RUI PASCOAL

Macroeconomic Factors of Household Default. Is There Myopic Behaviour?

ESTUDOS DO GEMF

N.º 20 2012

PUBLICAÇÃO CO-FINANCIADA PELA

FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA

Impresso na Secção de Textos da FEUC
COIMBRA 2012
Macroeconomic Factors of Household Default. Is there myopic behaviour?

Rui Pascoal
Faculdade de Economia da Universidade de Coimbra
ruiapsp@fe.uc.pt
Abstract

The purpose of this paper is to study the family financial distress in Portugal, using quarterly observations, in a period from 2002 to 2010, by analysing the macroeconomic determinants of the Household Default rate, for which we take a logit transformation. Ordinary least squares are used.

The default determinants considered are Euribor rate, Gross Domestic Product (GDP) growth rate (gdpgr) and unemployment rate. The distinctive feature of this paper is the decomposition of gdpgr in a short term and a long term components and the substitution of gdpgr for its long term component as a regressor which improves the adjustment of the regression.

The signs of the coefficients are the ones expected according to economic theory, except for Euribor rate, which may be due to its pro-cyclical behaviour with respect to economic activity.

Taking into account the distinct characterization with respect to stationarity of the different variables, the estimation of the relation between household default rate and its factors has to be done in two stages: first a regression on the integrated variables, and then a regression of the residuals of the first regression on the stationary variables.

It is detected a more pronounced effect of the long term component of gdpgr and a perverse influence (although it may be spurious) of the short term component of gdpgr on default, which, jointly, suggests the existence of myopic behaviour by the families.

It is analysed the joint evolution of these variables to detect possible interactions between them. Namely, the paradoxical role of Euribor rate is explained by its correlation with the other regressors.

JEL Classification: D81, I12, C61

Keywords: Household default, spectral analysis, logit regression, cointegration
1 Introduction

The purpose of this paper is to study the family financial distress in Portugal, using quarterly observations, in a period from December 2002 to December 2010, by analysing the macroeconomic determinants of the Household Default rate, for which we take a logit transformation. Similar studies can be found for other countries in [Boss (2002)], [Marcucci, Quagliariello (2005)], [Wong, Fong (2006)]. Ordinary least squares are used.

The default determinants considered are unemployment rate (z1), Euribor rate (z2), and Gross Domestic Product growth rate (gdpgr). As tests for stationarity are not conclusive in the case of gdpgr, either a regression on all these factors is done, assuming that gdpgr is integrated as the others are, or, if we assume it is stationary, a two stage procedure is done. In this last case, a first regression of the default rate on z1 and z2, or alternatively only on z1, is done and, then, regression of the residuals of that regression on gdpgr or on its components.

In fact, the distinctive feature of this paper is the decomposition of gdpgr in a short term and a long term components and the substitution of gdpgr for its components as a regressors which improves the adjustment of the regression.

The signs of the coefficients are the ones expected according to economic theory, except for Euribor rate, which may be due to its procyclical behaviour with respect to economic activity. It is detected a more pronounced effect of the long term component of GDP growth rate and a perverse influence (although it may be spurious) of the short term component of GDP growth rate on default, which, jointly, suggests the existence of myopic behaviour by the families.

It is analysed the joint evolution of these variables to detect possible interactions between them. Namely, the paradoxical role of Euribor rate is explained by its correlation with the other regressors.

In section 2, the default rate and its logit transformation are defined, and the macroeconomic factors are presented. In section 3, tests for stationarity of these variables are done, which is a previous step to the following sections. As for GDP growth rate, the tests are inconclusive. In section 4, a first regression of default on its factors is performed assuming that all variables (including GDP growth rate) are integrated, and a test of cointegration is done. The unexpected sign of the Euribor rate coefficient lead to the study of its relation with the other factors, namely unemployment. In the last sections, GDP growth rate is assumed to be stationary. In section 5, the procedure for decomposing the stationary series in its short term and long term fluctuations is described. In section 6, the analysis of the influence of macroeconomic factor on default rate is performed in two stages: first, regression on the integrated variables (unemployment and Euribor rate or, alternatively, only on unemployment), and then regression of the resulting residuals on GDP growth rate or, alternatively, on its short term and long term components. We find that the long term component has a more significant coefficient than GDP growth rate and the short term component coefficient is positive. This effect is greater when we consider unemployment as the only factor on the first stage.

