HOW BANK MARKET CONCENTRATION, REGULATION, AND INSTITUTIONS SHAPE THE REAL EFFECTS OF BANKING CRISES

ANA I. FERNÁNDEZ
FRANCISCO GONZÁLEZ
NURIA SUÁREZ

FUNDACIÓN DE LAS CAJAS DE AHORROS
DOCUMENTO DE TRABAJO
Nº 543/2010
De conformidad con la base quinta de la convocatoria del Programa de Estímulo a la Investigación, este trabajo ha sido sometido a evaluación externa anónima de especialistas cualificados a fin de contrastar su nivel técnico.

ISSN: 1988-8767

La serie DOCUMENTOS DE TRABAJO incluye avances y resultados de investigaciones dentro de los programas de la Fundación de las Cajas de Ahorros. Las opiniones son responsabilidad de los autores.
How Bank Market Concentration, Regulation, and Institutions Shape the Real Effects of Banking Crises

Ana I. Fernández*
Francisco González*
Nuria Suárez*†

Abstract

This paper studies the influence of bank market concentration, regulation, and institutions on the real effects of 68 systemic banking crises in 54 countries over the 1980-2000 period. We find that less stringent restrictions on non-traditional bank activities and on the mixing of banking and commerce have a negative effect on economic growth during normal periods but mitigate the negative effects of banking crises on economic growth. This changing influence between crisis and non-crisis periods is reinforced by market concentration. We also find that explicit deposit insurance and better-quality accounting standards mitigate the negative real effects of systemic banking crises and interact positively with bank concentration to minimize the reduction of economic growth during crisis episodes. These results are evidence of the greater benefits that long-term relationships and the mixing of banking and commerce may provide during banking crises.

Keywords: banking crises, bank concentration, economic growth, institutions, regulation

JEL Codes: E44, G21, O16

* University of Oviedo, Department of Business Administration, School of Economics and Business Avenida del Cristo s/n, 33071. Oviedo. (Spain).
† Corresponding author: Nuria Suárez. Phone: +34.985.10.28.20. Fax: +34.985.10.37.08. E-mail: suareznuria@uniovi.es

Acknowledgments: Financial support from the Spanish Ministry of Science and Innovation (MCI), Project MICINN-09-ECO2009-11758, is gratefully acknowledged. Nuria Suárez also acknowledges financial support from the Fundación para el Fomento en Asturias de la Investigación Científica Aplicada y la Tecnología (FICYT).
1. Introduction

One of the main concerns in the current economic crisis is how to reduce the negative effects of banking crises on economic growth. This debate is not a transient one, as banking crises appear to have become more common and more far-reaching in the 1990s and 2000s in comparison with earlier periods (Bordo et al., 2001). In this context, this paper uses a sample of 68 systemic banking crises in 54 countries to analyze how the real effects of banking crises depend on the country’s bank market concentration, regulation, and institutions. We also analyze interactions between these variables to find the mechanisms by which banking crises reduce economic growth through the lending channel.

The law and finance literature provides substantial and recent empirical evidence indicating that financial development helps firms to grow faster by supplying more external funds and that a country’s financial development is related to its legal and institutional framework (La Porta et al. 1997, 1998; Levine 1997, 2005; Rajan and Zingales, 1998). The natural extension of the above evidence to banking crisis periods suggests that there will be a more contractionary impact on sectors in which growth is dependent on funds provided by banks when a sudden negative shock obliges them to reduce their credit supply.

Empirical evidence confirms the above hypothesis. Bordo et al. (2001), Boyd et al. (2005), and Hutchison and Noy (2005) show that the magnitude of output losses associated with banking crises varies substantially across crisis episodes. Hoggarth et al. (2002) find that output losses incurred during crises in developed countries are higher on average than those in emerging economies. Dell’Ariccia et al. (2008) and Krozsner et al. (2007) confirm that the negative real effects remain after carefully controlling for reverse causality between economic downturns and banking crises. They find that more financially dependent industries perform significantly worse during banking crises than industries that are not so dependent on external funds. This indicates causality running from banking crises to recessions, stemming at least in part from a reduction in the credit supply, and not simply from recessions to banking crises. Krozsner et al. (2007), moreover, show that the negative effect of banking crises on growth is greater in countries with more developed financial systems. Their finding is the natural extension for banking crisis periods of the evidence provided by Rajan and Zingales (1998) for non-crisis periods. The interpretation is that operating in an environment where financial markets are well developed is an advantage for more financially dependent industries in good times, but a disadvantage in times of banking crises. They also find a differential impact of banking crises on growth for industries dominated by young firms and for industries with high levels of intangible assets.

Little is known, however, about whether the real effects of banking crises depend on other country characteristics apart from financial development. Our paper attempts to help fill this gap by linking the literature on the impact of bank market concentration, regulation, and institutions on economic growth with the literature analyzing the real effects of banking crises. The paper makes several contributions.

First, we analyze how bank concentration influences the real effects of banking crises. Previous research has suggested two opposite effects for bank concentration on economic growth. In perfect
markets, bank concentration may imply more market power for banks, involving higher interest rates and lower availability of funds. Bank concentration might thus reduce economic growth. In markets with asymmetric information, however, higher bank market concentration may increase banks’ incentives to invest in the acquisition of soft information by establishing close relationships with borrowers over time (relationship banking), facilitating the availability of credit and thereby reducing firms’ financial constraints (Petersen and Rajan, 1994, 1995; Boot, 2000; Dell’Ariccia and Marquez, 2004). Bank concentration might thus foster economic growth. Cetorelli and Gamberra (2001) empirically find that the effect of bank concentration on economic growth varies across sectors. While bank concentration has a general negative effect on growth, it also promotes growth of industrial sectors that are more in need of external finance by facilitating credit access for younger firms. The argument is that banking market concentration facilitates the creation of close lending relationships between banks and this type of firm, leading to an enhancing effect on firms’ growth.

There is, however, no empirical evidence on the influence of bank concentration on the negative real effects of banking crises. A priori, there is no clear forecast. On the one hand, a more concentrated banking market that favors lending relationships might reduce the negative effects of banking crises on the credit channel. The better the information banks have about the quality of firms’ investment opportunities, the more the lower credit supply might be turned to more profitable investments. In such cases, bank concentration might reduce the negative real effects of banking crises. On the other hand, close lending relationships between banks and firms originate switching costs for borrowers in changing lenders. If the relationship bank goes bankrupt, some of its borrowers might be obliged to borrow from non-relationship banks. These borrowers would face an adverse selection problem as non-informed banks will prefer to allocate their funds to the better known, but less profitable, projects of relationship firms (Detragiache et al. 2000). The consequence is that the projects financed are not the best in the economy. In such cases, bank concentration might increase the negative real effects of a banking crisis. As the theory predicts both effects, we do not make an a priori forecast as to how bank concentration influences the real effects of banking crises, and treat it rather as an empirical issue.

Second, our research provides empirical evidence on which regulatory and institutional country characteristics minimize the negative real effects of banking crises. We study two aspects: 1) whether bank regulation and institutions have an additional influence to that found for bank concentration and financial development and, 2) whether bank regulation and institutions interact with bank concentration, i.e., if the effect of bank concentration on the real effects of banking crises varies across countries depending on regulation and institutions. As bank concentration, regulation, and institutions may be affected by endogeneity problems leading to correlations among them, we focus on the exogenous component of each one using instrumental variables.

As regulatory variables we specifically consider the influence of restrictions on non-traditional bank activities, restrictions on the mixing of banking with commerce, and the presence of explicit deposit insurance. Empirical evidence provided for non-crisis periods shows that more strictly regulated
banking markets are less developed, less stable, and less competitive (Barth et al., 2004; Claessens and Laeven, 2004). The effects of bank regulation might, however, be different in crisis and non-crisis periods. This is the case of bank equity holdings of industrial firms. As conflicts of interest and information asymmetries become more relevant to firms in financial distress, even restrictive legislations such as those of the US and Britain have allowed banks to temporarily take equity in industrial firms to prevent viable firms from being liquidated (Gilson et al., 1990; James, 1995; Franks and Nyborg, 1996). There is no evidence, however, on the role of the mixing between banking and commerce during periods of banking crises even though, during such periods, agency costs and information asymmetries may become more important as banks have to select the borrowers to whom they will not be renewing loans. The traditional benefits associated with the affiliation between banking and commerce might thus increase banks’ efficiency in the more restrictive lending policy that forces a lower credit supply.

Similarly, it has long been suggested that while deposit insurance exists to prevent bank runs in solvent banks during systemic crises (Diamond and Dybvig, 1983), more generous deposit insurance has costs in the long run, weakening market discipline enforced by depositors (Merton, 1977; Demirgüç-Kunt and Detragiache, 2002). The empirical literature on the effects of deposit insurance coverage during banking crises is, however, inconclusive. Claessens et al. (2003) find that generous support for banking systems does not reduce the output cost of banking crises. Angkinand (2008) find the opposite result. Neither of the two papers controls for reverse causality problems between economic downturn and the real effects of banking crises. Dell’Ariccia et al. (2008) address the reverse causality problems and do not find a statistically significant relation between blanket depositor protection and the real cost of crises. None of the above works analyze how the interaction with bank concentration of deposit insurance, restrictions on non-traditional bank activities, and the mixing of banking and commerce may mitigate the negative real effects of banking crises.

As institutional variables potentially influencing the real effects of banking crises we include the control of corruption and the quality of disclosure of firms’ annual reports. As the law and finance literature has proved that financial development is positively related to institutional quality, the role of institutions on the real effects of banking crisis would have been partially captured by Kroszner et al. (2007) when they find a greater reduction of economic growth in countries with deeper financial systems. A different influence to the negative one associated with financial development might, however, stem from the positive effect of institutional quality on the resolution policies usually adopted during banking crises or through interactions with bank concentration. Claessens et al. (2004) suggest that a better institutional framework lowers fiscal outlays for crisis resolution. Fernández et al. (2010) find that bank concentration is more beneficial for solving adverse selection and moral hazard problems between firms and banks in less developed markets that have poor institutional infrastructure. The difficulty of developing markets in such environments may make long-term relationships between banks and debtors helpful in solving the problem (La Porta et al., 1997, 1998). Bank concentration in such markets may favor these relationships and thereby have a greater positive effect on economic growth.
There is, however, no empirical evidence on whether a high-quality institutional environment complements or substitutes bank concentration to promote long-term relationships with borrowers during banking crises. We use different measures of institutional quality to find which of the aspects that are positively related to financial development are most important during banking crises for mitigating negative effects on economic growth. We focus on the exogenous component of each institutional variable to avoid correlated results.

Finally, we analyze more countries than previous studies. We include a sample of 68 systemic banking crisis in 54 developed and developing countries over the 1980-2000 period using data on 28 industries in each country. Also using industrial data, Kroszner et al. (2007) analyze data from 38 countries, and Dell'Ariccia et al. (2008) from 41 countries. We can thus provide information on a greater range of country differences to give us a better understanding of how the real effects of banking crises depend on bank market concentration, regulation, and institutions.

Our results indicate that bank regulation and institutions interact with market concentration to mitigate the negative real effects of systemic banking crises. We find that less stringent restrictions on non-traditional bank activities and on the mixing of banking and commerce have a negative effect on economic growth during normal periods but mitigate the negative effects of banking crises on economic growth. We also find that, in periods of stability, concentration only has a positive effect on the economic growth of more financial dependent sectors when there are restrictions on banking activities and on the extent to which banks may own and control non-financial firms. In crisis periods, however, bank concentration has a positive effect on economic growth only when bank activities and the mixing of banking and commerce are unrestricted.

These results suggest that legal restrictions on non-traditional banking activities and bank ownership of non-financial firms prevent a more efficient risk assessment that might promote economic growth during banking crises. They also indicate that legal restrictions on bank activities are more important than market structure in reducing the negative real effects of systemic banking crises. These results are evidence of the greater benefits that long-term relationships and the mixing of banking and commerce may provide during banking crises.

We also find that explicit deposit insurance and better-quality accounting standards mitigate the negative real effects of systemic banking crises and interact positively with bank concentration to minimize the reduction of economic growth during banking crisis periods.

The remainder of the paper is organized as follows. Section 2 discusses the econometric methodology. Section 3 discusses the data. Section 4 presents the results, and Section 5 concludes.
2. Methodology

We extend the method in Kroszner et al. (2007) to analyze the influence of bank concentration, regulation, and institutions on the real effects of banking crises. We apply the following model in countries with systemic banking crises and for three separated sub-periods, namely, before, during, and after the crisis:

\[
\text{Growth}_{ij} = \text{Constant} + \beta_1 \times \text{Industry Share of Value Added}_{ij} \\
+ \beta_2 \times \text{Financial Development}_{i} \times \text{External Dependence}_{j} \\
+ \beta_3 \times \text{Bank Concentration}_{i} \times \text{External Dependence}_{j} \\
+ \beta_4 \times \text{Regulation and Institutions}_{i} \times \text{External Dependence}_{j} \\
+ \beta_5 \times \text{Industry Dummies}_{j} \\
+ \beta_6 \times \text{Country Dummies}_{i} \\
+ \text{Error}_{i,j} \tag{1}
\]

\(\text{Growth}_{ij}\) is the real growth in value added\(^1\) of sector \(j\) in country \(i\). The industrial share on value added controls for the potential convergence effects among industries, i.e., the tendency of larger industries to experience slower growth. Following previous literature, we include an interaction term between financial development and external dependence to control for the influence of financial development. The interaction with external dependence aims to avoid the usual reverse causality problems for the relationship between economic growth and financial development. The premise of this approach is that, if industries that depend more on external finance are hurt more severely after a banking crisis, then a banking crisis is likely to have an independent negative effect on real economic activity. The coefficient \(\beta_2\) of this interaction term is expected to be positive in pre-crisis periods and negative in crisis periods.\(^2\)

We extend previous analyses by including two additional interaction terms. One is between the level of external financial dependence and bank concentration. This interaction analyzes in three separate subperiods (pre-crisis, crisis, and post crisis period) whether sectors that are more in need of external finance grow disproportionately slower or faster if they are in a country with high bank concentration. Following the arguments explained in the previous section, the sign of \(\beta_3\) in the pre-crisis period is ambiguous depending on the dominance of the negative effect of banking market power or of the positive effect on the incentives for (monopolistic) banks to establish lending relationships. Cetorelli and Gambera (2001) find a positive coefficient for this interaction for normal periods in a sample of 41

\(^1\) For robustness, we check that basic results do not change when we use gross capital formation, employment, and number of establishments as the dependent variables instead of value added.

\(^2\) This approach was initially applied by Rajan and Zingales (1998) and subsequently used by Cetorelli and Gambera (2001), Claessens and Laeven (2003), Fisman and Love (2003), and Braun and Larrain (2005) to investigate the effects of bank concentration, trade credit usage, property rights, and recessions, respectively, on sectoral growth. Kroszner et al. (2007) and Dell’Arco et al. (2008) have also applied this approach to specifically study the real effects of banking crises.
countries. The change of the sign of $\beta_3$ over the pre-crisis, crisis, and post-crisis period is also an empirical question.

Finally, we include an interaction term between the level of external dependence of industry $j$ and a set of regulatory and institutional variables in country $i$. These interactions capture whether regulatory and institutional characteristics influence the real effects of banking crises via other mechanisms apart from those included in financial development and bank market concentration. These interaction terms are incorporated sequentially rather than both together to avoid possible correlation problems.

We use industry and country dummies to control for all unobservable sources of value added growth specific to each country and each industry. Inclusion of these fixed effects avoids the need for financial development, bank concentration, and regulatory and institutional variables to enter the regression on their own. It allows us to focus only on the terms of their interaction.

