

Does Foreign Bank Presence Affect Interest Rate Pass-Through in Emerging and Developing Economies?

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Ongoing Research

- Gopalan, S. “Does Foreign Bank Entry Contribute to Financial Depth? Examining the Role of Income Thresholds.” HKUST IEMS Working Paper No.05, 2015.
- Gopalan, S. and R.S. Rajan. “How Does Foreign Bank Entry Affect Financial Inclusion in Emerging and Developing Economies?”, HKUST IEMS Working Paper No.04, 2015.
- Gopalan, S. and R.S. Rajan. “Does Foreign Bank Presence Affect Interest Rate Pass-Through in Emerging and Developing Economies?”, HKUST IEMS Working Paper No.06, 2015.
- Gopalan, S. and R.S. Rajan. “Exploring the Links between Financial Inclusion and Macroeconomic Volatility” in progress.

Structure

1. Context
2. Conceptual Framework
3. Motivating Hypotheses: Foreign Bank Presence and IRPT
4. Literature
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*“The past two decades have experienced a **resurgence of international banking**, continuing...the Second Age of Globalization. The **shares** in (developing) country banking systems of banks with sizable foreign positions have **grown tremendously**... All of these developments could have **profound implications** for the host countries receiving the services of **globally-oriented banks**...”*

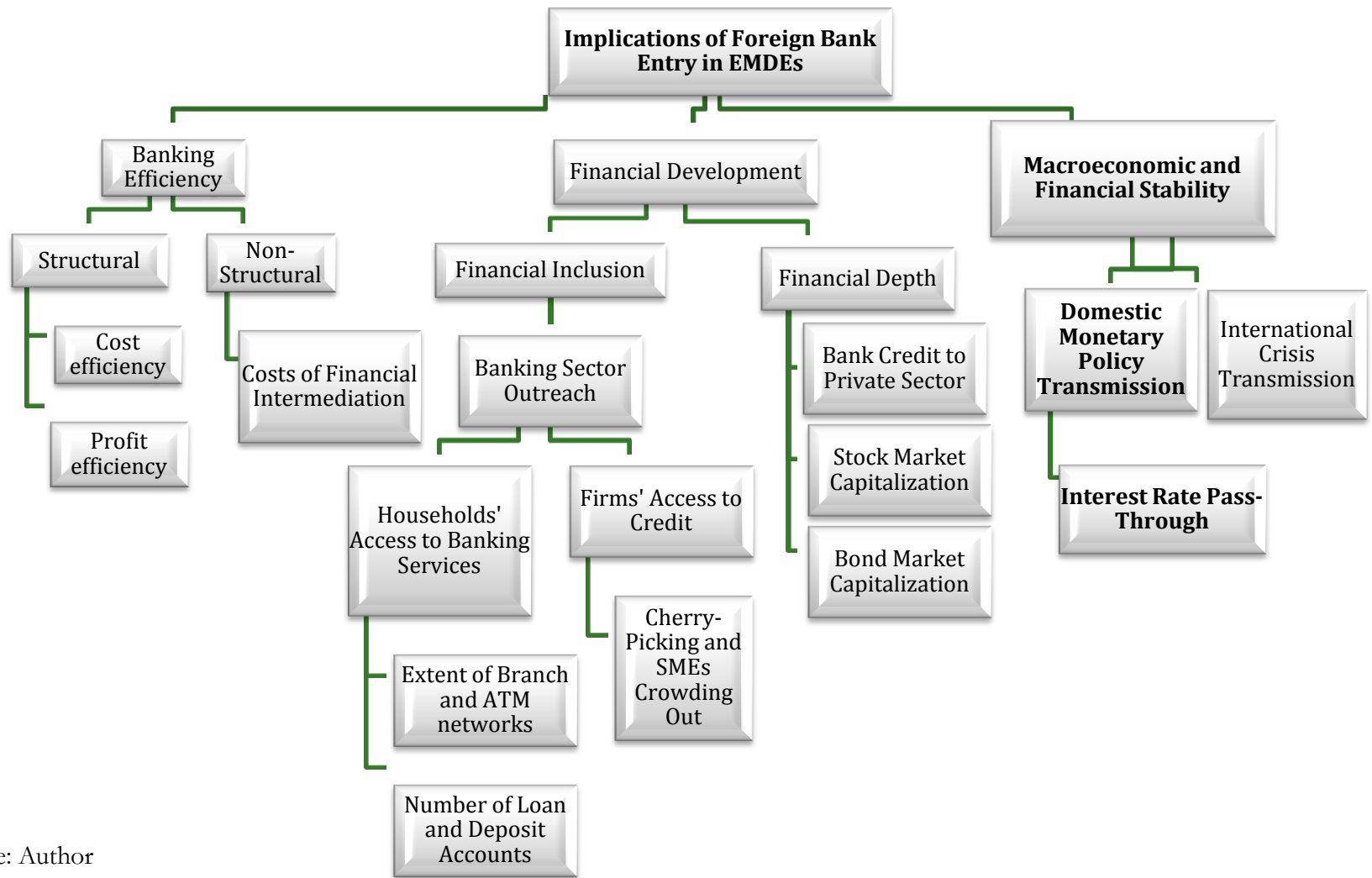
-- Goldberg , L.S. (2009, p.171). “Understanding Banking Sector Globalization,”
IMF Staff Papers, 56(1), pp.171-197

1. Context

- Financial liberalization in emerging and developing economies (EMDEs).
 - Domestic – Moving away from ‘financial repression.’
 - International – Internationalization of financial sector vs. Capital account deregulation.

- **International banking liberalization** – Integral component of financial sector internationalization particularly post-EMDE crises.
 - Foreign bank entry associated with right of establishment.

Impact of Foreign Bank Entry



Source: Author

Why Interest Rate Transmission?

- Flexible exchange rate regimes, growing popularity of inflation targeting and rising prominence of interest rates as a principal tool of macroeconomic management.
- Bank-based financial systems in EMDEs and lack of substitutes for bank-based financing.
- Rising importance of foreign banks and financial sector development and its impact on effectiveness of interest rate pass-through (IRPT).
 - How changes in policy rates affect market interest rates and aggregate demand.

2. Conceptual Framework

- Decomposing IRPT: Cost of Funds and Monetary Policy Approach.
- **Cost of Funds Approach:** In market-based economies with well developed financial and government bond markets, IRPT happens through two stages:
 - *First stage:* changes in the monetary policy rate are transmitted to inter-bank rates.
 - *Second stage:* changes in inter-bank rates passed on to short end of the yield curve, then to other yields of higher maturity and then to retail lending rates through the government bond market.
 - Keys: Arbitrage, competition and well-developed bond market.

Conceptual Framework

- **Cost of Funds Approach** (based on Illes and Lombardi, 2013):

$$r_l - r_p = (r_l - r_g) + (r_g - r_m) + (r_m - r_p)$$

r_l is the bank lending rate; r_p is the policy rate; r_g is the government bond yield;
 r_m is money market/interbank rate

- Spread between the policy and lending (or deposit) rate depends on the spread between the policy rate and money market rate, the money market and government bond rate and finally the government bond rate and the lending rate.

Conceptual Framework

- **Monetary Policy Approach:** In EMDEs with under-developed financial and government bond markets and limited banking sector competition, IRPT occurs directly from policy to lending rates.
 - Government dominant or private bank-led oligopolistic banking system.
 - Moral suasion.