2 Default and its determinants

The dependent variable is the household default rate, y, defined (according to the Bank of Portugal) as the proportion of families credit that is not yet paid at maturity. This variable takes values in [0, 1]. We consider the logit transformation \( \logit(y) = \ln \frac{y}{1-y} \) which transforms the original values in [0, 1] to values in \( ]-\infty, +\infty[ \). This variable is labelled ylog.

The macroeconomic factors of default considered are:
Figure 1: - Unemployment rate (z1) has a positive correlation with default rate since households whose members face unemployment immediately have an increased difficulty in paying their debts; 
- Three months Euribor rate (z2) which affects the burden of the debt; it is expected that as Euribor rate increases so does default; 
- Portuguese GDP growth rate (gdpgr) has a twofold influence on household default; on the one hand, a long term increase in gdpgr enables households to serve their debt easily; on the other hand, a short term increase in gdpgr may generate a false positive expectation, increasing its debts and consequently the inherent default risk; this last aspect is a consequence of myopic behaviour by economic agents.
Other factors could be included, namely wage growth which increases the ability of the more fragile households to pay theirs debts.

3 Are the series integrated?

Unit root and stationarity tests were performed: the augmented Dickey-Fuller unit root test (ADF) with 3 lags and against the alternative of stationarity ([Dickey, Fuller (1981)]), the Phillips-Perron unit root test (PP) with 3 lags and against the alternative of stationarity ([Phillips, Perron (1988)]), the Kwiatkowski-Phillips-Schmidt-Shin stationarity test (KPSS) with 1 lag and against the alternative of unit root ([Kwiatkowsky, Phillips, Schmidt, Shin (1992)]), and the Elliot-Rothenberg-Stock unit root test (ERS) ([Elliot, Rothenberg, Stock (1996)]). The results are presented in Table 1.

As for the first three tests, we come to the conclusion that all variables considered are integrated, except for z2 where the KPSS test comes to a different conclusion from the others and for gdpgr where the tests come to distinct conclusions (see p-values in parenthesis). As for this last variable, since ADF test has low power, its conclusion can, in principle, be discarded, accepting that GDP growth rate is stationary.

In face of the divergence of results on some variables, we consider the unit root test of Elliot, Rothenberg and Stock which is more powerful than the ADF and PP tests. Its critical values are -2.63, -1.95 and -1.62 at, respectively, the 1%, 5% and 10% levels. The p-value for GDP growth rate is near 5% which, taking into account the power of the test, suggests that stationarity is an acceptable

<table>
<thead>
<tr>
<th>Tests \ Variables (p-values)</th>
<th>ylog</th>
<th>z1</th>
<th>z2</th>
<th>gdpgr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF</td>
<td>-0.9546</td>
<td>-1.1332</td>
<td>-1.912</td>
<td>-2.4324</td>
</tr>
<tr>
<td></td>
<td>(0.5298)</td>
<td>(0.9031)</td>
<td>(0.6077)</td>
<td>(0.4055)</td>
</tr>
<tr>
<td>PP</td>
<td>-0.0194</td>
<td>-5.0914</td>
<td>-4.218</td>
<td>-24.446</td>
</tr>
<tr>
<td></td>
<td>(0.984 )</td>
<td>(0.8075)</td>
<td>(0.8645)</td>
<td>(&lt;0.01 )</td>
</tr>
<tr>
<td>KPSS</td>
<td>0.6894</td>
<td>1.4049</td>
<td>0.3032</td>
<td>0.1193</td>
</tr>
<tr>
<td></td>
<td>(0.01451)</td>
<td>(&lt;0.01)</td>
<td>(&gt;0.1)</td>
<td>(&gt;0.1)</td>
</tr>
<tr>
<td>ERS</td>
<td>-1.5101</td>
<td>-0.2579</td>
<td>-2.2312</td>
<td>-1.8033</td>
</tr>
</tbody>
</table>

Table 1. Unit root and stationarity tests
hypothesis. As for z2, the p-values between 1% and 5% enhance the doubt on the existence of unit root on this variable.

