Financial openness, market structure and private credit: An empirical investigation

Ronald Fischer *, Patricio Valenzuela
Center of Applied Economics and Center of Finance, Department of Industrial Engineering, University of Chile, Chile

**Highlights**
- Evidence for effectiveness of financial openness on development is inconclusive.
- Hypothesis: intensity of banking competition affects results of financial openness.
- Test empirically this hypothesis in a panel of 105 countries.
- Financial openness has positive effect when banking system is competitive ex ante.
- Effects weaker and even negative when there is imperfect competition ex ante.

**Abstract**
Consistent with recent theoretical models, this paper finds that financial openness has a positive effect on private credit in economies characterized by a competitive banking sector, but that this effect vanishes and even becomes negative in economies with imperfect banking competition.

© 2013 Elsevier B.V. All rights reserved.

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 would not only improve the access of firms to sources of capital in international markets, but it 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; Eichengreen et al., 2011; Detriagache et al., 2008; Mian, 2006; Giannetti and Ongena, 2009; Prati et al., 2012). 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 the economy are affected.

Detriagache 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. 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.

* Correspondence to: Department of Industrial Engineering, University of Chile, Av. Republica 701, Santiago, Chile. Tel.: +56 2 2978 4055.
E-mail addresses: rfsicher@dii.uchile.cl (R. Fischer), patriciov@dii.uchile.cl (P. Valenzuela).
This article contributes to this literature by empirically exploring the effects of financial openness on private credit under different market structures in the banking sector prior to liberalization. Consistent with recent theoretical arguments, we find that financial openness has a positive effect on private credit in economies characterized by a competitive banking sector, but that this effect is weaker and even becomes negative in economies with imperfect banking competition.

2. Financial openness, market structure and private credit

Balmaceda et al. (forthcoming) provide a theoretical framework on the relationships among financial openness, competition in the banking sector and private credit that we empirically test in this article. 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 obtain 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 to liberalization. Financial openness is measured by the KAOPEN index developed by Chinn and Ito (2006, 2008) which 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). 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 corresponds to the accounting value of a 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 two measures represent a less competitive banking system. Both measures are 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

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private credit / GDP</td>
<td>1827</td>
<td>0.48</td>
<td>0.42</td>
<td>0.00</td>
<td>2.44</td>
</tr>
<tr>
<td>Financial openness</td>
<td>1827</td>
<td>0.58</td>
<td>0.36</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Net interest margin</td>
<td>1773</td>
<td>0.05</td>
<td>0.03</td>
<td>0.01</td>
<td>0.32</td>
</tr>
<tr>
<td>Bank concentration</td>
<td>1827</td>
<td>0.71</td>
<td>0.20</td>
<td>0.15</td>
<td>1.00</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>1917</td>
<td>7952</td>
<td>9961</td>
<td>117</td>
<td>40,837</td>
</tr>
<tr>
<td>Growth</td>
<td>1816</td>
<td>2.76</td>
<td>3.62</td>
<td>-17.07</td>
<td>21.76</td>
</tr>
</tbody>
</table>

\[ PC_{it} = \alpha + \beta \text{COMP}_{it} + \gamma \text{COMP}_{it-2} \times \text{FO}_{it-1} + A_{it} + B_{it} + \epsilon_{it} \]

(1)

where \( PC_{it} \) is private credit over GDP in country i at time t, \( \text{FO}_{it-1} \) is the lagged value of financial openness, and \( \text{COMP}_{it-2} \) is the degree of competitiveness in the banking sector lagged two periods. \( A_{it} \) and \( B_{it} \) are vectors of country and year dummy variables and \( \epsilon_{it} \) is the error term.

The interaction term, \( \text{COMP}_{it-2} \times \text{FO}_{it-1} \), 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 Balmaceda et al. (forthcoming), 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.

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

\[ \frac{\partial PC_{it}}{\partial \text{FO}_{it-1}} = \alpha + \gamma \text{COMP}_{it-2}. \]

(2)

1 The variables are: 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.

2 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 market structure prior to liberalization. Results are qualitatively identical if we lag COMP one or two periods.

3 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 always affect private credit in a similar way.
### Table 2: Financial openness, market structure and private credit.

<table>
<thead>
<tr>
<th></th>
<th>Whole sample</th>
<th>Low and middle income countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Financial openness</td>
<td>0.182***</td>
<td>0.223***</td>
</tr>
<tr>
<td></td>
<td>(0.036)</td>
<td>(0.059)</td>
</tr>
<tr>
<td>Net interest margin</td>
<td>0.248</td>
<td>0.543***</td>
</tr>
<tr>
<td></td>
<td>(0.216)</td>
<td>(0.207)</td>
</tr>
<tr>
<td>Net interest margin × financial openness</td>
<td>−2.095***</td>
<td>−1.941***</td>
</tr>
<tr>
<td></td>
<td>(0.420)</td>
<td>(0.397)</td>
</tr>
<tr>
<td>Bank concentration</td>
<td>0.181***</td>
<td>0.175***</td>
</tr>
<tr>
<td></td>
<td>(0.049)</td>
<td>(0.045)</td>
</tr>
<tr>
<td>Bank concentration × financial openness</td>
<td>−0.251***</td>
<td>−0.200***</td>
</tr>
<tr>
<td></td>
<td>(0.088)</td>
<td>(0.084)</td>
</tr>
<tr>
<td>GDP per capita (in logs)</td>
<td>−0.251***</td>
<td>0.500***</td>
</tr>
<tr>
<td></td>
<td>(0.053)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>Growth</td>
<td>−0.010**</td>
<td>−0.009**</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
</tbody>
</table>

Observations: 1,773 1827 1760 1814 1098 1145 1090 1137

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%.

Fig. 1. Marginal effect of financial openness (FO) on private credit (PC) conditional on values of net interest margin. Note: The figure considers values of net interest margin in the 1st and 99th percentile range. Dotted lines are 95% confidence bands.

Using Eq. (2) and the results from models (3) and (4), we estimate the conditional response of private credit for values of COMP1−2. Figs. 1 and 2 show the marginal effect of financial openness on private credit conditional on values of net interest margin and bank concentration respectively. The magnitudes and confidence intervals reported in the figures suggest that financial openness is beneficial for private credit under competitive banking systems, but it has a negative or null effect when the structure of the banking sector prior to liberalization is one of imperfect competition. Therefore, 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 to liberalization. However, this effect vanishes and even becomes negative in countries with weak competition in the banking sector prior to 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.

Acknowledgments

Ronald Fischer wishes to thank Fondecyt project # 1110052 and the support of the Instituto Milenio de Ciencias de la Ingeniería.

References