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PRIVATE CREDIT: AN EMPIRICAL INVESTIGATION**  
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# Financial Openness, Market Structure and Private Credit: An Empirical Investigation

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## ABSTRACT

This paper empirically examines whether the effect of financial openness on private credit depends on the market structure of the banking sector prior liberalization. We find that financial openness has a positive effect on private credit in countries characterized by a highly competitive banking sector. However, this effect vanishes and even becomes negative in countries where the market structure is one of imperfect competition. These findings are consistent with the predictions of recent theoretical models.

JEL classification: F34; G15; G21; G38

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## **1. Introduction**

The last three decades have witnessed a process of global financial integration that has increased the access of less developed countries to international capital markets. This process was believed to foster economic development through financial development. Financial openness may not only improve the access of firms to sources of capital in international markets, but may also help to develop domestic financial markets.

Despite a large body of research on the effectiveness of financial openness and on the channels through which it may affect long-run economic growth and financial deepening, robust conclusions remain largely elusive (Gormley, 2010; Detriagiache, Gupta and Tressel, 2008; Mian, 2006; Gianetti and Ongena, 2009). Potential reasons for the lack of consistent empirical results are that financial openness is effective only under certain conditions and that average effects may hide important heterogeneities in the extent to which different subsets of an economy are affected. Detriagiache et al. (2008) explain the paradoxical results of financial opening by assuming that in a closed economy, lenders pool creditors to avoid costly monitoring, subsidizing weaker borrowers. Allowing foreign bank entry leads to the collapse of the pooling equilibrium and to lower financial penetration.

Academic research has explored some specific preconditions under which financial openness is beneficial for financial development and economic growth. Martell and Stulz (2003) argue that the capacity of firms to benefit from stock market liberalizations depends on the protection of investor rights and on corporate governance. Chinn and Ito (2006) find that financial openness contributes to equity market development, but only if a threshold level of general development of legal systems and institutions has been attained. Eichengreen et al. (2011) find that financial openness has positive effects on the growth of financially dependent

industries. Prati et al. (2012) show that liberalizing the capital account benefits significantly more the credit rating of those firms with more limited foreign currency access.

This paper contributes to this literature by empirically exploring the effects of financial openness on private credit under different market structures in banking prior to liberalization. We find that financial openness has a positive effect on private credit in economies characterized by a competitive banking sector prior to financial liberalization. However, this effect is weaker and even becomes negative in economies with imperfect banking competition. These findings are consistent with the predictions of recent theoretical models.

## **2. Theoretical framework**

This section briefly presents a theoretical discussion of the relationship between financial openness and private credit under different levels of competitiveness in the banking sector. The theoretic argument by Balmaceda, Fischer and Ramirez (2013) frames the most important issues. If the banking system is initially competitive, access to cheaper international funds and the entry of more efficient international banks will lower rates and increase access to loans for borrowers. On the other hand, under weak competition, we have both high margins on loans but also low rates paid on deposits, i.e., financial repression. When financial openness occurs some savers have access to international capital markets and the cost of funds for the domestic banks goes up. The overall effect could be to increase the cost of loans for weaker borrowers and therefore to exclude them from the financial system.

## **3. Data**

The sample in this study includes 105 developed and developing countries over the period 1990-2009. The dependent variable is the level of private credit by deposit money banks as a

fraction of GDP. The independent variables of interest are financial openness and its interaction with the market structure of the banking sector prior liberalization. Financial openness is measured by the KAOPEN index developed by Chinn and Ito (2006). The index is the first principal component of four restrictions on cross-border financial transactions reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER).<sup>1</sup> The index was rescaled to lie between zero and one. A higher value of the index indicates greater financial openness.

We utilize two measures of market structure in the banking sector. The first one is the net interest margin, which is the accounting value of bank's net interest revenue as a share of its interest-bearing assets. The second measure of market structure in the banking sector is bank concentration, which is measured by the assets of the three largest banks as a share of assets of all banks. Higher values of these variables represent a less competitive banking system. Both measures are taken from the Financial Development and Structure Dataset (Beck et al., 2009).

For robustness purposes, we consider two country-level time-varying control variables: GDP per capita and economic growth. These variables can be viewed as parsimonious controls for macroeconomic characteristics. The source of these variables is the World Bank's World Development Indicators (World Bank, 2013). Table 1 reports descriptive statistics of the variables used in this study.

#### **4. Panel regression analysis**

The central question of this study is to explore whether financial openness affects private credit, and if this effect depends on the degree of competitiveness of the banking sector prior liberalization. In order to reduce potential problems associated with endogeneity, we conduct

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<sup>1</sup> These variables indicate the existence of multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions and the requirement of the surrender of exports proceeds.

panel data regressions. Country and year dummies are included in all our specifications. Country fixed effects control for average country-level characteristics and time fixed effects control for global factors. Therefore, we exploit the within-country variation to observe whether a country is more likely to have a higher level of private credit as a share of GDP as it becomes more financially integrated to the rest of the world. The baseline econometric model takes the following form:

$$PC_{it} = \alpha FO_{it-1} + \beta COMP_{it-2} + \gamma COMP_{it-2} \times FO_{it-1} + A_i + B_t + \varepsilon_{it} \quad (1)$$

where  $PC_{it}$  is private credit over GDP in country  $i$  at time  $t$ ,  $FO_{it-1}$  is the lagged value of financial openness, and  $COMP_{it-2}$  is the degree of competitiveness in the banking sector lagged two periods.<sup>2</sup>  $A_i$  and  $B_t$  are vectors of country and year dummy variables and  $\varepsilon_{it}$  is the error term.

