0,356 | 5688 | 5688 | 5688 | 0,00 | 563 | 563 | 563 | 0,00 |
| Russia | 50,5 | 52,1 | 51,220 | 0,756 | 7311 | 7311 | 7311 | 0,00 | 37653 | 37653 | 37653 | 0,00 |
| Sao Tome & Principe | 48,0 | 53,3 | 49,960 | 2,038 | 4614 | 4614 | 4614 | 0,00 | 209 | 209 | 209 | 0,00 |
| Saudi Arabia | 60,6 | 66,2 | 62,720 | 2,080 | 525 | 525 | 525 | 0,00 | 2640 | 2640 | 2640 | 0,00 |
| Senegal | 55,4 | 57,8 | 55,960 | 1,036 | 2835 | 2835 | 2835 | 0,00 | 531 | 531 | 531 | 0,00 |
| Serbia | 58,0 | 60,0 | 58,800 | 0,883 | 2466 | 2466 | 2466 | 0,00 | 0 | 0 | 0 | 0,00 |
| South Africa | 61,8 | 62,7 | 62,460 | 0,378 | 842 | 842 | 842 | 0,00 | 2798 | 2798 | 2798 | 0,00 |
| Tunisia | 57,0 | 58,6 | 57,820 | 0,712 | 1695 | 1695 | 1695 | 0,00 | 1148 | 1148 | 1148 | 0,00 |
| Turkey | 62,5 | 64,9 | 63,540 | 0,986 | 371 | 371 | 371 | 0,00 | 7200 | 7200 | 7200 | 0,00 |
| Ukraine | 45,8 | 49,3 | 46,880 | 1,411 | 327 | 327 | 327 | 0,00 | 2782 | 2782 | 2782 | 0,00 |
| United Arabic Emirates | 67,8 | 72,4 | 70,400 | 1,834 | 6031 | 6031 | 6031 | 0,00 | 1318 | 1318 | 1318 | 0,00 |
| Venezuela | 34,3 | 38,1 | 36,480 | 1,484 | 6863 | 6863 | 6863 | 0,00 | 2800 | 2800 | 2800 | 0,00 |
| Vietnam | 50,8 | 51,7 | 51,280 | 0,383 | 11163 | 11163 | 11163 | 0,00 | 3444 | 3444 | 3444 | 0,00 |

Table 3 presents the absolute and relative frequencies of "no" and "yes" cases of the Links variable. In other words, the non-existence and existence of colonial and/or Portuguese language connections. It appears that in all countries, whenever a Link is "no" or "yes", it is the same during the 5 years of registration. Therefore, only cases with 0% or 100% are available.

Table 3 – Absolute and relative frequency of the Links variable in each country.

| | **Links** | | | |
|---|---|---|---|---|
| | No | | Yes | |
| Countries | *n* | % | *n* | % |
| Algeria | 5 | 100 | 0 | 0 |
| Angola | 0 | 0 | 5 | 100 |
| Argentina | 5 | 100 | 0 | 0 |
| Azerbaijan | 5 | 100 | 0 | 0 |
| Belarus | 5 | 100 | 0 | 0 |
| Brazil | 0 | 0 | 5 | 100 |
| Cape Verde | 0 | 0 | 5 | 100 |
| China | 5 | 100 | 0 | 0 |
| Costa Rica | 5 | 100 | 0 | 0 |
| East Timor | 0 | 0 | 5 | 100 |
| Ecuador | 5 | 100 | 0 | 0 |
| Egypt | 5 | 100 | 0 | 0 |
| Georgia | 5 | 100 | 0 | 0 |
| Ghana | 5 | 100 | 0 | 0 |
| Hong Kong | 5 | 100 | 0 | 0 |

| | | | | |
|---|---|---|---|---|
| India | 5 | 100 | 0 | 0 |
| Jordan | 5 | 100 | 0 | 0 |
| Kenya | 5 | 100 | 0 | 0 |
| Lebanon | 5 | 100 | 0 | 0 |
| Macao | 0 | 0 | 5 | 100 |
| Mexico | 5 | 100 | 0 | 0 |
| Morocco | 5 | 100 | 0 | 0 |
| Mozambique | 0 | 0 | 5 | 100 |
| Peru | 5 | 100 | 0 | 0 |
| Qatar | 5 | 100 | 0 | 0 |
| Russia | 5 | 100 | 0 | 0 |
| Sao Tome & Principe | 0 | 0 | 5 | 100 |
| Saudi Arabia | 5 | 100 | 0 | 0 |
| Senegal | 5 | 100 | 0 | 0 |
| Serbia | 5 | 100 | 0 | 0 |
| South Africa | 5 | 100 | 0 | 0 |
| Tunisia | 5 | 100 | 0 | 0 |
| Turkey | 5 | 100 | 0 | 0 |
| Ukraine | 5 | 100 | 0 | 0 |
| United Arabic Emirates | 5 | 100 | 0 | 0 |
| Venezuela | 5 | 100 | 0 | 0 |
| Vietnam | 5 | 100 | 0 | 0 |

### 4.1.1. Evolution of Total PT EXP according to each Country studied

Figure 1 shows the evolution of the dependent variable, i.e., TOTAL PT EXP, in each country over the years. A certain stabilization of growth is visible. Perhaps, Costa Rica, Azerbaijan and Russia are the ones that show the greatest increase in the total value of Portuguese exports. On the other hand, there does not seem to be any other country with a decreasing trend in exports.

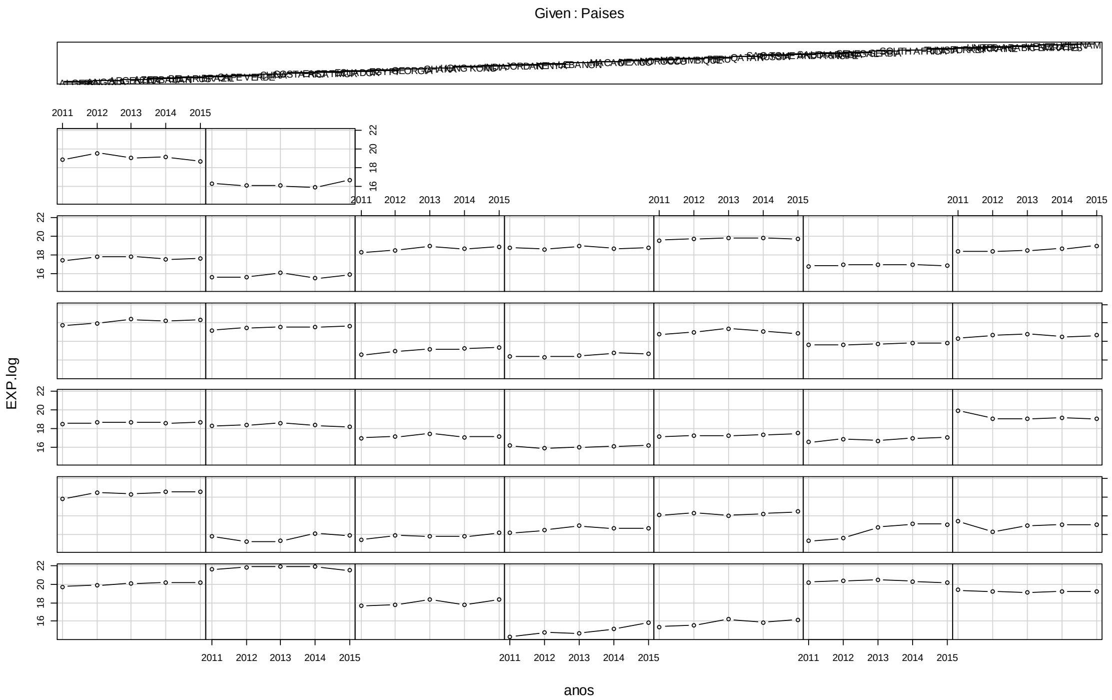


**Figure 1** – Evolution of the total value of Portuguese exports for each country in the sample.

## 4.2. Heterogeneity

### 4.2.1. Between Countries

Figure 2 shows the heterogeneity between countries for all variables under study. Regardless of the variable, the presence of heterogeneity is visible.

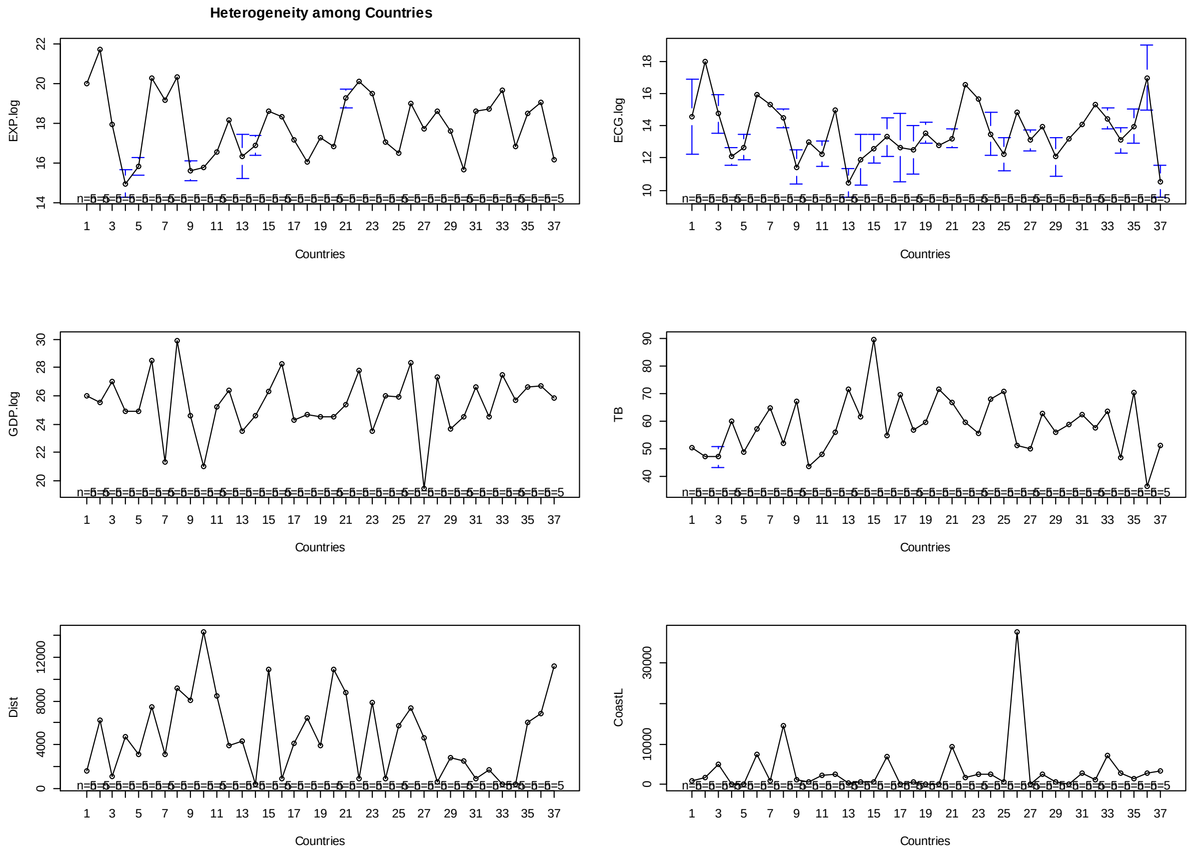


**Figure 2** – Heterogeneity between countries

### 4.2.2. Between Years

Figure 3 shows the heterogeneity between years for all variables. 95% confidence intervals around the mean are shown. In the variable "EXP.log" there is a tendency to increase with time; in the variable "ECG.log" the trajectory has oscillations; in the GDP.log variable, after an increase in the first 4 years, there is a reduction in the last year of registration; in the variable "TB" a certain constancy is evident; in the variables "Dist" and "CoastL" the values are, as expected, constant over the years.

