The Real Effects of Financial Crises: Evidence from an International Perspective

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Abstract

Financial crises can be considered as resulting from a condition of financial fragility determining serious effects on the whole economic system: from this perspective, economic literature has reveled the impact that systemic crises generally produce, in terms of GDP contraction, credit restrictions, consequences for the community because of the need for bank bailouts, decreases of investments, currency crises. Despite this evidence, there is still a lack of knowledge about the real effects that systemic financial crisis affecting the banking system can determine for the whole economy. By considering an international sample of systemic financial crises occurred in different banking systems, we regress the most relevant variables which characterize the economic performance of each countries, before and after each crisis, obtaining significant evidence about the effects that can result from the degree of financial development, together with the characteristics of financial firms and the effectiveness of legal and supervisory systems.

Keywords: Financial Crisis, Legal System, Output Loss, GDP

1. Introduction

The aim of this paper is to research for the impact that systemic banking crises may have on the economy, in terms of GDP contraction, credit restrictions, consequences for the community because of the need for bank bailouts, decreases of investments, currency crises. Moving from the most recent dataset of Laeven and Valencia (2010), we created a unique and original dataset, where 76 episodes of systemic banking crises are considered, covering the period from 1976 to 2008. We regressed the most relevant variables which characterize the economic performance of each countries, before and after each crisis, in order to investigate for the main determinants and effects, which interested with different intensity 54 countries where these crises happened. In this regard, we consider of particular interest the evidence we obtained about the factors that seem to have caused such episodes of crises, with significant differences that result from the degree of financial development, together with the characteristics of financial firms and the effectiveness of legal and supervisory systems. At the same time, we find particularly interesting the evidence obtained about the effects that banking crises caused, in terms of GDP contraction, the need for bailouts by sovereign states and the increase for countries' debt burden, together with other impacts for the community, in terms of decreases of investments, currency crises, increases of unemployment. By contrast, no evidence appears in terms of impact on banks' performance, whose profitability does not seem to be influenced by the nature and intensity of the crisis. We consider this body of evidence of a particular interest, in order to be considered for the adoption of appropriate policies to reform the prudential supervision on financial system. The remainder of the paper is organized as follows. Section 2 considers the economic literature on financial crises, underlining the debate which had taken place more recently about their determinants and consequences for economic system. Section 3 describes the dataset composition and the variables considered, together with the methodology of analysis. The empirical results are reported in Section 4. Section 5 concludes.

2. The economic literature on financial crises

Financial crises can be considered as resulting from a condition of financial fragility of economic system: that fragility can affect economy within a local level, such as in a single country or economic area, or it can spread across borders triggering contagion on an international scale (Allen, Gale, 2007).

Nevertheless, the ways in which crises occur are not always the same: events of the past can recur in the future with different intensity and features. Despite these differences, economic literature has found that in financial crises there is almost always a basis, which can be related to a wave of optimism generated by a favorable evolution of the economy (Kindleberger, 1991), with the expectations for a better future which contribute to an underestimation of risk and openness to easy credit, both on the part of financial institutions and investors (Bernanke, Gertler, 1986, 1999). Therefore, when optimism and euphoria increase, a feeling of being thrown into a new era become well-liked, with the future which seems to become less uncertain and the goals become more readily achievable and feasible (Bekaert, Fratzscher, 2011). Then, when the expectations become more realistic, new discords and sudden changes affect the economic growth, with a contraction of economic activity and credit, leading to financial system's instability. From this perspective, financial crises can produce reflections on intermediaries and financial instruments, such as collapses and bankruptcies, leading to the inability of capital markets to allocate resources efficiently to the real economy, making the economic contraction even more severe (Claessens et al., 2008).

Many economists have tried to develop a theory explaining the main causes and consequences of financial crises, without reaching to a single explanation or any deterministic model in order to predict these phenomena (Minsky 1985, Kindleberger 1991): from this perspective, the prediction of financial crises remains difficult, because of the variety of economic forces involved, which must interpreted by analyzing the various interconnections and interdependencies between the real economy and financial mechanisms (Bordo et al., 2000).

The phenomenon of financial crises over the years has taken on an intensity not negligible, with significant effects interesting not only the financial intermediaries involved, but the entire economic and financial system (Demirgüc-Kunt, Detragiache, 1998; Dell'Ariccia et al., 2008; Cardarelli et al., 2009). By this meaning, a condition of widespread crisis, especially in the banking sector, may lead to interruption of the normal functioning of the payment system, a sharp contraction of credit extended to the production system and a crisis of confidence among depositors with possible capital outflows (Kaminsky, Reinhart, 1999; Hoggart et al., 2002). The ultimate effect may be represented by a sharp decrease in the volume of transactions and productive activity, which tends to remain below its potential level for several years, together with a substantial weakening of the financial position of the intermediaries, which could put threaten the solvency of the same and induce bankruptcies (IMF, 1998). A banking crisis is therefore a phenomenon much more significant than a condition of failure that affects an individual bank, as it is characterized by a pervasive diffusion, which is magnified because of the existence of ties between the banks themselves, because of existing relationships on interbank market, and the relationships between banks and other sectors of the economy (Laeven, Valencia, 2008, 2010; Reinhart, Rogoff, 2009; Pesic, 2011).

