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Financial openness, domestic financial development and credit ratings



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ABSTRACT

This article shows that financial openness significantly affects corporate and sovereign credit ratings and that the magnitude of this effect depends on the level of development of the domestic financial market. Issuers located in less financially developed economies stand to benefit the most from opening up their capital accounts, whereas the impact of this effect decreases as the level of development of the domestic capital market improves.

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1. Introduction

The last four decades have witnessed a process of global financial integration, which is believed to have fostered economic development due to easier and cheaper access to capital in international markets. However, the unconditional merits of this process have recently come under scrutiny. A rich body of research emphasizes that financial openness is effective only under certain circumstances and that the average effects associated with financial openness hide important heterogeneities (Chinn and Ito, 2006; Baltagi et al., 2009; Fischer and Valenzuela, 2013).

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The main contribution of this study is to empirically investigate the effects of financial openness on both corporate and sovereign credit ratings and to examine whether these effects depend on the degree of domestic financial development. Understanding the determinants of credit ratings is crucial because ratings affect the issuer's cost of capital by signaling its likelihood of default (Denzler et al., 2006) and the pool of international and institutional investors that firms and governments can access (Kisgen and Strahan, 2010).¹

Recent studies have documented that capital account restrictions affect foreign currency credit ratings. Furthermore, as Fig. 1 illustrates, preliminary evidence shows a positive relationship between ratings and financial openness. The main mechanism behind this effect is that capital controls tend to make access to capital in international markets more difficult and/or expensive, increasing default probabilities and lowering both corporate and sovereign credit ratings (Prati et al., 2012; Ostry et al., 2009). In fact, credit rating agencies have publicly stated that they positively evaluate governments whose economies are financially integrated with the rest of the world as restrictions on capital flows are likely to constrain the ability of firms to meet offshore debt obligations.

We further investigate the link between financial openness and credit ratings and examine whether this nexus is shaped by domestic financial development. We find that financial openness has a positive effect on credit ratings and that this effect depends on the level of development of the domestic financial market. Issuers located in economies with less-developed financial markets stand to benefit most from opening up their capital accounts, although this effect weakens as domestic capital markets become more developed.

Since policymakers' decisions to liberalize the capital account are usually linked to their countries' economic performance, potential endogeneity is a relevant concern. In spite of the lack of a suitable instrument, we manage to attenuate endogeneity concerns in five different ways. First, we employ panel data models to control for a comprehensive set of firm and country time-variant variables. Second, we include firm and country fixed effects to reduce potential endogeneity arising from omitted time-invariant characteristics; and time fixed effects to control for global factors that may simultaneously affect ratings and the use of capital controls. Fourth, we use microeconomic data to attenuate potential reverse causality. Fifth, we explore a non-linear effect that is more consistent with a causal interpretation than with a simple correlation.

From a policymaker's perspective, the standard instrument to improve the credit conditions faced by firms and sovereign states is the development of domestic capital markets. However, domestic financial development is challenging due to the infrastructure and time required to successfully achieve this goal. In fact, government-led initiatives to promote domestic financial markets have had mixed success (Laeven, 2014). Our results draw attention to the fact that the easing of capital account restrictions may be an alternative policy tool for improving access to international capital for firms and governments, particularly in economies with underdeveloped financial systems. Furthermore, capital controls have the additional advantage of being reversible if the country needs to reenact them. Of course, liberalizing the capital account must be a decision considered within a thorough analysis of the optimum policy toolset for the economy.

2. Financial openness, domestic financial development and credit ratings

There are at least three reasons to expect a non-linear effect of financial openness on credit ratings based on the level of domestic financial development. First, when a country imposes capital controls, a well-developed domestic financial system can act as a substitute for both firm and sovereign financing needs. Therefore, the benefits from removing capital account restrictions should be greater in less financially developed countries. Second, the international finance literature suggests that capital account liberalization reduces risk premiums due to improved risk sharing and enhanced market liquidity (Bekaert and Harvey, 2000; Chari and Henry, 2004). A lower cost of capital reduces an issuer's default probability and improves its credit rating. However, issuers from well-developed local markets already benefit from considerable risk sharing and liquidity; thus, the room for further improvement in this regard is less

¹ Credit ratings can also impose additional costs on firms. Kisgen (2006) argues: "A firm's rating affects operations of the firms, access to other financial markets such as commercial paper, disclosure requirement for bonds . . . and bond covenants".