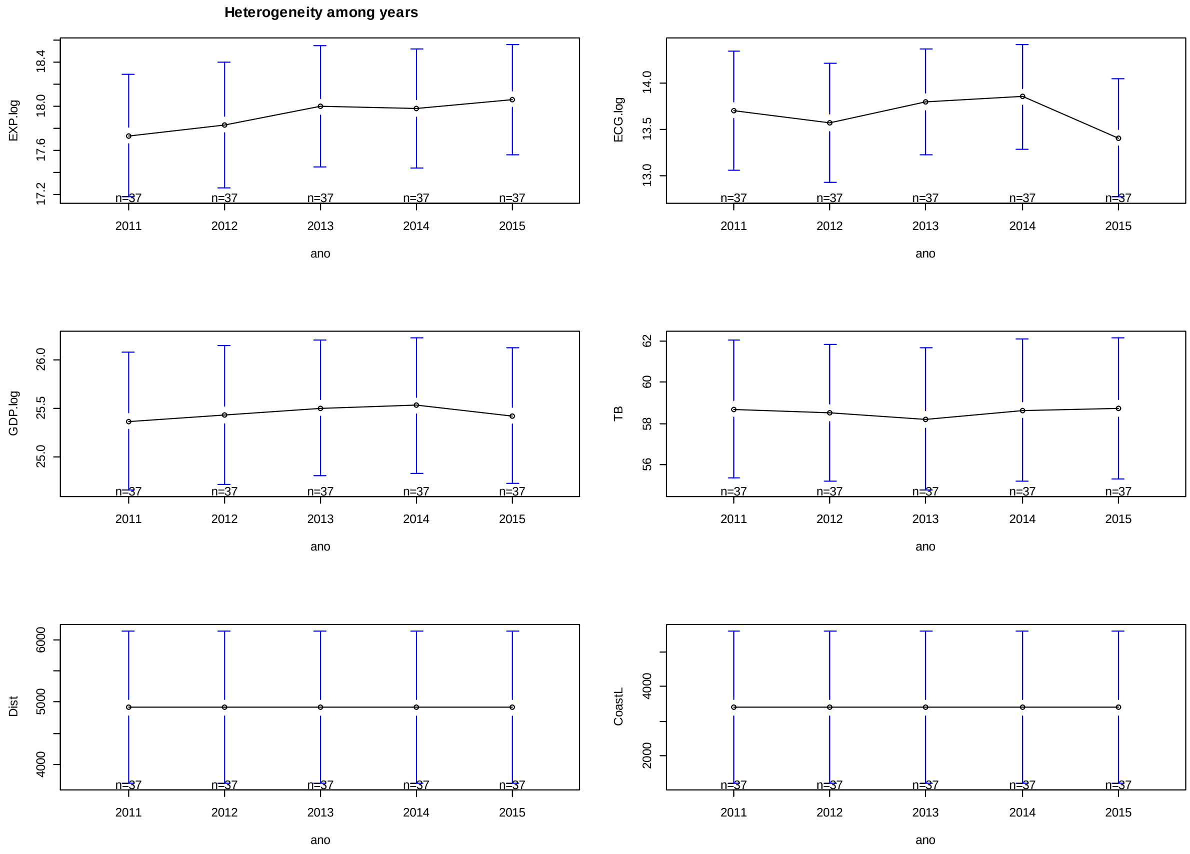


**Figure 3** – Heterogeneity among years.

## 4.3. Correlation

Table 4 presents the matrix of correlations between the variables under study. Of all, only the correlation between log(EXP) vs log(ECG) variables is of strong magnitude (r=0.74), positive and statistically significant (p<0.01). As for the dependent variable, log(EXP), this will not pose future multicollinearity problems. Below the table is the significance level at 1% and 5%, as well as the classification of the magnitude of all correlations. Note that in the case of the variable "Links", the biserial correlation by points was used.

**Table 4** – Correlation matrix between variables.

| | log(EXP) | log(ECG) | log(GDP) | TB | Dist | CoastL | Links |
|---|---|---|---|---|---|---|---|
| log(EXP) | --- | 0,74** (1) | 0,42** (2) | -0,09 (6) | -0,11 (6) | 0,33** (4) | 0,24** (4) |
| log(ECG) | | --- | 0,28** (4) | -0,31** (5) | -0,15* (6) | 0,21** (4) | 0,31** (4) |
| log(GDP) | | | --- | 0,01 (6) | -0,15* (6) | 0,49** (2) | -0,47** (3) |

| | | | | |
|---|---|---|---|---|
| TB | --- | 0,02 (6) | -0,18* (6) | -0,14 (6) |
| Dist | | --- | 0,14 (6) | 0,38** (4) |
| CoastL | | | --- | -0,11 (6) |
| Links | | | | --- |

* p<0.05 ** p<0.01

(1) strong magnitude correlation with positive direction
(2) correlations of moderate magnitude, with a positive direction
(3) correlation of moderate magnitude, with a negative direction
(4) weak magnitude correlations, with a positive direction
(5) weak magnitude correlations, with negative direction
(6) correlations of very weak magnitude, with positive or negative direction

## 4.4. Panel Data Model (PDM)

Panel data are structures with spatial (cross-sectional) and temporal (time series) dimensions of combined data where the same cross-sectional unit is observed over time, providing information about the dynamics of the behaviour of the variables.

Thus, each unit (in this study, Country) of the cross-section is assigned a time series (in this study, Years 2011 to 2015), and the concern of this methodology is to monitor the evolution of countries, in each indicator, over the time. In R we use the plm package (Croissant & Millo, 2008).

## 4.5. Models to be Studied

### 4.5.1. Pooled Model

This model "stacks" the observations, ignoring the panel data structure. For this reason, the observations are treated as uncorrelated and with homoscedastic errors for the countries. It is the simplest form, as it does not consider the combination of time and space dimensions. The estimation of the coefficients ($\beta$) is done by the method of ordinary least squares (OLS, Ordinary Least Squares). The structural form is given by:

$$\boldsymbol{Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + \varepsilon_{it}} \quad \text{with} \quad \boldsymbol{i = 1, 2, \ldots, 37; \quad t = 2011, \ldots, 2015} \qquad [\mathbf{1}]$$

where $i$ corresponds to the $i$-th Country, $t$ corresponds to the $t$-th year of registration and $\varepsilon_{it}$ is a random error term with zero mean and variance $\sigma_{\varepsilon}^{2}$, $\boldsymbol{X}_{it}$ is the set of predictor variables and $\beta$ are the parameters to be estimated.

Of all the models (Pooled, fixed effects and random effects), the pooled2 model is the simplest panel data technique. Here both space and time are disregarded; the observations are simply "stacked" and the regression is obtained, losing the opportunity to identify intrinsic differences between the observational units, while existing differences are not accounted for in the predictor variables. As a result, the estimated coefficients can be biased and inconsistent (Wooldridge, 2002).

### 4.5.2. Fixed Effects Model

This model considers that the intercept values for each regression, $\alpha_i$, vary depending on the effect of each country and that the coefficients of the predictor variables for each equation are the same for each country. The structural form is given by:

$$\boldsymbol{Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots + \beta_k X_{kit} + \varepsilon_{it}} \quad \textbf{with} \quad \boldsymbol{i = 1, 2, \ldots, 37; \quad t = 2011, \ldots, 2015} \qquad [2]$$

where $i$ corresponds to the $i$-th Country, $t$ corresponds to the $t$-th year of registration and $\varepsilon_{it}$ is a random error term with zero mean and variance $\sigma_{\varepsilon}^{2}$.

Thus, the intercept of the equation varies from country to country, but the effect of the predictor variables is the same on the dependent variable. This data indicates that there are special characteristics in each country that influence the log(EXP). The fixed effects model is operationally simpler, however many degrees of freedom may be required depending on the number of cross-section and/or temporal units (Wooldridge, 2002, 2008). In this study, $n$=37 and $T$=5, thus $nT$=185, which is a considerably high value.

### 4.5.3. Random Effects Model

In this model, country effects are considered random variables. It is assumed that all individual differences (i.e., between countries) are captured by the intercept $\alpha$, but both individual effects and $\varepsilon_{it}$

2 The process of joining (grouping) sectional and temporal data in a panel is also called pooling

errors are treated as random variables (as opposed to the fixed effects model). The structural form is given by:

$$\begin{aligned}
&Y_i = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + .... + \beta_k X_{kit} + \nu_{it} \\
&\quad \text{com} \\
&\nu_{it} = \alpha_i^* + \varepsilon_{it} \quad \text{e} \quad \alpha_i^* = (\alpha_i - \alpha) \\
&i = 1, 2, ..., 37; \quad t = 2011, ..., 2015
\end{aligned} \qquad [3]$$

where the random effects estimator, the term $\alpha_i^* = (\alpha_i - \alpha)$ are the country-specific random effects, being a random variable with zero mean and variance $\sigma_\alpha^2$, $\varepsilon_{it}$ is the random error of the regression that represents several factors that influence the dependent variable, but that varies over time and countries; represents idiosyncratic error. The intercept for each country is given by:

$$\nu_{it} = \alpha_i^* + \varepsilon_{it} \quad with \quad \alpha_i^* = (\alpha_i - \alpha) \qquad [4]$$

In this model, it is assumed that individual errors are not correlated either with each other or between the cross-sectional units of the time series. This model is especially more interesting in cases where large cross-sectional variations occur over time, as is the case in the present study. In this situation, the estimators are more efficient (i.e., they have less variability) (Wooldridge, 2002, 2008).

