



**Economic and Financial Linkages in the Western Hemisphere  
Seminar organized by the Western Hemisphere Department  
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## **Financial Flows from the United States to Latin America**

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Presented at the Economic and Financial Linkages in the Western Hemisphere  
Seminar organized by the Western Hemisphere Department  
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WHD Conference on External and Financial linkages

# Financial Flows from the United States to Latin America: Basic patterns, causes, and implications

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with support from  
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# Motivation

- § While much research has shown the importance of U.S. financial conditions for the ROW, the literature analyzing the causes and impact of financial flows is much sparser.
- § Given this, our focus is on capital flows from U.S. residents to Latin America:
  - Which countries are most exposed to U.S. investors?
  - Are they mainly into equity or bonds? Have the patterns changed over time? Are equity and bond flows linked?
  - What are the causes and consequences of portfolio flows?
- Data limits analysis of flows from other countries, but U.S. flows can be regarded as a proxy for advanced country flows.

# Road Map

- \$ Description of data
- \$ Basic trends and correlations
- \$ Link between equity and bond flows
- \$ Related Literature
- \$ VAR analysis
- \$ Conclusions and next steps

# Data

- \$ Bilateral monthly flows data come from the TIC system (split into equity and bond flows) and BOP accounts.
- \$ Stock data comes from the benchmark TIC asset surveys.
- \$ Custodial bias a problem with the flows, but not with the stock data. Warnock and Cleaver (2002) argues that it isn't such a big problem for asset flow to emerging markets.

## Overall capital flows snapshot

- \$ As a general rule, portfolio investment (as a % of GDP) in the region has declined in recent years as the current account positions have turned around.
- \$ Before the Asian crisis, bond flows tended to dominate. In the last few years, equity purchases in Brazil and Mexico have been ramped up.
- \$ On average, for most countries, FDI flows have tended to be more important than portfolio flows.