2.1. The debate about the determinants of financial crises

A rapidly growing empirical literature is studying the determinants of financial crises, given the scope and importance they played for economic and financial environment. The main factors that make banks more inclined to live in situations of widespread weakness, which could escalate into a real banking crisis, are discussed below, highlighting the essential features in order to keep exposure to a proper stage (Reinhart, Rogoff, 2009). Poor quality of assets, which can be considered by the deterioration of the quality of bank loans can result in a loss of public trust towards banking institution: if operators consider that the loans of poor quality are increasing compared to the total loans disbursed, a crisis of confidence can arise, determined by the concern that poor quality loans become noteworthy (Demirgüc-Kunt, Detragiache, 1998). Deterioration of bank assets' quality can be determined by different causes, which can affect assets' quality through different perspectives. An important factor which can be crucial for this phenomenon is a suddenly rise of interest rates, which can precipitate the crisis in the banking sector by accentuating the classic problem of adverse selection (Mishkin, 1985, 1998). When facing a rise in interest rates prudent investors become reluctant to ask for loans to banks, whilst entrepreneurs investing in highly risky projects are willing to pay higher interest rates, given that if successful they will enjoy the high profitability, while in case of failure they respond only for the fraction of the loan. Another possible determinants of banking crises are phenomena of lending booms, with the strong growth of bank loans often associated with phenomena of crises: when the increase in the credit's supply is high and concentrated in very short periods of time, it is likely that the activity of screening is carried out improperly, thereby promoting the increase of the loans of poor quality (Demirgüc-Kunt, Detragiache, 1998).

Another fundamental factor which can determine a banking crisis is the lack of regulatory and supervisory activities: the absence of effective oversight and regulatory agencies, taking risky positions by banks may increase the likelihood to experience a banking crisis (Levine et al., 2001, 2008; Adiad et al., 2008). There are other factors of significant importance that can power the occurrence of a crisis in the banking system, as they tend to increase the risk of financial instability. Are among these factors, the phenomenon of moral hazard that can cause distortion in the incentives of investors and the phenomenon of too-big-to-fail: we refer especially to more industrialized countries, where credit institutions achieve such dimensions that they cannot be allowed to fail, since their eventual failure would result in a real banking crisis systemic (Heffernan, 2005).

2.2. The research about potential effects of financial crises

Evaluating the effects that financial crises can produce for the real economy is of a particular interest for economic policy makers. The higher the intensity of the real impacts of the crisis, the greater should be, in fact, the interest of policy makers in setting policies for the management and crisis prevention. Generally, the effects of financial crises are not distributed uniformly on the real economy and population: they generate, in fact, suffering particularly in the poorer classes, namely those related to non-tradables, characterized by low savings rates and some exposure to fluctuations in the exchange rate. By this meaning, financial crises tend to hit more severely a part of economic system, namely who has not the possibility to obtain foreign currency from its business operations, the small investors who see their savings wiped out by bank failures and high rates of inflation, and the groups most likely to purchase products and services from abroad.

More distinctively, the empirical literature has identified two significant variables that approximate the real effects of the crisis. The first variable is based on the quantification of the impact of tax: the cost of the crisis will be given by the weight increase of expenditure on GDP/debt ratio due to conditions of contrast of the crisis, such as, for example, the bailouts of banks and redemptions in respect of depositors covered by insurance. A second variable is represented by the losses in terms of output, which are estimated in absolute terms or relative, by measuring the distance between the actual evolution of income and what it would be in the absence of crisis, the so-called performance against factual (Laeven, Valencia, 2008). As shown by Allen and Gale (2007), the economic literature on financial crises originally considered fiscal costs as a key variable for estimating the effects of the crisis: indeed, this is not a variable that captures the effect of real economic costs, but only the redistributive transfers. For this reason, a most recent literature has focused attention on the loss of output, throughout it is possible to estimate the real effect of crises on economy. A first estimate of the fiscal costs and losses in terms of output is provided by Hoggarth et al. (2002), whilst the fiscal costs are estimated for a sample of 24 banking crises occurred since the eighties by Caprio and Klingebiel (1999). Moreover, the losses in terms of output are calculated by considering a sample of 47 crises occurred between 1977 and 1998 in developed economies and emerging economies by Caprio and Klingebiel (1999) and Levine et al. (2000).

A further explanation about the actual effects of the crisis is provided by Laeven and Valencia (2008), who estimate fiscal costs and losses in terms of output for a selection of 42 episodes of systemic banking crises, occurring between 1970 and 2007 in 37 countries. They calculated the net fiscal costs on average to 13% of GDP, by calculating for the year when the crisis broke out and the next four years, whilst the losses are calculated by summing the annual differences between actual GDP and trend GDP, as a percentage of the latter, for four years. This empirical analysis is extended by Laeven and Valencia (2010) to a larger sample of crisis, considering those that have arisen from August 2007, as a result of the US subprime crisis: those results show that the economic impact of the recent episodes are more intense than those of the past, with a loss of output estimated in a average of 25% of GDP and an average increase in public debt in the three years following the outbreak of the crisis about the 24%.