With the variables "Total PT EXP", "Export Credit Guarantees" and "Real GDP", as we have seen previously logarithmized (transformation widely used in the area of economics, especially when the variables are represented by very large numbers and/or when problems with asymmetry, as was the case) and the remaining variables in the original scale, we started by testing the linearity of the pooled model, followed by the fixed effects model and finally by the random effects model. In the Pooled model, the estimation of parameters is done by the method of ordinary least squares. In the case of fixed effects regression, the parameter estimation was performed by the “within” estimation and in the random effects regression by a “random” model. In the three types of models, the effects considered were “individual”, “time” and “twoways”[3]. However, models with temporal and two-way effects are shown to be significantly weaker than the models with individual effects themselves.

In all cases, we start by inputting all the predictor variables into the model and looking at the significance level of the estimates. We then eliminate the non-significant variables (*p*>0.05), one at a time, starting

3 Pooled with individual effect = Pooled with temporal effect = Pooled with twoways effect = random effects

with twoways effect.

with the variable with the highest p-value, until we are left with only those variables whose estimates are statistically significant.

### 4.5.4. Obtaining models and significance of parameters

Table 5 presents the estimates of the coefficients of the Pooled model: point estimate *(β)*, standard error (*se*), 95% confidence interval, *t*-test and *p*-value.

It is observed that all predictors, in addition to being positive (which is in line with the literature) are statistically significant ($p<0{,}05$). The model is statistically significant, that is, $F_{(4;180)}=83{,}9847$; $p<0{,}001$. However, this model does not differentiate between the influence/difference of countries in the log(EXP) variable, nor whether the log(EXP) response to the predictor variables is maintained over time. The regression equation is as follows:

$$\log(EXP) = 1{,}82025 + 0{,}538 \times \log(ECG) + 0{,}28682 \times \log(GDP) + 0{,}0214 \times \text{TB} + 1{,}02472 \times links \quad [5]$$

(Links: 0 if "no"; 1 if "yes")

Note that the pooled model is strictly the same as the multiple linear regression model, so it should not be very interesting that it is the most suitable model. The pooled model regression was performed using the ordinary least squares method.

**Table 5** – Pooled Model Coefficient Estimates.

| | Estimate, β | *se* | $CI_{95\%}$ (β) | *t* | *p* |
|---|---|---|---|---|---|
| Intercept | 1,82025 | 1,1485 | (-0,4308; 4,0713) | 1,5848 | 0,115 |
| log(ECG) | 0,53800 | 0,0501 | (0,4398; 0,6362) | 10,7345 | <0,001 |
| log(GDP) | 0,28682 | 0,0457 | (0,1972; 0,3764) | 6,2728 | <0,001 |
| TB | 0,02140 | 0,0075 | (0,0067; 0,0361) | 2,8529 | 0,005 |
| factor(links)1 | 1,02472 | 0,2430 | (0,5484; 1,5010) | 4,2165 | <0,001 |

Table 6 presents the estimates of the coefficients of the fixed effects model: point estimate (*β*), standard error (*se*), 95% confidence interval, *t*-test and *p*-value. Regression by the fixed effects method was performed by the "within" estimator.

It is observed that only the log(GDP) variable is statistically significant and that its impact on the log(EXP) is positive, for all countries. The model is globally significant, $F_{(1;147)}=5{,}03591$; $p=0{,}026$.

The regression equation is as follows:

$$\log(EXP) = 0,420582 \times \log(GDP) \quad [6]$$

**Table 6** – Estimates of the coefficients of the fixed effects model.

| | Estimate, β | *se* | $CI_{95\%}$ (β) | *t* | *p* |
|---|---|---|---|---|---|
| log(GDP) | 0,420582 | 0,1875 | (0,0533; 0,7884) | 2,2441 | 0,026 |

In this model, the effect of intercepts for each country must be defined, that is:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ALG | ANG | ARG | AZE | BLR | BRAZIL | Cape VER | CHINA |
| 9,0517 | 10,9581 | 6,5827 | 4,4822 | 5,3443 | 8,2892 | 10,2435 | 7,7652 |
| C RICA | E TIMOR | ECU | EGY | GEO | GHANA | H Kong | INDIA |
| 5,2784 | 6,9627 | 5,9274 | 7,1011 | 6,4642 | 6,5791 | 7,5436 | 6,4577 |
| JOR | KENYA | LEB | MACAO | MEXICO | MOR | MOZ | PERU |
| 6,9730 | 5,6633 | 6,9621 | 6,5121 | 8,5996 | 8,4184 | 9,6149 | 6,1317 |
| QATAR | RUSSIA | S T PRIN | S ARABIA | SEN | SRB | S AFRICA | TUN |
| 5,6329 | 7,1225 | 9,5571 | 7,1349 | 7,6609 | 5,3730 | 7,4078 | 8,4113 |
| TUR | UKR | U A EMIR | VEN | VIET | | | |
| 8,1179 | 6,0424 | 7,3268 | 7,8247 | 5,3183 | | | |

We also obtained the global constant and its standard error of the model:

Overall intercept = 7,211806; *se* = 4,772438

Thus, it appears that all countries have a positive effect on the log(EXP). Taking Algeria as an example, the regression equation is expressed as follows:

$$\log(EXP) = 9,0517 + 0,420582 \times \log(GDP) \quad [7]$$

Table 7 presents the estimates of the coefficients of the random effects model: point estimate (β), standard error (*se*), 95% confidence interval, *t*-test and *p*-value. Regression by the random effects method was performed by the "random" estimation proposed by Croissant et al. (2017), according to Swamy-Arora's transformation, present in the “plm” package of R (Croissant & Millo, 2008).

It is observed that the two variables retained by the model, i.e., the variables log(ECG) and log(GDP) are statistically significant and that their impact on the log(EXP) is positive, for all countries. The model is globally significant, $x^2_{(2)}$=29,3004; $p$<0,001. The regression equation is as follows:

$$\log(EXP) = 8,55603 + 0,09497 \times \log(ECG) + 0,31699 \times \log(GDP) \quad [8]$$

**Table 7** – Estimates of random effects model coefficients.

| | Estimate, β | *se* | $CI_{95\%}$ (β) | *t* | *p* |
|---|---|---|---|---|---|
| Intercept | 8,55603 | 1,9654 | (4,7038; 12,4082) | 4,3532 | <0,001 |
| log(ECG) | 0,09497 | 0,0311 | (0,0341; 0,1558) | 3,0576 | 0,002 |
| log(GDP) | 0,31699 | 0,0769 | (0,1663; 0,4676) | 4,1238 | <0,001 |

## 4.5.7. Comparison Pooled OLS model vs Fixed Effects model

The comparison between the pooled OLS model vs the fixed effects model was performed using the Chow test (also known as the F statistic) (Chow, 1960). The hypotheses are:

$H_0$: the pooled model is more consistent, $\alpha_1 = \alpha_2 = ... = \alpha_{37}$, that is, the effects of the Countries are not significant.

$H_1$: the unrestricted (fixed effects) model is more consistent, $\alpha_1 \neq \alpha_2 \neq ... \neq \alpha_{37}$, that is, the effects of the Countries are significant.

The test statistic is given by:

$$F = \frac{\frac{R^2_{FE} - R^2_{pool}}{n-1}}{\frac{1-R^2_{FE}}{nT-n-k}} \quad [9]$$

where $R^2$ is the coefficient of determination, “FE” refers to the fixed effects model, “*pool*” refers to the pooled model, $n$ is the number of countries under study, $T$ is the number of time periods e $k$ is the number of predictor variables present in the model (not considering the constant). Reject $H_0$ if $p \leq \alpha$ or if $F_{obs} > F_{1-\alpha,k-1,nT-n-k}$.

Since $F_{(33,147)} = 59,232$ and $p$<0.001 (likewise, $F_{obs}$=59,232 > $F_{crit}$=3,85409), it appears that there is statistically significant evidence to reject the consistency effects of the pooled OLS model in detriment of the better consistency of the fixed effects model. We understand that this situation makes perfect sense, since the sections represent countries, where each one has its own characteristics, so it would be unrealistic to consider the pooled model for the data in this study.

### 4.5.8. Comparison Pooled OLS model vs Random Effects model

Since the present study is carried out in a context of balanced panels, the comparison between the pooled model vs the random effects model was performed using the Breusch-Pagan Lagrange multiplier test. (*Lagrange Multiplier Test (Breusch-Pagan) for balanced panels*) (Breusch & Pagan, 1980). The hypotheses are:

$H_0$: the pooled model is more consistent, $\sigma_\alpha^2 = 0$. The variance of the residuals that reflect individual differences is null, so the panel effect is not significant.

$H_1$: the random effects model is more consistent, $\sigma_\alpha^2 \neq 0$. The variance of the residuals that reflect individual differences is different from zero, so the panel effect is significant.

The test statistic has a chi-squared distribution with 1 degree of freedom, is given by:

$$LM = \frac{nT}{2(T-1)} \left[ \frac{\sum_{i=1}^{n} \left( \sum_{t=1}^{T} \hat{w}_{it} \right)^2}{\sum_{i=1}^{n} \sum_{t=1}^{T} \hat{w}_{it}^2} \right]^2 \sim \chi_{(1)}^2 \qquad [10]$$

Reject the $H_0$ if $p \leq \alpha$ or if $LM > \chi_{(1-\alpha,1)}^2$.

At a significance level of 5%, there is statistically significant evidence to reject the pooled model in detriment of the higher consistency of the random effects model ($\text{LM} = 199,74; p < 0.001$ , or if $\text{LM} = 199,74 > \chi_{(0.95,1)}^2 = 3,841459$). That is, there is significant evidence of differences between countries.

### 4.5.9. Comparison of Fixed Effects model vs Random Effects model

The comparison between the fixed effects model vs the random effects model will be the same as verifying whether there is a correlation between the unobserved effect $\alpha_i$ and predictor variables. For this purpose, the Hausman test has been the most recommended (Hausman, 1978; Wooldridge, 2008). The hypotheses are:

$H_0$: $\alpha_i$ are not correlated with $X_{it}$, the difference between the coefficients is not systematic, so the random effects model is better.

$H_1$: $\alpha_i$ are correlated with $X_{it}$, the difference between the coefficients is not systematic, so the fixed effects model is better.

In case the $H_0$ is true, then $\hat{\beta}_{RE}$ is consistent and efficient, while $\hat{\beta}_{FE}$ is consistent. In turn, in case the $H_1$ is true, then $\hat{\beta}_{RE}$ is inconsistent, while $\hat{\beta}_{FE}$ is consistent.