If GDPgr is considered integrated, then the relation found between default rates and its factors may be seen as an equilibrium relation. This is the object of the next section.

4 Regression on the three factors; the role of Euribor rate

Assuming that GDPgr is integrated, a regression of the default rate on the three factors is performed. The results are shown in Table 2. As a test of cointegration, we perform the unit root test of Elliot, Rothenberg and Stock on the residuals of the regression, accepting the alternative hypothesis of stationarity (the statistics value is -1.9738 which is between the 1% and 5% critical values).

The predicted values for household default presented in Table 3 are based on this regression.

The coefficients have the expected sign, except for z2 (Euribor rate). In this case, the negative sign is explained by the fact that Euribor rate is negatively correlated with unemployment and positively correlated with Product growth as we’ll see below, which expresses a pro-cyclical behaviour of this variable.

Considering the regression of z2 on z1 and gdpgr, the coefficient of this last variable is not significant, so we take the regression of z2 only on z1 which results in Table 4 confirms the negative effect of unemployment on Euribor rate.

We perform the unit root test of Elliot, Rothenberg and Stock on the residuals of the regression, as a test of cointegration, accepting the alternative hypothesis of stationarity (the statistics value is -2.155 which is between the 1% and 5% critical values).

5 GDP decomposition

In this section we assume that the GDP growth rate is stationary.

The GDPgr series is decomposed in a series representing the long term movement and another series representing the short term variations. This is done by using a procedure based on a transformation to the frequency domain which allows to distinguish between low and high frequencies, and, after this separation, a transformation back to the time domain to obtain the series corresponding to low frequencies (long term movement) and the series corresponding to high frequencies (short term variations). This procedure was introduced by Tan and Ashley [Ashley, Tan (1999)].
Table 3. Forecast of household default rate based on regression of ylog on z1, z2 and gdpg

<table>
<thead>
<tr>
<th>gdpg</th>
<th>euribor</th>
<th>unempl.</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>0,75</td>
<td>3,619798</td>
<td>3,773933</td>
<td>3,854364</td>
<td>4,101323</td>
</tr>
<tr>
<td>-1</td>
<td>1</td>
<td>3,553964</td>
<td>3,705464</td>
<td>3,863088</td>
<td>4,027097</td>
</tr>
<tr>
<td>-1</td>
<td>1,5</td>
<td>3,425739</td>
<td>3,571917</td>
<td>3,724082</td>
<td>3,882489</td>
</tr>
<tr>
<td>-0,5</td>
<td>0,75</td>
<td>3,521825</td>
<td>3,671947</td>
<td>3,828215</td>
<td>3,990857</td>
</tr>
<tr>
<td>-0,5</td>
<td>1</td>
<td>3,457709</td>
<td>3,6052</td>
<td>3,758738</td>
<td>3,918548</td>
</tr>
<tr>
<td>-0,5</td>
<td>1,5</td>
<td>3,332837</td>
<td>3,475193</td>
<td>3,623402</td>
<td>3,777855</td>
</tr>
<tr>
<td>0</td>
<td>0,75</td>
<td>3,420409</td>
<td>3,572615</td>
<td>3,724818</td>
<td>3,885245</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>3,283969</td>
<td>3,507667</td>
<td>3,657147</td>
<td>3,812809</td>
</tr>
<tr>
<td>0</td>
<td>1,5</td>
<td>3,242369</td>
<td>3,380996</td>
<td>3,525335</td>
<td>3,675601</td>
</tr>
<tr>
<td>1</td>
<td>0,75</td>
<td>3,243004</td>
<td>3,381658</td>
<td>3,526024</td>
<td>3,676318</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>3,183797</td>
<td>3,320006</td>
<td>3,461834</td>
<td>3,609494</td>
</tr>
<tr>
<td>1</td>
<td>1,5</td>
<td>3,08502</td>
<td>3,195942</td>
<td>3,356818</td>
<td>3,479338</td>
</tr>
</tbody>
</table>