2.3. Some unresolved issues about the financial crises

Despite the attention that economic literature has put forward the real effects of financial crises, it must be considered that the actual effects produced by the banking crisis are multiple and involve various economic subjects: in particular, we can consider the losses suffered from the whom of bank's stakeholders. For example, we can consider shareholders who are shrinking or even erase the value of their shares, depositors who are likely to see dissipated much of their savings, creditors who may not be reimbursed, debtors who may face difficulties in finding sources of financing alternatives to the bank, taxpayers who are called upon to finance, through taxes, the crisis resolution measures undertaken by the public sector (Dell'Ariccia et al, 2008).

In our paper, we consider two fundamental categories of effects, which we distinguished between real effects (as traditionally defined by economic literature) and macroeconomic effects, for which we reported the evidence obtained through our model. In particular, within the macroeconomic standpoint, we consider the increase of Gross Public Debt on GDP following the outbreak of the crisis, together with the variation of Effective Exchange Rate experimented by each countries after the crisis. Then, we consider the variation of GDP Pro Capita and the increase of Unemployment Rate after each crisis. From this perspective, a fairly significant contribution to the bond that exists between financial crises and the real effects is offered by a recent paper by Reinhart and Rogoff (2009), who carry out a historical analysis focuses on the periods subsequent to systemic financial crises. Observing a very large database, which includes both financial crises erupted in emerging countries than in advanced ones, the authors conclude that the consequences of the crisis are lengthy and involve various sectors of the economy. Moreover, as we consider that banking crises can have different nature and intensity, depending on the level of economic and social development of the country, Reinhart and Rogoff (2008) point out, however, that the real costs do not differ significantly, if considering crises in emerging economies and advanced economies.

The analysis, in fact, asserts that more and less advanced countries show similar trends in stock prices, housing prices, unemployment rates, debt levels, tax revenues, during periods following financial crises. Totally contrasting results are proposed by Dell'Ariccia et al. (2008), who point out that the consequences of banking crises are more acute in less developed economies. Considering a sample of 41 countries that have experienced banking crises in the period 1980-2000, the authors show how a business sector that, in more advanced economics, can depend on external financing others than banks, it would suffer from a crisis in a more limited extent, because of the possibility of using various sources of financing, such as, for example, the issuance of securities, the stock exchange, the use of the stock market or the international capital market. Cecchetti et al. (2009) connect the real effects of financial crises with deep cuts in income, associated with periods during which the income is below the level recorded before the crisis. They argue that the losses associated with the crisis is more acute when the banking crisis is accompanied by a currency crisis. However, when the banking crisis is followed by a sovereign debt crisis, the consequences are less expensive. Nevertheless, the negative effects on GDP of systemic banking crises show a character at all permanent. A similar conclusion is suggested by Cerra and Saxena (2008), who argue that financial crises have an impact on the economy, with profound intensity and duration very long.

3. Empirical analysis

3.1. Construction of the dataset

In order to perform our analysis we created a unique and original database comprising 76 episodes of systemic banking crises, happened in 54 countries between 1976 and 2010, collected from Laeven and Valencia (2008 and 2010). In this case, a systemic banking crisis is defined as a situation where: companies and the country's financial sector have a large number of defaults, companies and financial institutions have serious difficulties in repaying their debts to predefined deadlines, there is a sudden increase in pain and exhaustion of most of the capital or the total of the entire national banking system, there is a presence of significant government intervention. We excluded those banking crises that, affecting banks, have not a systemic nature. All variables considered relevant were taken into account for each episode of banking crisis annually, in the time interval [t-5, t+5], with t for the year of the beginning of each crisis. Besides the annual values were estimated also the mean values in the 3 and 5 years preceding and following the year of origination of the crisis. Therefore, we have been able to look at their variation within a short-term, a medium-term and a long-term perspective. More in particular, we looked at their variation within a short-term perspective, by considering the variation between 1 year before and 1 year after the crisis. We analyzed the medium-term perspective, by considering the variation between the mean value of 3 years before the crisis and 3 years after the crisis. Finally, we looked at the long-term perspective, by considering the variation between the mean value of 5 years before the crisis and 5 years after the crisis.

3.2. Analysis

The effect of banking crises (which we distinguish between real effects and macroeconomic effects) are examined from the following model:

$$\textit{effect of banking crisis} = f\,(\textit{financial interm, macroeconomy, regulation, control variables})$$

We considered the real effects of banking crisis in term of output cost and fiscal cost. We considered the macroeconomic effects of banking crisis in term of increase of Gross Public Debt on GDP, variation of Effective Exchange Rate, variation of GDP Pro Capita and variation of Unemployment Rate. We tried to consider also the variation of Bank ROA, but we did not obtained any evidence about a significant influence of banking crises on the variation of bank profitability between the period prior and after the crisis.