The test statistic with chi-square distribution is given by:

$$H = (\hat{b}_{RE} - \hat{b}_{FE})^T \left[ Var(\hat{b}_{RE}) - Var(\hat{b}_{FE}) \right]^{-1} (\hat{b}_{RE} - \hat{b}_{FE}) \sim \chi^2_{(\rho)} \quad [11]$$

where $\rho$ is the number of degrees of freedom, that is, the number of predictor variables present in the model, $\hat{b}_{FE}$ is the vector of the fixed effects model estimators, is the vector of the random effects model estimators, $Var(\hat{b}_{FE})$ is the variance-covariance matrix of the estimators $\hat{b}_{FE}$, $Var(\hat{b}_{RE})$ is the variance-covariance matrix of the estimators $\hat{b}_{RE}$.

We reject the $H_0$ if $p \leq \alpha$ or if $H > \chi^2_{(1-\alpha,k)}$. In other words, the rejection of the null hypothesis can be interpreted as an indicator that the fixed effects model is the most adequate. Since $H = 0{,}36851$, $p = 0.5438$ (or $H = 0{,}36851 > \chi^2_{(0.95,2)} = 5{,}991465$), it indicates that there is no evidence to reject the random effects model in favour of the fixed effects model. In other words, the random effects model is globally the most adequate.

## 4.6. Final model analysis: random effects model

In the regression analysis it is assumed that all factors that affect the dependent variable but were not included as regressors (predictors) can be summarized by a random error term. This leads to the assumption that $\alpha_i$ are random, independent and identically distributed factors over individuals (in this study, Countries) and treated as an error term. In the random effects model, it is necessary to assume that the predictor variables are not correlated with the specific term for each unit of the cross section. With this, the number of parameters to be estimated is substantially reduced. Thus, the influence of predictor variables on the dependent variable is identical for all cross-section units, although with accommodation of heterogeneity between cross-section units.

We analysed different models in panel. According to Fávero (2013), the fixed effects model contains misconceptions about econometric modelling since the effect at the individual level is random. Thus, the model that best considers the random effect in relation to countries and time, to explain the dependent variable, was defined in the expressions [3] and [4].

Table 7 shows the estimates of the coefficients, the standard errors, the 95% confidence interval, the *t* value and the significance level (*p*) of each variable accepted in the random effects model to explain the total value of Portuguese exports. In the model presented, the intercept and the predictor variables log(ECG) and log(GDP) are statistically significant at a 5% level. Thus, we can state that predictors have a significant influence on the dependent variable, log(EXP).

This model aims to control the effects of omitted variables that vary between countries and remain constant over time. To do so, it assumes that the constant varies from one country to another, but that it remains constant over time. Conversely, the response parameters remain constant for all countries and for all time periods.

According to Croissant et al. (2017) the “swar” random method proposed by Swamy & Arora (1972) was used. According to Fávero (2013), this model saves degrees of freedom and produces a more efficient estimator of slope coefficients when compared to the fixed effects model. Precisely because this model allows the estimation of the coefficients of explanatory variables that do not vary over time, but that do vary across countries.

The results show that there is an increasing effect and a statistically significant influence on the "Total PT EXP" due to the positive value and $p<0.05$ of the variables log(ECG) and log(GDP), indicating that the higher the values of " Export Credit Guarantees” and “Real GDP”, the higher the “Total PT EXP” will be.

We can say that about 8,55603 corresponds to the unconditional expected average of log(EXP). Therefore, 8,55603 is the intercept (i.e., the constant) of log(EXP), that is, the point where the line intersects the Y axis. The slopes of the predictor variables correspond to the slope parameters of the relationship between the log(EXP) and the predictors, i.e., the coefficients measure the effect of the predictors on the dependent variable log(EXP). That is, it represents the average effect of X on Y when X changes by 1 unit over time and across countries.

For example, the regression coefficient log(ECG) indicates how much of the expected change in log(EXP) occurs when log(ECG) increases by one unit, keeping the other predictor variables constant for this purpose at log(GDP). More specifically, the dependent variable “log(EXP)” increases the value of the estimate of the variable log(ECG) when the ECG increases by 1 unit, keeping the variable GDP constant.

Table 8 shows an example of the impact on the prediction of Total PT EXP, if values 1, 2 and 3 are obtained in the log(ECG), keeping the log(GDP) value constant, for this purpose, log(GDP)=22.

Table 8 – Simulation of the prediction of Total PT EXP, as a function of some log(ECG) and log(GDP) values.

| | | | | |
|---|---|---|---|---|
| log(ECG) | 1 | 2 | 3 | In case we obtain these values |
| log(GDP) | 22 | 22 | 22 | |
| **Previsão log(EXP)** | **15,62478** | **15,71975** | **15,81472** | |
| **Previsão EXP** | **6105985,03** | **6714299,07** | **7383216,93** | |
| Variação | | 608314,05 | 668917,86 | |
| % Variação | | 9,96 | 9,96 | |

The result of this estimation process is presented in the regression equation [8].

## 4.7. Diagnosis of the random effects model

In this section, we validate the most adequate model against the available data, in this case, the random effects model, whose estimates are presented in Table 7.

In the validation process we will include the following tests/procedures:

– Overall significance of the model

– Normality of residuals

– Homoscedasticity of residuals

– Independence of residuals

– Multicollinearity

– Stationarity

### 4.7.1. Overall significance of the model

The overall significance of the model was performed either by the chi-square test or by the F test, whose F test statistic is given by:

$$F = (SSR/k)/(SSE/(nT - n - k)) = MSR/MSE \qquad [12]$$

where SSR is the sum of squares of the regression, SSE is the sum of squares of the errors (residuals), $n$ is the number of countries, $T$ is the number of time periods and $k$ is the number of predictor variables present in the model.

The null hypothesis indicates that the model's coefficients are all equal and equal to zero (that is, the model is not adequate). Since $\chi^2_{(2)}$=29.3004, $p$<0.001 or $F$=11,736; $p$<0,001, there is evidence to reject the null hypothesis that the coefficients are equal to zero and assert that the model is statistically significant (i.e., at least one of the coefficients is significantly different from zero), with the explained variability not due to chance, and the probability of the observed result being wrong is very small. The ANOVA table for panel data regression is shown in Table 9:

**Table 9** – ANOVA of the regression of the model under study.

| Variation | Sum of Squares | df | Mean Squares | *F* | *p* |
|---|---|---|---|---|---|
| Regression | 2,934 | 2 | 1,467 | 11,736 | <0,001 |
| Residual (Error) | 18,225 | 146 | 0,125 | | |
| TOTAL | 21,159 | 184 | | | |

## 4.7.2. Normality of the residuals

By the Pearson chi-square normality test,

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i} \quad [13]$$

concerning the normality of the residuals of the model under study $\{H_0 : \varepsilon_{it} \sim N(0, \sigma_\varepsilon^2)\}$, we verify that they follow a normal distribution., $P$=13,027 $p$=0,5244.

In turn, in Figure 4, it is observed that the graph of the quantile-quantile Normal residuals presents a general configuration based on the normality of the residuals, as almost all the observations are located on the straight line, although with a slight deviation in the lower tail that doesn't seem to jeopardize normalcy. The histogram of the residuals with the density curve shows that most observations are located around zero, representative of the normality of the residuals.

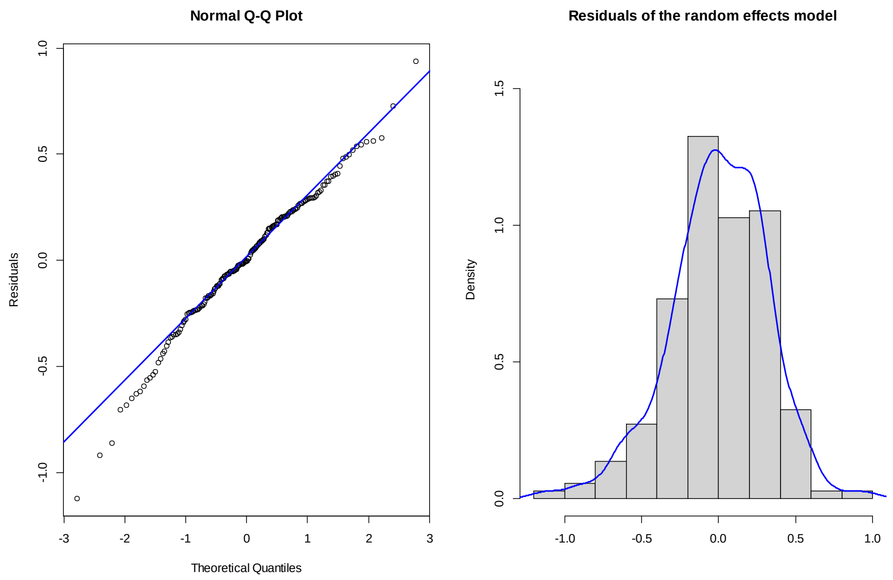


**Figure 4** – Residues in the normal quantile-quantile plot (left) and histogram of the residues with the density curve (right).

### 4.7.3. Residuals Homoscedasticity

Several authors consider heteroscedasticity a problem (Wooldridge, 2002, Baltagi et al., 2006). However, several other authors, despite the controversy surrounding the topic, report that heteroscedasticity is not such a serious problem when working with panel data models, since these models are themselves a solution to heteroscedasticity (Drukker, 2003).

The Breusch-Pagan (BP) test, contained in the "lmtest" package of R, is one of the most used to verify the homogeneity of residues (Zeileis & Hothorn, 2002). The hypotheses are:

$H_0$: presence of homogeneity

$H_1$: presence of heterogeneity

We reject the $H_0$ if $p \leq \alpha$. In other words, the rejection of the null hypothesis can be interpreted as an indicator that the model residues are heterogeneous.

In the present study, at a significance level of 5%, using the Breusch-Pagan test, it is verified that $BP_{(2)}=3.5729$; $p=0.1676$, not rejecting the null hypothesis of the homogeneity of the residuals.

