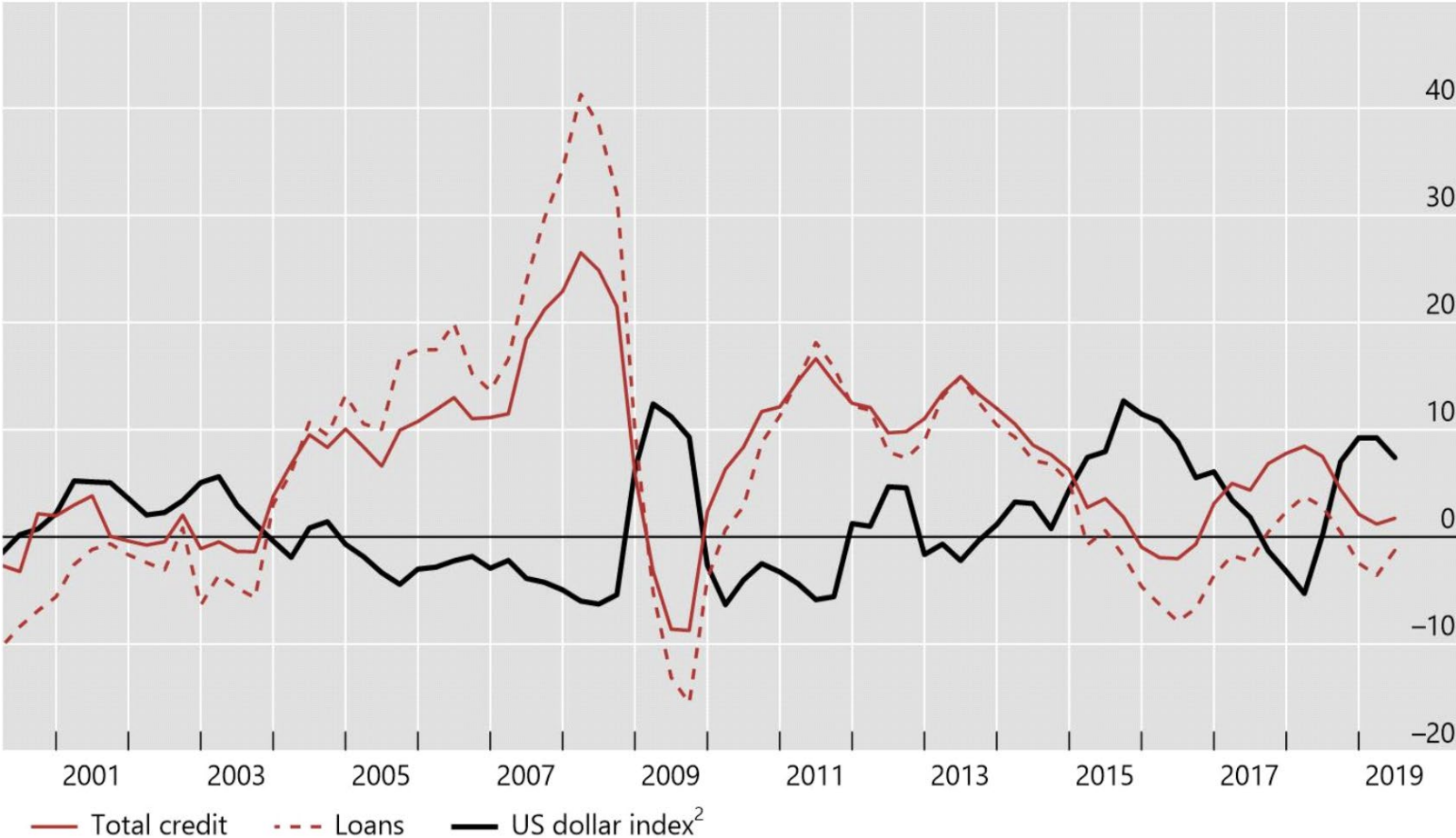


Dollar exchange rate as a credit supply factor: evidence from firm-level exports

Valentina Bruno Hyun Song Shin

12 December 2019

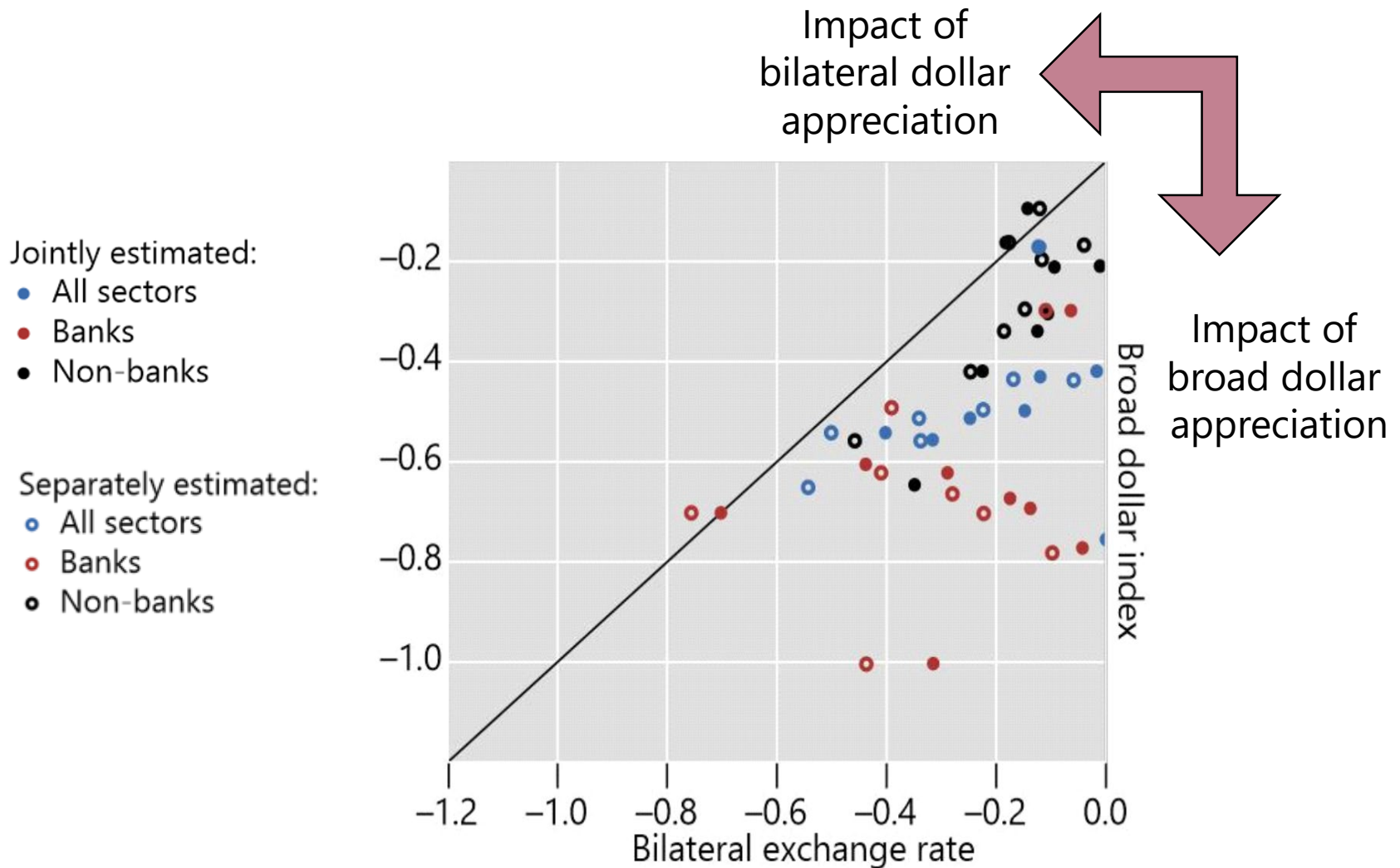
US dollar credit to EMEs¹



¹ Annual growth of US dollar-denominated credit to non-banks in EMEs. ² Annual growth of the Federal Reserve Board trade-weighted nominal dollar index, major EMEs.