The output cost of banking crisis is obtained as the difference between the actual and potential output levels from the period that a banking crisis starts until the period that the actual output returns to its trend level: we obtained these data from Laeven and Valencia (2008 and 2010). They calculated the output loss as the sum of the difference between the trend "counterfactual" and actual annual real GDP, expressed as a percentage of GDP "counterfactual". The latter was estimated by applying a Hodrick-Prescott filter (HP) series on real GDP in the period [t-1, t-20], with t for the year of start of the crisis. The fiscal cost of banking crisis is calculated in term of ratio of tax expenses to GDP incurred by the State as a result of the intervention in the banking system after the crisis: we obtained these data from Beck, Demirgüç-Kunt, Levine (2009). The variation of Gross Public Debt on GDP and the variation of exchange effective rate are obtained from the International Financial Statistics (IFS): in particular, the increase of Gross Public Debt on GDP in calculated in term of Ratio of gross government debt to nominal GDP. Also the variation of GDP Pro Capita and Unemployment Rate are obtained from the International Financial Statistics (IFS): in particular, the GDP Pro Capita is obtained as the Ratio of gross domestic product to the resident population at mid-year.

As part of the data on the banking sector, the latter were found mainly from the World Bank's Development Indicators and from the work from Beck, Demirgüç-Kunt, Levine (2009). The macroeconomic data, however, were extracted from International Financial Statistics (IFS), the Datastream database of Thomson Reuters and the World Bank's Development Indicators. With reference to the control variables we considered the parameters which can be evaluated as explanatory of a characteristic potentially relevant for the analysis (eg. the presence of a legal system "common low"). Therefore, we considered the following control variables: the type of legal system in force, drawn by La Porta et al (1999), the degree of economic development, which was found by the World Economic Outlook (WEO) of the International Monetary Fund, the classification based on the level of GDP, achieved by sorting the real GDP of the countries considered, and then dividing them into 4 groups.

3.3. Variables considered

In order to perform our analysis, we distinguished the following variables for financial intermediation:

- BANK DEPOSITS/GDP, which is the Ratio of bank deposits and GDP, calculated using the index of consumer prices annual average
- PRIVATE CREDIT BY DEPOSIT MONEY BANKS/GDP, which is the Ratio of private sector credit provided by deposit banks to GDP, calculated using the index of consumer prices annual average
- LIQUID LIABILITIES/GDP, which is the Ratio of liquid liabilities (interest-bearing liabilities) of banks and other financial intermediaries to GDP, calculated using the index of consumer prices annual average
- BANK CONCENTRATION, which is the Ratio of total assets of the three largest domestic banks and total assets of the entire banking sector

We distinguish also the following variables for macroeconomic standpoint:

- MONETARY AGGREGATE M1 (% GDP), which represents M1 monetary aggregate as a percentage of GDP
- REFINANCING LENDING RATE, which is the interest rate charged to operations funding to the banking system by the Central Bank
- INFLATION RATE, which represents the Consumer Price Index
- ANNUAL GDP GROWTH RATE (%), which represents the annual rate of growth of GDP at market prices based on constant currency
- LOG GDP PRO CAPITA, which is the Ratio of gross domestic product to the resident population at mid-year (data expressed in USD 2000 and logarithm)

In order to control for the characteristics of each country, we considered the following dummy variables:

- FINANCIAL REFORM, which represents a dummy variables for countries which have been involved in a significant financial reform during the years considered
- CAPITAL REGULATION, which represents the level of capital that banks are requested to preserve for regulation objectives
- Division of the countries on the basis of the level of GDP, obtained by sorting the countries considered for real GDP and then dividing them into 4 groups, with the following dummy variables: HIGH GDP, MEDIUM-HIGH GDP, MEDIUM-LOW GDP, LOW GDP
- Division of the countries on the basis of the state prevailing in the economy (IMF Classification, World Economic Outlook), with the following dummy variables: DEVELOPING COUNTRIES, EMERGING COUNTRIES, ADVANCED COUNTRIES
- Division of the countries on the basis of the legal system governing the protection of shareholders and creditors of the company in the country (La Porta et al. 1999), with the following dummy variables: COMMON LAW, FRENCH CIVIL LAW, GERMAN CIVIL LAW, SCANDINAVIAN CIVIL LAW, DICTATORIAL

In Table 1, we reported the main descriptive statistics, for the independent variables we have already described, together with dependent variables we analyzed in the previous section.

4. Results

To perform our analysis, we regressed the most relevant variables which characterize the economic performance of each countries, before and after each crisis, in order to investigate for the main determinants and effects, which interested with different intensity 54 countries where these crises happened. In this regard, we consider of particular interest the evidence we obtained about the factors that seem to have caused such episodes of crises, with significant differences that result from the degree of financial development, together with the characteristics of financial firms and the effectiveness of legal and supervisory systems.