Table 4. Regression of z2 on z1

<table>
<thead>
<tr>
<th>z2</th>
<th>Coefficients</th>
<th>standard-deviation</th>
<th>statistics</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.90086</td>
<td>1.0011</td>
<td>4.912</td>
<td>2.74e-05</td>
</tr>
<tr>
<td>z1</td>
<td>-0.4133</td>
<td>0.1408</td>
<td>-2.818</td>
<td>0.008531</td>
</tr>
<tr>
<td>F-statistic (1,31)</td>
<td>7.841</td>
<td>0.008331</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The vector of GDPgr observations is pre-multiplied by the real-valued transformation matrix $A$ with $(s,t)$th element given by:

$$ a_{st} = \begin{cases} 
(\frac{1}{T})^\frac{1}{2}, & \text{for } s = 1; \\
(\frac{1}{T})^\frac{1}{2} \cos \left( \frac{s\pi(t-1)}{T} \right), & \text{for } s = 2, 4, 6, ..., (T - 2) \text{ or } (T - 1); \\
(\frac{1}{T})^\frac{1}{2} \sin \left( \frac{s\pi(t-1)}{T} \right), & \text{for } s = 3, 5, 7, ..., (T - 1) \text{ or } T; \\
(\frac{1}{T})^\frac{1}{2} (-1)^{t+1}, & \text{for } s = T \text{ and } T \text{ even, } t = 1, ..., T.
\end{cases} $$

The first row of $A$ corresponds to zero frequency. The $(2k)$th and $(2k + 1)$th rows correspond, respectively, to the sine and cosine transforms at the $\frac{2k\pi}{T}$ frequency ($k \in \{1, 2, ..., \frac{T}{2}\}$).

The effect of the pre-multiplication by $A$ is as follows:
- the first observation of the new variable is the mean of all observations;
- the second (resp. third) observation is an average too, but the weights make one complete sine (resp. cosine) oscillation during the sample;
- for the fourth and fifth observations, the weights have two complete oscillations over the sample, and so on.

We call the resulting variable $X$.

Taking a frequency band (that is, a set of frequencies), we construct a variable with the observation equal to the corresponding observation in $X$ if the observation index belongs to the band considered, and zero otherwise. In our case we consider one band for the lower frequencies and another for the higher ones. This way, we obtain the variable $X_1$ for the lower frequencies and $X_2$ for the higher ones.

Finally, we return to the time domain by pre-multiplying each of these variables by $A^{-1} = AT^T$, that is, $X_1^* = AT^T X_1$ and $X_2^* = AT^T X_2$.

$X_1^*$ is a series expressing the short term GDP fluctuations and $X_2^*$ is a series expressing the long term fluctuations of GDP. To simplify the notation, we set $z3 = X_2^*$ and $z4 = X_1^*$. Variable $z3$ matches the cycles with maximal duration of 3 years and a quarter. Variable $z4$ matches the cycles with duration from 5 years and a quarter to 8 years and a quarter. So, $z3$ may be viewed as reflecting transitory deviations from longer temporal movements on the variable.

A long term fluctuation may in some sense be anticipated by the agents. On the other hand, if an agent takes a short term evolution as "permanent" that may be seen as a miss-judgement which can lead to a wrong decision by households of increasing their debts and consequently its default risk.

As referred in [Ashley, Tan (1999)], the distinction between short and long fluctuations has collected much attention through the history of Economic Thought, by authors such as Marshall ("short period" versus "long period"), Keynes ("short run" versus "long run") and Friedman ("transitory income" versus "permanent income"). Also, more recently, the studies on habit formation and, more specifically, focusing on the consumption of households, pursue the same distinction.

As for these last, as a result of addiction and planning of savings by newly rich, there is persistence of consumption, which makes it relatively insensitive to income fluctuations (even permanent ones), and consequently to monetary policy ([Becker (1992)]). This "excess smoothness" of consumption is shown by [Campbell, Deaton (1989)].