### 4.7.4. Independence of residuals

The verification of the independence of the residues can be verified by the mean absolute correlation coefficient for the cross-sectional dependence (average absolute correlation coefficient for cross-sectional dependence) (Pesaran, 2004, 2012, 2015). The hypotheses are:

$H_0$: residuals between countries have coss-sectional independence (not correlated)

$H_1$: residuals between countries have coss-sectional dependence (correlated)

The model of this study registered $|\rho|=0{,}518$ which corresponds to a moderate correlation, so we can say there is enough evidence to reject the null hypothesis, that is, the errors do not have a significant cross-sectional serial correlation. However, this assumption is not always valid in random effects models, since, for example, the fact that a country has a Total PT EXP higher than the other countries (due to factors not present in the model), would have no relationship with Export Credit Guarantees and/or with Real GDP (model predictor variables). Nevertheless, it is known larger developing countries markets attract more foreign direct investment (Liargovas & Skandais, 2012) and consequently we see higher rates of Export Credit Guarantees to them. This assumption is not necessary in the fixed effects model, as the residuals do not determine the variations in Total PT EXP between countries.

### 4.7.5. Multicollinearity

Multicollinearity occurs when predictor variables are strongly intercorrelated. According to Tabachnick & Fidell (2007), multicollinearity is verified when the bivariate correlation is above 0.90 (regardless of the sign). The most common test to verify multicollinearity is the VIF (Variance Inflation Factor) (Fox & Weisberg, 2011), which tests the linear dependence between predictor variables (Montgomery & Runger, 2003), whose test statistic is given by:

$$VIF(\beta_j) = (1 - R_j^2)^{-1}, \quad j = 1, \ldots, k \qquad [14]$$

where $R_j$ is the multiple correlation coefficient between the variable $j$ and the remaining predictor variables. The minimum possible is VIF=1. In turn, a VIF value>10 is a clear indicator of the presence of multicollinearity (Montgomery & Runger, 2003), although some authors point to VIF values greater than 4 or 5 (Miles & Shevlin, 2001).

Considering the predictor variables of the random effects model of this study, the VIF values are:

VIF (ECG.log) = 1,010975

VIF (GDP.log) = 1,010975

from which it is clear that there are no problems of multicollinearity between the predictor variables, as the VIF value of all variables is clearly below 4.

### 4.7.6. Stationarity / Unit Roots

The Augmented Dickey-Fuller Test (ADF) (Dickey & Fuller, 1979) is suitable for checking the existence of a stochastic trend. It is given by:

$$\Delta z_t = \alpha_0 + \beta t + \theta z_{t-1} + \omega_1 \Delta z_{t-1} + \omega_2 \Delta z_{t-2} + ... + \omega_{p-1} \Delta z_{t-p+1} + \varepsilon_t \quad [15]$$

where $\alpha$ is the constant, $\beta$ is the time trend coefficient (or deterministic), $p$ represents the number of lags of the dependent variable in the first difference, included in the model to remove the serial autocorrelation of the residuals, ensuring that $\varepsilon_t$ be a white noise process (stationary process), that is, a sequence of independent and identically distributed random variables, $\varepsilon_t \sim N(0, \sigma^2)$. The restrictions $\alpha$=0 e $\beta$=0 correspond to the random walk, and using only $\beta$=0 we have a trendless model.

The hypotheses are given by:

$H_0 : \theta = 0$, that is, the series is non-stationary, i.e, it has a unit root.

$H_1 : \theta < 0$, that is, the series is stationary, i.e, it has no unit root.

Table 10 presents the results of the stationarity of the variables present in the random effects model of this study. Based on the ADF test, it appears that there is statistically significant evidence to reject the null hypothesis of non-stationarity in the three variables of the model: log(EXP) the dependent variable, and log(ECG) and log(GDP) the predictor variables.

**Table 10** – Augmented Dickey-Fuller test.

| Variáveis | ADF | *p* |
|---|---|---|
| log(EXP) | -4.9097 | 0.01 |
| log(ECG) | -4.7953 | 0.01 |
| log(GDP) | -4.7272 | 0.01 |

# 5. Conclusions

When companies engage in cross border trade, they are likely to face higher risks than in domestic markets. Exporting countries' governments provide support through Export Credit Agencies (ECAs) by assuming the risk of default of importing underdeveloped markets when offering Export Credit Guarantees (ECG). And that is because the private sector of credit insurance is not often willing to provide coverage for emerging markets, which are not usually considered creditworthy. Therefore, ECAs intervene by filling the gap left by private credit insurance for exports in respect to risky markets transactions coverage, i.e., ECAs are oriented to higher value-added goods/services or higher requiring amortization periods, as well as higher risk coverage, not available in the private export insurance companies.

Several empirical studies concerning ECAs and their importance have been conducted in other countries, but so far there are none regarding the Portuguese ECA's role, so this study contributes to the literature by focusing on its impact over the Portuguese total exports.

We used a panel data sample, from 2011 to 2015, with 37 importing countries, totalizing 185 observations. The Random Effects Model was the most suitable for this case, since there are no significant evidence to reject the random effects model in detriment of the fixed effects model, according to the Hausman Test performed. This model aimed to control the effects of omitted variables that vary between countries and remain constant over time, assuming the constant varies from one country to another, but that it remains constant over time. On the contrary, the response parameters remain constant for all countries and for all time periods. Our results show that there is an increasing effect and a statistically significant influence on the "Total PT EXP" due to the positive value and $p<0.05$ of the variables log(ECG) and log(GDP), indicating that the higher the values of Export Credit Guarantees and importing countries Real GDP, the higher the total Portuguese exports will be. According to the method, the average unconditionally effect of the log(EXP) is 8,55603, i.e., the intercept or constant. For instance, the regression coefficient log(ECG) indicates how much of the expected change in log(EXP) occurs when log(ECG) increases by one unit, keeping the other predictor variables constant. Thus, for the period of 2011 to 2015, a one percentage point increase in the Export Credit Guarantees, keeping all other variables constant, boosts exports by 9,96 percentage points. Moreover, it is possible to assert that the model used is statistically significant, since the predictor variables have influence over the total of Portuguese exports.

In terms of limitations, during the study of the data, it was considered of using a gravitational model, however this method returned too many coefficients for each predictor variable, making the model too complex, so this possibility was eventually abandoned.

As mentioned before, the study was conducted analysing the impact of Export Credit Guarantees on Portuguese exports during a delicate period (2011 to 2015) corresponding to the time when Portugal was included in an IMF bailout program and austerity measures were implemented. However, it would be interesting, for future studies on the subject, to verify whether the ECG continues to have an impact or not, during non-crisis periods.

Finally, I was very pleased to have completed this project since, as a COSEC (ECA) employee, it was rewarding to know, albeit indirectly, my everyday work contributes for the Portuguese economy.

# 6. References


Catermol, F. (2008) 'Agências de Crédito à Exportação: o papel de instituições oficiais no apoio à inserção internacional de empresas', Revista do BNDES, 15(30), pp. 5–38.

Van Den, M. et al. (2017) Discussion Paper Public export credit insurance in the Netherlands: an input-output approach Public export credit insurance in the Netherlands: an input-output approach.

Felbermayr, G., Heiland, I. and Yalcin, E. (2014) The Role of State Export Credit Guarantees for German Firms.

Fitzgerald, B. and Monson, T. (1989) PREFERENTIAL CREDIT AND INSURANCE AS MEANS TO PROMOTE EXPORTS.

Gianturco, D. E. (2001) Export credit agencies : the unsung giants of international trade and finance. Quorum Books.

Grath, A. (2008) The handbook of international trade and finance: the complete guide to risk management, international payments and currency management, bonds and guarantees, credit insurance and trade finance. Kogan Page.

Heiland, I. and Yalcin, E. (2015) Export Market Risk and the Role of State Credit Guarantees.

Herger, N. and Lobsiger, M. (2010) How do Export Risk Guarantees affect Exports?-The Case of Switzerland *.

Hilmarsson, H. Þ. and Dinh, T. Q. (2014) Can Export Credit Agencies facilitate cross border trade to emerging markets economies.

Jones, P. M. (2010) Trade Credit Insurance.

Malouche, M. (2009) 'Trade and Trade Finance Developments in 14 Developing Countries Post September 2008 - A World Bank Survey', (November), pp. 1–40.

Nederlandsche, D., Nv, B. and Van Der Veer, K. (2010) The Private Credit Insurance Effect on Trade.

Liargovas, P. G. and Skandalis K. S. (2012) 'Foreign Direct Investment and Trade Openness: The Case of Developing Economies'

Wright, C. (2011) 'Export Credit Agencies and Global Energy: Promoting National Exports in a Changing World', Global Policy, 2(SUPPL.1), pp. 133–143.

Young In, S. (2014) Do Export Credit Agencies Benefit the Economy?

Baltagi, B.H., Song, S.H. & Kwon, J.H. (2006). Testing for heteroskedasticity and spatial correlation in a random effects panel data model. Mimeo.

Breusch, T.S. & Pagan, A.R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. Review of Economic Studies, 47 (1): 239-253.

Chow, G.C. (1960) Tests of equality between sets of coefficients in two linear regressions. Econometrica, 28 (3): 591-605.

Croissant, Y. & Millo, G. (2008). Panel Data Econometrics in R: The plm Package. Journal of Statistical Software, 27 (2): 1-43.

Croissant, Y.; Millo, G.; Tappe, K.; Toomet, O.; Kleiber, C.; Zeileis, A.; Andronic, L. & Schoenfelder, N. (2017). Linear Models for Panel Data, Package 'plm'.

Dickey, D.A. & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. Journal of the American Statistical Association, 74 (366): 427-431.

Drukker, D.M. (2003). Testing for serial correlation in linear panel-data models. Stata Journal, 3 (2): 168-177.

Fávero, L.P. (2013). Dados em painel em contabilidade e finanças: teoria e aplicação. Brazilian Business Review, 10 (1): 131-156.

Fox, J. & Weisberg, S. (2011). An {R} Companion to Applied Regression, Second Edition. Thousand Oaks CA: Sage. URL: http://socserv.socsci.mcmaster.ca/jfox/Books/Companion.

Gross, J. & Ligges, U. (2015). nortest: Tests for Normality. R package version 1.0-4. https://CRAN.R-project.org/package=nortest

Hausman, J.A. (1978). Specification tests in econometrics. Econometrica, 46 (6): 1251-1272.

Miles, J. & Shevlin, M. (2001). Applying Regression & Correlation: a guide for students and researchers. Thousands Oaks, CA: SAGE.

Montgomery, D.C. & Runger, G.C. (2003). Applied Statistics and Probability for Engineers. 3th Edition, John Wiley & Sons, Inc.

Pesaran, M.H. (2004). General Diagnostic Tests for Cross Section Dependence in Panels. CESifo Working Paper 1229.

Pesaran, M.H. (2012). Testing Weak Cross-Sectional Dependence in Large Panels. CWPE 1208.

Pesaran, M.H. (2015). Testing Weak Cross-Sectional Dependence in Large Panels. Econometric Reviews, 34 (6-10): 1089-1117.