In particular, in Table 2 the results we obtained for real effects of crises are reported: in particular, Table 2 shows the output cost of crises become more severe for countries characterized by the relevance of banks in economic system, both in term of deposit to GDP and private credit provided by deposit bank to GDP (positive and significant correlation with the dependent variable). On the opposite, the condition of liquidity of the systems (the ratio of liquid liabilities to GDP), the degree of bank concentration, the level of GDP of countries are factors which mitigate the severity of output loss, showing that a more developed financial system, with liquid liabilities and bank concentration, it is supposed to bear the economy effect of banking crises more effectively. In Table 2, we consider also the results obtained for the fiscal impact of crises: in particular, we show that fiscal costs become more severe if the banking system is particularly large for economic system (bank deposit/GDP). At the same time, we show that the liquidity of banking system (liquid liabilities/GDP) and of the whole economic (M1 %GDP) are factors which mitigate the severity of the fiscal cost of crises, as well as the cost for refinancing for banks, the GDP pro capita, the presence of a proper capital regulation.

In Table 3, we report a part of the results we obtained for the macroeconomic effects of banking crises. In particular, we show that the increase of Gross Public Debt is positively influenced by the severity of crisis (measures as the output loss of the crisis), the cost of refinancing lending rate for banks and, quite surprisingly, the presence of financial reform undertaken before the crisis: on the opposite, the effectiveness of banks' capital regulation and the inflation rate seem to reduce the increase of Gross Public Debt after the crises. The effective exchange rate is seriously and negatively influenced by banking crises: in particular, a decrease of exchange rate is more acute for advanced countries with a more developed banking system (negative and significant sign for the constant and the ratio bank deposit/GDP), whilst the characteristics of liquidity, inflation, GDP pro capita are more capable to mitigate the effects on exchange rate of banking crises.

In Table 4, we consider the results for the last part of microeconomic effects of banking crises. From this perspective, it is possible to consider that GDP Pro Capita is significantly and negatively influenced by banking crises.

More relevant is the banking system, more severe appears the contraction of GDP Pro capita, especially for emerging countries and dictatorial systems: on the opposite, the liquidity of the system mitigates this effect. Finally, in Table 4 we consider the results obtained for the variation of unemployment rate: in particular, the presence of financial reform before the crisis, the annual GDP growth rate, the refinancing lending rate seems to positively influence the increase of unemployment rate after financial crises. Nevertheless the different analysis we performed, no evidence appears in terms of impact on banks' performance, whose profitability does not seem to be influenced by the nature and intensity of the crisis.

5. Conclusion

The aim of this paper has been to research for the impact that systemic banking crises may have on the economy, in terms of GDP contraction, credit restrictions, consequences for the community because of the need for bank bailouts, decreases of investments, currency crises. Moving from the most recent dataset of Laeven and Valencia (2010), we created a unique and original dataset, where 76 episodes of systemic banking crises were considered, in order to cover the period from 1976 to 2008: we regressed the most relevant variables which characterize the economic performance of each countries, before and after each crisis, in order to investigate for the main determinants and effects, which interested with different intensity 54 countries where these crises happened. We find particularly interesting the evidence obtained about the effects that banking crises caused, in terms of GDP contraction, the need for bailouts by sovereign states and the increase for countries' debt burden, together with other impacts for the community, in terms of decreases of investments, currency crises, increases of unemployment. We consider this body of evidence of a particular interest, in order to be considered for the adoption of appropriate policies to reform the prudential supervision on financial system.

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Annexes

Table 1 – Descriptive Statistics

	Mean	Max	Min	Dv. Std.	25° perc.	75° perc.
OUTPUT COST $_{t/t+3}$	32,77941	116	0	28,8464	10,5	45
TAX BURDEN $_{t/t+3}$	8,1887	55,1	-0,4	11,2455	1,1	10,2
VAR. GROSS PUBLIC DEBT/GDP $_{t-1/t+1}$	8,3810	119,9814	-143,3310	30,5301	1,1672	18,6259
VAR. EFFECTIVE EXCHANGE RATE $_{t-1/t+1}$	-27353,7	300,0931	-1449529	199107,6	-17,9365	3,3628
VAR. GDP PRO CAPITA $_{t-1/t+1}$	-0,0363	0,2544	-0,4534	0,1188	-0,0949	0,0325
VAR. UNEMPLOYMENT RATE $_{t-1/t+1}$	2,2901	11,1449	-4,4718	2,9484	0,6602	3,5911
BANK DEPOSITS / GDP $_{t-1}$	52,5139	389,5689	1,6748	55,8168	21,9992	68,1494
PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP $_{t-1}$	62,2169	191,7593	1,7079	53,5350	25,1566	83,3009
LIQUID LIABILITIES / GDP $_{t-1}$	58,2830	393,6903	4,5027	56,9381	26,4834	73,0257
BANK CONCENTRATION $_{t-1}$	61,0761	100	16,0696	22,8954	40,9530	76,1290
MONETARY AGGREGATE M1 (% GDP) $_{t-1}$	38,0075	1145,522	0,1214	134,5789	9,2549	30,1844
REFINANCING LENDING RATE $_{t-1}$	21,4776	310,99	0,5	43,9882	5	20,125
INFLATION RATE $_{t-1}$	236,8995	11749,64	-0,9359	1424,806	3,6435	20,4018
ANNUAL GDP GROWTH RATE (%) $_{t-1}$	3,0176	10,2228	-11,3628	4,5366	1,6194	5,9122
LOG GDP PRO CAPITA $_{t-1}$	3,7150	5,0286	2,3987	0,6685	3,2221	4,3881
FIN_REFORM_N	0,5783	1	0	0,2983	0,3601	0,8273
CAPITAL REGULATION	5,9483	12	0	4,3488	0	9