We follow Krozsner et al. (2007) and Dell’ Ariccia et al. (2008) for classifying the sub-period around banking crises. We use $[t, t+2]$ as the crisis period, where $t$ is the first year of the crisis period as reported by Caprio et al. (2003). We separate the pre-crisis period from the crisis period by three years, that is, we define the pre-crisis period as $[t_1, t-3]$, where $t_1$ is the first year of the sample period (1980 or first year available). Similarly, we define the post-crisis period as $[t+3, T]$, where $t$ is the crisis inception year and $T$ is the end of the sample period (generally, 2000).\textsuperscript{3}

A small number of countries experience multiple crises during our sample period. In these cases and if the corresponding data on real value added are available, we account for multiple crises within a country as in Krozsner et al. (2007). Because periods between crises may not be regarded as normal times, the pre-crisis variables are based only on the period after the last crisis in the sample. The “during-crisis” variables are calculated as an average of each during-crisis episode for that country. We therefore include only one crisis observation in the basic regressions for countries that have experienced multiple crises. We perform the same robustness checks as Krozsner et al. (2007) to verify that results do not vary with the treatment of multiple crises.\textsuperscript{4}

We define an additional specification to analyze the difference in real growth in value added between the crisis period and the pre-crisis period. In this specification, we use the difference in real growth value added between the crisis period and the pre-crisis period as the dependent variable, that is,

$$\Delta \text{Growth}_{ij} = \text{Constant} + \beta_1 \cdot \text{Industry Share of Value Added}_{ij} + \beta_2 \cdot \text{Financial Development}_{i} \cdot \text{External Dependence}_{j} + \beta_3 \cdot \text{Bank Concentration}_{i} \cdot \text{External Dependence}_{j} + \beta_4 \cdot \text{Regulation and Institutions}_{i} \cdot \text{External Dependence}_{j} + \beta_5 \cdot \text{Industry Dummies}_{j}$$

\textsuperscript{3} We check that results do not vary when we use alternative definitions of the crisis periods, such as $(t-3, t+3)$ and $(t-5, t+5)$.

\textsuperscript{4} In particular, the results do not change when we allow each crisis episode in a country to be a different observation, including more than one crisis per country, when we add an indicator for countries with multiple crises, or when we drop countries with multiple crises altogether.
\[ \Delta \text{Growth}_{ij} = \text{Growth}_{ij, \text{CRISIS}} - \text{Growth}_{ij, \text{PRE-CRISIS}}, \] where \( \text{Growth}_{ij, \text{CRISIS}} \) is the real growth in value added of sector \( j \) in country \( i \) during the crisis period and \( \text{Growth}_{ij, \text{PRE-CRISIS}} \) is the real growth in value added of sector \( j \) in country \( i \) during the pre-crisis period.

Finally, we analyze if the impact of bank concentration on economic growth during crisis and non-crisis periods depends on bank regulation and institutional quality. We sequentially incorporate an interaction term between bank concentration, external financial dependence and each variable proxying for the regulatory and institutional environment. The inclusion of industry and country dummies allows us to focus only on the interaction terms. The model specification is as follows:

\[
\text{Growth}_{ij} = \text{Constant} + \beta_1 \times \text{Industry Share of Value Added}_{ij} + \beta_2 \times \text{Financial Development}_i \times \text{External Dependence}_j + \beta_3 \times \text{Bank Concentration}_i \times \text{Regulation and Institutions}_i \times \text{External Dependence}_j + \beta_4 \times \text{Industry Dummies}_j + \beta_5 \times \text{Country Dummies}_i + \text{Error}_{i,j} \tag{3}
\]

The regressions are estimated using ordinary least squares (OLS). In all estimations we try to identify the exogenous component of each country variable and control for potential simultaneity bias among financial development, bank concentration, regulation, and institutions. A major stumbling block when empirical analysis includes regulation and institutions is separating out the effects and the correlated outcomes. Such interrelations and the potential endogeneity of country-level variables make it difficult to tease out the specific effect of each variable and to know which of them plays the major role in economic growth. We select much the same set of instruments as other authors for the legal and institutional variables. Following Krozsner et al. (2007), we consider the five binary variables indicating the legal origin and a measure of rule of law in each country as instruments for bank concentration, and legal and institutional variables. This methodology allows us to focus on the influence of the exogenous component of bank market concentration, regulation, and the quality of institutions on industrial economic growth during both stability periods and banking crises. To test the suitability of using an Instrumental Variables (IV) estimator, we perform the Durbin-Wu-Hausman test which

---

5 Results are robust to alternative definitions of the set of instruments. For instance, we check that results do not vary when we use as instruments only the country’s legal origin as in La Porta et al. (1998), Beck et al. (2000), and Levine et al. (2000), when we use the legal origin, the rule of law, the total GDP, and the country’s population as in Cetorelli and Gambera (2001) or when we use the legal origin, the latitudinal distance from the equator, and the religious composition of the population in each country as in Barth et al. (2004).
verifies the null hypothesis that the introduction of IVs has no effect on estimates of the regression’s coefficients. We report IV estimations when the test is rejected at the 10 percent level or less. Otherwise, OLS estimates are reported.

3. Data

We use industry-specific and country-specific data from a variety of sources. We take the information on banking crises from Caprio et al. (2003). Our database contains information on 113 banking crises in 93 countries since the 1970s. Due to data constraints, a number of countries are dropped. First, we drop countries for which we do not have data on industrial value added. Following Krozsner et al. (2007) we also exclude countries for which we do not have sectoral value added for at least five sectors during any of the sub-periods. Missing data on the ratio of private credit to GDP reduce our final sample to 68 systemic banking crises in 54 countries over the 1980-2000 period. The basic estimation uses an unbalanced sample of 927 country-industry observations for the pre-crisis period, 909 country-industry observations for the crisis period, and 805 country-industry observations for the post-crisis period. Table 1 reports the crisis inception dates included in our sample.

We calculate the industrial real growth in value added and the industry’s share in total value added in the country using the UNIDO Industrial Statistic Database (2006). This database contains information on 28 industrial sectors at 3-digit ISIC disaggregation level. To deflate the industrial value added, we use the Consumer Price Index (CPI) from International Financial Statistics (IFS). Table 1 reports the average growth rate of real value added for each country’s pre, during, and post-crisis periods.

We follow Rajan and Zingales (1998), Beck et al., (2000) or Krozsner et al., (2007), among others, and we measure financial development as the ratio of private credit of deposit money banks to GDP taken from the IFS. The industry’s share in total value added and financial development are calculated for the first year in our sample, 1980, or first year available, to control for the potential endogeneity of these variables.

We use in our main specification the index calculated in Rajan and Zingales (1998) as the measure of external dependence. This index is defined as the fraction of capital expenditures not financed with cash-flow from operations constructed at industry-level for a sample of US firms. As in Cetorelli and Gambera (1998), we focus on the external financial needs of younger firms (those less than 10 years old). We also check that results do not change when we use alternative proxies for external finance. Following Dell’Ariccia et al. (2008) we use the average establishment or plant size and export orientation, and following Raddatz (2006) we use the ratio of total inventories over annual sales for US firms in the same industry in 1980.

Rajan and Zingales (1998) argue that the financial structure of US industries is an appropriate benchmark because the relatively open, sophisticated, and developed US financial markets should allow US firms to face fewer obstacles to achieving their desired financial structure than firms in other countries. This approach offers a valid and exogenous way of identifying the extent of an industry’s external dependence anywhere in the world. An important assumption underlying it is that external dependence reflects technological characteristics of the industry that are relatively stable across space and time.
We approximate the level of bank concentration by the fraction of bank assets held by the three largest commercial banks in a country. This measure is used, among others, by Cetorelli and Gamberra (2001), Demirgüç-Kunt et al. (2004), Beck et al. (2006). This variable is averaged over the sample period and comes from the Beck et al. (2000) database. Table 1 shows that bank concentration ranges from 39% for India to 100% for Cape Verde and Finland, indicating that high levels of bank concentration is not only a developing country characteristic. We check that the main results do not change when we use alternative measures of bank market concentration such as the sum (measured in total assets) of markets shares of the five largest banks; the rank of bank concentration and the Herfindahl index of market concentration.

We include three regulatory variables widely used in previous papers (Barth et al., 2004; Beck et al., 2006). The first is whether banks are allowed to take part in activities that generate non-interest income. This variable indicates whether bank activities in the securities, insurance, and real estate markets and bank ownership and control of non-financial firms are: (1) unrestricted, (2) permitted, (3) restricted, or (4) prohibited. This indicator can range from 4 to 16, where higher values indicate more restrictions on bank activities and non-financial ownership and control. We also separate in a single variable the restrictions on bank ownership and control of non-financial firms to specifically analyze the influence of the mixing of banking and commerce. This variable ranges from 1 to 4. Information on both variables comes from the World Bank’s bank regulation database.

The third regulatory variable is the presence of explicit deposit insurance in a country. We use a dummy variable (INS) that takes a value of 1 if there is explicit deposit insurance and 0 otherwise. Deposit insurance data come from Demirgüç-Kunt and Sobaci (2001).

Finally, we use two different variables to measure the quality of the institutional environment: the index of control of corruption from the ICRG (International Country Risk Guide), and the index of the quality of disclosure of firms’ annual reports from La Porta et al. (1998). The index of control of corruption ranges from the minimum 1.01 presented by Bangladesh to the maximum 8.9 in the case of South Africa. The quality of accounting standards varies in our sample from 2.4 (Egypt) to 8.3 (Sweden).

4. Empirical Results

4.1 Financial Development and Banking Crises

We initially replicate the Kroszner et al. (2007)’ estimations to see if their results remain in our database. We find (see Table 2) similar results to those reported in Kroszner et al. (2007). We obtain a positive and significant coefficient for the interaction term between financial development and the index of external financial dependence in the pre-crisis period. This means that during non-crisis periods, industries with higher levels of financial dependence tend to grow faster in countries with
Table 1
Economic Growth and Banking Crises

This table shows country averages of the industry-level real growth in value added for the pre-crisis, crisis and post-crisis periods. The sample consists only of systemic banking crisis countries. Data are for the period 1980-2000. Following Krozsner et al., (2007), the pre-crisis period is \([t, t-3]\), where \(t\) is the first year of the sample period (1980 or earliest available) and \(t\) is the crisis year. The crisis period is defined as \([t, t+2]\), where \(t\) is the first year of the crisis period reported on Caprio and Klingebiel (2002) or on the World Bank Database of Banking Crises (2003). The post-crisis period is \([t+3, T]\), where \(t\) is the crisis inception date and \(T\) is the end of the sample period (generally, 2000). We also report the ratio of private credit to GDP in 1980 (or the first year available), and the average bank concentration for the whole period, 1980-2000. Due to missing data on private credit and bank concentration the final sample consists in 70 systemic banking crises in 57 countries. Data on value added are from UNIDO. Data on private credit come from IFS. Finally, data on bank concentration come from the Beck et al., (2000), database.

<table>
<thead>
<tr>
<th>Country</th>
<th>Banking Crises Date</th>
<th>Real Growth in Value Added</th>
<th>Number of Sectors</th>
<th>Private Credit to GDP</th>
<th>Bank Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre-Crisis</td>
<td>Crisis</td>
<td>Post-Crisis</td>
<td>Pre-Crisis</td>
</tr>
<tr>
<td>Algeria</td>
<td>1990</td>
<td>0.026</td>
<td>-0.054</td>
<td>-0.186</td>
<td>28</td>
</tr>
<tr>
<td>Argentina</td>
<td>1980, 1989, 1995</td>
<td>n.a.</td>
<td>0.010, 0.034, 0.031</td>
<td>-0.010</td>
<td>0</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1987</td>
<td>0.002</td>
<td>-0.015</td>
<td>-0.021</td>
<td>27</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1986, 1994</td>
<td>-0.065</td>
<td>0.036, -0.009</td>
<td>-0.021</td>
<td>26</td>
</tr>
<tr>
<td>Burkina-Faso</td>
<td>1988</td>
<td>-0.062</td>
<td>n.a.</td>
<td>n.a.</td>
<td>23</td>
</tr>
<tr>
<td>Burundi</td>
<td>1994</td>
<td>-0.041</td>
<td>n.a.</td>
<td>n.a.</td>
<td>17</td>
</tr>
<tr>
<td>Cameroon</td>
<td>1987, 1995</td>
<td>-0.050</td>
<td>n.a., -0.008</td>
<td>-0.058</td>
<td>25</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>1993</td>
<td>0.037</td>
<td>n.a.</td>
<td>n.a.</td>
<td>9</td>
</tr>
<tr>
<td>Central African Rep.</td>
<td>1988</td>
<td>-0.060</td>
<td>0.033</td>
<td>-0.009</td>
<td>13</td>
</tr>
<tr>
<td>Chile</td>
<td>1981</td>
<td>n.a.</td>
<td>-0.055</td>
<td>-0.051</td>
<td>0</td>
</tr>
<tr>
<td>Colombia</td>
<td>1992</td>
<td>n.a.</td>
<td>-0.019</td>
<td>-0.136</td>
<td>0</td>
</tr>
<tr>
<td>Congo</td>
<td>1992</td>
<td>0.009</td>
<td>n.a.</td>
<td>n.a.</td>
<td>12</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1994</td>
<td>-0.133</td>
<td>-0.021</td>
<td>-0.027</td>
<td>27</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>1988</td>
<td>-0.041</td>
<td>0.077</td>
<td>-0.109</td>
<td>19</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1989</td>
<td>n.a.</td>
<td>-0.005</td>
<td>n.a.</td>
<td>0</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1980, 1990, 1996</td>
<td>0.020, 0.050, 0.011</td>
<td>n.a.</td>
<td>0</td>
<td>28, 28, 28</td>
</tr>
<tr>
<td>Egypt</td>
<td>1991</td>
<td>0.044</td>
<td>-0.032</td>
<td>0.009</td>
<td>28</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1989</td>
<td>-0.045</td>
<td>n.a.</td>
<td>0.017</td>
<td>27</td>
</tr>
<tr>
<td>Finland</td>
<td>1991</td>
<td>-0.007</td>
<td>-0.021</td>
<td>0.006</td>
<td>28</td>
</tr>
<tr>
<td>Ghana</td>
<td>1992</td>
<td>n.a.</td>
<td>-0.165</td>
<td>-0.092</td>
<td>0</td>
</tr>
<tr>
<td>Hungary</td>
<td>1991</td>
<td>-0.051</td>
<td>-0.031</td>
<td>-0.035</td>
<td>27</td>
</tr>
<tr>
<td>India</td>
<td>1993</td>
<td>-0.007</td>
<td>0.007</td>
<td>-0.001</td>
<td>28</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1992, 1997</td>
<td>0.027</td>
<td>0.005, -0.029</td>
<td>0.001</td>
<td>25</td>
</tr>
<tr>
<td>Jamaica</td>
<td>1994, 1996</td>
<td>-0.121</td>
<td>0.006, -0.025</td>
<td>n.a.</td>
<td>14</td>
</tr>
<tr>
<td>Japan</td>
<td>1992</td>
<td>0.035</td>
<td>0.007</td>
<td>-0.004</td>
<td>28</td>
</tr>
<tr>
<td>Jordan</td>
<td>1989</td>
<td>0.015</td>
<td>-0.008</td>
<td>0.038</td>
<td>26</td>
</tr>
<tr>
<td>Kenya</td>
<td>1985, 1993</td>
<td>-0.018</td>
<td>0.000, 0.017</td>
<td>0.032</td>
<td>26</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>1992</td>
<td>0.008</td>
<td>0.019</td>
<td>0.005</td>
<td>28</td>
</tr>
<tr>
<td>Kuwait</td>
<td>1986</td>
<td>-0.013</td>
<td>0.030</td>
<td>-0.028</td>
<td>23</td>
</tr>
<tr>
<td>Madagascar</td>
<td>1988</td>
<td>-0.096</td>
<td>n.a.</td>
<td>n.a.</td>
<td>20</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1985, 1997</td>
<td>-0.004</td>
<td>0.004, -0.029</td>
<td>0.021</td>
<td>28</td>
</tr>
<tr>
<td>Mexico</td>
<td>1981, 1994</td>
<td>n.a.</td>
<td>-0.076, -0.050</td>
<td>-0.008</td>
<td>0</td>
</tr>
<tr>
<td>Morocco</td>
<td>1980</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0</td>
</tr>
<tr>
<td>Nepal</td>
<td>1988</td>
<td>0.071</td>
<td>-0.027</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1989</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0</td>
</tr>
<tr>
<td>Country</td>
<td>Year(s)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>-----</td>
</tr>
<tr>
<td>Niger</td>
<td>1983</td>
<td>n.a.</td>
<td>n.a.</td>
<td>-0.058</td>
<td>0</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1991</td>
<td>-0.051</td>
<td>-0.091</td>
<td>-0.027</td>
<td>25</td>
</tr>
<tr>
<td>Norway</td>
<td>1990</td>
<td>-0.028</td>
<td>-0.007</td>
<td>-0.000</td>
<td>28</td>
</tr>
<tr>
<td>Panama</td>
<td>1988</td>
<td>-0.001</td>
<td>0.016</td>
<td>-0.052</td>
<td>26</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1995</td>
<td>-0.044</td>
<td>n.a.</td>
<td>n.a.</td>
<td>26</td>
</tr>
<tr>
<td>Peru</td>
<td>1983</td>
<td>n.a.</td>
<td>n.a.</td>
<td>-0.445</td>
<td>0</td>
</tr>
<tr>
<td>Philippines</td>
<td>1983, 1998</td>
<td>n.a.</td>
<td>-0.060, n.a.</td>
<td>n.a.</td>
<td>0</td>
</tr>
<tr>
<td>Poland</td>
<td>1992</td>
<td>-0.149</td>
<td>-0.005</td>
<td>n.a.</td>
<td>28</td>
</tr>
<tr>
<td>Senegal</td>
<td>1988</td>
<td>-0.061</td>
<td>0.827</td>
<td>-0.036</td>
<td>20</td>
</tr>
<tr>
<td>South Africa</td>
<td>1989</td>
<td>-0.058</td>
<td>-0.003</td>
<td>-0.053</td>
<td>28</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1989</td>
<td>-0.017</td>
<td>0.005</td>
<td>0.006</td>
<td>28</td>
</tr>
<tr>
<td>Swaziland</td>
<td>1996</td>
<td>-0.071</td>
<td>n.a.</td>
<td>n.a.</td>
<td>16</td>
</tr>
<tr>
<td>Sweden</td>
<td>1991</td>
<td>-0.019</td>
<td>-0.022</td>
<td>-0.006</td>
<td>28</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1982</td>
<td>-0.101</td>
<td>-0.018</td>
<td>-0.137</td>
<td>24</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1991</td>
<td>-0.011</td>
<td>0.046</td>
<td>-0.019</td>
<td>27</td>
</tr>
<tr>
<td>Thailand</td>
<td>1983</td>
<td>n.a.</td>
<td>-0.044</td>
<td>0.098</td>
<td>0</td>
</tr>
<tr>
<td>Togo</td>
<td>1993</td>
<td>-0.080</td>
<td>n.a.</td>
<td>n.a.</td>
<td>16</td>
</tr>
<tr>
<td>Turkey</td>
<td>1982, 1994, 2000</td>
<td>n.a.</td>
<td>-0.033, -0.057, -0.036</td>
<td>n.a.</td>
<td>0</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1981</td>
<td>n.a.</td>
<td>-0.070</td>
<td>-0.327</td>
<td>0</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1994</td>
<td>-0.128</td>
<td>-0.050</td>
<td>0.114</td>
<td>28</td>
</tr>
<tr>
<td>Zambia</td>
<td>1995</td>
<td>-0.169</td>
<td>n.a.</td>
<td>n.a.</td>
<td>27</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>1995</td>
<td>-0.096</td>
<td>0.003</td>
<td>n.a.</td>
<td>28</td>
</tr>
<tr>
<td><strong>Average/Total</strong></td>
<td></td>
<td><strong>-0.037</strong></td>
<td><strong>-0.012</strong></td>
<td><strong>-0.037</strong></td>
<td><strong>985</strong></td>
</tr>
</tbody>
</table>
more developed financial systems. This result is also consistent with Rajan and Zingales (1998). During crisis periods, we obtain the opposite relation, i.e., industries that are more dependent on external sources of funds tend to grow disproportionately more slowly in more developed financial systems. Results for the post-crisis period in column (3) show that the coefficient on the interaction term between bank development and external dependence is not statistically significant.