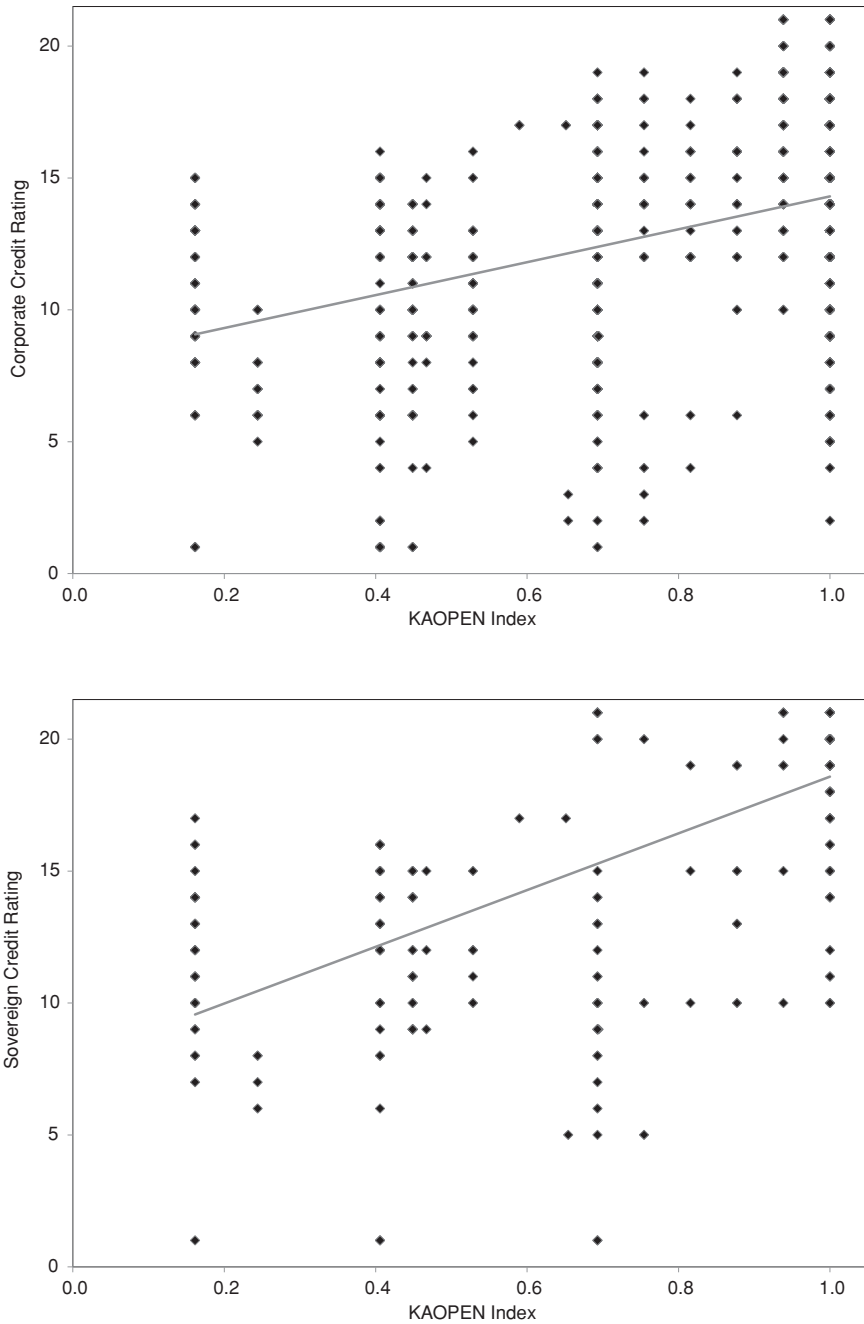


Fig. 1. Credit ratings and financial openness.