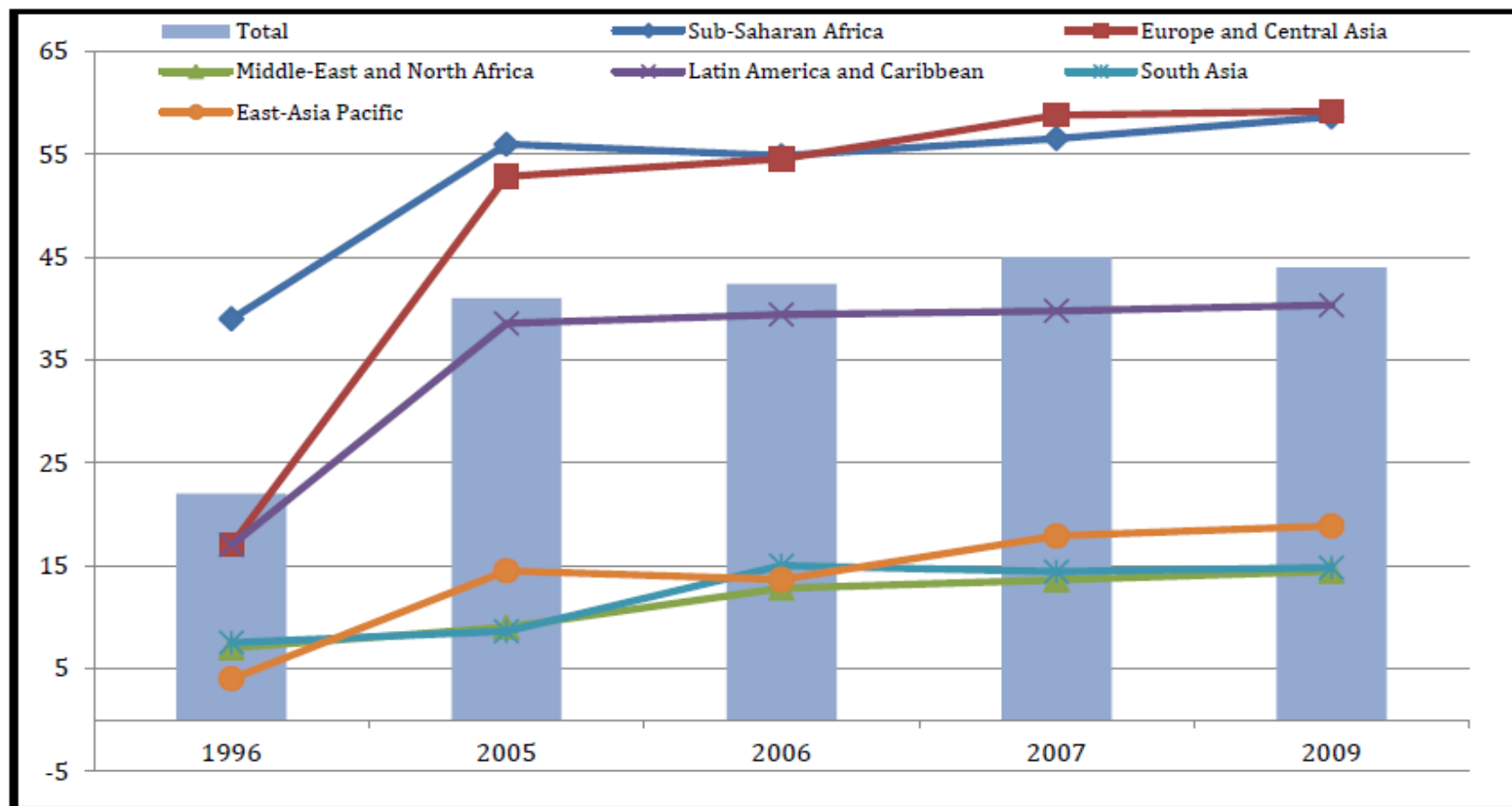
3. Foreign Bank Presence and IRPT

- How does Foreign Bank (FB) presence affect IRPT?
 - Strengthen IRPT through efficiency and financial market development.

“Foreign banks have supported the development of local financial markets in several developing countries, particularly in local securities and derivatives markets by investing considerable capital and expertise. Foreign banks participate as primary dealers in some government bond markets and as pension fund managers and swap dealers in other markets.” (World Bank, 2008)
 - Enhances banking sector competition which ensures operation of arbitrage.
 - Is the relationship between FB presence and IRPT necessarily linear? Are there thresholds?

Trends in Foreign Bank Entry

Share of Foreign Bank Assets in Total Banking Assets across EMEs



Note: This figure shows the average share of assets held by foreign banks (expressed as percentage of total assets) in each region at each point in time. A bank is considered foreign when it owns at least 50 percent of shares.

Source: Compiled from Claessens et al. (2008) and Claessens and Van Horen (2011).

FB Thresholds?

- High degree of FB presence, greater banking efficiency and financial development leads to high IRPT (Indirect Channel).
- Low degree of FB presence (greater degree of State-ownership in banking system), results in high IRPT through moral suasion (Direct Channel).
- Intermediate stages? Weaker IRPT as:
 - Gradual reduction in moral suasion which reduces direct IRPT.
 - Insufficient FB presence, weaker financial development and so second-stage IRPT is weak as well.

4. Literature

- Foreign banks and monetary policy transmission focusing on the quantity of funds, i.e. bank lending channel (Arena et al., 2006; Jeon and Wu, 2012).
 - Weak evidence for FBE contributing to instability in credit markets in EMEs (Arena et al., 2006).
 - Foreign banks less responsive to domestic monetary policy shocks and adjust loan and deposit growth rates less than domestic banks (Wu et al., 2011).
- Estimating effectiveness and degree of IRPT in general (Coricelli et al., 2006); and determinants of IRPT (Cottarelli and Kourelis, 1994; Sorensen and Werner, 2006; Gigineishvili, 2011).
- Impact of FB presence specifically on IRPT – *literature largely silent.*

5. Research Question

- *How does interest rate transmission change with higher foreign bank participation in EMDEs?*
 - How does foreign bank presence affect the degree of IRPT?
 - Are there threshold effects in terms of foreign bank presence that affect the extent of IRPT?
- ➔ ***Caveats:*** *Entry (Flow) vs. Presence (Stock); Branches vs. Subsidiaries; Cross-border lending vs. establishment.*

6. Empirical Model

■ Benchmark Fixed Effects Model:

$$LR_{it} = \delta_i + \beta_1 MMR_{it} + \beta_2 fb_{it} + \beta_3 fb_{it} * MMR_{it} + \beta_4 \mathbf{Z}_{it} + \beta_5 \mathbf{Z}_{it} * MMR_{it} + \mu_t + \varepsilon_{it}$$

- LR_{it} - Lending rate and MMR_{it} - Money Market rate;
- fb_{it} is the foreign bank share of assets;
- $\mathbf{Z}_{it}$ is the set of possible determinants of IRPT;
- δ_i and μ_t are country and time fixed effects.

- $\beta_1 \rightarrow$ IRPT coefficient: If equal to 1, then we have a complete or perfect IRPT; Value lower than one is incomplete where either the banks or the money market does not respond to monetary impulses on a one-to-one basis.
- $\beta_2 \rightarrow$ impact of foreign bank presence on lending rates.
- $\beta_3 \rightarrow$ impact of foreign bank presence on IRPT.

Empirical Model

- On Foreign Bank Assets Share (%)
 - Cross-border banking flows excluded -- “Right of establishment.”
 - Mode 3 vs. Mode 1 – GATS.
 - Number of foreign banks – poor proxy.

