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How do Banking Crises Impact on Income Inequality?

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ABSTRACT

We show that banking crises have an important effect on income distribution: inequality increases before banking crisis episodes and sharply decline afterwards. We also find that, while a large government size does not per se seem to reduce inequality, a rise in financial depth (i.e. better access to credit provided by the banking sector) contributes to a more equal distribution of income.

Keywords: Inequality, banking crisis, financial depth, government size.
JEL classification: E25, E44, H12, G18.

1. Introduction

How does income inequality change in the outcome of a banking crisis? From a theoretical point of view, financial crises can lead to bankruptcies and falls in asset prices, generate deep recessions and demand policy responses such as bailouts, but their effects on inequality are not clear (Atkinson and Morelli, 2011). From an empirical perspective, the 1929 crash was followed by a substantial correction in inequality, because wealth losses and financial reforms hit the top of income distribution. In contrast, the most recent turmoil witnessed a slight fall in income gap, but no clear trend on how it will evolve in the future.

Freeman (2010) finds that inequality increases dramatically before financial crises. Similarly, a number of authors analyze the link between income inequality, household debt leverage, and financial crises and emphasize that the role of credit demand (Rajan, 2010; Reich, 2010) or credit supply (Fitoussi and Saraceno, 2010; Levitin and Wachter, 2010) in explaining the high debt levels of households at the bottom of income distribution. Hubbard (2010) argues that policymakers appear to be responsible for the latest crises.[1]

Moss (2009) investigates whether huge income gaps create "wrong" incentives that increase the vulnerability of the financial system. Stiglitz (2009) suggests that the combination of stagnant real incomes and increased borrowing by low income households leads to an unsustainable path that makes default and financial crises more likely. Blair (2010) shows that, because asset bubbles typically lead to higher returns, the banking system has the potential to generate highly leveraged systems and increase inequality.

In this paper, we find that income inequality significantly increases at the onset of a banking crises and declines afterwards. In addition, while, for OECD countries, the distributional effects of banking crises over income occur after the event and reduce inequality, Non-OECD countries observe a significant rise in inequality before the onset of the crisis.

We also show that the government size does not per se reduce inequality, which casts some doubts about the redistributive effects of fiscal policy, in particular, for OECD countries.

Interestingly, in OECD countries, a better access to credit from the banking sector helps achieving a reduction in inequality. However, households at the top of the income distribution seem to have been favoured in richer countries.

[1] Other authors look at the impact of foreign direct inestment (Choi, 2006) or globailization (Lee, 2010) on inequality.

2. Econometric Framework

We estimate the following dynamic panel data model:

$$\text{Gini}_{it} = \rho_1 \text{Gini}_{it-1} + \boldsymbol{\beta}' \mathbf{X}_{it} + \left(\gamma_1 D_{it-j}^{BC} + \gamma_2 D_{it}^{C} + \gamma_3 D_{it+j}^{AC}\right) + \delta_i + \lambda t + \varepsilon_{it} \quad (1)$$

for $i = 1, ..., N$, $t = 1, ..., T_i$, where Gini_{it} is the Gini inequality index for country i at time t and **X** is a set of control variables including government size, income per capita, financial depth (i.e. domestic credit provided by the banking sector in percentage of GDP) and unemployment rate. D_{it-j}^{BC}, D_{it}^{C} and D_{it+j}^{AC} are dummy variables that take the value of one for all t - j periods before the banking crisis (BC), during the entire period of the banking crisis (C) and for all t + j periods after the banking crisis (AC), respectively, and zero otherwise. Finally δ_i and λ account for country-specific and time effects, respectively, and ε_{it} is an i.i.d. error term.

Given that the distributional effects associated with banking crises may occur with some lags, we consider different time horizons (j = 1, ..., 5). In addition, to avoid any indeterminacy, all the observations where pre- or post-crisis periods partially or fully overlap with previous or future crisis episodes are dropped from the analysis.

Model (1) is estimated using Instrumental Variables – Generalized Method of Moments (IV-GMM) techniques. We instrument Gini coefficient index, income per capita and government size with their lags. Financial depth and unemployment rate are assumed to be exogenous.

3. Data and Empirical Results

We use annual data for 62 OECD and non-OECD countries and the sample period is 1980-2006.

Gini inequality index data comes from the Standardized World Income Inequality Database (SWIID).[2] Banking crises episodes are identified as in Reinhart and Rogoff (2010).

Data for government size, income per capita, financial depth and unemployment rate are provided by the World Development Indicators of the World Bank.

Table 1 summarizes the results for the full sample. We show that income inequality rises some periods before a banking crisis and declines afterwards. The effects are

[2] See Solt (2009).

statistically significant and typically larger one year before and after the crisis. This is corroborated by the coefficients associated with D_{it-1}^{BC} (0.307) and D_{it+1}^{AC} (-0.320).