Note: credit ratings are mapped onto 21 numerical categories, with 21 corresponding to the highest rating (AAA) and 1 to the lowest rating (D) (see Table 1). The KAOPEN 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. Sources: Standard and Poor's; Chinn and Ito (2008).

Table 1
Scale of Standard and Poor's foreign currency debt ratings.

Interpretation	Rating	Assigned value
Investment-grade ratings		
Highest quality	AAA	21
High quality	AA+	20
	AA	19
	AA–	18
Strong payment capacity	A+	17
	A	16
	A–	15
Adequate payment capacity	BBB+	14
	BBB	13
	BBB–	12
Noninvestment-grade ratings		
Likely to fulfill obligations, ongoing uncertainty	BB+	11
	BB	10
	BB–	9
High-risk obligation	B+	8
	B	7
	B–	6
Currently vulnerable nonpayment obligation	CCC+	5
	CCC	4
	CCC–	3
Highly vulnerable to nonpayment	CC/C	2
Default	SD/D	1

than that afforded to issuers from less-developed financial markets. Finally, more-sophisticated domestic capital markets potentially provide firms with the opportunity to make financial innovations to circumvent capital controls (Klein and Olivei, 2008).

According to the three aforementioned channels, the effects of financial openness on ratings should decrease as the level of local financial development rises, a hypothesis we test below.

3. Data

Our dataset builds on that used in Borensztein et al. (2013), which contains corporate credit ratings and firm-level performance indicators for non-financial publicly traded firms, as well as sovereign credit ratings and a set of macro-variables for advanced and emerging economies during the period 1995–2009. The dependent variables are the Standard and Poor's (S&P) foreign currency corporate and sovereign credit ratings. Standard and Poor's (2013) defines a foreign currency credit rating as a:

“current opinion of an obligor's overall capacity to meet its foreign-currency-denominated financial obligations. . . . [The credit rating] is based on the obligor's individual credit characteristics, including the influence of country or economic risk factors. . . . [A] foreign currency credit rating includes transfer and other risks related to sovereign actions that may directly affect access to the foreign exchange needed for timely servicing of the rated obligation.”

Table 1 shows the direct mapping of the credit ratings onto 21 numerical categories, with 21 corresponding to the highest rating (AAA) and 1 to the lowest rating (D).

Financial openness is measured by the KAOPEN index developed by Chinn and Ito (2008). The KAOPEN 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*. These restrictions indicate the existence of multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions, and requirements involving the surrender of exports' proceeds. We rescale the index to values between zero and one, with a higher index value indicating greater financial openness.

Table 2
Descriptive statistics.

	Obs.	Mean	Std. dev.	Min.	Max.
<i>Firm level</i>					
Corporate credit rating	2949	13.42	3.43	1	21
EBIT/assets	2949	8.20	6.05	-13.12	44.86
EBIT/interest expense	2949	7.52	0.71	6.21	12.98
Retained earnings/assets	2949	19.16	17.50	-88.78	76.53
Working capital/assets	2949	6.57	15.36	-88.96	75.91
Equity/capital	2949	54.27	20.36	-57.22	100.00
Size	2949	4.12	1.37	0.33	8.09
<i>Country level</i>					
Sovereign credit rating	301	15.69	4.90	1	21
GDP per capita (logs)	301	8.94	1.50	5.51	11.02
Inflation	301	4.12	5.34	-1.41	58.02
Current account/GDP	301	-0.10	5.17	-12.04	17.44
GDP growth	301	3.82	3.30	-13.13	13.01
GDP volatility	301	0.07	0.15	0.00	0.89
Financial openness	301	0.73	0.31	0.16	1.00
Private credit/GDP	301	0.76	0.47	0.10	2.20
Private bond/GDP	283	0.24	0.29	0.00	1.64

This article utilizes two measures of domestic financial development: private credit to GDP and private bond market capitalization to GDP. Both measures are from the Financial Development and Structure Dataset. Finally, all of our regressions control for a comprehensive set of firm and country-level variables that have been used as standard determinants of ratings according to the empirical literature on the determinants of corporate credit ratings (Borensztein et al., 2013) and sovereign credit ratings (Cantor and Parker, 1996; Mellios and Paget-Blanc, 2006).