The negative and significant coefficient of column (4) indicates that the different influence of financial development on growth during the pre-crisis and the crisis period is economically and statistically significant. We do not, however, obtain a statistically significant coefficient on the interaction term when we compare the post-crisis period with the crisis period (Column 5) and the pre-crisis period (Column 6).

Columns (7) and (8) show that basic results in columns (1) and (2) do not vary when we use a balanced panel by dropping those sectors for which we only have data on one sub-period. Finally, in column (9) we show the results allowing for multiple crisis observations. The dependent variable is the difference in growth between the crisis and pre-crisis period. Our database therefore confirms the results found by Krozsner et al. (2007).

4.2. Bank Market Concentration and Banking Crises

We now incorporate the role of the exogenous component of bank concentration on economic growth during banking crises. We first add bank concentration in country i to examine its global impact on the real effects of banking crises. The results are reported in Table 3. As we include country dummies in all regressions, we now just isolate the specific effect of the exogenous component of bank concentration that in the previous regressions is captured by the country dummies. It is therefore not surprising that the coefficients of the interaction between financial development and the index of external financial dependence keep the signs shown in Table 2.

We obtain a negative and significant coefficient for bank concentration during the pre-crisis period. This result is consistent with Cetorelli and Gambera (2001) and supports the idea that greater banking market concentration imposes a deadweight loss in the credit market that affects the whole economy. During the crisis period we do not observe any statistically significant effect of bank concentration, but it again becomes negative in the post-crisis period. We obtain a positive coefficient for bank concentration when we analyze in column (4) the difference in growth between the crisis and the pre-crisis period. This result reflects the disappearance during the crisis period of the negative effects caused by bank concentration during the pre-crisis period.

In column (5) we present the results of estimations using the difference in growth during the post-crisis and the crisis periods. We obtain a negative and significant effect for bank concentration, suggesting that during the post-crisis period the negative effect of bank concentration on economic growth
Table 2
Financial Development and Banking Crises

This table shows the results of regressions analyzing the influence of financial development on the real effects of banking crises. Regressions are estimated using OLS estimators for cross-country data. In columns (1), (2) and (3), the dependent variable is the growth rate of real value added during each of pre-crisis, crisis and post-crisis periods. In column (4) the dependent variable is the difference in the growth rate of real value added between the crisis and pre-crisis periods. In column (5) the dependent variable is the difference in the growth rate of real value added between the post-crisis and crisis periods. In column (6) the dependent variable is the difference in the growth rate of real value added between the post-crisis and pre-crisis periods. We include the industrial share of value added for each industry in 1980. Bank financial development is measured as the value of private credits by deposit money banks and other financial institutions to the private sector divided by GDP. We use the index of industrial external financial dependence calculated in Rajan and Zingales (1998). In columns (7) y (8) we use balanced panel data of countries in the sample with data for both pre-crisis and crisis periods. In column (9) we allow each crisis episode in a country to be a distinct crisis observation, thereby including more than one crisis for countries with multiples crisis over the time period. Country and industry dummies are included but are not reported. T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-crisis</th>
<th>Crisis</th>
<th>Post-crisis</th>
<th>Crisis vs. pre-crisis</th>
<th>Post-crisis vs. Crisis</th>
<th>Post-crisis vs. Pre-crisis</th>
<th>Pre-crisis</th>
<th>Crisis</th>
<th>Crisis vs. pre-crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Share of Value Added</td>
<td>-0.0953***</td>
<td>0.0884</td>
<td>0.0547</td>
<td>0.1420*</td>
<td>-0.0469</td>
<td>0.1399**</td>
<td>-0.0981***</td>
<td>0.0439</td>
<td>0.0998</td>
</tr>
<tr>
<td>Financial Development *</td>
<td>0.0507**</td>
<td>-0.0280**</td>
<td>0.0082</td>
<td>-0.0612***</td>
<td>0.0364</td>
<td>-0.0351</td>
<td>0.0534***</td>
<td>-0.0278*</td>
<td>-0.0618*</td>
</tr>
<tr>
<td>External Dependence</td>
<td>(2.51)</td>
<td>(-1.97)</td>
<td>(0.31)</td>
<td>(-3.14)</td>
<td>(1.13)</td>
<td>(-1.06)</td>
<td>(2.93)</td>
<td>(-1.72)</td>
<td>(-1.91)</td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.4863</td>
<td>0.5475</td>
<td>0.4962</td>
<td>0.5505</td>
<td>0.5090</td>
<td>0.3459</td>
<td>0.6692</td>
<td>0.4963</td>
<td>0.6451</td>
</tr>
<tr>
<td># Observations</td>
<td>927</td>
<td>909</td>
<td>805</td>
<td>692</td>
<td>739</td>
<td>663</td>
<td>692</td>
<td>692</td>
<td>870</td>
</tr>
</tbody>
</table>
Table 3
Bank Concentration and Banking Crises

This table shows the results of regressions analyzing the influence of bank concentration on the real effects of banking crises. Regressions are estimated using OLS estimators for cross-country data. In columns (1), (2) and (3), the dependent variable is the growth rate of real value added during each of pre-crisis, crisis and post-crisis periods. In column (4) the dependent variable is the difference in the growth rate of real value added between the crisis and pre-crisis periods. In column (5) the dependent variable is the difference in the growth rate of real value added between the post-crisis and pre-crisis periods. In columns (7) and (8) we use balanced panel data of countries in the sample with data for both pre-crisis and crisis periods.

In column (9) we allow each crisis episode in a country to be a distinct crisis observation, thereby including more than one crisis for countries with multiple crises over the time period. We include the industrial share of value added for each industry in 1980. Bank financial development is measured as the value of private credits by deposit money banks and other financial institutions to the private sector divided by GDP. We use the index of industrial external financial dependence calculated in Rajan and Zingales (1998). Bank market concentration is calculated as the averaged value of the ratio assets from the three largest banks to total assets of banking sector in each country. The Durbin-Wu-Hausman statistic tests the null hypothesis that the use of instruments for bank concentration does not change the estimation outcome. We report IV estimates when the test is rejected at the one percent level. Instruments for bank concentration are: legal origin and rule of law. Country and industry dummy variables are included but are not reported.

T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-crisis</th>
<th>Crisis</th>
<th>Post-crisis</th>
<th>Crisis vs. pre-crisis</th>
<th>Post-crisis vs. Crisis</th>
<th>Post-crisis vs. Pre-crisis</th>
<th>Pre-crisis</th>
<th>Crisis</th>
<th>Crisis vs. pre-crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Share of Value</td>
<td>-0.0870**</td>
<td>0.0832</td>
<td>0.0479</td>
<td>0.1419*</td>
<td>-0.0493</td>
<td>0.1463**</td>
<td>-0.1105***</td>
<td>0.0313</td>
<td>0.0960</td>
</tr>
<tr>
<td>Added</td>
<td>(-2.13)</td>
<td>(1.13)</td>
<td>(1.04)</td>
<td>(1.79)</td>
<td>(-0.54)</td>
<td>(2.45)</td>
<td>(-3.73)</td>
<td>(0.44)</td>
<td>(1.27)</td>
</tr>
<tr>
<td>Financial Development *</td>
<td>0.0514***</td>
<td>-0.0277*</td>
<td>-0.0014</td>
<td>-0.0717***</td>
<td>0.0261</td>
<td>-0.0448</td>
<td>0.0447**</td>
<td>-0.0270</td>
<td>-0.0001*</td>
</tr>
<tr>
<td>External Dependence</td>
<td>(2.72)</td>
<td>(-1.86)</td>
<td>(-0.05)</td>
<td>(-2.72)</td>
<td>(0.82)</td>
<td>(-1.33)</td>
<td>(2.49)</td>
<td>(-1.57)</td>
<td>(-1.84)</td>
</tr>
<tr>
<td>Bank Concentration</td>
<td>-0.1760***</td>
<td>-0.0091</td>
<td>-0.2563**</td>
<td>0.1521***</td>
<td>-1.187***</td>
<td>0.3628***</td>
<td>-0.1650***</td>
<td>-0.0113</td>
<td>0.1023***</td>
</tr>
<tr>
<td>(-9.96)</td>
<td>(-0.50)</td>
<td>(-4.57)</td>
<td>(6.71)</td>
<td>(-6.16)</td>
<td>(3.79)</td>
<td>(-14.83)</td>
<td>(-0.60)</td>
<td>(2.69)</td>
<td></td>
</tr>
</tbody>
</table>

| Industry Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| R-Squared | 0.6281 | 0.5679 | 0.5387 | 0.5681 | 0.5172 | 0.3562 | 0.7281 | 0.4990 | 0.6727 |
| # Observations | 859 | 863 | 800 | 666 | 734 | 688 | 666 | 666 | 857 |
| Durbin-Wu-Hausman Test | 99.11*** | 0.25 | 20.91*** | 45.02*** | 37.93*** | 14.38*** | 220.03*** | 0.36 | 7.26*** |
The positive coefficient of bank concentration in column (6) indicates that the negative effect diminishes in the post-crisis period compared to the pre-crisis period. Results do not vary when in columns (7) and (8) we use a balanced panel data set or when in column (9) we allow each crisis episode in a country to be a separate observation.

The approach outlined above enables us to identify the difference in terms of the global effect of bank concentration on economic growth between crisis and non-crisis periods.

We go on to try to determine whether the impact of banking market concentration on industry growth, during crises and non-crisis periods, might vary among industries depending on the level of external financial dependence. In Table 4, we report estimations adding the interaction term between bank concentration and the index of external financial dependence. This model specification allows us to break down the total effect of the exogenous component of bank concentration in, first, an economy-wide effect and, second, a sector-specific effect.

Consistent with Cetorelli and Gambera (2001), we obtain a positive and significant coefficient for the interaction term between bank concentration and the index of external financial dependence in pre-crisis periods. This result indicates that bank concentration promotes economic growth of the industrial sectors that are most in need of external financing by facilitating credit access for younger firms. Cetorelli and Gambera (2001) suggest that, with information asymmetries, higher levels of bank concentration may increase banks’ incentives to invest in the acquisition of soft information by establishing close lending relationships with borrowers over time. These credit relationships facilitate the availability of funds for the sectors that are most in need of such relationships (Petersen and Rajan, 1994, 1995; Boot, 2000; Dell’Ariccia and Marquez, 2004).

The results reported in column (2) show a different pattern during banking crises. We do not find a significant impact of bank concentration on economic growth during banking crises in more financially dependent industries. We thus obtain a negative and significant coefficient for the interaction term between bank concentration and the index of financial dependence in column (4) when the dependent variable is the difference in real growth rate between the crisis and the pre-crisis period. This negative coefficient indicates that the disappearance during the crisis period of the positive effect of bank concentration for the growth of sectors that are more dependent on external finance is statistically significant.

We also obtain a negative and significant coefficient for the interaction term of bank concentration and external financing dependence, in column (6), when the dependent variable is the difference in real growth rate between the post-crisis and the pre-crisis period. This result implies that the positive effect in normal periods of bank concentration on economic growth of industries with higher levels of external financial dependence disappears not only during the crisis period but also subsequent to it. It suggests that the benefits of bank concentration to solve adverse selection and moral hazard problems between banks and firms in more financially dependent firms are reduced after a financial crisis. The results
### Table 4: Bank Concentration, External Dependence, and Banking Crises

This table shows the results of regressions analyzing the influence of bank concentration on the real effects of banking crises in more financially dependent industries. Regressions are estimated using OLS estimators for cross-country data. In columns (1), (2) and (3), the dependent variable is the growth rate of real value added during each of the pre-crisis, crisis and post-crisis periods. In column (4) the dependent variable is the difference in the growth rate of real value added between the crisis and pre-crisis periods. In column (5) the dependent variable is the difference in the growth rate of real value added between the post-crisis and pre-crisis periods. In columns (7) and (8) we use balanced panel data of countries in the sample with data for both pre-crisis and crisis periods. In column (9) we allow each crisis episode in a country to be a distinct crisis observation, thereby including more than one crisis for countries with multiple crises over the time period. We include the industrial share of value added for each industry in 1980. Bank financial development is measured as the value of private credits by deposit money banks and other financial institutions to the private sector divided by GDP. We use the index of industrial external financial dependence calculated in Rajan and Zingales (1998). Bank market concentration is calculated as the averaged value of the ratio assets from the three largest banks to total assets of banking sector in each country. The Durbin-Wu-Hausman statistic tests the null hypothesis that the use of instruments for bank concentration does not change the estimation outcome. We report IV estimates when the test is rejected at the one percent level. Instruments for bank concentration are: legal origin and rule of law. Country and industry dummy variables are included but are not reported. T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-crisis</th>
<th>Crisis</th>
<th>Post-crisis</th>
<th>Crisis vs. Pre-crisis</th>
<th>Post-crisis vs. Crisis</th>
<th>Post-crisis vs. Pre-crisis</th>
<th>Pre-crisis</th>
<th>Crisis</th>
<th>Crisis vs. Pre-crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced Panel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Share Value</td>
<td>-0.0761*</td>
<td>0.0763</td>
<td>0.0343</td>
<td>0.1258</td>
<td>-0.0508</td>
<td>0.1242**</td>
<td>-0.1009***</td>
<td>0.0246</td>
<td>0.0711</td>
</tr>
<tr>
<td>Financial Development</td>
<td>(-1.85)</td>
<td>(0.98)</td>
<td>(0.77)</td>
<td>(1.52)</td>
<td>(-0.52)</td>
<td>(2.21)</td>
<td>(-3.64)</td>
<td>(0.32)</td>
<td>(0.91)</td>
</tr>
<tr>
<td>External Dependence</td>
<td>0.0257**</td>
<td>-0.0046</td>
<td>0.0013</td>
<td>-0.0335*</td>
<td>0.0116</td>
<td>-0.0277</td>
<td>0.0269*</td>
<td>-0.0063</td>
<td>-0.0044</td>
</tr>
<tr>
<td>Bank Concentration</td>
<td>(1.77)</td>
<td>(-0.48)</td>
<td>(0.07)</td>
<td>(-1.77)</td>
<td>(0.60)</td>
<td>(-1.00)</td>
<td>(1.94)</td>
<td>(-0.57)</td>
<td>(-0.18)</td>
</tr>
<tr>
<td>Financial Development *</td>
<td>0.0706**</td>
<td>-0.0027</td>
<td>-0.0502</td>
<td>-0.0555*</td>
<td>-0.0459</td>
<td>-0.1181*</td>
<td>0.0540**</td>
<td>-0.0072</td>
<td>0.0605</td>
</tr>
<tr>
<td>Bank Concentration</td>
<td>(2.59)</td>
<td>(-0.20)</td>
<td>(-1.07)</td>
<td>(-1.71)</td>
<td>(-0.92)</td>
<td>(-1.89)</td>
<td>(1.98)</td>
<td>(-0.45)</td>
<td>(1.42)</td>
</tr>
<tr>
<td>Country Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.6315</td>
<td>0.6082</td>
<td>0.5645</td>
<td>0.5885</td>
<td>0.5422</td>
<td>0.3530</td>
<td>0.7097</td>
<td>0.5479</td>
<td>0.6975</td>
</tr>
<tr>
<td>Observations</td>
<td>769</td>
<td>793</td>
<td>719</td>
<td>599</td>
<td>662</td>
<td>592</td>
<td>599</td>
<td>599</td>
<td>767</td>
</tr>
<tr>
<td>Durbin-Wu-Hausman Test</td>
<td>53.14***</td>
<td>0.29</td>
<td>30.13***</td>
<td>19.82***</td>
<td>19.09***</td>
<td>12.94***</td>
<td>115.69***</td>
<td>0.31</td>
<td>7.53***</td>
</tr>
</tbody>
</table>
found using a balanced panel dataset and allowing for multiple crisis observations yield very similar results.