Empirical Model

■ The **control** variables:

- GDP growth per capita (+)
- Inflation (+)
- Exchange Rate Regimes (+)
- Private Sector Credit-to-GDP (+)
- Banking Concentration (-)

■ Capturing non-linearity:

$$LR_{it} = \delta_i + \beta_1 MMR_{it} + \beta_2 fb_{it} + \beta_3 fb_{it} * MMR_{it} + \beta_4 fb_{it}^2 + \beta_5 fb_{it}^2 * MMR_{it} + \beta_6 \mathbf{Z}_{it} + \beta_7 \mathbf{Z}_{it} * MMR_{it} + \mu_t + \varepsilon_{it}$$

- *If β_3 continues to be positive and significant after controlling for potential non-linearities, then we can test the influence of foreign bank presence at different threshold levels to see how it affects IRPT.*

Data

■ Panel data on 57 EMDEs over the period 1995-2009

Variable	Definition	Source
Lending Rate (%)	Lending Rate is the domestic rate at which banks lend to meet the short- and medium-term financing needs of the private sector. This rate is for the domestic economy.	IMF International Financial Statistics
Money Market Rate (%)	Short-term money market rates	IMF International Financial Statistics
Foreign Bank Assets (%)	Share of foreign bank assets in total banking assets	Claessens and Neeltje van Horen (2011)
Inflation (Average CPI: 2005=100)	Average Inflation measured by Consumer Price Index in 2005 prices	Global Financial Development Database - World Bank
GDP Per Capita (Constant 2000 USD)	GDP Per Capita measured in 2000 US dollars	Global Financial Development Database - World Bank
Exchange Rate Regime	1 – no separate legal tender 2- crawling pegs narrower than or equal to +/-2%; 3-managed floating; 4-freely floating; 5-freely falling; 6-dual market in which parallel market data is missing	Ilzetzki, Reinhart and Rogoff (2008)
Private Credit to GDP	The financial resources provided to the private sector by domestic money banks as a share of GDP. (International Monetary Fund, International Financial Statistics, and World Bank GDP estimates)	Global Financial Development Database - World Bank
Banking Concentration (Lerner Index)	A measure of market power in the banking market. It compares output pricing and marginal costs (that is, markup). An increase in the Lerner index indicates a deterioration of the competitive conduct of financial intermediaries. (Bankscope)	Global Financial Development Database - World Bank
Global Financial Crisis	Dummy for Global Financial Crisis taking the value 1 for 2008 and 2009.	Author

Defining EMDEs

- EM – Emerging Market group of countries includes those that are in the Standard and Poor's Emerging Market and Frontier Markets index and that were not high-income countries in the year 2000. (Average income in our sample of 34 countries – US\$4765).
 - Based on Claessens and Van Horen (2011).
- The developing countries, includes all other countries based on World Bank's income classification (as of year 2000). (Average income in our sample of 23 countries – US\$1930).

Country Coverage

Region	Country
East Asia and Pacific (EAP)	Indonesia, Korea, Malaysia, Philippines, Thailand
Europe and Central Asia (ECA)	Armenia, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Kyrgyz Republic, Latvia, Lithuania, Moldova, Romania, Russia, Serbia, Slovak Republic, Slovenia, Ukraine.
Latin America and Caribbean (LAC)	Antigua, Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Guatemala, Jamaica, Mexico, Panama, Paraguay, Peru, Uruguay, Venezuela
Middle East and North Africa (MENA)	Algeria, Bahrain, Jordan, Kuwait, Libya, Morocco and Oman
South Asia (SA)	India, Pakistan and Sri Lanka
Sub Saharan Africa (SSA)	Madagascar, Mali, Mauritius, Mozambique, Namibia, Niger, Rwanda, Senegal, South Africa, Togo, Zimbabwe

Methodology

- Fixed Effects Estimation
 - Controlling for unobserved heterogeneity.
 - Country and Time fixed effects.
 - Hausman Test.
- Endogeneity in terms of self-selection in developed markets?
 - Greater impetus to FBE after crisis – does this count as an exogenous shock?.
- Robustness check: Maximum Likelihood Estimation (MLE) method in a random effects setup.
 - To ensure that our estimating procedure fully accounts for non-normally distributed error terms.

7. Empirical Results: Benchmark Model

	(1)	(2)	(3)	(4)
Dep Var: Lending Rate (%)	Baseline	(1) with Fin	Quad FB	(3) with Fin
Money Market Rate (%)	1.003***	0.968***	0.840**	0.817**
	(0.273)	(0.285)	(0.366)	(0.365)
Foreign Bank Assets (%)	0.0146	0.0217	-0.123	-0.119
	(0.0374)	(0.0411)	(0.102)	(0.152)
Δ Ln Inflation Rate	1.329	1.551	1.128	1.405
	(1.195)	(1.371)	(1.229)	(1.341)
Δ Ln GDPPC Growth	12.70	18.89	11.65	14.19
	(20.37)	(24.42)	(18.36)	(20.03)
Exchange Rate Regime	-1.498	-1.545	-1.505	-1.539
	(1.284)	(1.254)	(1.369)	(1.288)
Private Credit to GDP		-0.0529		-0.0676
		(0.0452)		(0.0512)
Foreign Bank Assets Squared			0.00145	0.00152
			(0.00100)	(0.00141)
MMR Interacting with:				
Foreign Bank Assets (%)	0.00107	3.93e-05	0.0137**	0.0134*
	(0.00300)	(0.00354)	(0.00644)	(0.00769)
Δ Ln Inflation Rate	-0.312*	-0.334*	-0.291*	-0.312*
	(0.167)	(0.183)	(0.170)	(0.178)
Δ Ln GDPPC Growth	-0.989	-0.989	-0.933	-0.563
	(1.261)	(1.395)	(1.344)	(1.141)
Exchange Rate Regime	0.0677	0.0699	0.0509	0.0640
	(0.116)	(0.113)	(0.121)	(0.118)
Private Credit to GDP		0.00393		0.00588
		(0.00354)		(0.00462)
Foreign Bank Assets Squared			-0.000146**	-0.000168**
			(7.31e-05)	(8.78e-05)
Constant	10.02**	10.77**	12.20***	12.82***
	(4.466)	(4.851)	(4.007)	(4.720)
Observations	524	515	524	515
R-squared	0.719	0.722	0.710	0.728
Number of Countries	49	49	49	49
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Robust Standard Errors Clustered
for Countries in Parentheses;

*** p<0.01, ** p<0.05, * p<0.1

Empirical Results

- The IRPT coefficient is 1 implying full IRPT.
- The interaction term of interest -- foreign banks and the money market rates – is insignificant.
 - Misspecification error? Non-normal errors and non-linear functional form (Kernel density, Quintile-Normal plots, Shapiro-Wilk, Ramsey test)
 - Re-estimating baseline model with quadratic term produces significant results; Basis for exploring foreign bank thresholds in more detail.
- Sample splitting – High and Low Thresholds
 - High Threshold: Greater than mean → Above 35 percent foreign bank assets share.
 - Low Threshold: Lower than mean → Less than 35 percent foreign bank assets share.
 - Alternative thresholds: Median? different time points?