Sources: Datastream; Dealogic; Euroclear; FRED; Thomson Reuters; Xtrakter Ltd; national data; BIS locational banking statistics; BIS effective exchange rate statistics; BIS calculations.

Regression coefficients for bank capital flows



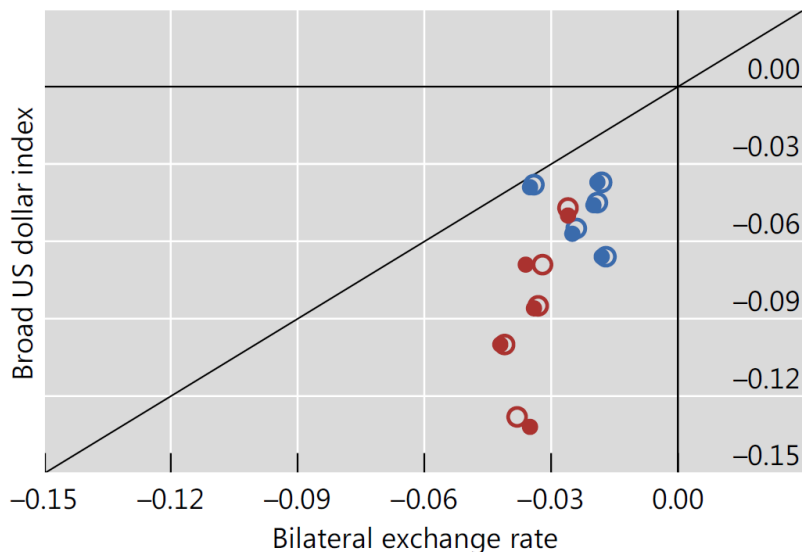
Estimated coefficients from panel regressions, US dollar.
Source: BIS calculations.

Broad dollar also shows up EME bond fund flows

- Depreciation of broad dollar index associated with
 - larger EME bond fund inflows
 - tighter EME bond spreads
- Impact of broad dollar index is stronger than bilateral dollar exchange rate
- Holds for both EME local currency and advanced economy currency bonds

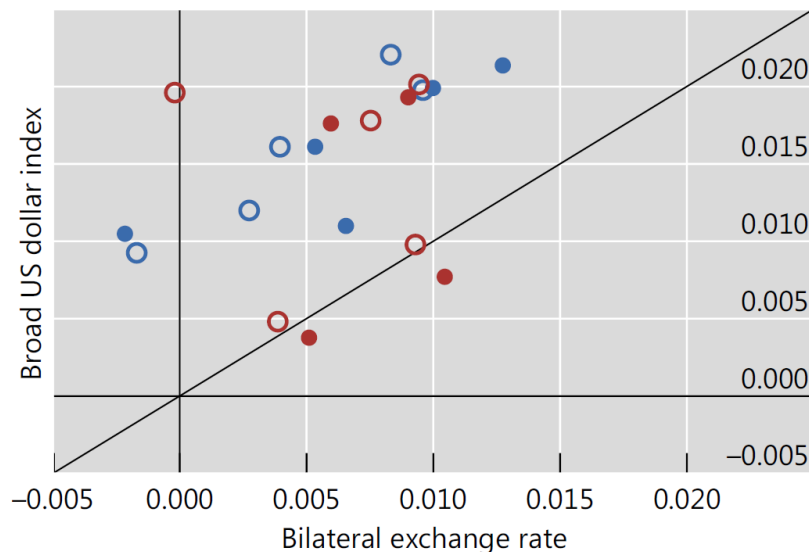
Panel regression coefficients for EME bond purchases and bond spreads

EME bond purchase regressions¹



- Hard currency fund, jointly estimated
- Hard currency fund, seperately estimated
- Local currency fund, jointly estimated
- Local currency fund, seperately estimated

EME bond spread regressions²



- Du-Schreger spreads, jointly estimated
- Du-Schreger spreads, seperately estimated
- Foreign currency spreads, jointly estimated
- Foreign currency spreads, seperately estimated

¹ The coefficient values on the vertical axis show the impact of 1 percent broad dollar appreciation on the ratio of the amount of purchase of a country's bonds divided by total net assets of a bond fund, while those on the horizontal axis the impact of bilateral dollar appreciation.