# Overall, U.S. home bias is strong

	2006			2001			1997		
	$\omega_{us}$	$\omega_m$	$\omega_{us} / \omega_m$	$\omega_{us}$	$\omega_m$	$\omega_{us} / \omega_m$	$\omega_{us}$	$\omega_m$	$\omega_{us} / \omega_m$
<b>Total: equity, domestic and international long-term debt securities</b>									
Argentina	0.03	0.15	0.17	0.02	0.23	0.07	0.17	0.31	0.56
Brazil	0.25	1.19	0.21	0.13	0.86	0.15	0.23	1.12	0.21
Chile	0.03	0.16	0.18	0.02	0.14	0.16	0.04	0.18	0.20
Colombia	0.01	0.09	0.15	0.01	0.06	0.18	0.02	0.06	0.34
Mexico	0.25	0.63	0.40	0.18	0.54	0.34	0.29	0.48	0.60
Peru	0.01	0.06	0.15	0.01	0.02	0.28	0.02	0.03	0.49
Venezuela	0.01	0.21	0.07	0.01	0.05	0.26	0.04	0.08	0.45
<b>Latin America 2/</b>	<b>0.59</b>	<b>2.48</b>	<b>0.24</b>	<b>0.38</b>	<b>1.91</b>	<b>0.20</b>	<b>0.80</b>	<b>2.26</b>	<b>0.36</b>
<b>Emerging Asia 2/</b>	<b>1.18</b>	<b>8.83</b>	<b>0.13</b>	<b>0.50</b>	<b>5.09</b>	<b>0.10</b>	<b>0.47</b>	<b>4.28</b>	<b>0.11</b>
<b>Industrial countries 2/</b>	<b>8.81</b>	<b>46.94</b>	<b>0.19</b>	<b>6.08</b>	<b>42.94</b>	<b>0.14</b>	<b>5.78</b>	<b>45.67</b>	<b>0.13</b>
<b>Equity</b>									
Argentina	0.01	0.07	0.13	0.01	0.07	0.09	0.12	0.26	0.45
Brazil	0.44	1.16	0.38	0.20	0.57	0.34	0.29	0.63	0.45
Chile	0.02	0.28	0.08	0.02	0.18	0.10	0.04	0.24	0.17
Colombia	0.00	0.08	0.04	0.00	0.02	0.06	0.01	0.06	0.11
Mexico	0.40	0.66	0.61	0.24	0.44	0.53	0.32	0.56	0.57
Peru	0.00	0.10	0.04	0.00	0.02	0.18	0.02	0.04	0.50
Venezuela	0.00	0.02	0.20	0.00	0.02	0.19	0.02	0.04	0.49
<b>Latin America 2/</b>	<b>0.88</b>	<b>2.38</b>	<b>0.37</b>	<b>0.47</b>	<b>1.33</b>	<b>0.35</b>	<b>0.81</b>	<b>1.83</b>	<b>0.44</b>
<b>Emerging Asia 2/</b>	<b>2.28</b>	<b>13.23</b>	<b>0.17</b>	<b>1.06</b>	<b>7.29</b>	<b>0.15</b>	<b>0.62</b>	<b>6.55</b>	<b>0.09</b>
<b>Industrial countries 2/</b>	<b>14.25</b>	<b>41.82</b>	<b>0.34</b>	<b>10.94</b>	<b>39.19</b>	<b>0.28</b>	<b>8.52</b>	<b>40.29</b>	<b>0.21</b>
<b>Domestic and international long-term debt securities</b>									
Argentina	0.04	0.21	0.20	0.02	0.35	0.07	0.23	0.35	0.65
Brazil	0.08	1.21	0.07	0.08	1.08	0.07	0.18	1.50	0.12
Chile	0.04	0.07	0.48	0.03	0.11	0.23	0.03	0.14	0.23
Colombia	0.02	0.09	0.25	0.02	0.09	0.20	0.03	0.05	0.61
Mexico	0.11	0.60	0.18	0.15	0.61	0.24	0.26	0.42	0.62
Peru	0.01	0.03	0.47	0.01	0.02	0.35	0.01	0.02	0.45
Venezuela	0.02	0.35	0.06	0.02	0.08	0.27	0.05	0.11	0.47
<b>Latin America 2/</b>	<b>0.32</b>	<b>2.56</b>	<b>0.13</b>	<b>0.32</b>	<b>2.34</b>	<b>0.14</b>	<b>0.80</b>	<b>2.60</b>	<b>0.31</b>
<b>Emerging Asia 2/</b>	<b>0.16</b>	<b>5.40</b>	<b>0.03</b>	<b>0.10</b>	<b>3.46</b>	<b>0.03</b>	<b>0.32</b>	<b>2.50</b>	<b>0.13</b>
<b>Industrial countries 2/</b>	<b>3.74</b>	<b>50.92</b>	<b>0.07</b>	<b>2.56</b>	<b>45.74</b>	<b>0.06</b>	<b>3.07</b>	<b>49.89</b>	<b>0.06</b>

# Systemic importance of U.S. investors (1)

- \$ Majority of U.S. foreign investments are in industrialized countries (over 90 percent).
- \$ While home bias has fallen slightly over the last decade, this is mostly because of U.S. purchases of industrialized country equities.
- \$ Yet, U.S. investors are massively underweight in industrialized country as well as emerging market country assets (particularly bonds) according to an ICAPM model.
- \$ While U.S. investors remain less underweight in Latin America than in Emerging Asia, home bias has increased with respect to Latin America since the Asian and Argentine crises.
- \$ Suggests that Latin American assets, particularly bonds, are not as attractive to U.S. investors as in the mid-90s.



## Systemic importance of U.S. investors (2)

- \$ Strong U.S. home bias does not imply that U.S. investors are not systemically important in Latin America.
- \$ U.S. holdings mainly in Brazil and Mexico, where equity holdings are more than double bond holdings.
- \$ U.S. investors hold significant shares of equity markets in Brazil and Mexico, and bond markets in Chile and Peru.
- \$ The change in Argentine asset holdings shows the impact of the 2001 crisis on foreign investments.