Do Thresholds Matter? High FB Threshold Sample

	(1)	(2)	(3)
Dep Var: Lending Rate (%)	Baseline	(1) With Concentration	(2) Without Year FE
Money Market Rate (%)	1.097***	0.873***	0.739***
	(0.276)	(0.272)	(0.204)
Foreign Bank Assets (%)	-0.0283	-0.0271	-0.0607**
	(0.0214)	(0.0246)	(0.0219)
Δ Ln Inflation Rate	-1.004**	-0.662	-0.665*
	(0.389)	(0.421)	(0.342)
Δ Ln GDPPC Growth	-27.26*	-37.50**	-24.19*
	(14.64)	(15.43)	(13.30)
Exchange Rate Regime	-1.257	-1.529	-1.728
	(1.558)	(1.620)	(1.636)
Banking Concentration		6.043	4.879
		(10.08)	(6.533)
MMR Interacting with:			
Foreign Bank Assets (%)	0.00195**	0.00352***	0.00429***
	(0.000905)	(0.000588)	(0.000873)
Δ Ln Inflation Rate	0.0276	0.0105	0.0103
	(0.0426)	(0.0356)	(0.0350)
Δ Ln GDPPC Growth	2.532***	2.600*	2.393
	(0.812)	(1.439)	(1.430)
Exchange Rate Regime	-0.0798	0.00924	0.0523
	(0.0793)	(0.0708)	(0.0631)
Banking Concentration		-0.975*	-0.997*
		(0.680)	(0.621)
Constant	17.91***	17.96***	17.56***
	(5.441)	(4.635)	(3.667)
Observations	258	214	214
R-squared	0.775	0.792	0.770
Number of Countries	24	20	20
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	No

Robust Standard Errors Clustered
for Countries in Parentheses;

*** p<0.01, ** p<0.05, * p<0.1

Do Foreign Bank Thresholds Matter?

- For High Threshold Sample
 - IRPT is complete (> 1)
 - Increase in FB presence is associated with a reduction in lending rates.
 - Impact of FB presence on IRPT captured by the interaction term is positive and highly significant.
 - Banking concentration reduces the IRPT by approximately 13 percentage points.

Do Thresholds Matter? Low FB Threshold Sample

	(1)	(2)
Dep Var: Lending Rate (%)	Baseline	(1) With Concentration
Money Market Rate (%)	0.831**	1.107**
	(0.364)	(0.488)
Foreign Bank Assets (%)	0.0219	0.000365
	(0.125)	(0.152)
Δ Ln Inflation Rate	4.969***	3.346*
	(1.309)	(1.784)
Δ Ln GDPPC Growth	38.68*	17.70
	(21.55)	(26.40)
Exchange Rate Regime	-1.772***	-0.291
	(0.631)	(1.158)
Banking Concentration		-0.0249
		(10.47)
MMR Interacting with:		
Foreign Bank Assets (%)	0.00169	0.000960
	(0.0109)	(0.00918)
Δ Ln Inflation Rate	-0.765***	-0.578**
	(0.129)	(0.235)
Δ Ln GDPPC Growth	-3.785***	-4.420*
	(1.116)	(2.422)
Exchange Rate Regime	0.175***	-0.0592
	(0.0332)	(0.191)
Banking Concentration		0.881
		(1.311)
Constant	7.415*	7.650***
	(4.149)	(2.237)
Observations	252	222
R-squared	0.886	0.755
Number of Countries	24	20
Country FE	Yes	Yes
Year FE	Yes	Yes

Robust Standard Errors Clustered for Countries in Parentheses;

*** p<0.01, ** p<0.05, * p<0.1

Do Foreign Bank Thresholds Matter?

- For Low Threshold Sample
 - IRPT is incomplete but relatively high – Moral suasion?.
 - FB presence insignificant in its relationship with lending rates and IRPT.
 - Banking concentration insignificant which is what we expect from our priors.

IRPT Coefficients Under Various FB Thresholds

	High Threshold (> 35%)	Low Threshold (< 35%)	$0 < \text{FB} < 17 \%$	$17 < \text{FB} < 35\%$	$35 < \text{FB} < 65\%$
IRPT	0.74	1.10	1.02	1.12	0.81
IRPT with FB	1.22	-	-	-	1.25

- **High FB threshold:** IRPT increases from 0.75 to 1.22
 - For 35-65% range, IRPT increases from 0.81 to 1.25
- **Low FB Threshold:** IRPT is complete and occurs via the monetary policy channel through moral suasion.
 - FB presence has no statistically significant effect.

Summary of Robustness Tests

Thresholds	Model	IRPT coefficient	Foreign Bank Asset	Interaction FB Asset*MMR	Interaction MMR * Concentration
Case-I:					
FBA > 50%	Baseline (1)	Significant	Significant	Significant	-
	(1) Augmented with banking concentration (2)	Significant	Significant	Significant	Significant
FBA < 50%	Baseline (1)	Significant	Insignificant	Significant	-
	(1) Augmented with banking concentration (2)	Significant	Insignificant	Insignificant	Insignificant
Case-II:					
FBA < 35%	Baseline (1)	Significant	Insignificant	Insignificant	-
	(1) Augmented with banking concentration (2)	Significant	Insignificant	Insignificant	Insignificant
35 < FBA < 65%	Baseline (1)	Significant	Significant	Significant	-
	(1) Augmented with banking concentration (2)	Significant	Significant	Significant	Significant
FBA > 65%	Baseline (1)	Insignificant	Insignificant	Insignificant	-
	(1) Augmented with banking concentration (2)	Insignificant	Insignificant	Insignificant	Insignificant

Conclusion

- Evidence for strong threshold effects:
 - Linear baseline with no thresholds: Impact of FB presence on IRPT insignificant.
 - Quadratic specification – Linear and quadratic FB interaction significant.
 - High Threshold Sample: Impact of FB presence on IRPT strong, significant and positive
 - Splitting the high threshold: Results consistent for 35-65% but not $> 65\%$
 - Low Threshold Sample: Association between FB and IRPT insignificant.

Conclusion

- Impact of FB on IRPT declines when controlling for banking concentration - Role for regulations?
 - Objective: to avoid private sector oligopoly dominated by foreign banks.
 - Examples: Albania, Lithuania, Slovak Republic, Mexico, El Salvador (World Bank, 2008).
 - Slovak Republic - decline in IRPT through the period it allowed greater foreign bank entry. High threshold (60%) in our sample.

Limitations and Future Research

Limitations

- Endogenous thresholds?
- Dynamic Panel Data – Lagged interest rates
- Comparison of two regimes, i.e. with and without FB?

Future Research

- Branch versus Subsidiary distinction?
- Foreign bank entry and bank concentration – causality?



Thank You!