² The coefficient values on the vertical axis show the impact of 1 percent broad dollar appreciation on bond spreads, while those on the horizontal axis the impact of bilateral dollar appreciation.

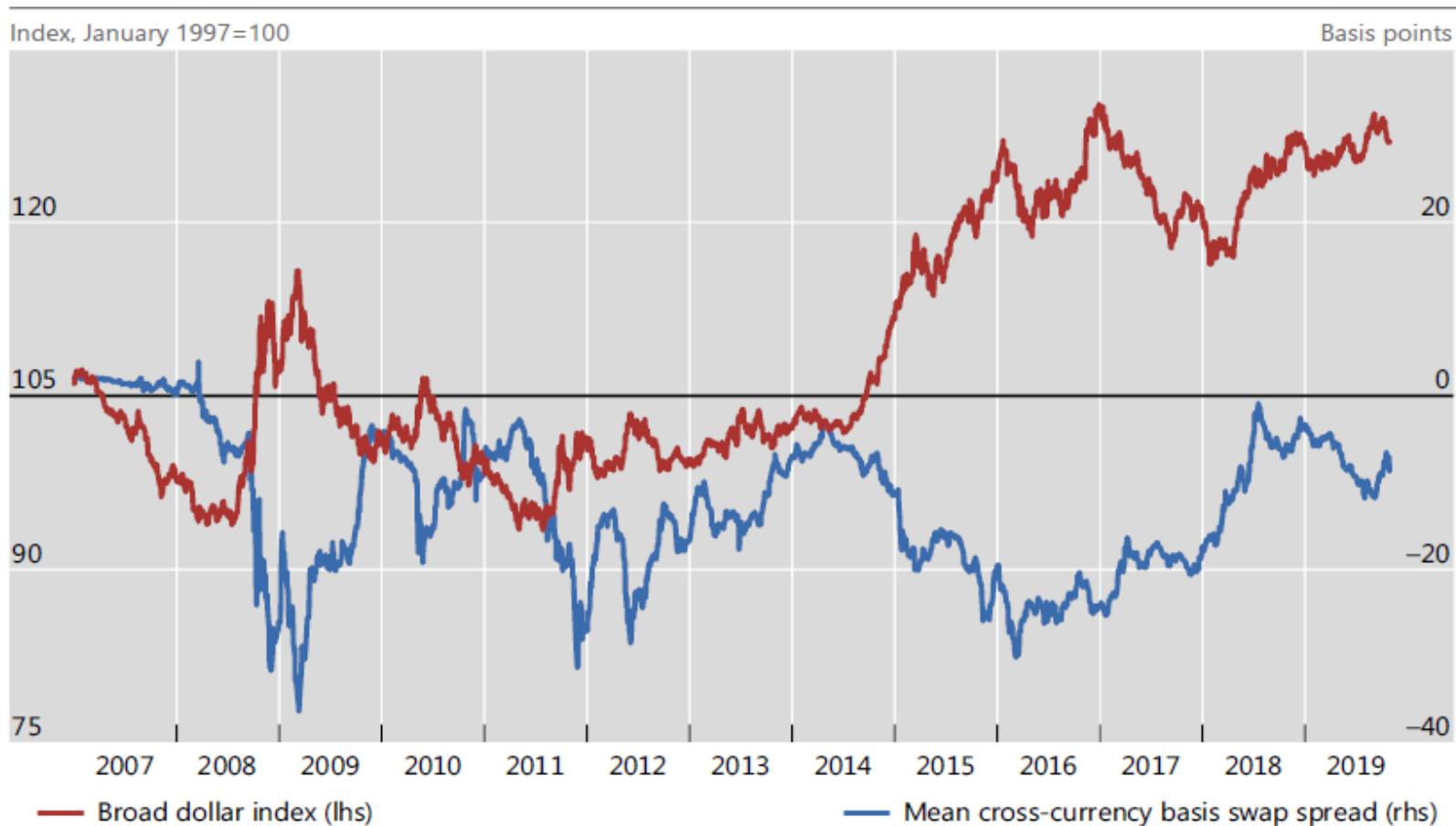
Sources: EPFR; BIS calculations.