# Significant U.S. holdings in some countries

	2006		2001		1997	
	In percent of market capitalization	In millions of U.S. dollars	In percent of market capitalization	In millions of U.S. dollars	In percent of market capitalization	In millions of U.S. dollars
<b>Total: equity, domestic and international long-term debt securities</b>						
Argentina	6.4	10,979	3.0	4,379	24.5	38,567
Brazil	7.8	110,256	6.1	33,453	9.1	51,656
Chile	6.4	12,539	6.6	5,947	8.7	8,126
Colombia	5.6	5,828	7.3	2,760	14.9	4,162
Mexico	14.5	108,432	14.2	48,772	26.3	63,751
Peru	5.4	3,763	11.5	1,673	21.6	3,544
Venezuela	2.5	6,096	10.6	3,655	19.8	7,827
<b>Latin America 2/</b>	<b>8.8</b>	<b>257,893</b>	<b>8.3</b>	<b>100,639</b>	<b>15.5</b>	<b>177,633</b>
<b>Emerging Asia 2/</b>	<b>4.9</b>	<b>515,409</b>	<b>4.1</b>	<b>132,189</b>	<b>4.8</b>	<b>103,798</b>
<b>Industrial countries 2/</b>	<b>6.9</b>	<b>3,841,064</b>	<b>5.9</b>	<b>1,605,149</b>	<b>5.5</b>	<b>1,278,820</b>
<b>Equity</b>						
Argentina	5.4	1,844	3.8	744	22.5	12,892
Brazil	15.3	92,045	14.0	21,801	22.3	31,338
Chile	3.1	4,447	3.9	1,917	8.5	4,555
Colombia	1.7	732	2.5	150	5.2	704
Mexico	24.6	84,620	21.7	26,279	28.3	34,965
Peru	1.8	925	7.4	452	24.5	2,341
Venezuela	7.9	971	7.6	348	24.2	1,975
<b>Latin America 2/</b>	<b>15.1</b>	<b>185,584</b>	<b>14.3</b>	<b>51,691</b>	<b>21.9</b>	<b>88,770</b>
<b>Emerging Asia 2/</b>	<b>7.0</b>	<b>479,346</b>	<b>5.9</b>	<b>117,305</b>	<b>4.7</b>	<b>68,293</b>
<b>Industrial countries 2/</b>	<b>13.8</b>	<b>2,999,187</b>	<b>11.4</b>	<b>1,214,092</b>	<b>10.5</b>	<b>936,430</b>
<b>Domestic and international long-term debt securities</b>						
Argentina	6.6	9,135	2.9	3,635	25.6	25,675
Brazil	2.3	18,211	3.0	11,652	4.8	20,318
Chile	16.2	8,092	9.7	4,030	9.0	3,571
Colombia	8.4	5,096	8.2	2,610	23.9	3,458
Mexico	5.9	23,812	10.1	22,493	24.2	28,786
Peru	16.0	2,838	14.4	1,221	17.6	1,203
Venezuela	2.2	5,125	11.1	3,307	18.6	5,852
<b>Latin America 2/</b>	<b>4.2</b>	<b>72,309</b>	<b>5.7</b>	<b>48,948</b>	<b>12.1</b>	<b>88,863</b>
<b>Emerging Asia 2/</b>	<b>1.0</b>	<b>36,063</b>	<b>1.2</b>	<b>14,884</b>	<b>5.0</b>	<b>35,505</b>
<b>Industrial countries 2/</b>	<b>2.5</b>	<b>841,877</b>	<b>2.3</b>	<b>391,057</b>	<b>2.4</b>	<b>342,390</b>

# Brazil and Mexico flow correlations

Table 4. Correlations of Brazil and Mexico bond and equity quarterly inflows.