Table 2 – Real Effects of Crises: Output Cost and Tax Burden

	Output Cost				Tax Burden			
CONSTANT	77.6746	111.3643	55.6845	94.2943	76.6328***	82.6042***	86.3470***	81.5163***
	(1.1605)	(1.5851)	(0.6896)	(1.2696)	(3.9446)	(4.0235)	(3.8142)	(3.7678)
BANK DEPOSITS / GDP $_{t-1}$	3.7093*	3.1356	3.8756*	3.0797	1.7604***	1.8132***	1.4812**	1.7492***
	(1.9936)	(1.6518)	(1.8240)	(1.6453)	(3.2229)	(3.2279)	(2.3811)	(3.0509)
PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP $_{t-1}$	0.4471***	0.4472**	0.4462**	0.4126**	0.0568	0.0568	0.0626	0.0453
	(2.9005)	(2.7509)	(2.7625)	(2.5148)	(1.2642)	(1.1820)	(1.3043)	(0.9172)
LIQUID LIABILITIES / GDP $_{t-1}$	-3.7646**	-3.1104	-3.7277*	-3.0006	-1.6287***	-1.6701***	-1.3664**	-1.5966***
	(-2.0871)	(-1.6998)	(-1.8534)	(-1.6636)	(-3.0660)	(-3.0868)	(-2.3112)	(-2.8929)
BANK CONCENTRATION $_{t-1}$	-0.3509	-0.3171	-0.1697	-0.5259*	-0.0811	-0.1014	-0.1164	-0.0815
	(-1.5806)	(-1.3992)	(-0.6648)	(-2.0762)	(-1.2376)	(-1.5162)	(-1.6003)	(-1.0921)
MONETARY AGGREGATE M1 (% GDP) $_{t-1}$	-0.1325	-0.2345	0.2207	-0.1944	-0.2715**	-0.3851**	-0.3518*	-0.3773**
	(-0.3414)	(-0.4344)	(0.3608)	(-0.3672)	(-2.3818)	(-2.4008)	(-1.9673)	(-2.3396)
REFINANCING LENDING RATE $_{t-1}$	-0.1619	0.2212	0.2734	0.0862	-0.2883**	-0.2175	-0.2290	-0.2362
	(-0.3611)	(0.4107)	(0.5054)	(0.1597)	(-2.2099)	(-1.4428)	(-1.5254)	(-1.5418)
INFLATION RATE $_{t-1}$	0.7882*	1.0189**	0.8546*	0.8619	0.1271	0.2022	0.1426	0.3483
	(1.8270)	(2.3050)	(1.8851)	(1.6378)	(0.8849)	(1.3472)	(0.9050)	(1.5188)
ANNUAL GDP GROWTH RATE (%) $_{t-1}$	3.0276	5.3687*	5.3555*	4.7676	-0.0285	0.6201	0.6021	0.7707
	(1.4703)	(1.9877)	(1.9852)	(1.6378)	(-0.0478)	(0.8545)	(0.8322)	(0.9993)
LOG GDP PRO CAPITA $_{t-1}$	-11.4478	-34.6121	-18.5524	-15.0745	-13.9423***	-14.1294**	-18.0459**	-18.3713**
	(-0.7988)	(-1.5363)	(-0.6854)	(-0.6119)	(-3.2425)	(-2.1311)	(-2.3551)	(-2.4412)
FIN_REFORM_N		94.0544	77.9110	58.2970		9.3070	8.0476	20.9428
		(1.6837)	(1.3824)	(0.9816)		(0.5663)	(0.4881)	(1.0674)
CAPITAL REGULATION		-4.6663	-4.7038	-4.0878		-1.4750*	-1.3747	-1.5724**
		(-1.6122)	(-1.6279)	(-1.3837)		(-1.7789)	(-1.6613)	(-2.4412)
EMERGING COUNTRIES			-1.4250				11.5631	
			(-0.0521)				(1.4770)	
ADVANCED COUNTRIES			-43.5004				14.6179	
			(-0.8949)				(1.0912)	
MEDIUM-LOW GDP				-12.7121				5.0546
				(-0.5898)				(0.7081)
MEDIUM-HIGH GDP				-17.7947				9.3913
				(-0.9572)				(1.4895)
HIGH GDP				-39.4824*				7.6493
				(-1.7929)				(1.0629)
N. OBS	34	34	34	34	34	34	34	34
AD. R-SQUARED	0.3102	0.3509	0.3626	0.3800	0.4558	0.5159	0.5213	0.5127

The Table reports the results obtained for the short-term perspective with the OLS regression for the real effects of banking crises and the characteristics of financial system before the crisis. Alternative models have been developed to test robustness to different included/excluded variables and time perspective. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3 – Macroeconomic Effects on Gross Public Debt and Effective Exchange Rate