Why broad dollar index?

- Consider global lender with diversified portfolio of dollar credits to borrowers around the world
- Some borrowers face currency mismatch or otherwise benefit from weaker dollar (eg, oil firm)
- Dollar depreciation against whole basket implies:
 - Reduction in credit risk for individual borrowers
 - Reduced tail risk for diversified loan portfolio
 - Reduced Value-at-Risk
 - Increased lending capacity given economic capital
- Bruno and Shin (RES 2015)

US dollar broad index and the cross-currency basis

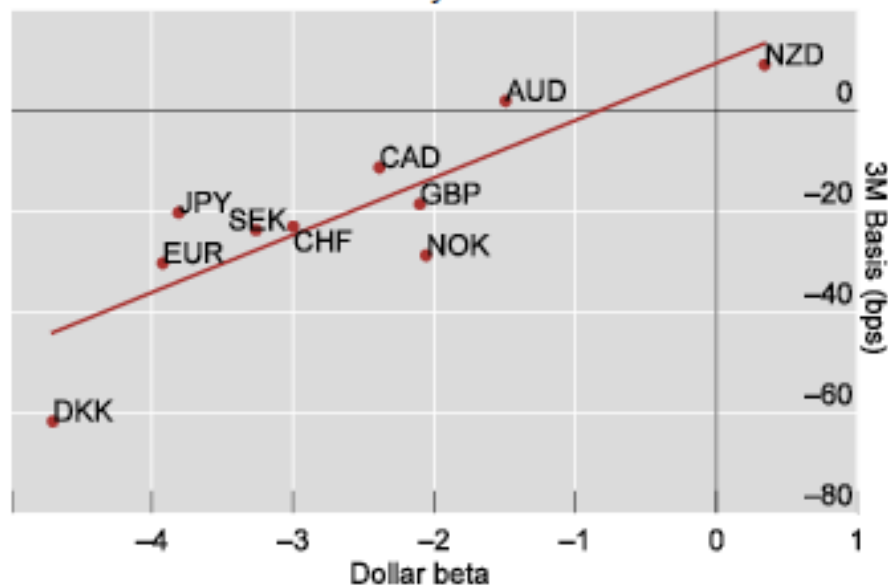
Avdjiev, Du, Koch and Shin (2019)



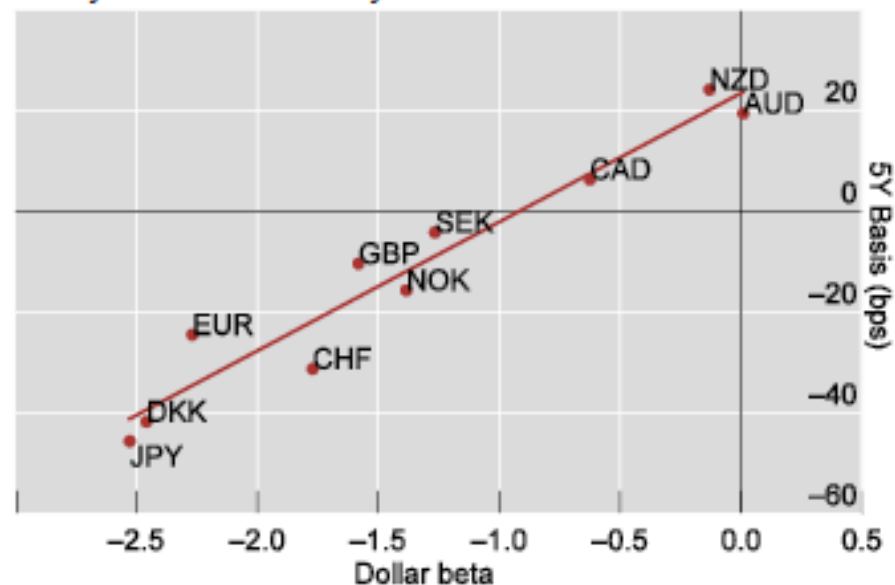
The red line shows the Federal Reserve Board's US trade-weighted broad dollar index, with higher values indicating a stronger US dollar. The blue line is the simple average of the five-year cross currency basis swap spreads for AUD, CAD, CHF, DKK, EUR, GBP, JPY, NOK, NZD and SEK vis-à-vis the US dollar.