1991–2006								
	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.21	0.24	0.27	0.60	0.32	0.27	0.12
BRA BOP bond	0.21	1.00	0.10	0.16	0.11	0.15	0.08	0.26
MEX BOP equity	0.24	0.10	1.00	0.08	0.42	0.34	0.63	0.09
MEX BOP bond	0.27	0.16	0.08	1.00	0.21	0.08	0.11	0.36
BRA US equity	0.60	0.11	0.42	0.21	1.00	0.29	0.24	0.09
BRA US bond	0.32	0.15	0.34	0.08	0.29	1.00	0.16	-0.06
MEX US equity	0.27	0.08	0.63	0.11	0.24	0.16	1.00	0.30
MEX US bond	0.12	0.26	0.09	0.36	0.09	-0.06	0.30	1.00
1991–1998								
	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.41	0.31	0.35	0.75	0.38	0.28	0.36
BRA BOP bond	0.41	1.00	-0.13	-0.13	0.26	0.03	0.22	0.22
MEX BOP equity	0.31	-0.13	1.00	0.26	0.48	0.20	0.69	0.44
MEX BOP bond	0.35	-0.13	0.26	1.00	0.43	-0.02	0.15	0.36
BRA US equity	0.75	0.26	0.48	0.43	1.00	0.11	0.09	0.54
BRA US bond	0.38	0.03	0.20	-0.02	0.11	1.00	-0.05	-0.13
MEX US equity	0.28	0.22	0.69	0.15	0.09	-0.05	1.00	0.45
MEX US bond	0.36	0.22	0.44	0.36	0.54	-0.13	0.45	1.00
1999–2004								
	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.41	0.15	0.29	0.48	0.49	0.37	-0.27
BRA BOP bond	0.41	1.00	0.09	0.26	0.30	0.29	0.11	0.03
MEX BOP equity	0.15	0.09	1.00	0.10	0.19	0.24	0.53	-0.13
MEX BOP bond	0.29	0.26	0.10	1.00	0.28	0.38	0.36	0.40
BRA US equity	0.48	0.30	0.19	0.28	1.00	0.25	0.30	0.17
BRA US bond	0.49	0.29	0.24	0.38	0.25	1.00	0.11	-0.03
MEX US equity	0.37	0.11	0.53	0.36	0.30	0.11	1.00	0.00
MEX US bond	-0.27	0.03	-0.13	0.40	0.17	-0.03	0.00	1.00
2005–2006								
	BRA BOP equity	BRA BOP bond	MEX BOP equity	MEX BOP bond	BRA US equity	BRA US bond	MEX US equity	MEX US bond
BRA BOP equity	1.00	0.33	0.51	0.07	0.19	0.07	0.40	-0.25
BRA BOP bond	0.33	1.00	0.44	0.45	-0.04	0.42	0.26	0.56
MEX BOP equity	0.51	0.44	1.00	-0.50	0.49	0.48	0.69	0.05
MEX BOP bond	0.07	0.45	-0.50	1.00	-0.70	0.02	-0.58	0.42
BRA US equity	0.19	-0.04	0.49	-0.70	1.00	0.27	0.58	-0.57
BRA US bond	0.07	0.42	0.48	0.02	0.27	1.00	0.40	0.05
MEX US equity	0.40	0.26	0.69	-0.58	0.58	0.40	1.00	0.21
MEX US bond	-0.25	0.56	0.05	0.42	-0.57	0.05	0.21	1.00

Source: IMF staff calculations.

# Equity and Bond flows

- \$ Variance-covariance matrix for Brazil and Mexico flows show that in general equity and bond flows have been positively correlated.
- \$ Equity inflows from the U.S. to Brazil and Mexico have become more correlated over time.
- \$ In the last two years total bond and equity flows to Mexico have become negatively correlated.

## Impact of US financial conditions and flows: related literature

- \$ See survey by Bannister, Cerisola et al.(2007)—very little on flows.
- \$ Most closely related paper is that of Bekaert, Harvey, and Lumsdane (BHL JIMF 2002). They estimate VARs for a variety of EMs, using short term interest rates, equity flows, dividend yields, and equity returns.
- \$ Building on this, our VARs add a global risk aversion measure (the VIX), bond flows, and domestic fundamentals.

# VAR Methodology

Variables in the VAR can be divided in four types:

## \$ U.S. Variables:

- VIX
- Fed Funds interest rate
- U.S. industrial production growth

## \$ Domestic Macro Variables:

- Domestic industrial production growth
- Domestic short-term interest rate

## \$ Financial flows variables:

- Net bond and equity flows from U.S. to L.A.