Our final sample covers 27 developed and developing countries.² The firm-level and country-level samples contain 2949 and 301 yearly observations, respectively. We observe 341 downgrades and 371 upgrades in corporate ratings and 25 downgrades and 53 upgrades in sovereign ratings. This time variation in ratings allows us to estimate fixed effects regressions. Table 2 reports the descriptive statistics for all of the variables used in this study.

4. Empirical strategy

The primary objective of this study is to explore whether financial openness affects credit ratings and whether this effect depends on the degree of domestic financial development. We conduct panel data regressions to reduce potential endogeneity stemming from omitted time-invariant characteristics and/or global factors that may simultaneously influence ratings and the imposition of capital controls. Thus, our general corporate credit rating econometric model takes the following form:

$$Corp_Rtg_{ict} = \beta_0 FO_{ct-1} + \beta_1 FD_{ct-1} + \beta_2 FD_{ct-1} \times FO_{ct-1} + \varphi X_{ict} + \theta Z_{ct-1} + A_i + B_t + \varepsilon_{it}, \quad (1)$$

where $Corp_Rtg_{ict}$ is the corporate credit rating of firm i in country c at time t . FO_{ct-1} is the lagged value of financial openness, and FD_{ct-1} is the lagged value of the degree of domestic financial development. The interaction term ($FD_{ct-1} \times FO_{ct-1}$) aims to capture the heterogeneity of the impact of financial openness on credit ratings. X_{ict} is a vector of firm-level performance indicators, and Z_{ct-1} is a vector of macroeconomic control variables. A_i and B_t are vectors of firm and year dummy variables that control for average firm-level characteristics and global factors, respectively.³ ε_{it} is the error term.

² The countries included in our final sample are: Argentina, Australia, Belgium, Brazil, Canada, China, Colombia, the Czech Republic, Denmark, Finland, Hungary, India, Indonesia, Ireland, Italy, Japan, Lithuania, Malaysia, Mexico, New Zealand, Peru, the Philippines, Poland, Portugal, Spain, Sweden, and Thailand. Borensztein et al. (2013) exclude countries with a time-invariant sovereign credit rating of AAA during the whole period under study. The excluded countries are economies with nearly fully liberalized capital accounts throughout the sample period. Thus, their exclusion matters little for our study, which focuses mainly on the effects of changes in financial openness.

³ In some models, we omit the fixed effects and estimate simple pooled cross-section regressions.

Our sovereign credit rating model takes the following form:

$$Sov_Rtg_{ct} = \gamma_0 FO_{ct-1} + \gamma_1 FD_{ct-1} + \gamma_2 FD_{ct-1} \times FO_{ct-1} + \theta Z_{ct-1} + A_c + B_t + \varepsilon_{it}, \quad (2)$$

where Sov_Rtg_{ct} is the credit rating of country c at time t . A_c is a vector of country dummy variables that control for average country-level characteristics.

According to the models presented in Eqs. (1) and (2), we can calculate the effect of financial openness on credit ratings at different levels of domestic financial development by examining the partial derivatives of ratings with respect to financial openness:

$$\frac{\partial Corp_Rtg_{ict}}{\partial FO_{ct-1}} = \beta_0 + \beta_2 FD_{ct-1} \quad (3)$$

Table 3

Financial openness, domestic financial development and credit ratings.