Sources: Board of Governors of the Federal Reserve System; Bloomberg.

Three-month cross-currency basis vs dollar beta



Five-year cross-currency basis vs dollar beta

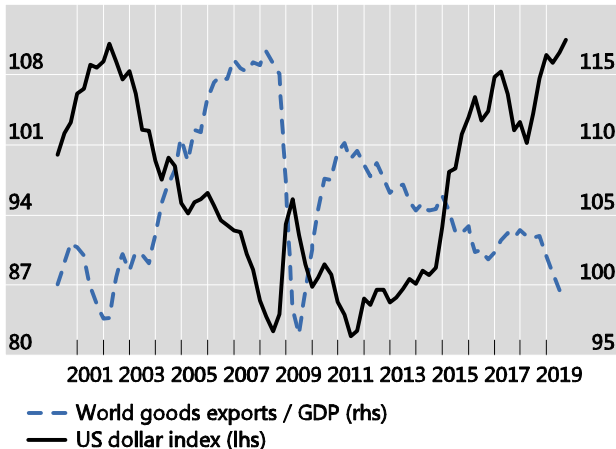


The vertical axis of the LHP shows the average three-month cross-currency basis expressed in basis points, while the horizontal axis indicates the regression beta of running daily regression for changes in the three-month cross-currency basis on changes in the broad US dollar index. The vertical axis of the RHP shows the average five-year cross-currency basis expressed in basis points, while the horizontal axis indicates the regression beta of running quarterly regression for changes in the five-year cross-currency basis on changes in the broad US dollar index.

Strong positive relationship between the average basis and

- the daily dollar beta (for 3M basis); correlation: 85% (LHP)
- the quarterly dollar beta (for 5Y basis); correlation: 97% (RHP)

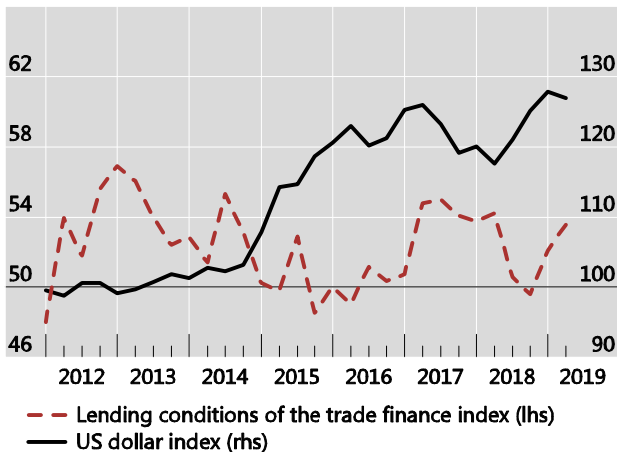
Ratio of world goods exports to world GDP



(Q1 2000 = 100)

- ▶ Merchandise exports to global output ratio fluctuates with dollar index

Trade finance lending conditions and the dollar index



- ▶ Bank lending conditions for trade finance are also procyclical

Exchange rates and trade: three channels

- ▶ **Competitiveness channel**

Local currency depreciation increases net exports
(Mundell-Fleming model)