The coefficients of bank concentration indicate that the general depressant effect on growth in less financially dependent sectors associated with a concentrated banking industry in normal periods is not found during crisis periods but re-appears after the banking crisis.

### 4.3. Regulation, Institutions, and Banking Crises

We now analyze if the impact of bank concentration on the real effects of banking crises persists after controlling for the characteristics of bank regulation and institutions in the country. We add sequentially an interaction term of the exogenous component of each legal and institutional variable with the index of external financial dependence.

Table 5 reports the results for the exogenous component of regulatory variables. The interaction coefficients of financial development and concentration with external dependence do not vary after including regulatory variables. Regulatory variables, however, have additional effects to those of bank concentration and financial development. Both variables, restrictions on non-traditional activities and on the mixing of banking and commerce, in normal periods promote the growth of financially dependent sectors. Their influence, however, becomes negative again during crisis periods, indicating that less stringent restrictions on non-traditional bank activities and on the mixing of banking and commerce have a positive effect during crisis periods. The negative and significant coefficients of the interactions of two regulatory variables in columns (5) and (6) indicate that the change in the influence between the pre-crisis and the crisis period is statistically significant. The change in the influence from the pre-crisis to the crisis period is consistent with the greater benefits that long-term relationships and the mixing between banking and commerce may provide during banking crises. This result suggests that legal restrictions prohibiting banks from investing in other banking activities prevents them from drawing up a more efficient risk assessment to promote economic growth during financial crises. It also suggests that regulations preventing banks from holding equity stakes in non-financial firms lead to higher economic costs during banking crises. Relaxing restrictions on the mixing of banking and commerce and/or lowering weights in the risk-weighted capital requirement for bank equity investments in relationship firms may help reduce the negative real effects of banking crises. This should, however, be only a temporary measure as more stringent restrictions have positive effects in normal periods.

Explicit deposit insurance does not have a significant effect on growth in normal periods but does promote the growth of more financial dependent sectors during the crisis period. The coefficient of the interaction between the presence of explicit deposit insurance and external financial dependence in column 9 indicates that the change in the influence between the pre-crisis and the crisis period is
Table 5
Bank Regulation and Banking Crises
This table shows the results of regressions analyzing the influence of bank regulation on the real effects of banking crises. We present the results for the pre-crisis, crisis and the difference in growth between the crisis and pre-crisis periods. Regressions are estimated using OLS estimators for cross-country data. In columns (1) and (2) the dependent variable is the growth rate of real value added during pre-crisis period; in columns (3) and (4), the dependent variable is the growth rate of real valued added during banking crises; and in columns (5) and (6), the dependent variable is the difference in growth between the crisis and the pre-crisis periods. Bank market concentration is measured as the ratio assets from the three largest banks to total assets of banking industry in each country. We use the indicator of the degree to which banks’ activities are restricted outside the credit and deposit business. Separately we use the indicator of the extent to which banks may own and control non-financial firms. Country and industry dummy variables are included on estimations, but are not reported. Country and industry dummy variables are included on estimations, but are not reported. The Durbin-Wu-Hausman statistic tests the null hypothesis that the use of instruments does not change the estimation outcome. We report IV estimates when the test is rejected at the one percent level. Instruments for bank concentration and for the regulatory variables are: legal origin and rule of law. T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-Crisis</th>
<th></th>
<th></th>
<th>Crisis</th>
<th></th>
<th></th>
<th>Crisis vs. Pre-crisis</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
</tr>
<tr>
<td>Industrial Share of Value Added</td>
<td>-0.0749*</td>
<td>-0.0744*</td>
<td>-0.0761*</td>
<td>0.0752</td>
<td>0.0755</td>
<td>0.0758</td>
<td>0.1224</td>
<td>0.1237</td>
<td>0.1253</td>
</tr>
<tr>
<td>Financial Development * External Dependence</td>
<td>0.0468***</td>
<td>0.0310**</td>
<td>0.0271*</td>
<td>-0.0100</td>
<td>-0.0084</td>
<td>-0.0115</td>
<td>-0.0571***</td>
<td>-0.385**</td>
<td>-0.0440*</td>
</tr>
<tr>
<td>Bank Concentration * External Dependence</td>
<td>0.1436***</td>
<td>0.1131***</td>
<td>0.016**</td>
<td>-0.0105</td>
<td>-0.0351</td>
<td>0.0029</td>
<td>-0.155***</td>
<td>-0.1231***</td>
<td>-0.0642**</td>
</tr>
<tr>
<td>Restrictions on Non-Traditional Banking Activities * External Dependence</td>
<td>0.0165**</td>
<td>0.0034*</td>
<td>-0.0214**</td>
<td>-0.0214**</td>
<td>-0.0214**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restrictions on the Ownership of Non-Financial Firms * External Dependence</td>
<td>0.0518***</td>
<td>-0.0325**</td>
<td>0.0674***</td>
<td>-0.0674***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposit Insurance * External Dependence</td>
<td>-0.0014</td>
<td>-2.43</td>
<td>0.0094</td>
<td>-3.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.5654</td>
<td>0.5596</td>
<td>0.5547</td>
<td>0.5898</td>
<td>0.5903</td>
<td>0.5891</td>
<td>0.5760</td>
<td>0.5752</td>
<td>0.5719</td>
</tr>
<tr>
<td># Observations</td>
<td>769</td>
<td>769</td>
<td>769</td>
<td>793</td>
<td>793</td>
<td>793</td>
<td>599</td>
<td>599</td>
<td>599</td>
</tr>
<tr>
<td>Durbin-Wu-Hausman Test</td>
<td>4.67***</td>
<td>7.68***</td>
<td>3.35**</td>
<td>1.87</td>
<td>3.07**</td>
<td>1.03</td>
<td>4.65***</td>
<td>5.80***</td>
<td>3.89***</td>
</tr>
</tbody>
</table>
statistically significant. This evidence is consistent with Angkinand (2008) who find that countries that provide comprehensive deposit insurance coverage experience a smaller output cost of crises.

Table 6 reports the results after controlling for the exogenous component of institutional variables. Results for the influence of financial development and bank concentration are unchanged from those reported previously. The influence of the exogenous component of the quality of accounting standards changes in crisis periods. During stability periods, the interaction between the quality of accounting standards and external dependence does not have a statistically significant coefficient. It indicates that industries that are more dependent on external financing grow faster in more financially developed countries and in more concentrated banking systems but accounting standards do not have an additional effect to that incorporated in the country’s financial development. During crisis periods, however, we found in column (4) that the quality of accounting standards plays a specific positive role. The coefficient of this interaction term in column (6) indicates that the change of the influence of accounting standards during the crisis period is statistically significant. It suggests the importance of better accounting disclosure to solve information asymmetry problems during banking crises.

We do not, however, obtain an additional influence during crisis periods for the exogenous component of control of corruption to that captured by the country's financial development.

4.4. Interactions between Bank Concentration, Regulation, and Institutions

We now analyze whether the exogenous component of bank regulation and institutions modify the impact of bank concentration on economic growth during banking crises. In this extended specification, we include a triple interaction term between each legal and institutional variable with bank concentration and external dependence.

Table 7 reports the results for the regulatory variables. Columns (1) and (2) show that interaction terms between bank concentration, external financial dependence and the two proxies for regulatory restrictions have positive coefficients during the pre-crisis period. Also, the interaction term between concentration and external dependence no longer has the positive coefficients observed in previous tables. It even has a negative and statistically significant coefficient in column (2) when we include the interaction with the restrictions on the mixing of banking and commerce. These findings indicate that concentration only has a positive effect on the economic growth of more financially dependent sectors in normal periods when there are restrictions on banking activities and on the extent to which banks may own and control non-financial firms.

The positive interaction between bank concentration and legal restrictions on bank activities during normal periods is consistent with Fernández et al. (2010) and may have several origins. The need to focus on deposits and loans favors specialization of bank activities and may make it more helpful for banks to establish lending relationships with firms. In this case, bank concentration may provide a
Table 6
Institutions and Banking Crises

This table shows the results of regressions analyzing the influence of institutions on the real effects of banking crises. We present the results for the pre-crisis, crisis and the difference in growth between the crisis and pre-crisis periods. Regressions are estimated using OLS estimators for cross-country data. In columns (1) and (2) the dependent variable is the growth rate of real value added during pre-crisis period; in columns (3) and (4), the dependent variable is the growth rate of real value added during banking crises; and in columns (5) and (6), the dependent variable is the difference in growth between the crisis and the pre-crisis periods. Bank market concentration is measured as the ratio assets from the three largest banks to total assets of banking industry in each country. The institutional variables are: the index of control of corruption from ICRG; and the index of accounting standards calculated in La Porta et al., (1998). Country and industry dummy variables are included on estimations, but are not reported. The Durbin-Wu-Hausman statistic tests the null hypothesis that the use of instruments does not change the estimation outcome. We report IV estimates when the test is rejected at the one percent level. Instruments for bank concentration and for the institutional variables are: legal origin and rule of law. T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-Crisis</th>
<th>Crisis</th>
<th>Crisis vs. Pre-Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Industrial Share of Value Added</td>
<td>-0.0754*</td>
<td>-0.0868*</td>
<td>0.0765</td>
</tr>
<tr>
<td></td>
<td>(-1.83)</td>
<td>(-1.82)</td>
<td>(0.98)</td>
</tr>
<tr>
<td>Financial Development * External Dependence</td>
<td>0.0337**</td>
<td>0.0335**</td>
<td>-0.0018</td>
</tr>
<tr>
<td></td>
<td>(2.14)</td>
<td>(2.42)</td>
<td>(-0.15)</td>
</tr>
<tr>
<td>Bank Concentration * External Dependence</td>
<td>0.1019**</td>
<td>0.0235</td>
<td>0.0058</td>
</tr>
<tr>
<td></td>
<td>(2.14)</td>
<td>(1.17)</td>
<td>(0.32)</td>
</tr>
<tr>
<td>Control of Corruption * External Dependence</td>
<td>-0.0026</td>
<td>-0.0005</td>
<td>-0.0005</td>
</tr>
<tr>
<td></td>
<td>(-0.98)</td>
<td>(-0.27)</td>
<td>(-0.27)</td>
</tr>
<tr>
<td>Accounting Standards * External Dependence</td>
<td></td>
<td>-0.0005</td>
<td>-0.0066**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-1.49)</td>
<td>(-2.42)</td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.5550</td>
<td>0.8133</td>
<td>0.5889</td>
</tr>
<tr>
<td># Observations</td>
<td>769</td>
<td>273</td>
<td>793</td>
</tr>
<tr>
<td>Durbin-Wu-Hausman Test</td>
<td>3.37**</td>
<td>0.73</td>
<td>1.25</td>
</tr>
</tbody>
</table>
higher marginal benefit to promote lending relationships. Stricter restrictions on the mixing of banking and commerce may increase the marginal benefit of bank concentration as a substitute for solving the conflicts of interest and information asymmetries between banks and debtors through the promotion of long-term relationships. Moreover, stricter restrictions regarding the mixing of banking and commerce may mitigate hold-up problems, as a bank that is only a lender will have less power than a bank that is both a shareholder and a lender to a firm.

In the crisis period, however, regulatory restrictions interact differently with bank concentration. In columns (4) and (5), the interaction term of bank concentration and external dependence has positive coefficients but the coefficients of the interactions with the two proxies of regulatory restrictions are negative. That is, we find a positive effect of bank concentration on economic growth when bank activities and the mixing of banking and commerce are unrestricted. Both types of legal restrictions, however, diminish the positive influence of bank concentration on the economic growth of more financially dependent industries during banking crises. This result suggests that banking freedom and bank concentration complement each other in solving the greater adverse selection and moral hazard problems that the economic downturn and the lower credit supply cause in the crisis period.

We also find that the interaction between bank concentration, deposit insurance, and external dependence has a positive, but not statistically significant, coefficient during the crisis period. The coefficient of the interaction term is positive and statistically significant in column (9) when we compare growth between the crisis and the pre-crisis period. It indicates that bank concentration and deposit insurance are complements that help mitigate the negative real effects associated with systemic banking crises.

In Table 8 we analyze the interaction between our two proxies for the institutional environment and bank concentration for the sectors that are more financially dependent. Results in columns (1) show a negative coefficient on the interaction term between bank concentration, external dependence, and financial development. This result is consistent with the higher value of close relationships between banks and firms, during stability periods, in countries where the poor quality of the institutional environment does not favor the development of markets. Bank concentration in underdeveloped markets may thus substitute strong institutions for reducing information asymmetries and agency costs between banks and debtors, by increasing the benefits for banks of establishing close lending relationships.