	Corporate credit ratings				Sovereign credit ratings			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Financial openness	5.2781*** (0.977)	4.2585*** (0.937)	3.4895*** (1.232)	3.3329*** (1.103)	4.7274*** (1.413)	2.4387 (1.501)	3.9717** (1.518)	3.0997** (1.301)
Private credit/GDP	5.4468*** (0.752)		2.5845** (1.137)		6.5297*** (1.018)		6.0463*** (1.538)	
Private credit/ GDP × financial openness	−4.7996*** (0.984)		−3.0854*** (1.139)		−4.0003*** (1.197)		−5.0786*** (1.407)	
Private bond/GDP		11.2480*** (2.279)		5.4850** (2.292)		5.0835* (2.360)		16.1311*** (4.063)
Private bond/ GDP × financial openness		−10.9697*** (2.304)		−8.7348*** (2.542)		−2.9450 (2.280)		−16.1833*** (4.067)
EBIT/assets	0.0574*** (0.012)	0.0456*** (0.011)	0.0379*** (0.008)	0.0356*** (0.008)				
EBIT/interest expense	0.1829 (0.115)	0.1842 (0.120)	0.1847*** (0.067)	0.2006*** (0.066)				
Retained earnings/assets	0.0321*** (0.005)	0.0317*** (0.005)	0.0178*** (0.004)	0.0197*** (0.004)				
Working capital/assets	−0.0226*** (0.004)	−0.0182*** (0.004)	0.0166*** (0.006)	0.0191*** (0.006)				
Equity/capital	0.0312*** (0.005)	0.0306*** (0.004)	0.0188*** (0.004)	0.0161*** (0.004)				
Size	1.0097*** (0.055)	1.1433*** (0.051)	0.5330*** (0.115)	0.5178*** (0.113)				
GDP per capita (logs)	0.3956*** (0.120)	0.2096 (0.165)	−0.4167 (0.538)	−0.3807 (0.547)	1.6809*** (0.170)	1.7379*** (0.275)	0.4236 (0.724)	0.3092 (0.695)
Inflation	−0.0546** (0.027)	−0.1019*** (0.030)	−0.0326* (0.019)	−0.0313* (0.018)	−0.0454 (0.046)	−0.1182** (0.050)	−0.0256 (0.033)	−0.0323 (0.026)
Current account/GDP	−0.0875*** (0.019)	−0.0518*** (0.019)	0.0454** (0.022)	0.0201 (0.022)	0.0132 (0.022)	0.0485 (0.030)	−0.0241 (0.024)	−0.1082*** (0.026)
GDP growth	0.0482 (0.045)	0.0423 (0.054)	0.0841** (0.042)	0.0694* (0.041)	0.1388** (0.054)	0.1085 (0.096)	0.1291* (0.065)	0.0505 (0.066)
GDP volatility	−2.7008*** (0.921)	−2.5895** (1.068)	−3.3107*** (0.917)	−3.0016*** (0.849)	−8.1914*** (1.469)	−7.4312*** (1.226)	−3.9118*** (1.231)	−2.3494** (0.969)
Observations	2949	2873	2949	2873	301	283	301	283
Adjusted R-squared	0.5898	0.5818	0.9123	0.9129	0.8450	0.7607	0.9506	0.9495
Firm fixed effects	NO	NO	YES	YES	NO	NO	NO	NO
Country fixed effects	NO	NO	NO	NO	NO	NO	YES	YES
Time fixed effects	NO	NO	YES	YES	NO	NO	YES	YES

Note: Numbers in parentheses are standard errors. Standard errors of models 1 and 2 are clustered at the country-year level. Standard errors of models 3 and 4 are clustered at the year level.