Summary Statistics

Variables	No. of Obs.	No. of Countries	Mean	Within Std. Dev
Lending Rate (%)	806	52	22.1	29.7
Money Market Rate (%)	818	57	10.8	11.8
Foreign Bank Assets (%)	783	57	35.1	18.8
Ln GDP Per Capita	907	57	3686.1	742.5
Exchange Rate Regime	849	57	2.6	0.8
Ln Inflation	820	57	1.7	0.9
Private Credit to GDP (%)	824	57	34.7	11.6
Banking Concentration	673	46	0.2	.07

MLE Empirical Results: Benchmark Model

Dep Var: Lending Rate (%)	Linear Baseline (1)	(1) with Financial Variable(s) (2)	(1) with Quadratic Interaction (3)	(3) with Financial Variable(s) (4)
Money Market Rate (%)	0.9833*** (0.1498)	0.9156*** (0.1537)	0.8876*** (0.1560)	0.7785*** (0.1607)
Foreign Bank Assets (%)	0.0152 (0.0257)	0.0160 (0.0266)	-0.0504 (0.0909)	-0.0580 (0.0925)
Δ Ln Inflation Rate	1.2507** (0.5653)	1.4570* (0.5814)	1.1222** (0.5621)	1.2959** (0.5767)
Δ Ln GDPPC Growth	12.7773 (11.0179)	18.2264 (12.4808)	9.7478 (10.9795)	13.5832 (12.4217)
Exchange Rate Regime	-1.0353* (0.5985)	-1.1826* (0.6089)	-1.0198 (0.5939)	-1.2077** (0.6016)
Foreign Bank Assets Squared			0.0007 (0.0010)	0.0009 (0.0009)
Private Credit to GDP		-0.0549* (0.0327)		-0.0716** (0.0328)
<i>Policy Rate Interacting with:</i>				
Foreign Bank Assets	0.0018 (0.0013)	0.0015 (0.0015)	0.0119*** (0.0042)	0.0139*** (0.0043)
Δ Ln Inflation Rate	-0.3151*** (0.0341)	-0.3284*** (0.0363)	-0.2935*** (0.0347)	-0.3072*** (0.0365)
Δ Ln GDPPC Growth	-1.1775** (0.5606)	-1.3331** (0.5766)	-0.9067* (0.5638)	-0.8880 (1.5845)
Exchange Rate Regime	0.0491 (0.0393)	0.0590 (0.0407)	0.0455 (0.0390)	0.0535 (0.0402)
Foreign Bank Assets Squared			-0.0001** (0.0001)	-0.0001** (0.0001)
Private Credit to GDP		0.0027 (0.0019)		0.0042** (0.0020)
Number of Observations	524	515	524	515
Number of Countries	49	49	49	49

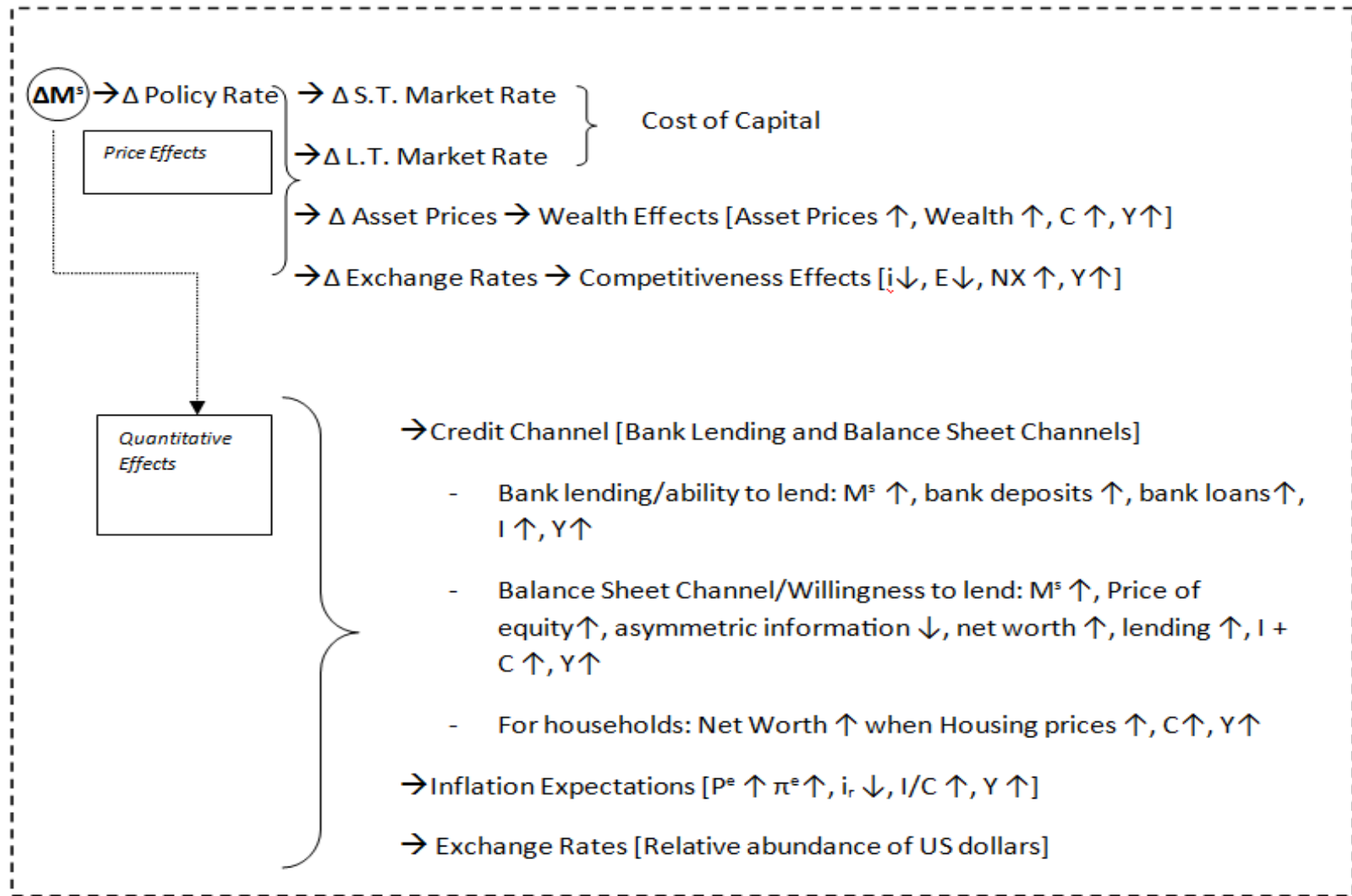
Do Thresholds Matter? High FB Threshold Sample

Dep Var: Lending Rate (%)	Linear Baseline (1)	(1) with Banking Concentration (2)	(1) with Regional and Temporal Effects (3)	(3) with Banking Concentration (4)
Money Market Rate (%)	1.0617*** (0.1757)	0.7540*** (0.1932)	1.1515*** (0.1771)	0.8893*** (0.1878)
Foreign Bank Assets (%)	-0.0482* (0.0235)	-0.0681*** (0.0242)	-0.0214 (0.0635)	-0.0564 (0.0792)
Δ Ln Inflation Rate	-1.1197** (0.5608)	-0.5541 (0.5564)	-1.4152** (0.5646)	-0.8617 (0.5528)
Δ Ln GDPPC Growth	-23.7437** (10.3255)	-23.9472** (10.7287)	-30.3622*** (11.2830)	-37.6858*** (11.8089)
Exchange Rate Regime	-0.7280 (0.7736)	-0.9773 (0.7981)	-0.7426 (0.7469)	-0.8908 (0.7525)
Banking Concentration		3.2666 (6.1018)		4.9429 (5.8277)
<i>Policy Rate Interacting with:</i>				
Foreign Bank Assets	0.0026*** (0.0010)	0.0046*** (0.0011)	0.0025*** (0.0010)	0.0041*** (0.0010)
Δ Ln Inflation Rate	0.0279 (0.0311)	0.0052 (0.0362)	0.0387 (0.0303)	0.0162 (.0347)
Δ Ln GDPPC Growth	2.6266*** (0.6548)	2.2825*** (0.7254)	2.8555*** (0.6453)	2.7102*** (0.7025)
Exchange Rate Regime	-0.07314 (0.0492)	0.0381 (0.0524)	-0.1001** (0.0494)	0.0019 (0.0509)
Banking Concentration		-1.0003*** (0.3097)		-1.0593*** (0.2957)
Number of Observations	258	214	258	214
Number of Countries	24	20	24	20