The interaction between bank concentration and institutions changes during the crisis period. Good-quality accounting standards are seen to be necessary if bank concentration is to play a positive role during banking crises. The interaction between bank concentration, accounting standards, and external dependence has a positive and statistically significant coefficient in column (6). Moreover, the coefficient for the interaction between bank concentration and external dependence becomes negative. This indicates that bank concentration, even in more financially dependent sectors, requires
Table 7
Bank Concentration, Regulation, and Banking Crises

This table shows the results of regressions analyzing the influence of the interaction between regulation and bank concentration on the real effects of banking crises. We present the results for the pre-crisis, crisis and the difference in growth between the crisis and pre-crisis periods. Regressions are estimated using OLS estimators for cross-country data. In columns (1) and (2) the dependent variable is the growth rate of real value added during pre-crisis period; in columns (3) and (4), the dependent variable is the growth rate of real valued added during banking crises; and in columns (5) and (6), the dependent variable is the difference in growth between the crisis and the pre-crisis periods. Bank market concentration is measured as the ratio assets from the three largest banks to total assets of banking industry in each country. We use the indicator of the degree to which banks’ activities are restricted outside the credit and deposit business. Separately we use the indicator of the extent to which banks may own and control non-financial firms. Country and industry dummy variables are included on estimations, but are not reported. The Durbin-Wu-Hausman statistic tests the null hypothesis that the use of instruments does not change the estimation outcome. We report IV estimates when the test is rejected at the one percent level. Instruments for bank concentration and for the regulatory variables are: legal origin and rule of law. T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-Crisis</th>
<th>Crisis</th>
<th>Crisis vs. Pre-crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Share of Value Added</td>
<td>-0.0775*</td>
<td>-0.0742*</td>
<td>-0.0760*</td>
</tr>
<tr>
<td>Financial Development * External Dependence</td>
<td>0.0448***</td>
<td>0.0337***</td>
<td>0.0304*</td>
</tr>
<tr>
<td>Bank Concentration * External Dependence</td>
<td>-0.0281</td>
<td>-0.0812*</td>
<td>0.0827**</td>
</tr>
<tr>
<td>Bank Concentration * Restrictions on Non-Traditional Banking Activities * External Dependence</td>
<td>0.0166***</td>
<td>0.0099**</td>
<td>0.0238***</td>
</tr>
<tr>
<td>Bank Concentration * Restrictions on the Ownership of Non-Financial Firms * External Dependence</td>
<td>0.0719***</td>
<td>-0.0444**</td>
<td>-0.0959***</td>
</tr>
<tr>
<td>Bank Concentration * Deposit Insurance * External Dependence</td>
<td>-0.0143</td>
<td>-0.0143</td>
<td>0.0131</td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.5572</td>
<td>0.5598</td>
<td>0.5548</td>
</tr>
<tr>
<td># Observations</td>
<td>769</td>
<td>769</td>
<td>769</td>
</tr>
<tr>
<td>Durbin-Wu-Hausman Test</td>
<td>6.28***</td>
<td>7.85***</td>
<td>3.40**</td>
</tr>
</tbody>
</table>
Table 8
Bank Concentration, Institutions, and Banking Crises
This table shows the results of regressions analyzing the influence of the interaction between institutions and bank concentration on the real effects of banking crises. We present the results for the pre-crisis, crisis and the difference in growth between the crisis and pre-crisis periods. Regressions are estimated using OLS estimators for cross-country data. In columns (1) and (2) the dependent variable is the growth rate of real value added during pre-crisis period; in columns (3) and (4), the dependent variable is the growth rate of real value added during banking crises; and in columns (5) and (6), the dependent variable is the difference in growth between the crisis and the pre-crisis periods. Bank market concentration is measured as the ratio assets from the three largest banks to total assets of banking industry in each country. The institutional variables are: the index of control of corruption from ICRG; and the index of accounting standards calculated in La Porta et al., (1998). Country and industry dummy variables are included on estimations, but are not reported. The Durbin-Wu-Hausman statistic tests the null hypothesis that the use of instruments does not change the estimation outcome. We report IV estimates when the test is rejected at the one percent level. Instruments for bank concentration and for the institutional variables are: legal origin and rule of law. T-statistics are between parentheses. ***, **, and * indicate significance levels of 1%, 5% and 10%, respectively.

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th>Pre-Crisis</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
</tr>
<tr>
<td>Industrial Share of Value Added</td>
<td>-0.0761*</td>
<td>-0.0750*</td>
<td>-0.0869*</td>
<td>0.0764</td>
<td>0.0764</td>
<td>0.2871*</td>
<td>0.1259</td>
<td>0.1233</td>
</tr>
<tr>
<td></td>
<td>(-1.86)</td>
<td>(-1.82)</td>
<td>(-2.82)</td>
<td>(0.98)</td>
<td>(0.98)</td>
<td>(1.67)</td>
<td>(1.52)</td>
<td>(1.49)</td>
</tr>
<tr>
<td>Financial Development * External Dependence</td>
<td>0.1751***</td>
<td>0.0360**</td>
<td>0.0328**</td>
<td>-0.0074</td>
<td>-0.0034</td>
<td>-0.0221*</td>
<td>-0.1659**</td>
<td>-0.0514***</td>
</tr>
<tr>
<td></td>
<td>(2.75)</td>
<td>(2.27)</td>
<td>(2.34)</td>
<td>(-0.27)</td>
<td>(-0.28)</td>
<td>(-1.67)</td>
<td>(-1.28)</td>
<td>(-2.18)</td>
</tr>
<tr>
<td>Bank Concentration * External Dependence</td>
<td>0.1911***</td>
<td>0.1419**</td>
<td>0.0768</td>
<td>0.0008</td>
<td>0.0060</td>
<td>-0.0622**</td>
<td>-0.1693**</td>
<td>-0.2016**</td>
</tr>
<tr>
<td></td>
<td>(2.68)</td>
<td>(2.06)</td>
<td>(1.38)</td>
<td>(0.03)</td>
<td>(0.20)</td>
<td>(-2.04)</td>
<td>(-1.98)</td>
<td>(-2.12)</td>
</tr>
<tr>
<td>Bank Concentration * Financial Development * External Dependence</td>
<td>-0.2156**</td>
<td>0.0041</td>
<td>0.1950*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.22)</td>
<td>(0.10)</td>
<td>(1.66)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Concentration * Control of Corruption * External Dependence</td>
<td>-0.0043</td>
<td>-0.0003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0088*</td>
<td>(1.77)</td>
</tr>
<tr>
<td></td>
<td>(-1.31)</td>
<td>(-0.13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Concentration * Accounting Standards * External Dependence</td>
<td>-0.0007</td>
<td>0.0008**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0016**</td>
<td>(2.60)</td>
</tr>
<tr>
<td></td>
<td>(-1.39)</td>
<td>(2.38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Country Dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.5557</td>
<td>0.5552</td>
<td>0.8128</td>
<td>0.5889</td>
<td>0.5889</td>
<td>0.3709</td>
<td>0.5719</td>
<td>0.5724</td>
</tr>
<tr>
<td># Observations</td>
<td>769</td>
<td>769</td>
<td>273</td>
<td>793</td>
<td>793</td>
<td>411</td>
<td>599</td>
<td>599</td>
</tr>
<tr>
<td>Durbin-Wu-Hausman Test</td>
<td>3.95**</td>
<td>3.43**</td>
<td>0.68</td>
<td>0.45</td>
<td>1.31</td>
<td>1.84</td>
<td>2.75*</td>
<td>2.52*</td>
</tr>
</tbody>
</table>
a minimum quality in accounting standards if it is to help mitigate the reduction in growth during banking crises.

5. Conclusions

We analyze the role of bank market concentration, regulation, and institutions on the real effects of banking crises using industrial data for a sample of 68 systemic banking crises in 54 developed and developing countries over the 1980-2000 period. We find that regulation and institutions modify across countries the negative effects of a banking crisis on economic growth associated with the reduction in the credit supply. Less stringent restrictions on non-traditional banking activities and on bank ownership of non-financial firms lead to a lower reduction in economic growth during crisis periods. This effect differs from the negative influence on growth that we observe for less stringent restrictions on non-traditional bank activities during non-crisis periods.

We also find that the effect of bank market concentration on economic growth depends on bank regulation and institutions, and varies from crisis to non-crisis periods. In stability periods, concentration has a positive effect on economic growth only in the case of more financially dependent sectors and when there are restrictions on banking activities and on the extent to which banks may own and control non-financial firms. In the crisis period, however, bank concentration has a positive effect on economic growth only when bank activities and the mixing of banking and commerce are unrestricted. These results suggest that legal restrictions on non-traditional bank activities and owning non-financial firms prevents them from drawing up a more efficient risk assessment that might promote economic growth during banking crises. These results afford evidence of the greater benefits that long-term relationships and the mixing of banking and commerce may provide during banking crisis. They also indicate that legal restrictions on banking activities are more important than bank concentration for reducing the negative real effects of systemic banking crisis.

We also find that explicit deposit insurance and better-quality accounting standards mitigate the negative real effects of systemic banking crises and interact positively with bank concentration to minimize the reduction of economic growth during a banking crisis.

Our analysis has two basic policy implications. First, regulation and institutions are relevant for mitigating the real effects of banking crisis and suggest that optimal regulations for stability periods may become inefficient for crisis periods. The negative consequences on economic growth of relaxing restrictions on bank activities and on the mixing of banking and commerce during normal periods become positive during periods of banking crises. Second, as the effect of bank concentration depends on the individual country’s regulation and quality of institutions, antitrust enforcement is not equally beneficial in every country. Antitrust enforcement should consider the benefits that a more concentrated bank market may provide during banking crises depending on the country’s regulatory and institutional framework.
References


Degryse, H., Ongena, S., 2005. Distance, lending relationships, and competition. J. Finance 60, 231-266.


Últimos números publicados

159/2000 Participación privada en la construcción y explotación de carreteras de peaje
  Ginés de Rus, Manuel Romero y Lourdes Trujillo

160/2000 Errores y posibles soluciones en la aplicación del Value at Risk
  Mariano González Sánchez

161/2000 Tax neutrality on saving assets. The spahish case before and after the tax reform
  Cristina Ruza y de Paz-Curbera

162/2000 Private rates of return to human capital in Spain: new evidence
  F. Barceinas, J. Oliver-Alonso, J.L. Raymond y J.L. Roig-Sabaté

163/2000 El control interno del riesgo. Una propuesta de sistema de límites riesgo neutral
  Mariano González Sánchez

164/2001 La evolución de las políticas de gasto de las Administraciones Públicas en los años 90
  Alfonso Utrilla de la Hoz y Carmen Pérez Esparrells

165/2001 Bank cost efficiency and output specification
  Emili Tortosa-Ausina

166/2001 Recent trends in Spanish income distribution: A robust picture of falling income inequality
  Josep Oliver-Alonso, Xavier Ramos y José Luis Raymond-Bara

167/2001 Efectos redistributivos y sobre el bienestar social del tratamiento de las cargas familiares en el nuevo IRPF
  Nuria Badenes Plá, Julio López Laborda, Jorge Onrubia Fernández

168/2001 The Effects of Bank Debt on Financial Structure of Small and Medium Firms in some European Countries
  Mónica Melle-Hernández

169/2001 La política de cohesión de la UE ampliada: la perspectiva de España
  Ismael Sanz Labrador

170/2002 Riesgo de liquidez de Mercado
  Mariano González Sánchez

171/2002 Los costes de administración para el afiliado en los sistemas de pensiones basados en cuentas de capitalización individual: medida y comparación internacional.
  José Enrique Devesa Carpio, Rosa Rodriguez Barrera, Carlos Vidal Meliá

172/2002 La encuesta continua de presupuestos familiares (1985-1996): descripción, representatividad y propuestas de metodología para la explotación de la información de los ingresos y el gasto.
  Llorenç Pou, Joaquín Alegre

173/2002 Modelos paramétricos y no paramétricos en problemas de concesión de tarjetas de credito.
  Rosa Puertas, María Bonilla, Ignacio Olmeda
<table>
<thead>
<tr>
<th>No</th>
<th>Año</th>
<th>Título</th>
<th>Autor(es)</th>
</tr>
</thead>
<tbody>
<tr>
<td>174</td>
<td>2002</td>
<td>Mercado único, comercio intra-industrial y costes de ajuste en las manufacturas españolas.</td>
<td>José Vicente Blanes Cristóbal</td>
</tr>
<tr>
<td>175</td>
<td>2003</td>
<td>La Administración tributaria en España. Un análisis de la gestión a través de los ingresos y de los gastos.</td>
<td>Juan de Dios Jiménez Aguilera, Pedro Enrique Barrilao González</td>
</tr>
<tr>
<td>176</td>
<td>2003</td>
<td>The Falling Share of Cash Payments in Spain.</td>
<td>Santiago Carbó Valverde, Rafael López del Paso, David B. Humphrey</td>
</tr>
<tr>
<td>177</td>
<td>2003</td>
<td>Effects of ATMs and Electronic Payments on Banking Costs: The Spanish Case.</td>
<td>Santiago Carbó Valverde, Rafael López del Paso, David B. Humphrey</td>
</tr>
<tr>
<td>178</td>
<td>2003</td>
<td>Factors explaining the interest margin in the banking sectors of the European Union.</td>
<td>Joaquín Maudos y Juan Fernández Guevara</td>
</tr>
<tr>
<td>179</td>
<td>2003</td>
<td>Los planes de stock options para directivos y consejeros y su valoración por el mercado de valores en España.</td>
<td>Mónica Melle Hernández</td>
</tr>
<tr>
<td>181</td>
<td>2003</td>
<td>The Euro effect on the integration of the European stock markets.</td>
<td>Mónica Melle Hernández</td>
</tr>
<tr>
<td>182</td>
<td>2004</td>
<td>In search of complementarity in the innovation strategy: international R&amp;D and external knowledge acquisition.</td>
<td>Bruno Cassiman, Reinhilde Veugelers</td>
</tr>
<tr>
<td>183</td>
<td>2004</td>
<td>Fijación de precios en el sector público: una aplicación para el servicio municipal de suministro de agua.</td>
<td>Mª Ángeles García Valiñas</td>
</tr>
<tr>
<td>184</td>
<td>2004</td>
<td>Estimación de la economía sumergida es España: un modelo estructural de variables latentes.</td>
<td>Ángel Alaños Pardo, Miguel Gómez de Antonio</td>
</tr>
<tr>
<td>185</td>
<td>2004</td>
<td>Causas políticas y consecuencias sociales de la corrupción.</td>
<td>Joan Oriol Prats Cabrera</td>
</tr>
<tr>
<td>186</td>
<td>2004</td>
<td>Loan bankers’ decisions and sensitivity to the audit report using the belief revision model.</td>
<td>Andrés Guiral Contreras and José A. Gonzalo Angulo</td>
</tr>
<tr>
<td>187</td>
<td>2004</td>
<td>El modelo de Black, Derman y Toy en la práctica. Aplicación al mercado español.</td>
<td>Marta Tolentino García-Abadillo y Antonio Díaz Pérez</td>
</tr>
<tr>
<td>188</td>
<td>2004</td>
<td>Does market competition make banks perform well?.</td>
<td>Mónica Melle</td>
</tr>
<tr>
<td>189</td>
<td>2004</td>
<td>Efficiency differences among banks: external, technical, internal, and managerial</td>
<td>Santiago Carbó Valverde, David B. Humphrey y Rafael López del Paso</td>
</tr>
</tbody>
</table>
190/2004 Una aproximación al análisis de los costes de la esquizofrenia en españa: los modelos jerárquicos bayesianos
F. J. Vázquez-Polo, M. A. Negrín, J. M. Cavasés, E. Sánchez y grupo RIRAG

191/2004 Environmental proactivity and business performance: an empirical analysis
Javier González-Benito y Óscar González-Benito

192/2004 Economic risk to beneficiaries in national defined contribution accounts (NDCs)
Carlos Vidal-Meliá, Inmaculada Domínguez-Fabian y José Enrique Devesa-Carpio

193/2004 Sources of efficiency gains in port reform: non parametric malmquist decomposition tfp index for Mexico
Antonio Estache, Beatriz Tovar de la Fé y Lourdes Trujillo

194/2004 Persistencia de resultados en los fondos de inversión españoles
Alfredo Ciriaco Fernández y Rafael Santamaria Aquilué

195/2005 El modelo de revisión de creencias como aproximación psicológica a la formación del juicio del auditor sobre la gestión continuada
Andrés Guiral Contreras y Francisco Esteso Sánchez

196/2005 La nueva financiación sanitaria en España: descentralización y prospectiva
David Cantarero Prieto

197/2005 A cointegration analysis of the Long-Run supply response of Spanish agriculture to the common agricultural policy
José A. Mendez, Ricardo Mora y Carlos San Juan

198/2005 ¿Refleja la estructura temporal de los tipos de interés del mercado español preferencia por la liquidez?
Magdalena Massot Perelló y Juan M. Nave

199/2005 Análisis de impacto de los Fondos Estructurales Europeos recibidos por una economía regional: Un enfoque a través de Matrices de Contabilidad Social
M. Carmen Lima y M. Alejandro Cardenete

200/2005 Does the development of non-cash payments affect monetary policy transmission?
Santiago Carbó Valverde y Rafael López del Paso

201/2005 Firm and time varying technical and allocative efficiency: an application for port cargo handling firms
Ana Rodriguez-Álvarez, Beatriz Tovar de la Fé y Lourdes Trujillo

202/2005 Contractual complexity in strategic alliances
Jeffrey J. Reuer y África Ariño

203/2005 Factores determinantes de la evolución del empleo en las empresas adquiridas por opa
Nuria Alcalde Fradejas y Inés Pérez-Soba Aguilar