- * Significance level at 10%.
- ** Significance level at 5%.
- *** Significance level at 1%.

$$\frac{\partial \text{Sov_Rtg}_{ct}}{\partial \text{FO}_{ct-1}} = \gamma_0 + \gamma_2 \text{FD}_{ct-1}. \quad (4)$$

We hypothesize that $\beta_0 > 0$ and $\beta_2 < 0$, and that $\gamma_0 > 0$ and $\gamma_2 < 0$. In other words, financial openness has a positive effect on corporate and sovereign credit ratings in economies with underdeveloped financial markets, but this effect weakens as the level of financial market development rises. This non-linear effect is more consistent with a causal interpretation than with a simple correlation. The primary channel through which financial openness should affect credit ratings is through increasing the available sources of financing. Therefore, if financial openness has a causal effect on credit ratings, then it should have a greater impact on the performance of issuers that are more restricted in terms of access to sources of financing (i.e., issuers located in less developed financial markets).

5. Results

Table 3 reports the results from estimating Eqs. (1) and (2) by ordinary least squares with clustering of errors by country-year and year, respectively. Columns 1 to 4 present the results for our corporate credit rating models using private credit to GDP and private bond market capitalization to GDP as measures of domestic financial development. Analogously, columns 5 to 8 present the results for our sovereign credit rating models. Columns 1, 2, 5 and 6 omit firm (country) and time fixed effects, respectively.

Table 3 shows that in all of our regressions, financial openness and both measures of financial development have positive coefficients, whereas the interaction terms between financial openness and financial development have negative coefficients. With only the exception of model (6), in which country and time fixed effects are omitted, all coefficients are highly statistically significant. Consistent with our hypothesis, the significant positive coefficient on financial openness and the negative coefficient on the interaction term indicate that issuers situated in economies with less-developed financial markets stand to benefit most from opening up their capital accounts, while the impact of this effect declines as the domestic capital market develops.⁴

Not surprisingly, the R-squared jumps considerably in the model with fixed effects, suggesting that they alleviated potential problems associated with omitted variables. Furthermore, it is notable that most of the coefficients associated with our control variables are consistent with previous studies on the determinants of corporate ratings (Borensztein et al., 2013) and sovereign ratings (Cantor and Packer, 1996).

6. Conclusion

This article presents unique preliminary evidence that financial openness affects both corporate and sovereign credit ratings and that the magnitude of the effect is not homogeneous. Issuers located in economies with less-developed financial markets stand to benefit most from opening up their capital accounts, whereas this effect diminishes as the domestic capital market develops.

Obtaining improved access to international capital through domestic financial development presents challenges at various levels. In this context, our results draw attention to the fact that the easing of capital account legal restrictions may be an alternative policy tool for improving access to international capital, particularly in economies with underdeveloped financial systems.

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⁴ Gelos et al. (2011) find that, on average, trade openness and FDI flows (two measures of a country's links with the rest of the world) do not help to increase government's market access. Table A.1 in the appendix reports the results from estimating our regressions without interaction terms. Consistent with Gelos et al. (2011), when we restrict the analysis to the average effect we do not find a robust significant average effect of financial openness on sovereign ratings. However, we do find a significant positive average effect on corporate ratings.

Appendix

Table A.1

Financial openness and credit ratings.

	Corporate credit ratings				Sovereign credit ratings			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Financial openness	1.7212*** (0.624)	1.6527** (0.741)	2.2419** (0.936)	2.2119** (0.933)	2.3871** (0.957)	2.0175 (1.242)	1.9090 (1.154)	1.5863 (1.173)
Observations	2949	2873	2949	2873	301	283	301	283
Adjusted R-squared	0.5755	0.5713	0.9114	0.9118	0.8357	0.7608	0.9484	0.9466
Firm fixed effects	NO	NO	YES	YES	NO	NO	NO	NO
Country fixed effects	NO	NO	NO	NO	NO	NO	YES	YES
Time fixed effects	NO	NO	YES	YES	NO	NO	YES	YES
Control variables	YES	YES	YES	YES	YES	YES	YES	YES

Note: numbers in parentheses are standard errors. Standard errors of models 1 and 2 are clustered at the country-year level. Standard errors of models 3 and 4 are clustered at the year level.

* Significance level at 10%

** Significance level at 5%.

*** Significance level at 1%.

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