However, [Belbute, Calheiro (2009)] found that the level of persistence on aggregate private consumption in Portugal is less persistent in Portugal than in other countries of European Community. In this result, a special role is played by the consumption of durables which are more volatile and less persistent than non-durables and services. This is in tune with the analysis in this paper.

The relation between Euribor rate and unemployment and long term component of GDP growth rate is confirmed by the correlation matrix between the variables presented in Table 5.
6 Default determinants assuming GDP growth rate stationarity

Assuming that gdpr is stationary, a first regression of ylog on z1 and z2 is fitted (see Table 6).

Performing, as a test of cointegration, the Elliot, Rothenberg and Stock unit root test on the residuals of this regression, we find a statistics value of -2.0822 which is between the 1% and the 5% critical values. Given the high power of the test, we accept the alternative hypothesis of stationarity of the residuals.

Next, the residuals of this regression are regressed, first on gdpr components z3 and z4 and then on gdpr itself (see Tables 7 and 8). Regression on z3 and z4 has a better adjustment than regression on gdpr, which suggests that the decomposition is advantageous in explaining credit default. Besides, the coefficient of z4 is greater than that of gdpr, which indicates a more pronounced effect when the long term component of gdpr is selected. The coefficient of z3 is positive, which indicates that there may be myopic behaviour by the households. That is, short term fluctuations are taken as permanent changes leading to assuming more debts, what results in a worsening of credit default.

These conclusions are even more pronounced if, in the first step regression, we regress ylog only on z1, taking into account that there is some correlation between z1 and z2. The results are presented in Tables 9 to 11. Nonetheless, in this case, the result of the Elliot, Rothenberg and Stock unit root test is not so favourable to the stationarity of the residuals of the regression as in the previous case.

<table>
<thead>
<tr>
<th>Table 5. Correlation Matrix of ylog, z1, z2, z3 and z4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>ylog</td>
</tr>
<tr>
<td>z1</td>
</tr>
<tr>
<td>z2</td>
</tr>
<tr>
<td>z3</td>
</tr>
<tr>
<td>z4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 6. Regression of ylog on z1, z2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>z1</td>
</tr>
<tr>
<td>z2</td>
</tr>
<tr>
<td>F-statistic (2,30)</td>
</tr>
</tbody>
</table>
The statistics value is -1.7046 which is between the 5% critical value (-1.95) and the 10% critical value (-1.62).

Comparing Tables 10 and 11, we see that the divergence between the signiﬁcance level of gdpgr and those of z3 and z4 is accentuated: the effect of the GDP growth rate is smaller and the effects of z3 and z4 are more pronounced, including the short term effect attributed to myopic behaviour.

The fact that household reacts differently to long and short cycles of GDP growth rate shows the distinct role these have, and that shorter fluctuations may be seen by households as permanent. Although analysis of longer cycles (not available due to lack of data) would be pertinent, evidence found allows to ﬁnd a signiﬁcant difference of the effect of the cycles available for analysis.

### 7 Conclusion

It is found that, in the data considered, unemployment and GDP growth rate have the expected effects on household default and these effects are statistically signiﬁcant.

On the other side, Euribor rate has an effect with the wrong sign, which may be due to its correlation with the other factors considered. That may be explained by a pro-cyclical behaviour of Euribor rate.
A decomposition of GDP growth rate on short term variations and long term movement is found. Performing a regression of household default on unemployment and then regressing its residuals on the components of GDP growth rate, we see that the long term component has a more significant effect than GDP growth rate. The paradoxical positive effect signal of short term component on default is explained by a myopic behaviour of households: transitory fluctuations in Product growth are taken as permanent, which results in default worsening.