Elena Olmedo, Juan M. Valderas, Ricardo Gimeno and Lorenzo Escot
<table>
<thead>
<tr>
<th>Número</th>
<th>Título</th>
<th>Autor(es)</th>
</tr>
</thead>
<tbody>
<tr>
<td>205/2005</td>
<td>Precio de la tierra con presión urbana: un modelo para España</td>
<td>Esther Decimavilla, Carlos San Juan y Stefan Sperlich</td>
</tr>
<tr>
<td>206/2005</td>
<td>Interregional migration in Spain: a semiparametric analysis</td>
<td>Adolfo Maza y José Villaverde</td>
</tr>
<tr>
<td>207/2005</td>
<td>Productivity growth in European banking</td>
<td>Carmen Murillo-Melchor, José Manuel Pastor y Emili Tortosa-Ausina</td>
</tr>
<tr>
<td>209/2005</td>
<td>La elasticidad de sustitución intertemporal con preferencias no separables intratemporalmente: los casos de Alemania, España y Francia.</td>
<td>Elena Márquez de la Cruz, Ana R. Martínez Cañete y Inés Pérez-Soba Aguilar</td>
</tr>
<tr>
<td>211/2005</td>
<td>Permanent income, convergence and inequality among countries</td>
<td>José M. Pastor and Lorenzo Serrano</td>
</tr>
<tr>
<td>212/2005</td>
<td>The Latin Model of Welfare: Do 'Insertion Contracts' Reduce Long-Term Dependence?</td>
<td>Luis Ayala and Magdalena Rodríguez</td>
</tr>
<tr>
<td>213/2005</td>
<td>The effect of geographic expansion on the productivity of Spanish savings banks</td>
<td>Manuel Illueca, José M. Pastor and Emili Tortosa-Ausina</td>
</tr>
<tr>
<td>214/2005</td>
<td>Dynamic network interconnection under consumer switching costs</td>
<td>Ángel Luis López Rodríguez</td>
</tr>
<tr>
<td>215/2005</td>
<td>La influencia del entorno socioeconómico en la realización de estudios universitarios: una aproximación al caso español en la década de los noventa</td>
<td>Marta Rahona López</td>
</tr>
<tr>
<td>216/2005</td>
<td>The valuation of spanish ipos: efficiency analysis</td>
<td>Susana Álvarez Otero</td>
</tr>
<tr>
<td>217/2005</td>
<td>On the generation of a regular multi-input multi-output technology using parametric output distance functions</td>
<td>Sergio Perelman and Daniel Santín</td>
</tr>
<tr>
<td>218/2005</td>
<td>La gobernanza de los procesos parlamentarios: la organización industrial del congreso de los diputados en España</td>
<td>Gonzalo Caballero Miguez</td>
</tr>
<tr>
<td>219/2005</td>
<td>Determinants of bank market structure: Efficiency and political economy variables</td>
<td>Francisco González</td>
</tr>
<tr>
<td>220/2005</td>
<td>Agresividad de las órdenes introducidas en el mercado español: estrategias, determinantes y medidas de performance</td>
<td>David Abad Diaz</td>
</tr>
</tbody>
</table>
221/2005 Tendencia post-anuncio de resultados contables: evidencia para el mercado español
Carlos Forner Rodríguez, Joaquín Marhuenda Fructuoso y Sonia Sanabria García

222/2005 Human capital accumulation and geography: empirical evidence in the European Union
Jesús López-Rodríguez, J. Andrés Faíña y Jose Lopez Rodriguez

223/2005 Auditors' Forecasting in Going Concern Decisions: Framing, Confidence and Information Processing
Waymond Rodgers and Andrés Guiral

José Ramón Cancelo de la Torre, J. Andrés Faíña and Jesús López-Rodríguez

225/2005 The effects of ownership structure and board composition on the audit committee activity: Spanish evidence
Carlos Fernández Méndez and Rubén Arrondo García

226/2005 Cross-country determinants of bank income smoothing by managing loan loss provisions
Ana Rosa Fonseca and Francisco González

Alejandro Estellér Moré

228/2005 Region versus Industry effects: volatility transmission
Pilar Soriano Felipe and Francisco J. Climent Diranzo

Daniel Vázquez-Bustelo and Sandra Valle

Alfonso Palacio-Vera

231/2005 Reconciling Sustainability and Discounting in Cost Benefit Analysis: a methodological proposal
M. Carmen Almansa Sáez and Javier Calatrava Requena

232/2005 Can The Excess Of Liquidity Affect The Effectiveness Of The European Monetary Policy?
Santiago Carbó Valverde and Rafael López del Paso

Miguel Angel Barberán Lahuerta

Víctor M. González

Waymond Rodgers, Paul Pavlou and Andres Guiral.

Francisco J. André, M. Alejandro Cardenete y Carlos Romero.
Santiago Carbó-Valverde, Francisco Rodríguez-Fernández y Gregory F. Udell.

238/2006 Trade Effects Of Monetary Agreements: Evidence For Oecd Countries. 
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano.

Marcos Álvarez-Díaz y Gonzalo Caballero Miguez.

240/2006 La interacción entre el éxito competitivo y las condiciones del mercado doméstico como determinantes de la decisión de exportación en las Pymes. 
Francisco García Pérez.

241/2006 Una estimación de la depreciación del capital humano por sectores, por ocupación y en el tiempo. 
Inés P. Murillo.

Manuel A. Gómez.

Jose Manuel Cordero-Ferrera, Francisco Pedraja-Chaparro y Javier Salinas-Jiménez

244/2006 Did The European Exchange-Rate Mechanism Contribute To The Integration Of Peripheral Countries?. 
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano

Marta Pascual and David Cantarero

Salvador Rojí Ferrari and Ana Gonzalez Marcos

247/2006 Testing For Structural Breaks In Variance Withadditive Outliers And Measurement Errors. 
Paulo M.M. Rodrigues and Antonio Rubia

Joaquín Maudos and Juan Fernández de Guevara

Desiderio Romero Jordán, José Félix Sanz Sanz y César Pérez López

250/2006 Regional Income Disparities in Europe: What role for location?. 
Jesús López-Rodríguez and J. Andrés Faíña

251/2006 Funciones abreviadas de bienestar social: Una forma sencilla de simultanear la medición de la eficiencia y la equidad de las políticas de gasto público. 
Nuria Badenes Plá y Daniel Santín González

252/2006 “The momentum effect in the Spanish stock market: Omitted risk factors or investor behaviour?”.
Luis Muga and Rafael Santamaria

253/2006 Dinámica de precios en el mercado español de gasolina: un equilibrio de colusión tácita. 
Jordi Perdiguero García
Desigualdad regional en España: renta permanente versus renta corriente.
José M. Pastor, Empar Pons y Lorenzo Serrano

Environmental implications of organic food preferences: an application of the impure public goods model.
Ana María Aldanondo-Ochoa y Carmen Almansa-Sáez

Family tax credits versus family allowances when labour supply matters: Evidence for Spain.
José Félix Sanz-Sanz, Desiderio Romero-Jordán y Santiago Álvarez-García

La internacionalización de la empresa manufacturera española: efectos del capital humano genérico y específico.
José López Rodríguez

María Martínez Torres

Efficiency and market power in Spanish banking.
Rolf Färe, Shawna Grosskopf y Emili Tortosa-Ausina.

Asimetrías en volatilidad, beta y contagios entre las empresas grandes y pequeñas cotizadas en la bolsa española.
Helena Chuliá y Hipòlit Torró.

José Antonio Ortega.

Accidentes de tráfico, víctimas mortales y consumo de alcohol.
José Mª Arranz y Ana I. Gil.

Análisis de la Presencia de la Mujer en los Consejos de Administración de las Mil Mayores Empresas Españolas.
Ruth Mateos de Cabo, Lorenzo Escot Mangas y Ricardo Gimeno Nogués.

Crisis y Reforma del Pacto de Estabilidad y Crecimiento. Las Limitaciones de la Política Económica en Europa.
Ignacio Álvarez Peralta.

Jaime Vallés-Giménez y Anabel Zárate-Marco.

Health Human Capital And The Shift From Foraging To Farming.
Paolo Rungo.

Juan Luis Jiménez y Jordi Perdiguero.

El cumplimiento del Protocolo de Kyoto para los hogares españoles: el papel de la imposición sobre la energía.
Desiderio Romero-Jordán y José Félix Sanz-Sanz.

Banking competition, financial dependence and economic growth
Joaquín Maudos y Juan Fernández de Guevara

Efficiency, subsidies and environmental adaptation of animal farming under CAP
Werner Kleinhans, Carmen Murillo, Carlos San Juan y Stefan Sperlich
A. García-Lorenzo y Jesús López-Rodríguez

272/2006 Riesgo asimétrico y estrategias de momentum en el mercado de valores español
Luis Muga y Rafael Santamaría

273/2006 Valoración de capital-riesgo en proyectos de base tecnológica e innovadora a través de la teoría
de opciones reales
Gracia Rubio Martín

274/2006 Capital stock and unemployment: searching for the missing link
Ana Rosa Martínez-Cañete, Elena Márquez de la Cruz, Alfonso Palacio-Vera and Inés Pérez-Soba Aguilar

275/2006 Study of the influence of the voters’ political culture on vote decision through the simulation of a
political competition problem in Spain
Sagrario Lantarón, Isabel Lillo, Mª Dolores López and Javier Rodrigo

276/2006 Investment and growth in Europe during the Golden Age
Antonio Cubel and Mª Teresa Sanchis

277/2006 Efectos de vincular la pensión pública a la inversión en cantidad y calidad de hijos en un
modelo de equilibrio general
Robert Meneu Gaya

278/2006 El consumo y la valoración de activos
Elena Márquez y Belén Nieto

279/2006 Economic growth and currency crisis: A real exchange rate entropic approach
David Matesanz Gómez y Guillermo J. Ortega

280/2006 Three measures of returns to education: An illustration for the case of Spain
María Arrazola y José de Hevia

281/2006 Composition of Firms versus Composition of Jobs
Antoni Cunyat

282/2006 La vocación internacional de un holding tranviario belga: la Compagnie Mutuelle de Tramways, 1895-1918
Alberte Martínez López

283/2006 Una visión panorámica de las entidades de crédito en España en la última década.
Constantino García Ramos

284/2006 Foreign Capital and Business Strategies: a comparative analysis of urban transport in Madrid and
Barcelona, 1871-1925
Alberte Martínez López

285/2006 Los intereses belgas en la red ferroviaria catalana, 1890-1936
Alberte Martínez López

286/2006 The Governance of Quality: The Case of the Agrifood Brand Names
Marta Fernández Barcala, Manuel González-Díaz y Emmanuel Raynaud

287/2006 Modelling the role of health status in the transition out of malthusian equilibrium
Paolo Rungo, Luis Currais and Berta Rivera

288/2006 Industrial Effects of Climate Change Policies through the EU Emissions Trading Scheme
Xavier Labandeira and Miguel Rodríguez
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>290/2006</td>
<td>La producción de energía eléctrica en España: Análisis económico de la actividad tras la liberalización del Sector Eléctrico</td>
<td>Fernando Hernández Martínez</td>
</tr>
<tr>
<td>291/2006</td>
<td>Further considerations on the link between adjustment costs and the productivity of R&amp;D investment: evidence for Spain</td>
<td>Desiderio Romero-Jordán, José Félix Sanz-Sanz and Inmaculada Álvarez-Ayuso</td>
</tr>
<tr>
<td>292/2006</td>
<td>Una teoría sobre la contribución de la función de compras al rendimiento empresarial</td>
<td>Javier González Benito</td>
</tr>
<tr>
<td>294/2006</td>
<td>Testing the parametric vs the semiparametric generalized mixed effects models</td>
<td>Maria José Lombardía and Stefan Sperlich</td>
</tr>
<tr>
<td>295/2006</td>
<td>Nonlinear dynamics in energy futures</td>
<td>Mariano Matilla-García</td>
</tr>
<tr>
<td>296/2006</td>
<td>Estimating Spatial Models By Generalized Maximum Entropy Or How To Get Rid Of W</td>
<td>Esteban Fernández Vázquez, Matías Mayor Fernández and Jorge Rodríguez-Valez</td>
</tr>
<tr>
<td>297/2006</td>
<td>Optimización fiscal en las transmisiones lucrativas: análisis metodológico</td>
<td>Félix Domínguez Barrero</td>
</tr>
<tr>
<td>298/2006</td>
<td>La situación actual de la banca online en España</td>
<td>Francisco José Climent Diranzo y Alexandre Momparler Pechuán</td>
</tr>
<tr>
<td>299/2006</td>
<td>Estrategia competitiva y rendimiento del negocio: el papel mediador de la estrategia y las capacidades productivas</td>
<td>Javier González Benito y Isabel Suárez González</td>
</tr>
<tr>
<td>300/2006</td>
<td>A Parametric Model to Estimate Risk in a Fixed Income Portfolio</td>
<td>Pilar Abad and Sonia Benito</td>
</tr>
<tr>
<td>301/2007</td>
<td>Análisis Empírico de las Preferencias Sociales Respecto del Gasto en Obra Social de las Cajas de Ahorros</td>
<td>Alejandro Esteller-Moré, Jonathan Jorba Jiménez y Albert Solé-Ollé</td>
</tr>
<tr>
<td>302/2007</td>
<td>Assessing the enlargement and deepening of regional trading blocs: The European Union case</td>
<td>Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano</td>
</tr>
<tr>
<td>303/2007</td>
<td>¿Es la Franquicia un Medio de Financiación?: Evidencia para el Caso Español</td>
<td>Vanesa Solís Rodríguez y Manuel González Díaz</td>
</tr>
<tr>
<td>305/2007</td>
<td>Spain is Different: Relative Wages 1989-98</td>
<td>José Antonio Carrasco Gallego</td>
</tr>
</tbody>
</table>
306/2007 Poverty reduction and SAM multipliers: An evaluation of public policies in a regional framework
Francisco Javier De Miguel-Vélez y Jesús Pérez-Mayo

307/2007 La Eficiencia en la Gestión del Riesgo de Crédito en las Cajas de Ahorro
Marcelino Martínez Cabrera

308/2007 Optimal environmental policy in transport: unintended effects on consumers' generalized price
M. Pilar Socorro and Ofelia Betancor

Roberto Ezcurra, Belen Iráizoz, Pedro Pascual and Manuel Rapún

310/2007 Long-run Regional Population Divergence and Modern Economic Growth in Europe: a Case Study of Spain
María Isabel Ayuda, Fernando Collantes and Vicente Pinilla

311/2007 Financial Information effects on the measurement of Commercial Banks' Efficiency
Borja Amor, María T. Tascón and José L. Fanjul

312/2007 Neutralidad e incentivos de las inversiones financieras en el nuevo IRPF
Félix Domínguez Barrero

313/2007 The Effects of Corporate Social Responsibility Perceptions on The Valuation of Common Stock
Waymond Rodgers, Helen Choy and Andres Guiral-Contreras

314/2007 Country Creditor Rights, Information Sharing and Commercial Banks’ Profitability Persistence across the world
Borja Amor, María T. Tascón and José L. Fanjul

315/2007 ¿Es Relevante el Déficit Corriente en una Unión Monetaria? El Caso Español
Javier Blanco González y Ignacio del Rosal Fernández

316/2007 The Impact of Credit Rating Announcements on Spanish Corporate Fixed Income Performance: Returns, Yields and Liquidity
Pilar Abad, Antonio Díaz and M. Dolores Robles

317/2007 Indicadores de Lealtad al Establecimiento y Formato Comercial Basados en la Distribución del Presupuesto
César Augusto Bustos Reyes y Óscar González Benito

318/2007 Migrants and Market Potential in Spain over The XXth Century: A Test Of The New Economic Geography
Daniel A. Tirado, Jordi Pons, Elisenda Paluzie and Javier Silvestre

319/2007 El Impacto del Coste de Oportunidad de la Actividad Emprendedora en la Intención de los Ciudadanos Europeos de Crear Empresas
Luis Miguel Zapico Aldeano

320/2007 Los belgas y los ferrocarriles de vía estrecha en España, 1887-1936
Alberte Martínez López

321/2007 Competición política bipartidista. Estudio geométrico del equilibrio en un caso ponderado
Isabel Lillo, Mª Dolores López y Javier Rodrigo

322/2007 Human resource management and environment management systems: an empirical study
Mª Concepción López Fernández, Ana Mª Serrano Bedía and Gema García Piqueres
323/2007 Wood and industrialization. evidence and hypotheses from the case of Spain, 1860-1935. Iñaki Iriarte-Goñi and María Isabel Ayuda Bosque


325/2007 Monetary policy and structural changes in the volatility of us interest rates. Juncal Cuñado, Javier Gomez Biscarri and Fernando Perez de Gracia

326/2007 The productivity effects of intrafirm diffusion. Lucio Fuentelsaz, Jaime Gómez and Sergio Palomas


328/2007 El grado de cobertura del gasto público en España respecto a la UE-15 Nuria Rueda, Begoña Barruso, Carmen Calderón y Mª del Mar Herrador