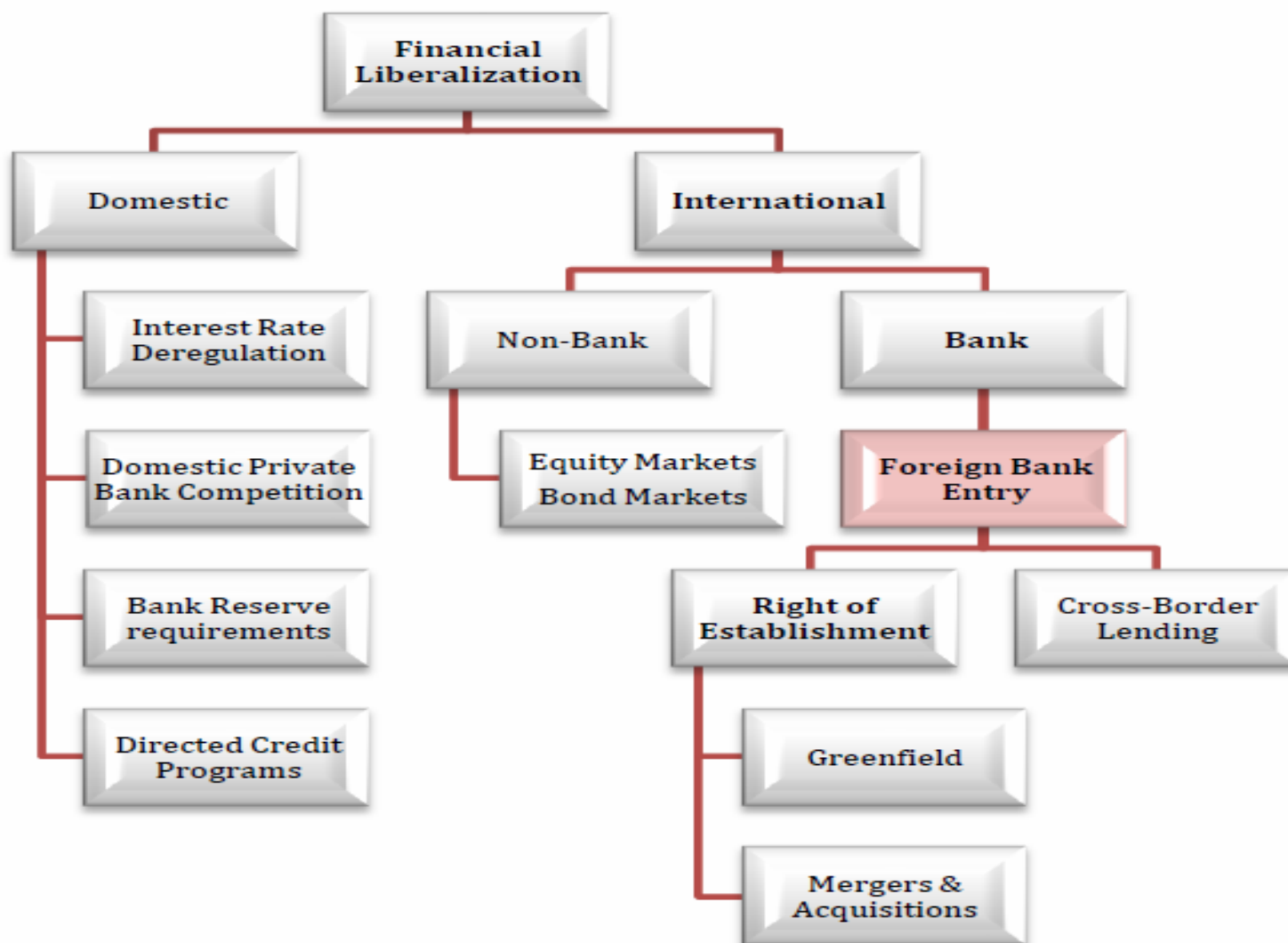
Do Thresholds Matter? Low FB Threshold Sample

Dep Var: Lending Rate (%)	Linear Baseline (1)	(1) with Banking Concentration (2)	(1) with Regional and Temporal Effects (3)	(3) with Banking Concentration (4)
Money Market Rate (%)	0.6471** (0.3148)	0.5994 (0.5790)	0.5717*** (0.1983)	0.5535 (0.4464)
Foreign Bank Assets (%)	0.0237 (0.0894)	0.0601 (0.1131)	0.0011 (0.0847)	0.0605 (0.1062)
Δ Ln Inflation Rate	4.6361*** (1.3842)	3.4009** (1.7446)	4.7511*** (0.6576)	3.5099*** (0.6093)
Δ Ln GDPPC Growth	34.4406* (19.0300)	22.8525 (24.0967)	31.5944** (15.4745)	16.2427 (15.5726)
Exchange Rate Regime	-1.6674*** (0.5852)	-0.9867 (1.2878)	-2.0361*** (0.6128)	-1.1420 (0.8106)
Banking Concentration		-5.1345 (9.3399)		-6.0872 (7.1890)
<i>Policy Rate Interacting with:</i>				
Foreign Bank Assets	0.0076* (0.0095)	0.0036 (.0089)	0.0098** (0.0106)	0.0083 (0.0060)
Δ Ln Inflation Rate	-0.7429*** (0.1398)	-0.5937*** (0.2253)	-0.7395*** (0.0451)	-0.5906*** (0.0495)
Δ Ln GDPPC Growth	-3.503*** (1.1162)	-3.6664 (2.5400)	-3.6234*** (0.6761)	-3.9785*** (1.0136)
Exchange Rate Regime	0.1752*** (0.0354)	0.0995 (0.2295)	0.1868*** (0.0396)	0.0813 (0.1096)
Banking Concentration		1.2581 (1.2498)		1.0464 (0.6784)
Number of Observations	252	222	252	222
Number of Countries	24	20	24	20

Monetary Transmission



Financial Liberalization – A Schematic Representation



Source: Author.