Pestana, M.H. & Gageiro, J.N. (2014). Análise de Dados para Ciências Sociais – a Complementaridade do SPSS. 6ª ed. Edições Sílabo, Lisboa.

R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Swamy, P.A.V.B. & Arora, S.S. (1972). The exact finite sample properties of the estimators of coefficients in the error components regression models. Econometrica, 40 (2): 261-275.

Tabachinick, B.G. & Fidell, L.S. (2007). Using Multivariate Statistics. 4ª.ed. Boston: Needhan Heights. USA.

Warnes, G.R.; Bolker, B.; Bonebakker, L.; Gentleman, R.; Liaw, W.H.A.; Lumley, T.; Maechler, M.;Magnusson, A.; Moeller, S.; Schwartz, M. & Venables, B. (2016). gplots: Various R Programming Tools for Plotting Data. R package version 3.0.1. https://CRAN.R-project.org/package=gplots

Wooldridge, J.M. (2002). Econometric Analysis of Cross Section and Panel Data. The MIT Press Cambridge, Massachusetts, London, England.

Wooldridge, J.M. (2008). Introdução à Econometria: uma abordagem moderna. 1th. ed. São Paulo: Cengage Learning.

Wuertz, D.; Setz, T. & Chalabi, Y. (2017). fBasics: Rmetrics - Markets and Basic Statistics. R package version 3042.89. https://CRAN.R-project.org/package=fBasics

Zeileis, A. & Hothorn, T. (2002). Diagnostic Checking in Regression Relationships. R News 2(3), 7-10. URL: https://CRAN.R-project.org/doc/Rnews/

## 6.1. Online Sources:

Berne Union:
https://www.berneunion.org/
World Trade Organization:
https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf
STATISTA:
https://www.statista.com/statistics/264682/worldwide-export-volume-in-the-trade-since-1950/
INE:
http://www.ine.pt
The World Bank:
World Development Indicators | DataBank (worldbank.org)
2021 Index Of Economic Freedom:
Economic Data and Statistics on World Economy and Economic Freedom (heritage.org)
Distance From To:
Distance from Portugal to Other Countries (distancefromto.net)
CIA World Fact Book:
The World Factbook - The World Factbook (cia.gov)

# 7. Appendix

| COUNTRY | YEAR | Total PT EXP (€) | EXPORT CREDIT GUARANTEES | REAL GDP (USD) | TRADE BARRIERS | DISTANCE (KM) | COASTLINE (KM) | LINKS |
|---|---|---|---|---|---|---|---|---|
| ALGERIA | 2011 | 358 009 923,00 | 14 439 968,00 | 200254371997,3 | 52,4 | 1 558 | 998 | 0 |
| ALGERIA | 2012 | 428 170 853,00 | 290 000,00 | 209021250805,9 | 51 | 1 558 | 998 | 0 |
| ALGERIA | 2013 | 527 403 984,00 | 300 000,00 | 209724351222 | 49,6 | 1 558 | 998 | 0 |
| ALGERIA | 2014 | 588 071 585,00 | 8 241 324,99 | 213860450595,8 | 50,8 | 1 558 | 998 | 0 |
| ALGERIA | 2015 | 565 474 510,00 | 3 986 166,56 | 166361491140,8 | 48,9 | 1 558 | 998 | 0 |
| ANGOLA | 2011 | 2 330 054 737,00 | 34 225 623,07 | 111789686464,4 | 46,2 | 6 241 | 1 600 | 1 |
| ANGOLA | 2012 | 2 988 536 987,00 | 52 305 878,07 | 128052853643,1 | 46,7 | 6 241 | 1 600 | 1 |
| ANGOLA | 2013 | 3 112 687 722,00 | 75 198 248,42 | 136709862831,2 | 47,3 | 6 241 | 1 600 | 1 |
| ANGOLA | 2014 | 3 177 938 336,00 | 96 850 942,56 | 145712200312,5 | 47,7 | 6 241 | 1 600 | 1 |
| ANGOLA | 2015 | 2 099 058 952,00 | 86 703 482,63 | 116193649124,2 | 47,9 | 6 241 | 1 600 | 1 |
| ARGENTINA | 2011 | 45 219 602,00 | 13 021 225,92 | 530163281574,7 | 51,7 | 1 033 | 4 989 | 0 |
| ARGENTINA | 2012 | 53 084 324,00 | 1 157 100,00 | 545982375701,1 | 48 | 1 033 | 4 989 | 0 |
| ARGENTINA | 2013 | 89 533 398,00 | 1 541 600,00 | 552025140252,2 | 46,7 | 1 033 | 4 989 | 0 |
| ARGENTINA | 2014 | 50 877 714,00 | 2 521 800,00 | 526319673731,6 | 44,6 | 1 033 | 4 989 | 0 |
| ARGENTINA | 2015 | 90 608 813,00 | 1 686 800,00 | 594749285413,2 | 44,1 | 1 033 | 4 989 | 0 |
| AZERBAIJAN | 2011 | 1 714 202,00 | 100 000,00 | 65 951 627 200,20 | 59,7 | 4 688 | 0 | 0 |
| AZERBAIJAN | 2012 | 2 711 409,00 | 250 000,00 | 69 683 935 845,20 | 58,9 | 4 688 | 0 | 0 |
| AZERBAIJAN | 2013 | 2 421 861,00 | 125 000,00 | 74 164 435 946,50 | 59,7 | 4 688 | 0 | 0 |
| AZERBAIJAN | 2014 | 3 946 053,00 | 250 000,00 | 75 244 294 275,10 | 61,3 | 4 688 | 0 | 0 |
| AZERBAIJAN | 2015 | 7 349 655,00 | 250 000,00 | 53 074 370 486,00 | 61 | 4 688 | 0 | 0 |
| BELARUS | 2011 | 4 876 625,00 | 160 000,00 | 61 757 788 944,70 | 47,9 | 3 143 | 0 | 0 |
| BELARUS | 2012 | 5 654 654,00 | 190 000,00 | 65 685 102 554,90 | 49 | 3 143 | 0 | 0 |
| BELARUS | 2013 | 10 897 486,00 | 290 000,00 | 75 527 984 234,20 | 48 | 3 143 | 0 | 0 |
| BELARUS | 2014 | 7 812 766,00 | 590 000,00 | 78 813 839 984,40 | 50,1 | 3 143 | 0 | 0 |
| BELARUS | 2015 | 10 362 572,00 | 625 000,00 | 56 454 734 396,60 | 49,8 | 3 143 | 0 | 0 |
| BRAZIL | 2011 | 583 107 128,00 | 5 968 019,40 | 2616200980392,2 | 56,3 | 7 487 | 7 491 | 1 |
| BRAZIL | 2012 | 680 845 723,00 | 14 638 000,00 | 2465188674415 | 57,9 | 7 487 | 7 491 | 1 |
| BRAZIL | 2013 | 738 945 642,00 | 10 736 944,30 | 2472806919901,7 | 57,7 | 7 487 | 7 491 | 1 |
| BRAZIL | 2014 | 638 568 090,00 | 7 785 000,00 | 2455993625159,4 | 56,9 | 7 487 | 7 491 | 1 |
| BRAZIL | 2015 | 568 772 821,00 | 5 294 000,00 | 1802214373741,3 | 56,6 | 7 487 | 7 491 | 1 |
| CAPE VERDE | 2011 | 253 786 091,00 | 3 604 000,00 | 1 865 915 544,10 | 64,6 | 3 088 | 965 | 1 |
| CAPE VERDE | 2012 | 215 610 578,00 | 4 591 000,00 | 1 741 809 809,00 | 63,5 | 3 088 | 965 | 1 |
| CAPE VERDE | 2013 | 201 995 234,00 | 4 155 000,00 | 1 850 470 042,40 | 63,7 | 3 088 | 965 | 1 |
| CAPE VERDE | 2014 | 214 964 268,00 | 5 328 000,00 | 1 859 898 513,30 | 66,1 | 3 088 | 965 | 1 |
| CAPE VERDE | 2015 | 214 503 644,00 | 5 445 000,00 | 1 596 800 287,20 | 66,4 | 3 088 | 965 | 1 |
| CHINA | 2011 | 396 586 584,00 | 2 137 000,00 | 7551500124203,4 | 52 | 9 158 | 14 500 | 0 |
| CHINA | 2012 | 777 967 664,00 | 3 530 500,00 | 8532229986993,7 | 51,2 | 9 158 | 14 500 | 0 |
| CHINA | 2013 | 657 484 420,00 | 1 275 000,00 | 9570406235659,6 | 51,9 | 9 158 | 14 500 | 0 |
| CHINA | 2014 | 839 714 326,00 | 1 164 824,55 | 10475682920594,5 | 52,5 | 9 158 | 14 500 | 0 |
| CHINA | 2015 | 838 723 451,00 | 2 352 420,00 | 11061553079876,4 | 52,7 | 9 158 | 14 500 | 0 |
| COSTA RICA | 2011 | 6 908 538,00 | 150 000,00 | 42 262 697 840,40 | 67,3 | 8 081 | 1 290 | 0 |
| COSTA RICA | 2012 | 3 946 437,00 | 118 000,00 | 46 473 128 285,60 | 68 | 8 081 | 1 290 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| COSTA RICA | 2013 | 4 247 339,00 | 118 000,00 | 49 745 088 111,70 | 67 | 8 081 | 1 290 | 0 |
| COSTA RICA | 2014 | 9 819 992,00 | 151 500,00 | 50 577 769 837,70 | 66,9 | 8 081 | 1 290 | 0 |
| COSTA RICA | 2015 | 7 791 046,00 | 20 000,00 | 54 775 994 478,50 | 67,2 | 8 081 | 1 290 | 0 |
| EAST TIMOR | 2011 | 4 899 362,00 | 500 000,00 | 1 054 725 400,00 | 42,8 | 14 332 | 706 | 1 |
| EAST TIMOR | 2012 | 8 072 081,00 | 335 000,00 | 1 147 779 600,00 | 43,3 | 14 332 | 706 | 1 |
| EAST TIMOR | 2013 | 7 244 189,00 | 471 000,00 | 1 395 524 600,00 | 43,7 | 14 332 | 706 | 1 |
| EAST TIMOR | 2014 | 6 984 718,00 | 699 000,00 | 1 447 311 400,00 | 43,2 | 14 332 | 706 | 1 |
| EAST TIMOR | 2015 | 10 086 911,00 | 250 000,00 | 1 594 410 800,00 | 45,5 | 14 332 | 706 | 1 |
| ECUADOR | 2011 | 10 502 467,00 | 150 000,00 | 79 276 664 000,00 | 47,1 | 8 435 | 2 237 | 0 |
| ECUADOR | 2012 | 13 656 187,00 | 155 100,00 | 87 924 544 000,00 | 48,3 | 8 435 | 2 237 | 0 |
| ECUADOR | 2013 | 21 480 780,00 | 447 000,00 | 95 129 659 000,00 | 46,9 | 8 435 | 2 237 | 0 |
| ECUADOR | 2014 | 16 792 393,00 | 380 000,00 | 101726331000 | 48 | 8 435 | 2 237 | 0 |
| ECUADOR | 2015 | 16 976 595,00 | 106 800,00 | 99290381000 | 49,2 | 8 435 | 2 237 | 0 |
| EGYPT | 2011 | 71 130 848,00 | 2 660 400,00 | 235989672977,6 | 59,1 | 3 859 | 2 450 | 0 |
| EGYPT | 2012 | 87 370 214,00 | 3 860 500,00 | 279116666666,7 | 57,9 | 3 859 | 2 450 | 0 |
| EGYPT | 2013 | 65 519 766,00 | 2 824 500,00 | 288434108527,1 | 54,8 | 3 859 | 2 450 | 0 |
| EGYPT | 2014 | 79 738 542,00 | 4 669 604,70 | 305595408895,3 | 52,9 | 3 859 | 2 450 | 0 |
| EGYPT | 2015 | 103 134 056,00 | 2 640 000,00 | 329366576819,4 | 55,2 | 3 859 | 2 450 | 0 |
| GEORGIA | 2011 | 4 300 369,00 | 25 000,00 | 15 107 441 446,80 | 70,4 | 4 283 | 310 | 0 |
| GEORGIA | 2012 | 5 737 226,00 | 25 000,00 | 16 488 403 076,40 | 69,4 | 4 283 | 310 | 0 |
| GEORGIA | 2013 | 19 219 482,00 | 50 000,00 | 17 189 551 521,00 | 72,2 | 4 283 | 310 | 0 |
| GEORGIA | 2014 | 27 071 434,00 | 95 000,00 | 17 627 003 454,70 | 72,6 | 4 283 | 310 | 0 |
| GEORGIA | 2015 | 25 849 631,00 | 15 000,00 | 14 953 950 557,40 | 73 | 4 283 | 310 | 0 |
| GHANA | 2011 | 36 164 435,00 | 50 000,00 | 39 337 314 809,90 | 59,4 | 357 | 539 | 0 |
| GHANA | 2012 | 11 976 823,00 | 35 000,00 | 41 270 954 737,20 | 60,7 | 357 | 539 | 0 |
| GHANA | 2013 | 22 550 648,00 | 700 000,00 | 62 405 374 785,50 | 61,3 | 357 | 539 | 0 |
| GHANA | 2014 | 23 919 267,00 | 150 000,00 | 53 660 342 159,80 | 64,2 | 357 | 539 | 0 |
| GHANA | 2015 | 25 051 813,00 | 350 000,00 | 48 564 863 888,40 | 63 | 357 | 539 | 0 |
| HONG KONG | 2011 | 111 474 536,00 | 625 000,00 | 248513617677,3 | 89,7 | 10 904 | 733 | 0 |
| HONG KONG | 2012 | 123 978 483,00 | 490 000,00 | 262629441493,5 | 89,9 | 10 904 | 733 | 0 |
| HONG KONG | 2013 | 130 726 059,00 | 250 000,00 | 275696879835 | 89,3 | 10 904 | 733 | 0 |
| HONG KONG | 2014 | 121 976 522,00 | 290 000,00 | 291459356985,3 | 90,1 | 10 904 | 733 | 0 |
| HONG KONG | 2015 | 129 787 220,00 | 100 000,00 | 309383627028,6 | 89,6 | 10 904 | 733 | 0 |
| INDIA | 2011 | 89 345 046,00 | 1 430 000,00 | 1823050405350,4 | 54,6 | 834 | 7 000 | 0 |
| INDIA | 2012 | 94 787 584,00 | 1 890 000,00 | 1827637859135,7 | 54,6 | 834 | 7 000 | 0 |
| INDIA | 2013 | 116 801 497,00 | 390 000,00 | 1856722121394,5 | 55,2 | 834 | 7 000 | 0 |
| INDIA | 2014 | 95 297 347,00 | 340 000,00 | 2039127446298,6 | 55,7 | 834 | 7 000 | 0 |
| INDIA | 2015 | 78 869 473,00 | 215 000,00 | 2103587817041,8 | 54,6 | 834 | 7 000 | 0 |
| JORDAN | 2011 | 24 121 910,00 | 2 945 750,00 | 29 524 149 164,90 | 68,9 | 4 124 | 26 | 0 |
| JORDAN | 2012 | 27 702 254,00 | 277 000,00 | 31 634 561 670,40 | 69,9 | 4 124 | 26 | 0 |
| JORDAN | 2013 | 39 033 601,00 | 387 000,00 | 34 454 440 180,70 | 70,4 | 4 124 | 26 | 0 |
| JORDAN | 2014 | 26 536 616,00 | 340 000,00 | 36 847 643 587,20 | 69,2 | 4 124 | 26 | 0 |
| JORDAN | 2015 | 28 991 995,00 | 25 000,00 | 38 587 017 944,30 | 69,3 | 4 124 | 26 | 0 |
| KENYA | 2011 | 10 302 158,00 | 385 000,00 | 41 953 433 591,40 | 57,4 | 6 409 | 536 | 0 |
| KENYA | 2012 | 7 932 066,00 | 35 000,00 | 50 412 754 861,00 | 57,5 | 6 409 | 536 | 0 |
| KENYA | 2013 | 8 647 431,00 | 400 000,00 | 55 096 728 047,90 | 55,9 | 6 409 | 536 | 0 |
| KENYA | 2014 | 9 844 630,00 | 350 000,00 | 61 448 046 801,60 | 57,1 | 6 409 | 536 | 0 |
| KENYA | 2015 | 10 891 128,00 | 804 254,30 | 64 007 750 169,30 | 55,6 | 6 409 | 536 | 0 |