329/2007 The Impact of Direct Subsidies in Spain before and after the CAP'92 Reform Carmen Murillo, Carlos San Juan and Stefan Sperlich

330/2007 Determinants of post-privatisation performance of Spanish divested firms Laura Cabeza García and Silvia Gómez Ansón

331/2007 ¿Por qué deciden diversificar las empresas españolas? Razones oportunistas versus razones económicas Almudena Martínez Campillo

332/2007 Dynamical Hierarchical Tree in Currency Markets Juan Gabriel Brida, David Matesanz Gómez and Wiston Adrián Risso

333/2007 Los determinantes sociodemográficos del gasto sanitario. Análisis con microdatos individuales Ana María Angulo, Ramón Barberán, Pilar Egea y Jesús Mur

334/2007 Why do companies go private? The Spanish case Inés Pérez-Soba Aguilar

335/2007 The use of gis to study transport for disabled people Verónica Cañal Fernández

336/2007 The long run consequences of M&A: An empirical application Cristina Bernad, Lucio Fuentelsaz and Jaime Gómez

337/2007 Las clasificaciones de materias en economía: principios para el desarrollo de una nueva clasificación Valentín Edo Hernández

338/2007 Reforming Taxes and Improving Health: A Revenue-Neutral Tax Reform to Eliminate Medical and Pharmaceutical VAT Santiago Álvarez-García, Carlos Pestana Barros y Juan Prieto-Rodriguez

339/2007 Impacts of an iron and steel plant on residential property values Celia Bilbao-Terol

340/2007 Firm size and capital structure: Evidence using dynamic panel data Víctor M. González and Francisco González
341/2007 ¿Cómo organizar una cadena hotelera? La elección de la forma de gobierno
Marta Fernández Barcala y Manuel González Díaz

342/2007 Análisis de los efectos de la decisión de diversificar: un contraste del marco teórico “Agencia-Stewardship”
Almudena Martínez Campillo y Roberto Fernández Gago

343/2007 Selecting portfolios given multiple eurostoxx-based uncertainty scenarios: a stochastic goal programming approach from fuzzy betas
Enrique Ballesteros, Blanca Pérez-Gladish, Mar Arenas-Parra and Amelia Bilbao-Terol

344/2007 “El bienestar de los inmigrantes y los factores implicados en la decisión de emigrar”
Anastasia Hernández Alemán y Carmelo J. León

Andrea Martínez-Noya and Esteban García-Canal

346/2007 Diferencias salariales entre empresas públicas y privadas. El caso español
Begoña Cueto y Nuria Sánchez- Sánchez

347/2007 Effects of Fiscal Treatments of Second Home Ownership on Renting Supply
Celia Bilbao Terol and Juan Prieto Rodríguez

348/2007 Auditors’ ethical dilemmas in the going concern evaluation
Andres Guiral, Waymond Rodgers, Emiliano Ruiz and Jose A. Gonzalo

Susana Morales Sequera y Carmen Pérez Esparrells

350/2007 Socially responsible investment: mutual funds portfolio selection using fuzzy multiobjective programming
Blanca Mª Pérez-Gladish, Mar Arenas-Parra, Amelia Bilbao-Terol and Mª Victoria Rodríguez-Uría

351/2007 Persistencia del resultado contable y sus componentes: implicaciones de la medida de ajustes por devengo
Raúl Iñiguez Sánchez y Francisco Poveda Fuentes

352/2007 Wage Inequality and Globalisation: What can we Learn from the Past? A General Equilibrium Approach
Concha Betrán, Javier Ferri and Maria A. Pons

353/2007 Eficacia de los incentivos fiscales a la inversión en I+D en España en los años noventa
Desiderio Romero Jordán y José Félix Sanz

354/2007 Convergencia regional en renta y bienestar en España
Robert Meneu Gaya

355/2007 Tributación ambiental: Estado de la Cuestión y Experiencia en España
Ana Carrera Poncels

356/2007 Salient features of dependence in daily us stock market indices
Luis A. Gil-Alana, Juncal Cuñado and Fernando Pérez de Gracia

357/2007 La educación superior: ¿un gasto o una inversión rentable para el sector público?
Inés P. Murillo y Francisco Pedraja
358/2007 Effects of a reduction of working hours on a model with job creation and job destruction
Emilio Domínguez, Miren Ullibarri y Idoya Zabaleta

359/2007 Stock split size, signaling and earnings management: Evidence from the Spanish market
José Yagüe, J. Carlos Gómez-Sala and Francisco Poveda-Fuentes

360/2007 Modelización de las expectativas y estrategias de inversión en mercados de derivados
Begoña Font-Belaire

361/2008 Trade in capital goods during the golden age, 1953-1973
Mª Teresa Sanchis and Antonio Cubel

362/2008 El capital económico por riesgo operacional: una aplicación del modelo de distribución de pérdidas
Enrique José Jiménez Rodríguez y José Manuel Feria Domínguez

363/2008 The drivers of effectiveness in competition policy
Joan-Ramon Borrell and Juan-Luis Jiménez

364/2008 Corporate governance structure and board of directors remuneration policies: evidence from Spain
Carlos Fernández Méndez, Rubén Arrondo García and Enrique Fernández Rodríguez

365/2008 Beyond the disciplinary role of governance: how boards and donors add value to Spanish foundations
Pablo De Andrés Alonso, Valentín Azofra Palenzuela y M. Elena Romero Merino

366/2008 Complejidad y perfeccionamiento contractual para la contención del oportunismo en los acuerdos de franquicia
Vanessa Solís Rodríguez y Manuel González Díaz

367/2008 Inestabilidad y convergencia entre las regiones europeas
Jesús Mur, Fernando López y Ana Angulo

368/2008 Análisis espacial del cierre de explotaciones agrarias
Ana Aldanondo Ochoa, Carmen Almansa Sáez y Valero Casanovas Oliva

369/2008 Cross-Country Efficiency Comparison between Italian and Spanish Public Universities in the period 2000-2005
Tommaso Agasisti and Carmen Pérez Esparrells

370/2008 El desarrollo de la sociedad de la información en España: un análisis por comunidades autónomas
María Concepción García Jiménez y José Luis Gómez Barroso

371/2008 El medioambiente y los objetivos de fabricación: un análisis de los modelos estratégicos para su consecución
Lucía Avella Camarero, Esteban Fernández Sánchez y Daniel Vázquez-Bustelo

372/2008 Influence of bank concentration and institutions on capital structure: New international evidence
Víctor M. González and Francisco González

373/2008 Generalización del concepto de equilibrio en juegos de competición política
Mª Dolores López González y Javier Rodrigo Hitos

374/2008 Smooth Transition from Fixed Effects to Mixed Effects Models in Multi-level regression Models
Maria José Lombardía and Stefan Sperlich
375/2008 A Revenue-Neutral Tax Reform to Increase Demand for Public Transport Services
Carlos Pestana Barros and Juan Prieto-Rodriguez

376/2008 Measurement of intra-distribution dynamics: An application of different approaches to the European regions
Adolfo Maza, María Hierro and José Villaverde

377/2008 Migración interna de extranjeros y ¿nueva fase en la convergencia?
María Hierro y Adolfo Maza

378/2008 Efectos de la Reforma del Sector Eléctrico: Modelización Teórica y Experiencia Internacional
Ciro Eduardo Bazán Navarro

379/2008 A Non-Parametric Independence Test Using Permutation Entropy
Mariano Matilla-García and Manuel Ruiz Marín

380/2008 Testing for the General Fractional Unit Root Hypothesis in the Time Domain
Uwe Hassler, Paulo M.M. Rodrigues and Antonio Rubia

381/2008 Multivariate gram-charlier densities
Esther B. Del Brio, Trino-Manuel Ñíguez and Javier Perote

382/2008 Analyzing Semiparametrically the Trends in the Gender Pay Gap - The Example of Spain
Ignacio Moral-Arce, Stefan Sperlich, Ana I. Fernández-Sainz and Maria J. Roca

383/2008 A Cost-Benefit Analysis of a Two-Sided Card Market
Santiago Carbó Valverde, David B. Humphrey, José Manuel Liñares Zegarra and Francisco Rodríguez Fernandez

384/2008 A Fuzzy Bicriteria Approach for Journal Deselection in a Hospital Library
M. L. López-Avello, M. V. Rodríguez-Uría, B. Pérez-Gladish, A. Bilbao-Terol, M. Arenas-Parra

385/2008 Valoración de las grandes corporaciones farmacéuticas, a través del análisis de sus principales intangibles, con el método de opciones reales
Gracia Rubio Martín y Prosper Lamothe Fernández

386/2008 El marketing interno como impulsor de las habilidades comerciales de las pyme españolas: efectos en los resultados empresariales
Mª Leticia Santos Vijande, Mª José Sanzo Pérez, Nuria García Rodríguez y Juan A. Trespalacios Gutiérrez

387/2008 Understanding Warrants Pricing: A case study of the financial market in Spain
David Abad y Belén Nieto

388/2008 Aglomeración espacial, Potencial de Mercado y Geografía Económica: Una revisión de la literatura
Jesús López-Rodríguez y J. Andrés Faíña

389/2008 An empirical assessment of the impact of switching costs and first mover advantages on firm performance
Jaime Gómez, Juan Pablo Maícas

390/2008 Tender offers in Spain: testing the wave
Ana R. Martínez-Cañete y Inés Pérez-Soba Aguilar
La integración del mercado español a finales del siglo XIX: los precios del trigo entre 1891 y 1905
Mariano Matilla García, Pedro Pérez Pascual y Basilio Sanz Carnero

Cuando el tamaño importa: estudio sobre la influencia de los sujetos políticos en la balanza de bienes y servicios
Alfonso Echazarra de Gregorio

Una visión cooperativa de las medidas ante el posible daño ambiental de la desalación
Borja Montaño Sanz

Efectos externos del endeudamiento sobre la calificación crediticia de las Comunidades Autónomas
Andrés Leal Marcos y Julio López Laborda

Technical efficiency and productivity changes in Spanish airports: A parametric distance functions approach
Beatriz Tovar & Roberto Rendeiro Martín-Cejas

Network analysis of exchange data: Interdependence drives crisis contagion
David Matesanz Gómez & Guillermo J. Ortega

Explaining the performance of Spanish privatised firms: a panel data approach
Laura Cabeza Garcia and Silvia Gomez Anson

Technological capabilities and the decision to outsource R&D services
Andrea Martínez-Noya and Esteban García-Canal

Hybrid Risk Adjustment for Pharmaceutical Benefits
Manuel García-Goñi, Pere Ibern & José María Inoriza

The Team Consensus–Performance Relationship and the Moderating Role of Team Diversity
José Henrique Dieguez, Javier González-Benito and Jesús Galende

The institutional determinants of CO₂ emissions: A computational modelling approach using Artificial Neural Networks and Genetic Programming
Marcos Álvarez-Díaz, Gonzalo Caballero Miguez and Mario Soliño

Alternative Approaches to Include Exogenous Variables in DEA Measures: A Comparison Using Monte Carlo
José Manuel Cordero-Ferrera, Francisco Pedraja-Chaparro and Daniel Santín-González

Efecto diferencial del capital humano en el crecimiento económico andaluz entre 1985 y 2004: comparación con el resto de España
Mª del Pópulo Pablo-Romero Gil-Delgado y Mª de la Palma Gómez-Calero Valdés

Análisis de fusiones, variaciones conjeturales y la falacia del estimador en diferencias
Juan Luis Jiménez y Jordi Perdigueru

Política fiscal en la uem: ¿basta con los estabilizadores automáticos?
Jorge Uxó González y Mª Jesús Arroyo Fernández

Papel de la orientación emprendedora y la orientación al mercado en el éxito de las empresas
Óscar González-Benito, Javier González-Benito y Pablo A. Muñoz-Gallego

La presión fiscal por impuesto sobre sociedades en la unión europea
Elena Fernández Rodríguez, Antonio Martínez Arias y Santiago Álvarez García
<table>
<thead>
<tr>
<th>Volume/Year</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>408/2008</td>
<td>The environment as a determinant factor of the purchasing and supply strategy: an empirical analysis</td>
<td>Dr. Javier González-Benito y MS Duilio Reis da Rocha</td>
</tr>
<tr>
<td>409/2008</td>
<td>Cooperation for innovation: the impact on innovatory effort</td>
<td>Gloria Sánchez González and Liliana Herrera</td>
</tr>
<tr>
<td>410/2008</td>
<td>Spanish post-earnings announcement drift and behavioral finance models</td>
<td>Carlos Forner and Sonia Sanabria</td>
</tr>
<tr>
<td>411/2008</td>
<td>Decision taking with external pressure: evidence on football manager dismissals in argentina and their consequences</td>
<td>Ramón Flores, David Forrest and Juan de Dios Tena</td>
</tr>
<tr>
<td>413/2008</td>
<td>Voter heuristics in Spain: a descriptive approach elector decision</td>
<td>José Luis Sáez Lozano and Antonio M. Jaime Castillo</td>
</tr>
<tr>
<td>414/2008</td>
<td>Análisis del efecto área de salud de residencia sobre la utilización y acceso a los servicios sanitarios en la Comunidad Autónoma Canaria</td>
<td>Ignacio Abásolo Alessón, Lidia García Pérez, Raquel Aguiar Ibáñez y Asier Amador Robayna</td>
</tr>
<tr>
<td>415/2008</td>
<td>Impact on competitive balance from allowing foreign players in a sports league: an analytical model and an empirical test</td>
<td>Ramón Flores, David Forrest &amp; Juan de Dios Tena</td>
</tr>
<tr>
<td>416/2008</td>
<td>Organizational innovation and productivity growth: Assessing the impact of outsourcing on firm performance</td>
<td>Alberto López</td>
</tr>
<tr>
<td>417/2008</td>
<td>Value Efficiency Analysis of Health Systems</td>
<td>Eduardo González, Ana Cárcaba &amp; Juan Ventura</td>
</tr>
<tr>
<td>418/2008</td>
<td>Equidad en la utilización de servicios sanitarios públicos por comunidades autónomas en España: un análisis multinivel</td>
<td>Ignacio Abásolo, Jaime Pinilla, Miguel Negrín, Raquel Aguiar y Lidia García</td>
</tr>
<tr>
<td>419/2008</td>
<td>Piedras en el camino hacia Bolonia: efectos de la implantación del EEES sobre los resultados académicos</td>
<td>Carmen Florido, Juan Luis Jiménez e Isabel Santana</td>
</tr>
<tr>
<td>420/2008</td>
<td>The welfare effects of the allocation of airlines to different terminals</td>
<td>M. Pilar Socorro and Ofelia Betancor</td>
</tr>
<tr>
<td>421/2008</td>
<td>How bank capital buffers vary across countries. The influence of cost of deposits, market power and bank regulation</td>
<td>Ana Rosa Fonseca and Francisco González</td>
</tr>
<tr>
<td>422/2008</td>
<td>Analysing health limitations in spain: an empirical approach based on the european community household panel</td>
<td>Marta Pascual and David Cantarero</td>
</tr>
</tbody>
</table>
Regional productivity variation and the impact of public capital stock: an analysis with spatial interaction, with reference to Spain
Miguel Gómez-Antonio and Bernard Fingleton

Average effect of training programs on the time needed to find a job. The case of the training schools program in the south of Spain (Seville, 1997-1999).
José Manuel Cansino Muñoz-Repiso and Antonio Sánchez Braza

Medición de la eficiencia y cambio en la productividad de las empresas distribuidoras de electricidad en Perú después de las reformas
Raúl Pérez-Reyes y Beatriz Tovar

Aercando posturas sobre el descuento ambiental: sondeo Delphi a expertos en el ámbito internacional
Carmen Almansa Sáez y José Miguel Martínez Paz

Determinants of abnormal liquidity after rating actions in the Corporate Debt Market
Pilar Abad, Antonio Díaz and M. Dolores Robles

Export led-growth and balance of payments constrained. New formalization applied to Cuban commercial regimes since 1960
David Matesanz Gómez, Guadalupe Fugarolas Álvarez-Ude and Isis Mañalich Gálvez

La deuda implícita y el desequilibrio financiero-actuarial de un sistema de pensiones. El caso del régimen general de la seguridad social en España
José Enrique Devesa Carpio y Mar Devesa Carpio

Efectos de la descentralización fiscal sobre el precio de los carburantes en España
Desiderio Romero Jordán, Marta Jorge García-Inés y Santiago Álvarez García

Euro, firm size and export behavior
Silviano Esteve-Pérez, Salvador Gil-Pareja, Rafael Llorca-Vivero and José Antonio Martínez-Serrano