## \$ Domestic financial variables:

- Dividend yield
- Equity return (minus S&P500 return)

Cross border listings also included as exogenous variable

# What drives U.S. financial flows into L.A.?

## \$ Questions:

- What is the impact of U.S. vis-à-vis domestic developments on flows?
- What is the role of risk aversion and how it compares to other factors typically considered in the literature?
- Is there evidence of momentum trading or return chasing?

## \$ Results:

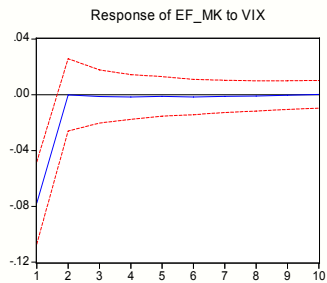
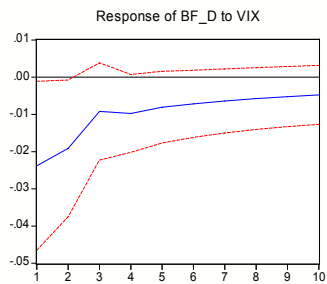
Impulse responses and variance decompositions suggest that:

- VIX is an important determinant of flows, although less so in Chile;
- U.S. ind. production is also relevant, especially in Chile;
- In Chile, domestic variables are relevant determinants of flows.
- Weak evidence of momentum trading.

# Responses of Flows to VIX Shocks

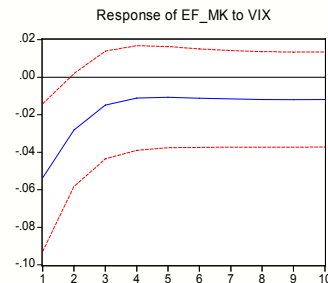
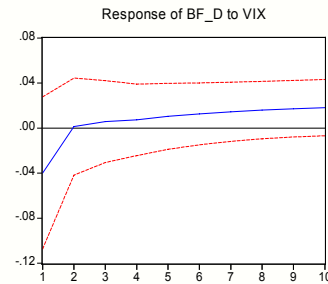
## Brazil

Response to Cholesky One S.D. Innovations  $\pm$  2 S.E.



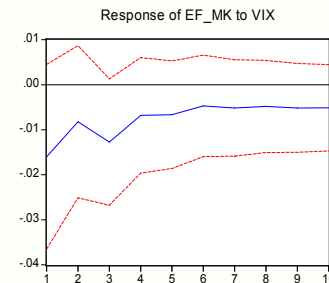
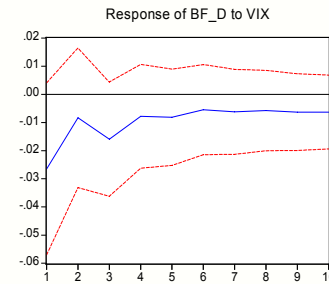
## Mexico

Response to Cholesky One S.D. Innovations  $\pm$  2 S.E.



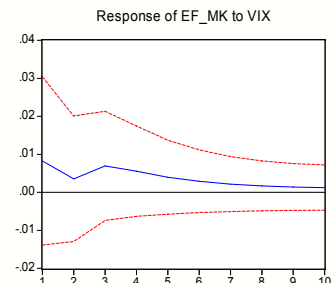
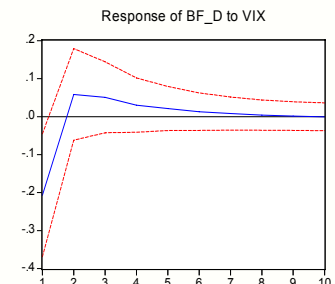
## Chile

Response to Cholesky One S.D. Innovations  $\pm$  2 S.E.



## Colombia

Response to Cholesky One S.D. Innovations  $\pm$  2 S.E.





# What can we learn from financial flows?

## \$ Questions:

- What is the effect of financial flows on domestic financial conditions?
- How does this compare to the effect of U.S. and domestic developments?
- Does the exclusion of flows from the VAR represent a significant misspecification?