References

[Ashley, Tan (1999)]

[Becker (1992)]

[Belbute, Caleiro (2009)]
Belbute, José; Caleiro, António. Measuring the Persistence on Consumption in Portugal. *Munich Personal RePEc Archive* (may 2009)

[Boss (2002)]


<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-19</td>
<td>Can German Unions Still Cut It?</td>
<td>John Addison, Paulino Teixeira, Jens Stephani &amp; Lutz Bellmann</td>
</tr>
<tr>
<td>2012-18</td>
<td>Financial Constraints: Do They Matter to R&amp;D Subsidy Attribution?</td>
<td>Filipe Silva &amp; Carlos Carreira</td>
</tr>
<tr>
<td>2012-17</td>
<td>Worker Productivity and Wages: Evidence from Linked Employer-Employee Data</td>
<td>Ana Sofia Lopes &amp; Paulino Teixeira</td>
</tr>
<tr>
<td>2012-16</td>
<td>Slovak Economic Growth and the Consistency of the Balance-of-Payments Constraint Approach</td>
<td>Elias Soukiazis &amp; Eva Muchova</td>
</tr>
<tr>
<td>2012-15</td>
<td>The Importance of a Good Indicator for Global Excess Demand</td>
<td>João Sousa Andrade &amp; António Portugal Duarte</td>
</tr>
<tr>
<td>2012-14</td>
<td>Measuring Firms’ Financial Constraints: A Rough Guide</td>
<td>Filipe Silva &amp; Carlos Carreira</td>
</tr>
<tr>
<td>2012-12</td>
<td>Where Are the Fragilities? The Relationship Between Firms’ Financial Constraints, Size and Age</td>
<td>Carlos Carreira &amp; Filipe Silva</td>
</tr>
<tr>
<td>2012-11</td>
<td>An European Distribution of Income Perspective on Portugal-EU Convergence</td>
<td>João Sousa Andrade, Adelaide Duarte &amp; Marta Simões</td>
</tr>
<tr>
<td>2012-10</td>
<td>Financial Crisis and Domino Effect</td>
<td>Pedro Bação, João Maia Domingues &amp; António Portugal Duarte</td>
</tr>
<tr>
<td>2012-09</td>
<td>Non-market Recreational Value of a National Forest: Survey Design and Results</td>
<td>Paula Simões, Luís Cruz &amp; Eduardo Barata</td>
</tr>
<tr>
<td>2012-08</td>
<td>Growth rates constrained by internal and external imbalances and the role of relative prices: Empirical evidence from Portugal</td>
<td>Elias Soukiazis, Pedro André Cerqueira &amp; Micaela Antunes</td>
</tr>
<tr>
<td>2012-07</td>
<td>Is the Erosion Thesis Overblown? Evidence from the Orientation of Uncovered Employers</td>
<td>John Addison, Paulino Teixeira, Katalin Evers &amp; Lutz Bellmann</td>
</tr>
<tr>
<td>2012-06</td>
<td>Explaining the interrelations between health, education and standards of living in Portugal: A simultaneous equation approach</td>
<td>Ana Poças &amp; Elias Soukiazis</td>
</tr>
<tr>
<td>2012-05</td>
<td>Turnout and the Modeling of Economic Conditions: Evidence from Portuguese Elections</td>
<td>Rodrigo Martins &amp; Francisco José Veiga</td>
</tr>
<tr>
<td>2012-04</td>
<td>The Relative Contemporaneous Information Response. A New Cointegration-Based Measure of Price Discovery</td>
<td>Helder Sebastião</td>
</tr>
<tr>
<td>2012-02</td>
<td>As Ações Portuguesas Seguem um Random Walk? Implicações para a Eficiência de Mercado e para a Definição de Estratégias de Transação</td>
<td>Ana Rita Gonzaga &amp; Helder Sebastião</td>
</tr>
<tr>
<td>2012-01</td>
<td>Consuming durable goods when stock markets jump: a strategic asset allocation approach</td>
<td>João Amaro de Matos &amp; Nuno Silva</td>
</tr>
<tr>
<td>2011-21</td>
<td>The Portuguese Public Finances and the Spanish Horse</td>
<td>João Sousa Andrade &amp; António Portugal Duarte</td>
</tr>
<tr>
<td>2011-20</td>
<td>Fitting Broadband Diffusion by Cable Modem in Portugal</td>
<td>Rui Pascoal &amp; Jorge Marques</td>
</tr>
</tbody>
</table>
2011-19  A Poupança em Portugal
- Fernando Alexandre, Luís Aguiar-Conraria, Pedro Bação & Miguel Portela