	Var. Gross Public Debt/GDP $_{t-1/t+1}$				Var. Effective Exchange Rate $_{t-1/t+1}$			
CONSTANT	-9.6379 (-0.3103)	20.3781 (0.6396)	27.5494 (0.8655)	3.6016 (0.0945)	-75.8913*** (-5.0410)	-75.2469*** (-4.6919)	-75.8740*** (-3.4468)	-77.7914*** (-4.0737)
BANK DEPOSITS / GDP $_{t-1}$	0.9889 (1.0582)	1.2691 (1.4380)	0.2837 (0.2687)	1.4627 (1.1061)	-3.2454*** (-7.7069)	-3.2813*** (-7.7794)	-3.2125*** (-6.6667)	-3.5866*** (-6.0943)
PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP $_{t-1}$	-0.0427 (-0.5820)	-0.0267 (-0.3640)	-0.0194 (-0.2707)	-0.0150 (-0.1735)	0.0348 (1.0437)	0.0398 (1.1367)	0.0336 (0.9414)	0.0273 (0.6246)
LIQUID LIABILITIES / GDP $_{t-1}$	-0.8925 (-0.9799)	-1.0902 (-1.2777)	-0.1893 (-0.1893)	-1.2859 (-0.9931)	3.0783*** (7.5419)	3.1288*** (7.6361)	3.0647*** (6.6114)	3.4514*** (5.8763)
BANK CONCENTRATION $_{t-1}$	0.0603 (0.6318)	0.0387 (0.4230)	-0.0279 (-0.2820)	0.0188 (0.1827)	-0.0632 (-1.3749)	-0.0718 (-1.4668)	-0.0507 (-0.8023)	-0.0781 (-1.2431)
MONETARY AGGREGATE M1 (% GDP) $_{t-1}$	-0.2309 (-1.4433)	-0.1512 (-0.7201)	-0.1409 (-0.6171)	-0.2801 (-1.1019)	0.3417*** (4.4285)	0.2897** (2.3242)	0.2914* (2.1932)	0.2014 (1.0750)
REFINANCING LENDING RATE $_{t-1}$	0.6685*** (2.9253)	0.9095*** (3.7598)	0.9271*** (3.9978)	0.8192*** (3.1807)	-0.1966** (-2.3358)	-0.2018* (-1.8628)	-0.1672 (-1.4747)	-0.2911* (-2.0577)
INFLATION RATE $_{t-1}$	-0.6275*** (-3.3281)	-0.4403** (-2.3002)	-0.4714** (-2.5547)	-0.4365** (-2.1647)	0.8069*** (6.8611)	0.9917*** (5.7237)	0.9634*** (5.2106)	1.0529*** (4.9374)
ANNUAL GDP GROWTH RATE (%) $_{t-1}$	-0.4214 (-0.4618)	1.3970 (1.2110)	1.2419 (1.1148)	1.4248 (1.1945)	-0.0128 (-0.0274)	-0.1917 (-0.3221)	-0.0733 (-0.1118)	-0.5815 (-0.7990)
LOG GDP PRO CAPITA $_{t-1}$	4.4195 (0.7045)	-10.1942 (-1.0627)	-17.3207 (-1.6940)	0.1237 (0.0099)	12.7236*** (3.6487)	7.7601 (1.3412)	9.9803 (1.1598)	10.4919 (1.2967)
SEVERITY OF CRISIS	0.3046*** (3.5830)	0.2260** (2.6259)	0.2332** (2.6472)	0.2061* (2.0451)	-0.0495 (-0.9169)	-0.0681 (-1.2341)	-0.0635 (-1.1195)	-0.0844 (-1.1024)
FIN_REFORM_N		45.8287* (1.9771)	43.0879* (1.9358)	25.3565 (0.8905)		28.3685 (1.4459)	23.6084 (1.0649)	24.4993 (0.9622)
CAPITAL REGULATION		-2.7224** (-2.2943)	-2.3799* (-2.0480)	-2.7477* (-2.1271)		-0.4125 (-0.5544)	-0.3522 (-0.4601)	-0.1226 (-0.1307)
EMERGING COUNTRIES			20.5771* (1.9041)				-7.3010 (-1.1157)	
ADVANCED COUNTRIES			31.9620 (1.5925)				-6.9768 (-0.5676)	
FRENCH CIVIL LAW				1.6828 (0.1797)				-4.0373 (-0.5327)
GERMAN CIVIL LAW				-9.3433 (-0.8169)				-7.2592 (-0.7943)
SCANDINAVIAN CIVIL LAW				-8.9523 (-0.0689)				-2.7059 (-0.3510)
DICTATORIAL				-0.8051 (-0.0689)				-8.0017 (-1.0010)
N. OBS	34	34	34	34	29	29	29	29
AD. R-SQUARED	0.5546	0.6279	0.6588	0.6053	0.8659	0.8707	0.8680	0.8422