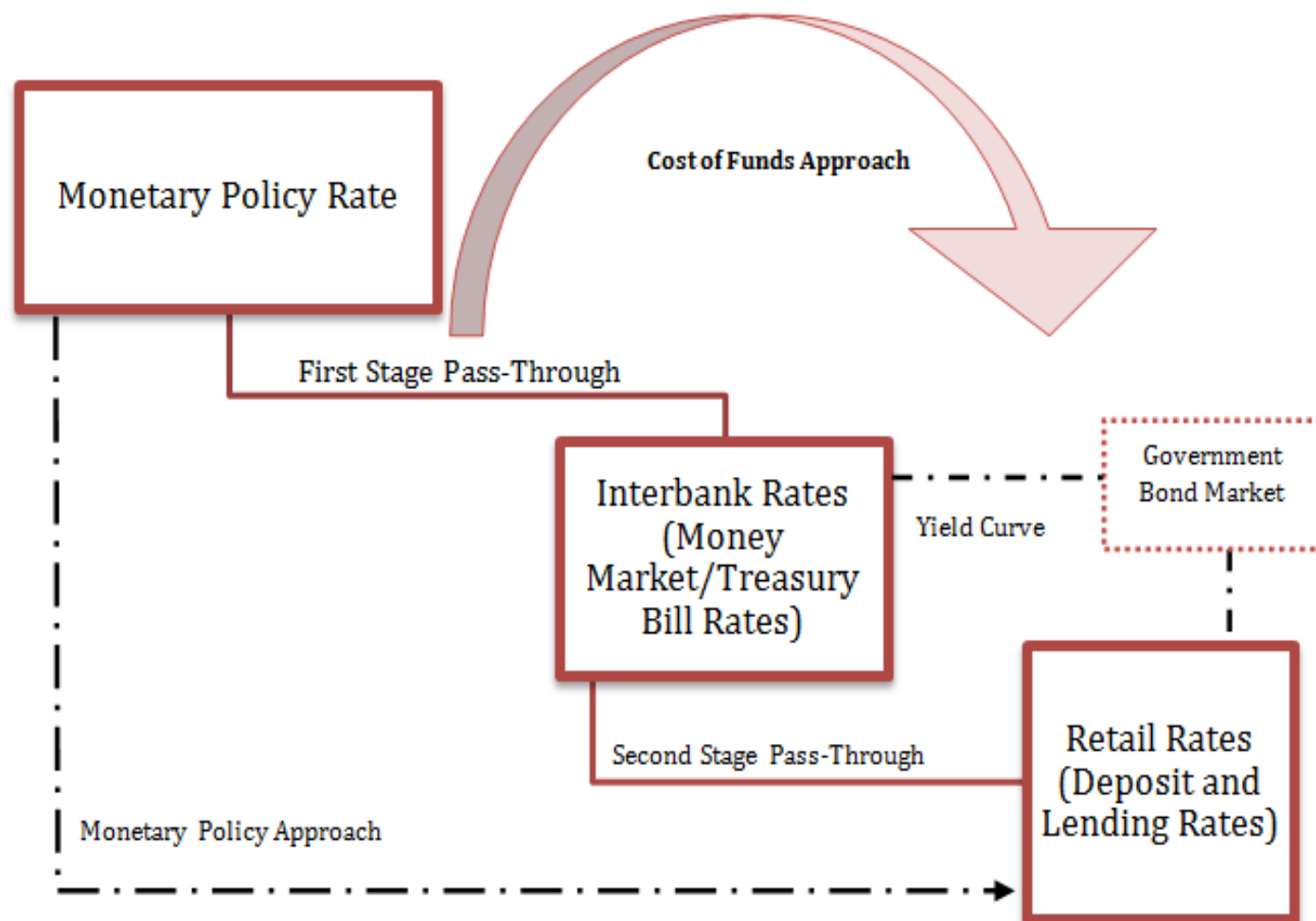
Domestic vs International Capital Flows and Bank Internationalization

	Loan provided by Domestic Supplier	Loan provided by Foreign Supplier*
Loan involves Domestic Capital only	<u>Cell I:</u> Neither financial services trade nor international capital flows.	<u>Cell II:</u> Financial services trade plus inward direct investment.
Loan involves International Capital only	<u>Cell III:</u> International capital flows only.	<u>Cell IV:</u> Financial services trade plus plus inward direct investment and international capital flows related to the supply of the loan

Note: Refers to the case of a loan provided by a bank that has established a domestic presence in the host country.

Source: Adapted from Kono and Schuknecht (1999).

Decomposing Interest Rate Pass-Through



Source: Based on Coricelli et al. (2006).

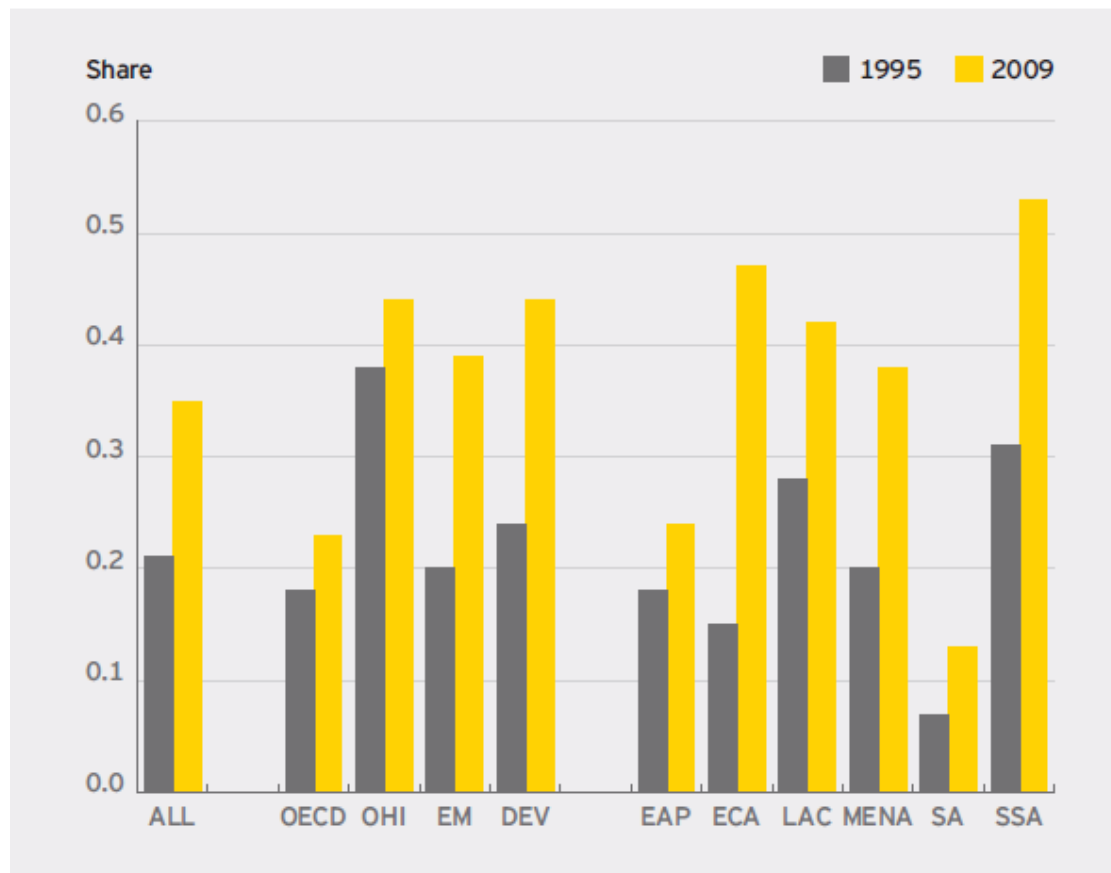


Figure 2: Share of foreign banks by income level and region, 1995 and 2009

Source: Claessens and Van Horen (2013a)

Note: OECD includes all core OECD countries. Other high-income countries includes all countries classified as high-income by the World Bank in 2000 but not belonging to the OECD. Emerging markets includes all countries that are included in the Standard and Poor's Emerging Market and Frontier Markets indexes and that were not high-income countries in 2000. Developing countries includes all other countries. The regions represent the regional classification as used by the World Bank.