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|---|---|---|---|---|---|---|---|---|
| LEBANON | 2011 | 27 755 463,00 | 485 000,00 | 39 927 125 961,20 | 60,1 | 3 943 | 225 | 0 |
| LEBANON | 2012 | 29 929 890,00 | 590 000,00 | 44 035 991 745,70 | 60,1 | 3 943 | 225 | 0 |
| LEBANON | 2013 | 31 860 727,00 | 620 000,00 | 46 909 335 135,10 | 59,5 | 3 943 | 225 | 0 |
| LEBANON | 2014 | 33 440 333,00 | 1 810 000,00 | 48 134 486 624,60 | 59,4 | 3 943 | 225 | 0 |
| LEBANON | 2015 | 39 777 184,00 | 808 000,00 | 49 939 374 832,70 | 59,3 | 3 943 | 225 | 0 |
| MACAO | 2011 | 15 574 929,00 | 300 000,00 | 36 709 860 068,30 | 73,1 | 10 882 | 41 | 1 |
| MACAO | 2012 | 21 412 330,00 | 405 000,00 | 43 031 577 366,40 | 71,8 | 10 882 | 41 | 1 |
| MACAO | 2013 | 17 974 891,00 | 405 000,00 | 51 552 075 901,50 | 71,7 | 10 882 | 41 | 1 |
| MACAO | 2014 | 23 717 901,00 | 605 000,00 | 55 347 998 647,80 | 71,3 | 10 882 | 41 | 1 |
| MACAO | 2015 | 26 447 255,00 | 200 000,00 | 45 361 678 146,50 | 70,3 | 10 882 | 41 | 1 |
| MEXICO | 2011 | 461 612 397,00 | 300 000,00 | 101370474295,1 | 67,8 | 8 718 | 9 330 | 0 |
| MEXICO | 2012 | 196 326 594,00 | 370 000,00 | 98 266 306 615,40 | 65,3 | 8 718 | 9 330 | 0 |
| MEXICO | 2013 | 196 455 984,00 | 705 000,00 | 106825649872,1 | 67 | 8 718 | 9 330 | 0 |
| MEXICO | 2014 | 199 954 977,00 | 750 280,00 | 110081248587,4 | 66,8 | 8 718 | 9 330 | 0 |
| MEXICO | 2015 | 198 538 371,00 | 850 000,00 | 101179808076,4 | 66,4 | 8 718 | 9 330 | 0 |
| MOROCCO | 2011 | 387 985 963,00 | 11 915 000,00 | 1180489601957,6 | 59,6 | 852 | 1 835 | 0 |
| MOROCCO | 2012 | 459 171 886,00 | 12 705 000,00 | 1201089987015,5 | 60,2 | 852 | 1 835 | 0 |
| MOROCCO | 2013 | 732 594 668,00 | 19 401 745,96 | 1274443084716,6 | 59,6 | 852 | 1 835 | 0 |
| MOROCCO | 2014 | 587 243 032,00 | 20 242 513,17 | 1315351183524,5 | 58,3 | 852 | 1 835 | 0 |
| MOROCCO | 2015 | 679 137 608,00 | 13 095 000,00 | 1171867608197,7 | 60,1 | 852 | 1 835 | 0 |
| MOZAMBIQUE | 2011 | 216 884 933,00 | 3 980 000,00 | 14 381 552 432,90 | 56,8 | 7 894 | 2 470 | 1 |
| MOZAMBIQUE | 2012 | 287 103 844,00 | 6 743 500,00 | 16 350 804 543,10 | 57,1 | 7 894 | 2 470 | 1 |
| MOZAMBIQUE | 2013 | 327 778 447,00 | 6 904 876,24 | 16 974 320 551,00 | 55 | 7 894 | 2 470 | 1 |
| MOZAMBIQUE | 2014 | 317 907 964,00 | 8 208 948,74 | 17 716 084 107,60 | 55 | 7 894 | 2 470 | 1 |
| MOZAMBIQUE | 2015 | 355 081 133,00 | 7 725 948,74 | 15 950 969 018,90 | 54,8 | 7 894 | 2 470 | 1 |
| PERU | 2011 | 15 893 900,00 | 1 000 000,00 | 171761737046,6 | 68,6 | 873 | 2 414 | 0 |
| PERU | 2012 | 23 983 240,00 | 1 035 000,00 | 192648999090,1 | 68,7 | 873 | 2 414 | 0 |
| PERU | 2013 | 28 598 119,00 | 1 555 000,00 | 201175469114,3 | 68,2 | 873 | 2 414 | 0 |
| PERU | 2014 | 30 264 304,00 | 105 000,00 | 200789362451,6 | 67,4 | 873 | 2 414 | 0 |
| PERU | 2015 | 34 150 483,00 | 1 180 000,00 | 189805300841,6 | 67,7 | 873 | 2 414 | 0 |
| QATAR | 2011 | 13 897 391,00 | 50 000,00 | 167775268614 | 70,5 | 5 688 | 563 | 0 |
| QATAR | 2012 | 12 719 937,00 | 355 000,00 | 186833502362,1 | 71,3 | 5 688 | 563 | 0 |
| QATAR | 2013 | 14 259 578,00 | 370 000,00 | 198727642979,3 | 71,3 | 5 688 | 563 | 0 |
| QATAR | 2014 | 19 076 038,00 | 275 000,00 | 206224598564,6 | 71,2 | 5 688 | 563 | 0 |
| QATAR | 2015 | 17 786 319,00 | 175 000,00 | 161739955577,7 | 70,8 | 5 688 | 563 | 0 |
| RUSSIA | 2011 | 139 582 719,00 | 2 070 000,00 | 2045925608274,4 | 50,5 | 7 311 | 37 653 | 0 |
| RUSSIA | 2012 | 181 675 333,00 | 2 382 000,00 | 2208295773643,2 | 50,5 | 7 311 | 37 653 | 0 |
| RUSSIA | 2013 | 263 046 118,00 | 3 275 000,00 | 2292473246621,1 | 51,1 | 7 311 | 37 653 | 0 |
| RUSSIA | 2014 | 204 063 726,00 | 3 340 000,00 | 2059241965490,8 | 51,9 | 7 311 | 37 653 | 0 |
| RUSSIA | 2015 | 157 617 919,00 | 3 530 000,00 | 1363481063446,8 | 52,1 | 7 311 | 37 653 | 0 |
| SAO TOME AND PRINCIPE | 2011 | 46 543 597,00 | 304 000,00 | 231 488 665,20 | 49,5 | 4 614 | 209 | 1 |
| SAO TOME AND PRINCIPE | 2012 | 46 096 752,00 | 374 000,00 | 250 680 453,10 | 50,2 | 4 614 | 209 | 1 |
| SAO TOME AND PRINCIPE | 2013 | 50 344 407,00 | 414 000,00 | 300 553 785,00 | 48 | 4 614 | 209 | 1 |
| SAO TOME AND PRINCIPE | 2014 | 56 606 465,00 | 504 000,00 | 346 527 949,80 | 48,8 | 4 614 | 209 | 1 |
| SAO TOME AND PRINCIPE | 2015 | 57 462 727,00 | 1 145 000,00 | 316 065 369,90 | 53,3 | 4 614 | 209 | 1 |
| SAUDI ARABIA | 2011 | 92 957 915,00 | 1 200 000,00 | 671238840108,2 | 66,2 | 525 | 2 640 | 0 |
| SAUDI ARABIA | 2012 | 132 716 519,00 | 1 575 000,00 | 735974843348,7 | 62,5 | 525 | 2 640 | 0 |
| SAUDI ARABIA | 2013 | 151 612 430,00 | 1 150 000,00 | 746647127407,6 | 60,6 | 525 | 2 640 | 0 |