## \$ Results:

- Responses of dividend yield and equity return to flows shocks not significant;
- VIX shocks lead to drop in equity return and persistent increase in dividend yield, except in Chile;
- The inclusion of flows do not affect other external shocks' transmission to domestic financial conditions.

# Responses of domestic financial conditions to VIX shocks (VARs with and without flows)

Brazil

Mexico

with flows

without flows

with flows

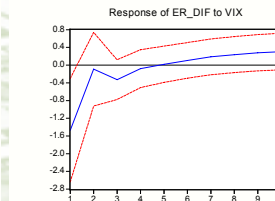
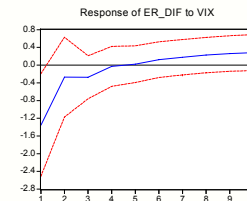
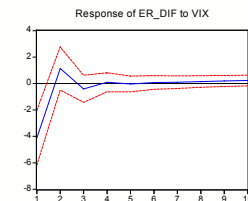
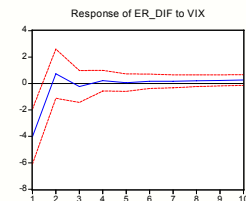
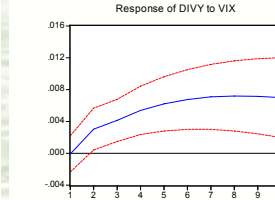
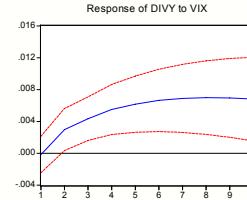
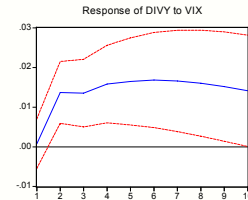
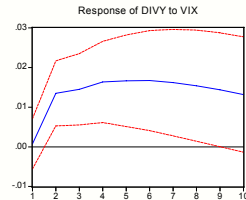
without flows

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.



Chile

Colombia

with flows

without flows

with flows

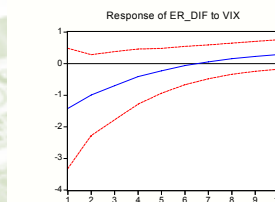
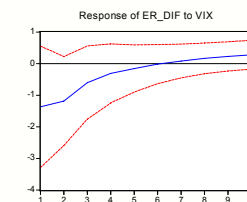
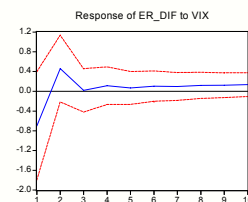
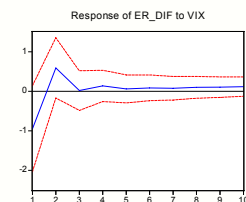
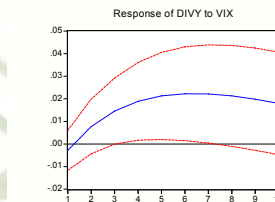
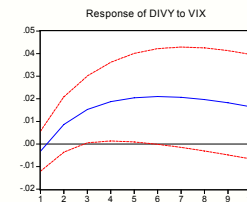
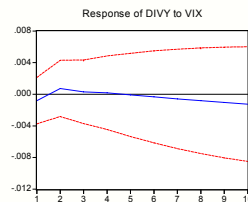
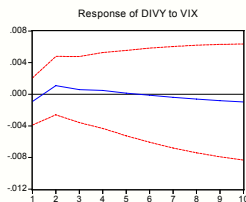
without flows

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.



# Conclusions and policy implications

- \$ While the degree has fallen since the Asian crisis, U.S. investors remain systemically important in some Latin American countries—especially the biggest ones.
- \$ VAR analysis suggests that external shocks are mainly transmitted through prices (especially changes in risk aversion) rather than flows.
- \$ The example of Chile suggests that trade and financial links make it difficult to “proof” financial systems from U.S. macro/financial developments, but that a strong sustained macro policy record can mitigate the impact of changes in risk aversion.