Inequality is a very persistent variable, which reflects that changes in the income distribution within the country do not often occur.

We do not find a significant effect of government size on income inequality. While Kenworthy and Pontusson (2005) show that redistribution by the government leads to a reduction of disparities, Krugman (2008) argues that inequality is primarily the result of political change in the form of rising polarization. This suggests that broad fiscal policies do not per se reduce inequality.

Income per capita has a positive and significant impact on income inequality, although the magnitude of the effect is very small. This can be linked to the higher wealth inequality driven by the poor performance of middle class families and those at the bottom of the income distribution in rich countries (Kumhof and Rancière, 2010).

A fall in unemployment and an ease of the access to credit from the banking sector allows households in the low-end of the income distribution to borrow and achieve higher living standards. As a result, inequality is reduced.

[Table 1]

In Tables 2 and 3, we replicate the estimation of model (1) for developed (OECD) and developing (Non-OECD) countries. An interesting difference between the two groups emerges: while, for OECD countries, inequality significantly drops after a banking crisis, Non-OECD countries experience a rise in inequality before the crisis.

For OECD countries, a rise in the government size exacerbates income inequality, in line with the perception of a lack of soundness in fiscal policies. As for financial depth, this variable is particularly relevant and effective in reducing income gaps. For Non-OECD countries, neither the government size nor financial depth is statistically significant, which largely reflects the dysfunctionalities of credit markets.

[Table 2]

[Table 3]

4. Conclusion

This paper shows that income gaps rise before banking crisis episodes and sharply falls afterwards. Moreover, inequality: (i) is not per se reduced by a large government size; and (ii) diminishes with the rise in financial depth.

Some authors argue that the lack of government regulation increased the debt leverage for the group at the bottom of income distribution and boosted the vulnerability to financial crises (Kumhof and Rancière, 2010).

From a policy perspective, this would demand more regulation and tax and social policies aimed at shortening the disparities between the poor and the rich. We plan to explore this research avenue in the future.

References

Atkinson, A. B., and S. Morelli (2011). Inequality and banking crises: A first look. Paper prepared for the Global Labour Forum in Turin organised by the International Labour Organization.

Blair, M. M. (2010). Financial innovation and the distribution of wealth and income. Vanderbilt Law and Economics Research Paper No. 10.

Brandolini, A., and T. Smeeding (2009). Income inequality in richer and OECD countries. In: Salverda, W., Nolan, B., and T. Smeeding (Eds.). The Oxford Handbook of Economic Inequality, Oxford University Press.

Choi, C. (2006). Does foreign direct investment affect domestic income inequality? Applied Economics Letters, 13(12), 811-814.

Fitoussi, J.-P., and F. Saraceno (2010). Europe: How deep is a crisis? Policy responses and structural factors behind diverging performances. Journal of Globalization and Development, 1(1), Article 17.

Freeman, R. B. (2010). It's financialization! International Labour Review, 149(2), 163-183.

Hubbard, G. (2010). Income inequality and financial crises. The New York Times, August 22nd, WK5.

Kenworthy, L., and J. Pontusson (2005). Rising inequality and the politics of redistribution in affluent countries. Perspectives on Politics, 3(3), 449-471.

Krugman, P. (2008). The conscience of a liberal: Reclaiming America from the right. Allen Lane: London.

Kumhof, M., and R. Rancière (2010). Inequality, leverage and crises. IMF Working Paper No. 268.

Lee, J.-e. (2010). Inequality in the globalizing Asia. Applied Economics, 42(23), 2975-2984.

Moss, D. (2009). An ounce of prevention: The power of public risk management in stabilizing the financial system. Harvard Business School, Working Paper No. 87.

Rajan, R. (2010). Fault lines: How hidden fractures still threaten the world economy. Princeton University Press.

Reich, R. (2010). Aftershock: The next e*conomy and America's* future. New York: Random House.

Reinhart, C. M., and K. S. Rogoff (2010). From financial crash to debt crises. National Bureau of Economic Research, NBER Working Paper No. 15795.

Solt, F. (2009). Standardizing the World Income Inequality Database. Social Science Quarterly, 90(2), 231-242.

Stiglitz, J. (2009). Joseph Stiglitz and why inequality is at the root of the recession. Next Left website, January 9th.

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Table 1 – The impact of banking crises on income inequality (Full sample).