The interaction term,  $COMP_{it-2} \times FO_{it-1}$ , in Eq. (1) aims to capture the heterogeneity in the impact of financial openness on private credit across different levels of competitiveness in the banking sector. Given that higher values of  $COMP$  represent a less competitive banking sector, consistent with our theoretical framework, we hypothesize that  $\alpha > 0$  and  $\gamma < 0$ . That is, financial openness has a positive effect on private credit in economies characterized by a competitive banking sector prior to financial liberalization, but that effect is weaker and may even become negative in economies with imperfect banking competition.<sup>3</sup>

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<sup>2</sup> Financial openness,  $FO$ , is lagged one period to reduce potential problems associated with reverse causality. Competitiveness,  $COMP$ , is lagged two periods to capture the effect of the market structure prior liberalization. Results are qualitatively identical if we lag  $COMP$  one or two periods.

<sup>3</sup> It is important to note that if the relationship between financial openness and private credit is just a simple correlation caused by common macroeconomic factors rather than by a causal effect, liberalizations should affect private credit always in a similar way.

Table 2 reports the results from estimating Eq. (1) by ordinary least squares with clustering of the errors by country. Columns 1 to 4 report the result for the whole sample of countries. Columns 5 to 8 report the results for a sub-sample excluding high income countries. As expected, the significant positive coefficients associated with financial openness,  $FO_{it-1}$ , and the negative coefficients associated with the interaction term,  $COMP_{it-2} \times FO_{it-1}$ , indicate that financial openness has a positive effect on private credit in countries with a highly competitive banking sector but that effect becomes smaller and even negative in countries in which competition in the banking sector is weak. Most of our coefficients of interest are statistically significant at standard levels of confidence.

To analyze the magnitude of the impact of financial openness on private credit across different market structures, we calculate the partial effect of financial openness at different levels of competitiveness in the banking sector. The partial effect of financial openness on private credit is given by:

$$\frac{\partial PC_{it}}{\partial FO_{it-1}} = \alpha + \gamma COMP_{it-2} \quad (2)$$

Using Eq. (2) and the results from models (3) and (4), we estimate the conditional response of private credit for values of  $COMP_{it-2}$  at the 10<sup>th</sup> and 90<sup>th</sup> percentiles. The values of the net interest margin and bank concentration at those percentiles are reported in Table 1. On the one hand, the marginal effect of financial openness on private credit is 0.106 and 0.078 conditional on values of net interest margin and bank concentration at the 10<sup>th</sup> percentile respectively. On the other hand, those effects are -0.049 and -0.034 conditional on values of net interest margin and bank concentration at the 90<sup>th</sup> percentile. Those magnitudes suggest that financial openness is beneficial for private credit under competitive banking systems, but it

has a negative effect when the structure of the banking sector prior liberalization is one of imperfect competition. Therefore, consistent with theoretic arguments, our results suggest that competition in the banking sector is a precondition for financial openness to lead to higher levels of private credit.

## **5. Conclusion**

This article reports novel preliminary results on the relationship between financial openness and access to credit. It finds that financial openness positively affects private credit in countries with a competitive banking sector prior liberalization. However, this effect vanishes and even becomes negative in countries with a weak competition in the banking sector prior liberalization. These findings are consistent with theoretic arguments and robust to alternative measures of competition in the banking sector, to including country and year fixed effects, and to a sub-sample of low and middle income countries.

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**Table 1**  
Descriptive statistics.

<b>Variable</b>	<b>Obs.</b>	<b>Mean</b>	<b>S.D.</b>	<b>Min.</b>	<b>Max.</b>	<b>10th percentile</b>	<b>90th percentile</b>
Private Credit/GDP	1827	0.48	0.42	0.00	2.44	0.09	1.08
Financial Openness	1827	0.58	0.36	0.00	1.00	0.16	1.00
Net Interest Margin	1773	0.05	0.03	0.01	0.32	0.02	0.10
Bank Concentration	1827	0.71	0.20	0.15	1.00	0.43	0.99
GDP per capita	1817	7,992	9,961	117	40,837	325	24,180
Growth	1816	2.76	3.62	-17.07	21.76	-1.09	7.11

**Table 2**

Financial openness, market structure and private credit.

Private Credit/GDP	Whole Sample				Low and Middle Income Countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Financial Openness	0.182*** (0.036)	0.223*** (0.059)	0.145*** (0.036)	0.164*** (0.056)	0.224*** (0.034)	0.188*** (0.047)	0.168*** (0.031)	0.143*** (0.047)
Net Interest Margin	0.248 (0.216)		0.543*** (0.207)		-0.007 (0.185)		0.243 (0.159)	
Net Interest Margin x Financial Openness	-2.095*** (0.420)		-1.941*** (0.397)		-1.372*** (0.304)		-1.063*** (0.270)	
Bank Concentration		0.181*** (0.049)		0.175*** (0.045)		-0.110*** (0.042)		-0.074* (0.038)
Bank Concentration x Financial Openness		-0.251*** (0.088)		-0.200** (0.084)		-0.143** (0.067)		-0.109 (0.068)
GDP per capita ( <i>in logs</i> )			0.500*** (0.053)	0.536*** (0.048)			0.442*** (0.041)	0.421*** (0.039)
Growth			-0.010*** (0.001)	-0.009*** (0.001)			-0.003*** (0.001)	-0.003*** (0.001)
Observations	1,773	1,827	1,760	1,814	1,098	1,145	1,090	1,137
Adjusted R-squared	0.861	0.860	0.873	0.874	0.862	0.862	0.885	0.884

Note: Numbers in parentheses are standard errors. Standard errors are clustered at the country level. Country and year dummies are included in all the regressions.

\* Significance level at 10%.

\*\* Significance level at 5%.

\*\*\* Significance level at 1%.

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