Does social spending increase support for free trade in advanced democracies?
Ismael Sanz, Ferran Martínez i Coma and Federico Steinberg

Potencial de Mercado y Estructura Espacial de Salarios: El Caso de Colombia
Jesús López-Rodríguez y María Cecilia Acevedo

Persistence in Some Energy Futures Markets
Juncal Cunado, Luis A. Gil-Alana and Fernando Pérez de Gracia

La inserción financiera externa de la economía francesa: inversores institucionales y nueva gestión empresarial
Ignacio Álvarez Peralta

¿Flexibilidad o rigidez salarial en España?: un análisis a escala regional
Ignacio Moral Arce y Adolfo Maza Fernández

Intangible relationship-specific investments and the performance of r&d outsourcing agreements
Andrea Martínez-Noya, Esteban García-Canal & Mauro F. Guillén

Friendly or Controlling Boards?
Pablo de Andrés Alonso & Juan Antonio Rodríguez Sanz
La sociedad Trenor y Cía. (1838-1926): un modelo de negocio industrial en la España del siglo XIX
Amparo Ruiz Llopis

Continental bias in trade
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez Serrano

Determining operational capital at risk: an empirical application to the retail banking
Enrique José Jiménez-Rodriguez, José Manuel Feria-Dominguez & José Luis Martín-Marin

Costes de mitigación y escenarios post-kyoto en España: un análisis de equilibrio general para España
Mikel González Ruiz de Eguino

Las revistas españolas de economía en las bibliotecas universitarias: ranking, valoración del indicador y del sistema
Valentín Edo Hernández

Convergencia económica en España y coordinación de políticas económicas. un estudio basado en la estructura productiva de las CC.AA.
Ana Cristina Mingorance Arnáiz

Instrumentos de mercado para reducir emisiones de co2: un análisis de equilibrio general para España
Mikel González Ruiz de Eguino

El comercio intra e inter-regional del sector Turismo en España
Carlos Llano y Tamara de la Mata

Efectos del incremento del precio del petróleo en la economía española: Análisis de cointegración y de la política monetaria mediante reglas de Taylor
Fernando Hernández Martínez

Bologna Process and Expenditure on Higher Education: A Convergence Analysis of the EU-15
T. Agasisti, C. Pérez Esparrells, G. Catalano & S. Morales

Global Economy Dynamics? Panel Data Approach to Spillover Effects
Gregory Daco, Fernando Hernández Martínez & Li-Wu Hsu

Pricing levered warrants with dilution using observable variables
Isabel Abínzano & Javier F. Navas

Information technologies and financial performance: The effect of technology diffusion among competitors
Lucio Fuentelsaz, Jaime Gómez & Sergio Palomas

A Detailed Comparison of Value at Risk in International Stock Exchanges
Pilar Abad & Sonia Benito

Understanding offshoring: has Spain been an offshoring location in the nineties?
Belén González-Díaz & Rosario Gandoy

Outsourcing decision, product innovation and the spatial dimension: Evidence from the Spanish footwear industry
José Antonio Belso-Martinez
<table>
<thead>
<tr>
<th>Volume</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>455/2009</td>
<td>Does playing several competitions influence a team’s league performance? Evidence from Spanish professional football</td>
<td>Andrés J. Picazo-Tadeo &amp; Francisco González-Gómez</td>
</tr>
<tr>
<td>456/2009</td>
<td>Does accessibility affect retail prices and competition? An empirical application</td>
<td>Juan Luis Jiménez and Jordi Perdiguero</td>
</tr>
<tr>
<td>457/2009</td>
<td>Cash conversion cycle in smes</td>
<td>Sonia Baños-Caballero, Pedro J. García-Teruel and Jordi Martínez-Solano</td>
</tr>
<tr>
<td>458/2009</td>
<td>Un estudio sobre el perfil de hogares endeudados y sobreendeudados: el caso de los hogares vascos</td>
<td>Alazne Mujika Alberdi, Iñaki García Arrizabalaga y Juan José Gibaja Martíns</td>
</tr>
<tr>
<td>459/2009</td>
<td>Imposing monotonicity on outputs in parametric distance function estimations: with an application to the spanish educational production</td>
<td>Sergio Perelman and Daniel Santín</td>
</tr>
<tr>
<td>460/2009</td>
<td>Key issues when using tax data for concentration analysis: an application to the Spanish wealth tax</td>
<td>José Mª Durán-Cabré and Alejandro Esteller-Moré</td>
</tr>
<tr>
<td>461/2009</td>
<td>¿Se está rompiendo el mercado español? Una aplicación del enfoque de feldstein –horioka</td>
<td>Saúl De Vicente Queijeiro, José Luis Pérez Rivero y María Rosalia Vicente Cuervo</td>
</tr>
<tr>
<td>462/2009</td>
<td>Financial condition, cost efficiency and the quality of local public services</td>
<td>Manuel A. Muñiz &amp; José L. Zafra</td>
</tr>
<tr>
<td>463/2009</td>
<td>Including non-cognitive outputs in a multidimensional evaluation of education production: an international comparison</td>
<td>Marián García Valiñas &amp; Manuel Antonio Muñiz Pérez</td>
</tr>
<tr>
<td>464/2009</td>
<td>A political look into budget deficits. The role of minority governments and oppositions</td>
<td>Albert Falcó-Gimeno &amp; Ignacio Jurado</td>
</tr>
<tr>
<td>465/2009</td>
<td>La simulación del cuadro de mando integral. Una herramienta de aprendizaje en la materia de contabilidad de gestión</td>
<td>Elena Urquía Grande, Clara Isabel Muñoz Colomina y Elisa Isabel Cano Montero</td>
</tr>
<tr>
<td>466/2009</td>
<td>Análisis histórico de la importancia de la industria de la desalinización en España</td>
<td>Borja Montañño Sanz</td>
</tr>
<tr>
<td>467/2009</td>
<td>The dynamics of trade and innovation: a joint approach</td>
<td>Silviano Esteve-Pérez &amp; Diego Rodríguez</td>
</tr>
<tr>
<td>468/2009</td>
<td>Measuring international reference-cycles</td>
<td>Sonia de Lucas Santos, Inmaculada Álvarez Ayuso &amp; Mª Jesús Delgado Rodríguez</td>
</tr>
<tr>
<td>469/2009</td>
<td>Measuring quality of life in Spanish municipalities</td>
<td>Eduardo González Fidalgo, Ana Cárcaba García, Juan Ventura Victoria &amp; Jesús García García</td>
</tr>
<tr>
<td>470/2009</td>
<td>¿Cómo se valoran las acciones españolas: en el mercado de capitales doméstico o en el europeo?</td>
<td>Begoña Font Belaire y Alfredo Juan Grau Grau</td>
</tr>
<tr>
<td>471/2009</td>
<td>Patterns of e-commerce adoption and intensity. evidence for the european union-27</td>
<td>María Rosalia Vicente &amp; Ana Jesús López</td>
</tr>
</tbody>
</table>
On measuring the effect of demand uncertainty on costs: an application to port terminals
Ana Rodríguez-Álvarez, Beatriz Tovar & Alan Wall

Order of market entry, market and technological evolution and firm competitive performance
Jaime Gómez, Gianvito Lanzolla & Juan Pablo Maicas

La Unión Económica y Monetaria Europea en el proceso exportador de Castilla y León (1993-2007): un análisis de datos de panel
Almudena Martínez Campillo y Mª del Pilar Sierra Fernández

Do process innovations boost SMEs productivity growth?
Juan A. Mañez, María E. Rochina Barrachina, Amparo Sanchis Llopis & Juan A. Sanchis Llopis

Incertidumbre externa y elección del modo de entrada en el marco de la inversión directa en el exterior
Cristina López Duarte y Marta Mª Vidal Suárez

Testing for structural breaks in factor loadings: an application to international business cycle
José Luis Cendejas Bueno, Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & Mª Jesús Delgado Rodríguez

¿Esconde la rigidez de precios la existencia de colusión? El caso del mercado de carburantes en las Islas Canarias
Juan Luis Jiménez y Jordi Perniguero

The poni test with structural breaks
Antonio Aznar & María-Isabel Ayuda

Accuracy and reliability of Spanish regional accounts (CRE-95)
Verónica Cañal Fernández

Estimating regional variations of R&D effects on productivity growth by entropy econometrics
Esteban Fernández-Vázquez y Fernando Rubiera-Morollón

Why do local governments privatize the provision of water services? Empirical evidence from Spain
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Jorge Guardiola

Assessing the regional digital divide across the European Union-27
María Rosalía Vicente & Ana Jesús López

Measuring educational efficiency and its determinants in Spain with parametric distance functions
José Manuel Cordero Ferrera, Eva Crespo Cebada & Daniel Santín González

Spatial analysis of public employment services in the Spanish provinces
Patricia Sánchez Cano & Matías Mayor Fernández

Trade effects of continental and intercontinental preferential trade agreements
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

Testing the accuracy of DEA for measuring efficiency in education under endogeneity
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano

Measuring efficiency in primary health care: the effect of exogenous variables on results
José Manuel Cordero Ferrera, Eva Crespo Cebada & Luis R. Murillo Zamorano
Capital structure determinants in growth firms accessing venture funding
Marina Balboa, José Martí & Álvaro Tresierra

Determinants of debt maturity structure across firm size
Víctor M. González

Análisis del efecto de la aplicación de las NIIF en la valoración de las salidas a bolsa
Susana Álvarez Otero y Eduardo Rodríguez Enríquez

An analysis of urban size and territorial location effects on employment probabilities: the Spanish case
Ana Viñuela-Jiménez, Fernando Rubiera-Morollón & Begoña Cueto

Determinantes de la estructura de los consejos de administración en España
Isabel Acero Fraile y Nuria Alcalde Fradejas

Performance and completeness in repeated inter-firm relationships: the case of franchising
Vanesa Solis-Rodriguez & Manuel Gonzalez-Diaz

A Revenue-Based Frontier Measure of Banking Competition
Santiago Carbó, David Humphrey & Francisco Rodríguez

Categorical segregation in social networks
Antoni Rubí-Barceló

Beneficios ambientales no comerciales de la directiva marco del agua en condiciones de escasez: análisis económico para el Guadalquivir
Julia Martín-Ortega, Giacomo Giannoccaro y Julio Berbel Vecino

Monetary integration and risk diversification in eu-15 sovereign debt markets
Juncal Cuñado & Marta Gómez-Puig

The Marshall Plan and the Spanish autarky: A welfare loss analysis
José Antonio Carrasco Gallego

The role of learning in firm R&D persistence
Juan A. Mañez, María E. Rochina-Barrachina, Amparo Sanchis-Llopis & Juan A. Sanchis-Llopis

Is venture capital more than just money?
Marina Balboa, José Martí & Nina Zieling

On the effects of supply strategy on business performance: do the relationships among generic competitive objectives matter?
Javier González-Benito

Corporate cash holding and firm value
Cristina Martínez-Sola, Pedro J. García-Teruel & Pedro Martínez-Solano

El impuesto de flujos de caja de sociedades: una propuesta de base imponible y su aproximación contable en España
Lourdes Jerez Barroso y Joaquín Teixeira Quirós

The effect of technological, commercial and human resources on the use of new technology
Jaime Gómez & Pilar Vargas
¿Cómo ha afectado la fiscalidad a la rentabilidad de la inversión en vivienda en España? Un análisis para el periodo 1996 y 2007
Jorge Onrubia Fernández y María del Carmen Rodado Ruiz

Modelización de flujos en el análisis input-output a partir de la teoría de redes
Ana Salomé García Muñiz

Export-led-growth hypothesis revisited. A balance of payments approach for Argentina, Brazil, Chile and Mexico
David Matesanz Gómez & Guadalupe Fugarolas Álvarez-Ude

Realised hedge ratio properties, performance and implications for risk management: evidence from the spanish ibex 35 spot and futures markets
David G McMillan & Raquel Quiroga García

Do we sack the manager... or is it better not to? Evidence from Spanish professional football
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Miguel Á. García-Rubio

Have Spanish port sector reforms during the last two decades been successful? A cost frontier approach
Ana Rodríguez-Álvarez & Beatriz Tovar

Size & Regional Distribution of Financial Behavior Patterns in Spain
Juan Antonio Maroto Acín, Pablo García Estévez & Salvador Roji Ferrari

The impact of public reforms on the productivity of the Spanish ports: a parametric distance function approach
Ramón Núñez-Sánchez & Pablo Coto-Millán

Trade policy versus institutional trade barriers: an application using “good old” ols
Laura Márquez-Ramos, Inmaculada Martínez-Zarzoso & Celestino Suárez-Burguet

The “Double Market” approach in venture capital and private equity activity: the case of Europe
Marina Balboa & José Martí

International accounting differences and earnings smoothing in the banking industry
Marina Balboa, Germán López-Espinosa & Antonio Rubia

Convergence in car prices among European countries
Simón Sosvilla-Rivero & Salvador Gil-Pareja

Effects of process and product-oriented innovations on employee downsizing
José David Vicente-Lorente & José Ángel Zúñiga-Vicente

Inequality, the politics of redistribution and the tax-mix
Jenny De Freitas

Efectos del desajuste educativo sobre el rendimiento privado de la educación: un análisis para el caso español (1995-2006)
Inés P. Murillo, Marta Rahona y Mª del Mar Salinas

Structural breaks and real convergence in opec countries
Juncal Cuñado

Human Capital, Geographical location and Policy Implications: The case of Romania
Jesús López-Rodríguez, Andres Faiña y Bolea Cosmin-Gabriel
Organizational unlearning context fostering learning for customer capital through time: lessons from SMEs in the telecommunications industry
Anthony K. P. Wensley, Antonio Leal-Millán, Gabriel Cepeda-Carrión & Juan Gabriel Cegarra-Navarro

The governance threshold in international trade flows
Marta Felis-Rota

The intensive and extensive margins of trade: decomposing exports growth differences across Spanish regions
Asier Minondo Uribe-Etxeberria & Francisco Requena Silvente

Why do firms locate R&D outsourcing agreements offshore? the role of ownership, location, and externalization advantages
Andrea Martínez-Noya, Esteban García-Canal & Mauro F. Guillén

Corporate Taxation and the Productivity and Investment Performance of Heterogeneous Firms: Evidence from OECD Firm-Level Data
Norman Gemmell, Richard Kneller, Ismael Sanz & José Félix Sanz-Sanz

Modelling Personal Income Taxation in Spain: Revenue Elasticities and Regional Comparisons
John Creedy & José Félix Sanz-Sanz

Mind the Remoteness!: Income disparities across Japanese Prefectures
Jesús López-Rodríguez, Daisuke Nakamura

El nuevo sistema de financiación autonómica: descripción, estimación empírica y evaluación
Antoni Zabalza y Julio López Laborda

Markups, bargaining power and offshoring: an empirical assessment
Lourdes Moreno & Diego Rodríguez

The snp-dcc model: a new methodology for risk management and forecasting
Esther B. Del Brio, Trino-Manuel Ñíguez & Javier Perote

El uso del cuadro de mando integral y del presupuesto en la gestión estratégica de los hospitales públicos
David Naranjo Gil

Análisis de la efectividad de las prácticas de trabajo de alta implicación en las fábricas españolas
Daniel Vázquez-Bustelo y Lucía Avella Camarero

Energía, innovación y transporte: la electrificación de los tranvías en España, 1896-1935
Alberte Martínez López

La ciudad como negocio: gas y empresa en una región española, Galicia 1850-1936
Alberte Martínez López y Jesús Mirás Araujo

To anticipate or not to anticipate? A comparative analysis of opportunistic early elections and incumbents’ economic performance
Pedro Riera Sagrera

The impact of oil shocks on the Spanish economy
Ana Gómez-Loscos, Antonio Montañés & María Dolores Gadea
The efficiency of public and publicly-subsidized high schools in Spain. Evidence from PISA-2006
Maria Jesús Mancebón, Jorge Calero, Álvaro Choi & Domingo P. Jiménez-de-Embún

Regulation as a way to force innovation: the biodiesel case
Jordi Perdiguero & Juan Luis Jiménez

Pricing strategies of Spanish network carrier
Xavier Fageda, Juan Luis Jiménez & Jordi Perdiguero

Papel del posicionamiento del distribuidor en la relación entre la marca de distribuidor y lealtad al establecimiento comercial
Oscar González-Benito y Mercedes Martos-Partal

How Bank Market Concentration, Regulation, and Institutions Shape the Real Effects of Banking Crises
Ana I. Fernández, Francisco González & Nuria Suárez