	Horizon (years)				
	j=1	*j=2*	*j=3*	*j=4*	*j=5*
L.Gini index	0.732***	0.731***	0.731***	0.730***	0.732***
	[0.026]	[0.026]	[0.026]	[0.027]	[0.026]
Government size	0.028	0.028	0.032	0.042	0.034
	[0.027]	[0.028]	[0.028]	[0.030]	[0.031]
Income per capita	0.000***	0.000***	0.000***	0.000***	0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Financial depth	-0.002	-0.003	-0.004	-0.004*	-0.005*
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Unemployment rate	0.046*	0.050**	0.049**	0.066***	0.062**
	[0.025]	[0.025]	[0.024]	[0.024]	[0.026]
Pre-crisis period(s)	**0.307***	**0.265***	**0.339****	**0.227**	**0.215**
	[0.169]	**[0.136]**	**[0.154]**	**[0.148]**	**[0.141]**
Banking crisis period(s)	0.038	0.024	0.060	-0.004	0.023
	[0.117]	[0.128]	[0.133]	[0.141]	[0.137]
Post-crisis period(s)	**-0.320****	**-0.270****	**-0.196**	**-0.264****	**-0.263****
	[0.155]	**[0.127]**	**[0.127]**	**[0.128]**	**[0.126]**
Observations	1237	1220	1193	1153	1144
Number of countries	62	62	62	62	62
R-squared	0.79	0.79	0.79	0.79	0.79
Hansen (J-stat)	0.36	0.43	0.72	1.63	1.36
Hansen (p-value)	0.55	0.51	0.40	0.20	0.24

Notes: Robust standard errors in brackets. *, **, *** - statistically significant at the 10, 5, and 1% level respectively.

Table 2 – The impact of banking crises on income inequality (OECD countries).

	Horizon (years)				
	j=1	*j=2*	*j=3*	*j=4*	*j=5*
L.Gini index	0.740***	0.738***	0.731***	0.726***	0.733***
	[0.028]	[0.029]	[0.030]	[0.031]	[0.029]
Government size	0.165***	0.177***	0.177***	0.216***	0.190***
	[0.058]	[0.058]	[0.060]	[0.062]	[0.060]
Income per capita	0.000***	0.000***	0.000**	0.000**	0.000**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Financial depth	-0.005	-0.005*	-0.005*	-0.006**	-0.006**
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Unemployment rate	0.086***	0.091***	0.092***	0.095***	0.090***
	[0.029]	[0.029]	[0.030]	[0.030]	[0.030]
Pre-crisis period(s)	**-0.054**	**0.006**	**0.268**	**0.121**	**0.119**
	[0.231]	**[0.185]**	**[0.221]**	**[0.203]**	**[0.189]**
Banking crisis period(s)	-0.196	-0.257	-0.214	-0.349*	-0.290
	[0.163]	[0.173]	[0.180]	[0.194]	[0.195]
Post-crisis period(s)	**-0.464***	**-0.584*****	**-0.463*****	**-0.702*****	**-0.554*****
	[0.242]	**[0.186]**	**[0.178]**	**[0.177]**	**[0.191]**
Observations	641	636	628	616	616
Number of countries	27	27	27	27	27
R-squared	0.83	0.83	0.83	0.83	0.83
Hansen (J-stat)	0.02	0.01	0.04	0.03	0.00
Hansen (p-value)	0.88	0.90	0.85	0.85	0.97

Notes: Robust standard errors in brackets. *, **, *** - statistically significant at the 10, 5, and 1% level respectively.

Table 3 – The impact of banking crises on income inequality (Non-OECD countries).

	Horizon (years)				
	j=1	*j=2*	*j=3*	*j=4*	*j=5*
L.Gini index	0.718***	0.717***	0.719***	0.721***	0.725***
	[0.049]	[0.050]	[0.051]	[0.053]	[0.053]
Government size	-0.02	-0.024	-0.021	-0.005	-0.010
	[0.034]	[0.035]	[0.036]	[0.037]	[0.038]
Income per capita	0.000***	0.000***	0.000***	0.000***	0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Financial depth	0.003	0.002	0.001	0.001	0.000
	[0.005]	[0.005]	[0.005]	[0.006]	[0.006]
Unemployment rate	0.008	0.010	0.009	0.032	0.025
	[0.041]	[0.040]	[0.039]	[0.042]	[0.043]
Pre-crisis period(s)	**0.625*****	**0.548****	**0.473****	**0.441***	**0.413***
	[0.236]	**[0.218]**	**[0.223]**	**[0.236]**	**[0.226]**
Banking crisis period(s)	0.129	0.185	0.226	0.251	0.215
	[0.191]	[0.220]	[0.235]	[0.258]	[0.230]
Post-crisis period(s)	**-0.166**	**-0.010**	**0.057**	**0.123**	**-0.019**
	[0.224]	**[0.185]**	**[0.193]**	**[0.210]**	**[0.199]**
Observations	596	584	565	537	528
Number of countries	35	35	35	35	35
R-squared	0.75	0.75	0.75	0.74	0.74
Hansen (J-stat)	0.65	0.71	1.06	2.18	1.67
Hansen (p-value)	0.42	0.40	0.30	0.14	0.20

Notes: Robust standard errors in brackets. *, **, *** - statistically significant at the 10, 5, and 1% level respectively.

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