2011-18  How Does Fiscal Policy React to Wealth Composition and Asset Prices?
- Luca Agnello, Vítor Castro & Ricardo M. Sousa

2011-17  The Portuguese Stock Market Cycle: Chronology and Duration Dependence
- Vítor Castro

2011-16  The Fundamentals of the Portuguese Crisis
- João Sousa Andrade & Adelaide Duarte

2011-15  The Structure of Collective Bargaining and Worker Representation: Change and Persistence in the German Model
- John T. Addison, Paulino Teixeira, Alex Bryson & André Pahnke

2011-14  Are health factors important for regional growth and convergence? An empirical analysis for the Portuguese districts
- Ana Poças & Elias Soukiazis

2011-13  Financial constraints and exports: An analysis of Portuguese firms during the European monetary integration
- Filipe Silva & Carlos Carreira

2011-12  Growth Rates Constrained by Internal and External Imbalances: a Demand Orientated Approach
- Elias Soukiazis, Pedro Cerqueira & Micaela Antunes

2011-11  Inequality and Growth in Portugal: a time series analysis
- João Sousa Andrade, Adelaide Duarte & Marta Simões

2011-10  Do financial Constraints Threat the Innovation Process? Evidence from Portuguese Firms
- Filipe Silva & Carlos Carreira

2011-09  The State of Collective Bargaining and Worker Representation in Germany: The Erosion Continues
- John T. Addison, Alex Bryson, Paulino Teixeira, André Pahnke & Lutz Bellmann

2011-08  From Goal Orientations to Employee Creativity and Performance: Evidence from Frontline Service Employees
- Filipe Coelho & Carlos Sousa

2011-07  The Portuguese Business Cycle: Chronology and Duration Dependence
- Vítor Castro

2011-06  Growth Performance in Portugal Since the 1960’s: A Simultaneous Equation Approach with Cumulative Causation Characteristics
- Elias Soukiazis & Micaela Antunes

2011-05  Heteroskedasticity Testing Through Comparison of Wald-Type Statistics
- José Murteira, Esmeralda Ramalho & Joaquim Ramalho

2011-04  Accession to the European Union, Interest Rates and Indebtedness: Greece and Portugal
- Pedro Bação & António Portugal Duarte

2011-03  Economic Voting in Portuguese Municipal Elections
- Rodrigo Martins & Francisco José Veiga

2011-02  Application of a structural model to a wholesale electricity market: The Spanish market from January 1999 to June 2007
- Vítor Marques, Adelino Fortunato & Isabel Soares

2011-01  A Smoothed-Distribution Form of Nadaraya-Watson Estimation
- Ralph W. Bailey & John T. Addison

2010-22  Business Survival in Portuguese Regions
- Alcina Nunes & Elsa de Morais Sarmento

2010-21  A Closer Look at the World Business Cycle Synchronization
- Pedro André Cerqueira

2010-20  Does Schumpeterian Creative Destruction Lead to Higher Productivity? The effects of firms’ entry
- Carlos Carreira & Paulino Teixeira
2010-19  How Do Central Banks React to Wealth Composition and Asset Prices?
- Vítor Castro & Ricardo M. Sousa

2010-18  The duration of business cycle expansions and contractions: Are there change-points in duration dependence?
- Vítor Castro

2010-17  Water Pricing and Social Equity in Portuguese Municipalities
- Rita Martins, Carlota Quintal, Eduardo Barata & Luís Cruz

2010-16  Financial constraints: Are there differences between manufacturing and services?
- Filipe Silva & Carlos Carreira

2010-15  Measuring firms’ financial constraints: Evidence for Portugal through different approaches
- Filipe Silva & Carlos Carreira

2010-14  Exchange Rate Target Zones: A Survey of the Literature
- António Portugal Duarte, João Sousa Andrade & Adelaide Duarte

2010-13  Is foreign trade important for regional growth? Empirical evidence from Portugal
- Elias Soukiazis & Micaela Antunes

2010-12  MCMC, likelihood estimation and identifiability problems in DLM models
- António Alberto Santos