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|---|---|---|---|---|---|---|---|---|
| SAUDI ARABIA | 2014 | 112 537 835,00 | 995 988,00 | 756350347320,4 | 62,2 | 525 | 2 640 | 0 |
| SAUDI ARABIA | 2015 | 128 374 838,00 | 900 000,00 | 654269902888,7 | 62,1 | 525 | 2 640 | 0 |
| SENEGAL | 2011 | 34 945 210,00 | 275 000,00 | 17 902 207 621,60 | 55,7 | 2 835 | 531 | 0 |
| SENEGAL | 2012 | 51 726 327,00 | 500 000,00 | 17 824 398 468,90 | 55,4 | 2 835 | 531 | 0 |
| SENEGAL | 2013 | 53 133 436,00 | 270 000,00 | 18 965 572 150,30 | 55,5 | 2 835 | 531 | 0 |
| SENEGAL | 2014 | 40 603 647,00 | 105 000,00 | 19 797 254 643,10 | 55,4 | 2 835 | 531 | 0 |
| SENEGAL | 2015 | 44 103 085,00 | 40 000,00 | 17 774 766 636,00 | 57,8 | 2 835 | 531 | 0 |
| SERBIA | 2011 | 5 606 776,00 | 340 000,00 | 49 258 136 129,00 | 58 | 2 466 | 0 | 0 |
| SERBIA | 2012 | 5 846 156,00 | 440 000,00 | 43 309 252 921,10 | 58 | 2 466 | 0 | 0 |
| SERBIA | 2013 | 9 222 740,00 | 730 000,00 | 48 394 239 474,70 | 58,6 | 2 466 | 0 | 0 |
| SERBIA | 2014 | 5 211 168,00 | 750 000,00 | 47 062 206 677,70 | 59,4 | 2 466 | 0 | 0 |
| SERBIA | 2015 | 7 824 709,00 | 460 000,00 | 39 655 958 842,50 | 60 | 2 466 | 0 | 0 |
| SOUTH AFRICA | 2011 | 85 880 246,00 | 1 505 000,00 | 416418874936,3 | 62,7 | 842 | 2 798 | 0 |
| SOUTH AFRICA | 2012 | 101 755 899,00 | 1 895 000,00 | 396332702639,5 | 62,7 | 842 | 2 798 | 0 |
| SOUTH AFRICA | 2013 | 160 894 326,00 | 1 745 000,00 | 366829390479 | 61,8 | 842 | 2 798 | 0 |
| SOUTH AFRICA | 2014 | 122 603 448,00 | 1 140 000,00 | 350904575292,3 | 62,5 | 842 | 2 798 | 0 |
| SOUTH AFRICA | 2015 | 153 195 990,00 | 745 000,00 | 317620522794,8 | 62,6 | 842 | 2 798 | 0 |
| TUNISIA | 2011 | 143 283 744,00 | 4 635 000,00 | 45 810 626 509,40 | 58,5 | 1 695 | 1 148 | 0 |
| TUNISIA | 2012 | 114 734 487,00 | 4 035 000,00 | 45 044 112 939,40 | 58,6 | 1 695 | 1 148 | 0 |
| TUNISIA | 2013 | 166 195 210,00 | 5 565 000,00 | 46 251 061 734,50 | 57 | 1 695 | 1 148 | 0 |
| TUNISIA | 2014 | 128 103 291,00 | 4 810 000,00 | 47 632 326 088,20 | 57,3 | 1 695 | 1 148 | 0 |
| TUNISIA | 2015 | 140 500 292,00 | 3 155 000,00 | 43 173 480 832,00 | 57,7 | 1 695 | 1 148 | 0 |
| TURKEY | 2011 | 300 698 956,00 | 4 375 000,00 | 838785707000,2 | 64,2 | 371 | 7 200 | 0 |
| TURKEY | 2012 | 355 391 970,00 | 1 660 000,00 | 880555967207,5 | 62,5 | 371 | 7 200 | 0 |
| TURKEY | 2013 | 381 110 698,00 | 2 345 000,00 | 957799371565,7 | 62,9 | 371 | 7 200 | 0 |
| TURKEY | 2014 | 403 715 904,00 | 1 365 000,00 | 938934394763,9 | 64,9 | 371 | 7 200 | 0 |
| TURKEY | 2015 | 362 984 660,00 | 1 070 000,00 | 864314287105,7 | 63,2 | 371 | 7 200 | 0 |
| UKRAINE | 2011 | 19 012 620,00 | 360 000,00 | 163159671670,3 | 45,8 | 327 | 2 782 | 0 |
| UKRAINE | 2012 | 21 476 933,00 | 812 250,00 | 175781379051,4 | 46,1 | 327 | 2 782 | 0 |
| UKRAINE | 2013 | 22 372 264,00 | 1 100 000,00 | 183310146378,1 | 46,3 | 327 | 2 782 | 0 |
| UKRAINE | 2014 | 22 404 696,00 | 335 000,00 | 133503411375,7 | 49,3 | 327 | 2 782 | 0 |
| UKRAINE | 2015 | 19 703 909,00 | 260 000,00 | 91 030 959 454,70 | 46,9 | 327 | 2 782 | 0 |
| UNITED ARABIC EMIRATES | 2011 | 90 101 305,00 | 662 000,00 | 350666031313,8 | 67,8 | 6 031 | 1 318 | 0 |
| UNITED ARABIC EMIRATES | 2012 | 95 100 146,00 | 450 000,00 | 374590605854,3 | 69,3 | 6 031 | 1 318 | 0 |
| UNITED ARABIC EMIRATES | 2013 | 101 711 479,00 | 900 000,00 | 390107556160,7 | 71,1 | 6 031 | 1 318 | 0 |
| UNITED ARABIC EMIRATES | 2014 | 123 501 588,00 | 2 996 290,00 | 403137100068,1 | 71,4 | 6 031 | 1 318 | 0 |
| UNITED ARABIC EMIRATES | 2015 | 170 155 993,00 | 2 745 000,00 | 358135057862,5 | 72,4 | 6 031 | 1 318 | 0 |
| VENEZUELA | 2011 | 154 201 926,00 | 67 153 211,50 | 316482190800,4 | 37,6 | 6 863 | 2 800 | 0 |
| VENEZUELA | 2012 | 313 262 092,00 | 59 680 657,45 | 381286237847,7 | 38,1 | 6 863 | 2 800 | 0 |
| VENEZUELA | 2013 | 190 113 733,00 | 64 414 621,68 | 371005379786,6 | 36,1 | 6 863 | 2 800 | 0 |
| VENEZUELA | 2014 | 206 961 149,00 | 19 717 104,60 | 482359318767,7 | 36,3 | 6 863 | 2 800 | 0 |
| VENEZUELA | 2015 | 133 904 332,00 | 1 450 000,00 | ,, | 34,3 | 6 863 | 2 800 | 0 |
| VIETNAM | 2011 | 12 007 078,00 | 30 000,00 | 135539438559,7 | 51,6 | 11 163 | 3 444 | 0 |
| VIETNAM | 2012 | 9 499 200,00 | 15 000,00 | 155820001920,5 | 51,3 | 11 163 | 3 444 | 0 |
| VIETNAM | 2013 | 9 273 563,00 | 35 000,00 | 171222025117,4 | 51 | 11 163 | 3 444 | 0 |
| VIETNAM | 2014 | 7 875 810,00 | 135 000,00 | 186204652922,3 | 50,8 | 11 163 | 3 444 | 0 |
| VIETNAM | 2015 | 17 467 343,00 | 35 000,00 | 193241108709,5 | 51,7 | 11 163 | 3 444 | 0 |