		Loan to assets	Loan to deposits	Liquid assets to total assets	Equity to assets	Capital ratio	LLR to assets
All countries							
	Domestic	0.58	1.17	0.22	0.12	0.17	0.02
	Foreign	0.49	1.10	0.33	0.15	0.22	0.02
Income groups							
OECD							
	Domestic	0.65	1.27	0.17	0.09	0.13	0.01
	Foreign	0.43	1.15	0.37	0.11	0.18	0.01
Other high-income							
	Domestic	0.54	0.92	0.29	0.14	0.19	0.02
	Foreign	0.52	1.06	0.30	0.13	0.16	0.01
Emerging markets							
	Domestic	0.51	1.12	0.26	0.15	0.18	0.03
	Foreign	0.54	1.25	0.29	0.15	0.22	0.02
Developing countries							
	Domestic	0.54	1.06	0.26	0.16	0.23	0.03
	Foreign	0.49	0.87	0.35	0.18	0.26	0.03

Table 2: Differences in balance sheet between domestic and foreign banks (2007)

Source: Claessens and Van Horen (2013a) and Bankscope

Note: OECD includes all core OECD countries. Other high-income countries includes all countries classified as high-income by the World Bank in 2000 but not belonging to the OECD. Emerging markets includes all countries that are included in the Standard & Poor's Emerging Market and Frontier Markets indexes and that were not high-income countries in 2000. Developing countries includes all other countries. All balance sheet variables are measured in 2007.

Empirical Results

- The IRPT coefficient is closer to 1 implying full pass-through
- The interaction term of interest -- foreign banks and the money market rates – is insignificant
 - Misspecification error? → Non-normal errors and non-linear functional form

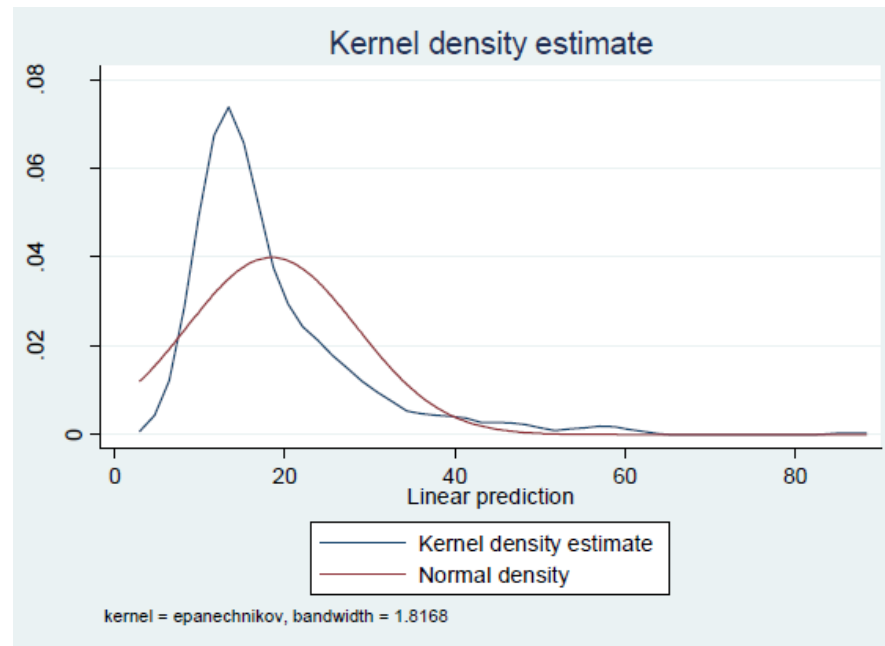
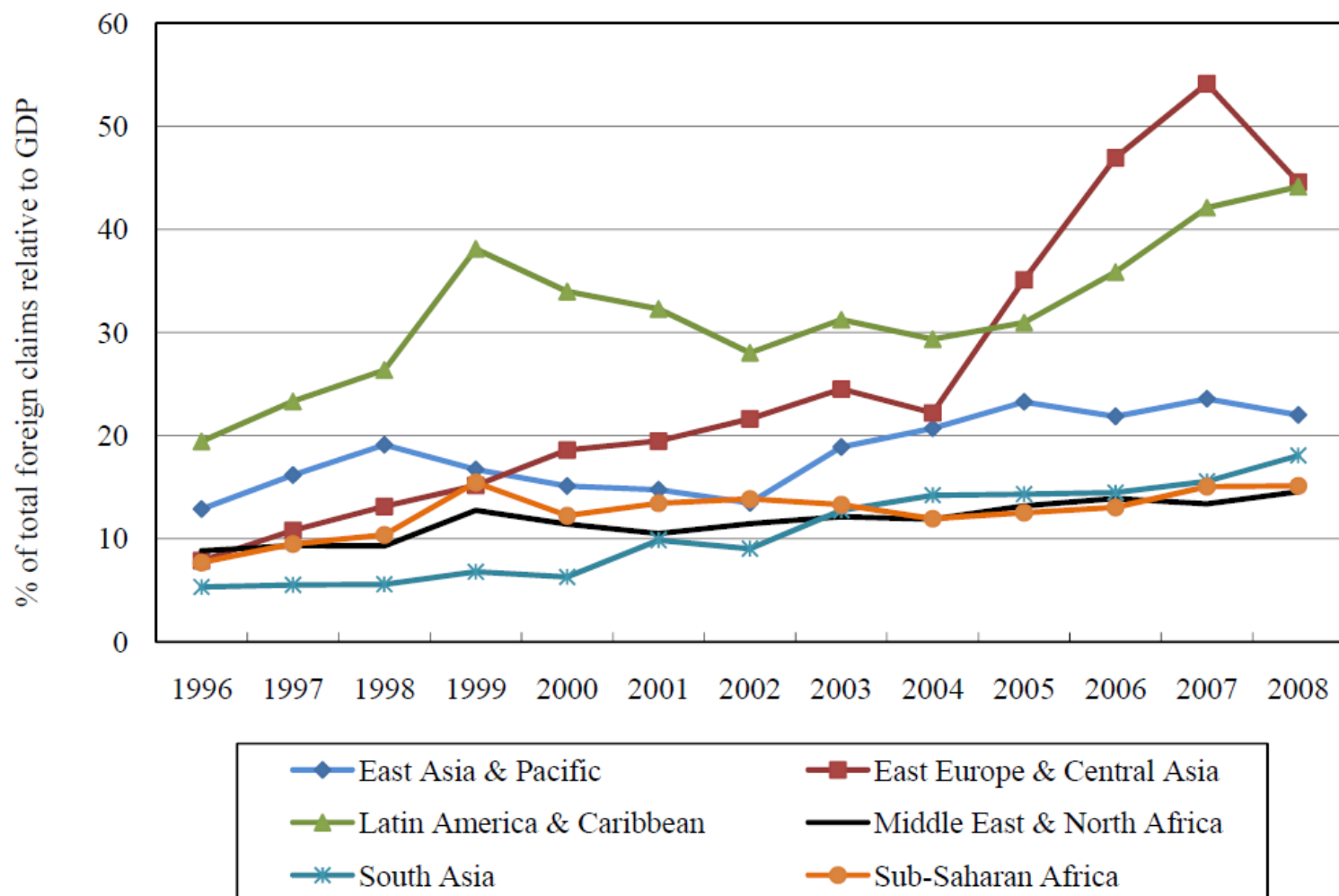


Figure 3: Total foreign claims relative to GDP across developing countries,

This figure shows the average share of total foreign claims (expressed as percentage of GDP) in each region at each point in time. The data come from the BIS *Consolidated Banking Statistics*.



Summary of Robustness Checks

- The behavior of coefficients of interest in the high threshold sample is consistent and robust across different benchmarks
- Sub-clusters within high threshold sample: splitting the high-threshold sample into half → results consistent for 35 to 65% range and not > 65%
 - Suggesting that effect of banking concentration is negligible when there is extremely high entry ?
 - Branch vs. Subsidiary? – Under researched
 - Foreign banks and Internal capital markets (Cetorelli and Goldberg, 2010)
- Low threshold cases – insignificant