2010-11  Regional growth in Portugal: assessing the contribution of earnings and education inequality
- Adelaide Duarte & Marta Simões

2010-10  Business Demography Dynamics in Portugal: A Semi-Parametric Survival Analysis
- Alcina Nunes & Elsa Sarmento

2010-09  Business Demography Dynamics in Portugal: A Non-Parametric Survival Analysis
- Alcina Nunes & Elsa Sarmento

2010-08  The impact of EU integration on the Portuguese distribution of employees’ earnings
- João A. S. Andrade, Adelaide P. S. Duarte & Marta C. N. Simões

2010-07  Fiscal sustainability and the accuracy of macroeconomic forecasts: do supranational forecasts rather than government forecasts make a difference?
- Carlos Fonseca Marinheiro

2010-06  Estimation of Risk-Neutral Density Surfaces
- A. M. Monteiro, R. H. Tütüncü & L. N. Vicente

2010-05  Productivity, wages, and the returns to firm-provided training: who is grabbing the biggest share?
- Ana Sofia Lopes & Paulino Teixeira

2010-04  Health Status Determinants in the OECD Countries. A Panel Data Approach with Endogenous Regressors
- Ana Poças & Elias Soukiazis

2010-03  Employment, exchange rates and labour market rigidity
- Fernando Alexandre, Pedro Baçao, João Cerejeira & Miguel Portela

2010-02  Slip Sliding Away: Further Union Decline in Germany and Britain
- John T. Addison, Alex Bryson, Paulino Teixeira & André Pahnke

2010-01  The Demand for Excess Reserves in the Euro Area and the Impact of the Current Credit Crisis
- Fátima Teresa Sol Murta & Ana Margarida Garcia

2009-16  The performance of the European Stock Markets: a time-varying Sharpe ratio approach
- José A. Soares da Fonseca

2009-15  Exchange Rate Mean Reversion within a Target Zone: Evidence from a Country on the Periphery of the ERM
- António Portugal Duarte, João Sousa Andrade & Adelaide Duarte

2009-14  The Extent of Collective Bargaining and Workplace Representation: Transitions between States and their Determinants. A Comparative Analysis of Germany and Great Britain
- John T. Addison, Alex Bryson, Paulino Teixeira, André Pahnke & Lutz Bellmann
How well the balance-of-payments constraint approach explains the Portuguese growth performance. Empirical evidence for the 1965-2008 period
- Micaela Antunes & Elias Soukiazis

Atypical Work: Who Gets It, and Where Does It Lead? Some U.S. Evidence Using the NLSY79
- John T. Addison, Chad Cotti & Christopher J. Surfield

The PIGS, does the Group Exist? An empirical macroeconomic analysis based on the Okun Law
- João Sousa Andrade

A Política Monetária do BCE. Uma estratégia original para a estabilidade nominal
- João Sousa Andrade

Wage Dispersion in a Partially Unionized Labor Force
- John T. Addison, Ralph W. Bailey & W. Stanley Siebert

Employment and exchange rates: the role of openness and technology
- Fernando Alexandre, Pedro Bação, João Cerejeira & Miguel Portela

Channels of transmission of inequality to growth: A survey of the theory and evidence from a Portuguese perspective
- Adelaide Duarte & Marta Simões

No Deep Pockets: Some stylized results on firms’ financial constraints
- Filipe Silva & Carlos Carreira

Aggregate and sector-specific exchange rate indexes for the Portuguese economy
- Fernando Alexandre, Pedro Bação, João Cerejeira & Miguel Portela

Rent Seeking at Plant Level: An Application of the Card-De La Rica Tenure Model to Workers in German Works Councils
- John T. Addison, Paulino Teixeira & Thomas Zwick

Unobserved Worker Ability, Firm Heterogeneity, and the Returns to Schooling and Training
- Ana Sofia Lopes & Paulino Teixeira

Worker Directors: A German Product that Didn’t Export?
- John T. Addison & Claus Schnabel

Fiscal and Monetary Policies in a Keynesian Stock-flow Consistent Model
- Edwin Le Heron

A série Estudos do GEMF foi iniciada em 1996.