The Table reports the results obtained for the short-term perspective with the OLS regression for the macroeconomic effects of banking crises and the characteristics of financial system before the crisis. Alternative models have been developed to test robustness to different included/excluded variables and time perspective. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4 – Macroeconomic Effects on GDP Pro Capita and Unemployment Rate

	Var. Log GDP Pro Capita $_{t-1/t+1}$				**Var. Unemployment Rate** $_{t-1/t+1}$			
CONSTANT	-0.5379***	-0.5260**	-0.5942***	-0.5463**	-7.3589	-0.4658	-1.7766	-2.6677
	(-3.2065)	(-2.6536)	(-3.0375)	(-2.3865)	(-0.8603)	(-0.0531)	(-0.1801)	(-0.2655)
BANK DEPOSITS / GDP $_{t-1}$	-0.0212***	-0.0209***	-0.0169***	-0.0234***	-0.1694	-0.1285	-0.1186	-0.1690
	(-4.3370)	(-3.8865)	(-3.0558)	(-3.3735)	(-0.7055)	(-0.5303)	(-0.4274)	(-0.5579)
PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP $_{t-1}$	0.0002	0.0001	2.16E-05	-1.38E-05	0.0067	0.0111	0.0136	0.0096
	(0.4545)	(0.2914)	(0.0469)	(-0.0229)	(0.3479)	(0.5542)	(0.6109)	(0.3757)
LIQUID LIABILITIES / GDP $_{t-1}$	0.0199***	0.0196***	0.0160***	0.0224***	0.1398	0.1159	0.1077	0.1440
	(4.1595)	(3.7768)	(3.0596)	(3.2952)	(0.6014)	(0.5017)	(0.4110)	(0.4894)
BANK CONCENTRATION $_{t-1}$	0.0001	9.90E-05	0.0004	0.0002	-0.0091	-0.0102	-0.0064	-0.0166
	(0.1881)	(0.1567)	(0.6961)	(0.3666)	(-0.3375)	(-0.3850)	(-0.2151)	(-0.5513)
MONETARY AGGREGATE M1 (% GDP) $_{t-1}$	0.0029***	0.0032**	0.0026*	0.0020	0.0356	0.0411	0.0614	0.0856
	(3.0897)	(2.2698)	(1.8107)	(1.1560)	(0.7724)	(0.7165)	(0.7585)	(1.2004)
REFINANCING LENDING RATE $_{t-1}$	2.97E-05	0.0001	0.0006	-5.48E-05	0.0849	0.1322**	0.1322*	0.1228
	(0.0270)	(0.1316)	(0.4608)	(-0.0342)	(1.5149)	(2.1114)	(1.9937)	(1.7446)
INFLATION RATE $_{t-1}$	0.0022*	0.0022	0.0025**	0.0024	-0.0362	0.0062	0.0038	0.0070
	(1.9653)	(1.6785)	(2.1580)	(1.7318)	(-0.7234)	(0.1188)	(0.0663)	(0.1223)
ANNUAL GDP GROWTH RATE (%) $_{t-1}$	0.0020	0.0027	0.0040	0.0030	0.3075	0.6706*	0.6610*	0.6772*
	(0.3893)	(0.3479)	(0.5755)	(0.3641)	(1.0053)	(1.8914)	(1.7567)	(1.7728)
LOG GDP PRO CAPITA $_{t-1}$	0.0870**	0.0803	0.1350*	0.1061	1.4381	-2.7867	-2.2689	-2.8310
	(2.4594)	(1.2681)	(2.0590)	(1.3065)	(0.8170)	(-1.0718)	(-0.7252)	(-0.8551)
SEVERITY OF CRISIS	-0.0011**	-0.0011*	-0.0010*	-0.0014*	0.0521**	0.0309	0.0278	0.0478
	(-2.3155)	(-1.9701)	(-1.8491)	(-2.0598)	(2.2928)	(1.3006)	(1.0556)	(1.7057)
FIN_REFORM_N		0.0046	0.0180	0.0025		14.0706**	12.9869	12.4057
		(0.0293)	(0.1270)	(0.0628)		(2.1408)	(1.6470)	(1.5038)
CAPITAL REGULATION		-0.0003	-0.0018	0.0005		-0.4751	-0.5318	-0.3787
		(-0.0408)	(-0.2441)	(0.0628)		(-1.4018)	(-1.3748)	(-0.9231)
EMERGING COUNTRIES			-0.1645**				0.3862	
			(-2.5195)				(0.0813)	
ADVANCED COUNTRIES			-0.1921				-1.1468	
			(-1.6170)				(-0.1779)	
FRENCH CIVIL LAW				-0.0798				3.0214
				(-1.2447)				(1.1870)
GERMAN CIVIL LAW				-0.1017				3.0848
				(-1.3733)				(1.0507)
SCANDINAVIAN CIVIL LAW				-0.0696				2.7676
				(-0.8995)				(0.8198)
DICTATORIAL				-0.0876*				1.2743
				(-1.8070)				(0.4153)
N. OBS	34	34	34	34	32	32	32	32
AD. R-SQUARED	0.6307	0.5862	0.6715	0.5413	0.1532	0.2511	0.1601	0.1555

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