Exchange rates and trade: three channels

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Local currency depreciation increases net exports
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- ▶ **Dollar invoicing channel**

Dollar depreciation increases net exports through enhanced competitiveness (Gopinath et al. (2019))

Exchange rates and trade: three channels

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Local currency depreciation increases net exports
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Dollar depreciation increases net exports through enhanced competitiveness (Gopinath et al. (2019))

- ▶ **Financial channel**

Dollar depreciation eases credit conditions
(Bruno and Shin (2015))

Easier credit conditions sustain greater GVC activity
(this paper)

Exchange rates and trade: three channels

- ▶ **Competitiveness channel**

Relevant exchange rate is the *trade-weighted exchange rate*

Exchange rates and trade: three channels

- ▶ **Competitiveness channel**

Relevant exchange rate is the *trade-weighted exchange rate*

- ▶ **Dollar invoicing channel**

Relevant exchange rate is the bilateral dollar exchange rate vis-à-vis *the export destination country*

Exchange rates and trade: three channels

- ▶ **Competitiveness channel**

Relevant exchange rate is the *trade-weighted exchange rate*

- ▶ **Dollar invoicing channel**

Relevant exchange rate is the bilateral dollar exchange rate *vis-à-vis the export destination country*

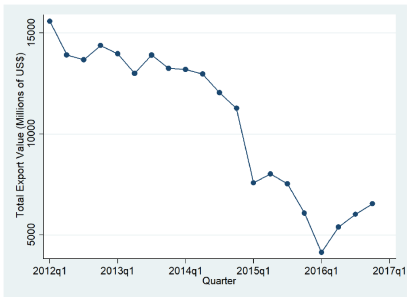
- ▶ **Financial channel**

Relevant exchange rate is the *broad dollar index*

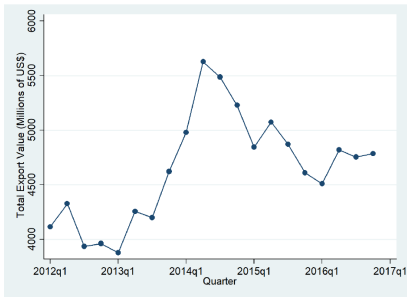
Why the broad dollar index?

- ▶ Consider global lender with diversified portfolio of dollar credits to borrowers around the world
- ▶ Some borrowers face currency mismatch or otherwise benefit from weaker dollar (eg, oil firm)
- ▶ Dollar depreciation against whole basket implies:
 - ▶ Reduction in credit risk for individual borrowers
 - ▶ Reduced tail risk for diversified loan portfolio
 - ▶ Reduced Value-at-Risk; spare lending capacity given economic capital
 - ▶ Easier dollar credit conditions

Bruno and Shin (RES 2015)



Firms with dollar bank credit



No dollar bank credit

	(1)	(2)	(3)	(4)	(5)	(6)
Δ USDbroad	-2.0797*** [0.3935]	-1.4940*** [0.4712]		-1.7030*** [0.3862]	-2.2439*** [0.4183]	-1.8634*** [0.5962]
Δ USD_destination			-1.3491*** [0.2892]	-0.9371*** [0.2801]		-0.8983*** [0.2983]
Δ USD_destination_orth					-0.9822*** [0.2796]	
Constant	0.0429*** [0.0100]	0.0396*** [0.0127]	0.0284*** [0.0092]	0.0443*** [0.0100]	0.0368*** [0.0101]	0.0471*** [0.0130]
Firm-product-destination FE	✓	✓	✓	✓	✓	✓
		Only USA				Excluded USA
Observations	196,543	74,826	195,697	195,697	191,972	120,871
R-squared	0.074	0.068	0.074	0.074	0.074	0.079

Credit needed to build production chain

		plants					debt attributable to wage costs at date t
		n	$n - 1$	\dots	2	1	
date t	1					w	$w(1+r)^n$
	2				w	w	$2w(1+r)^{n-1}$
	\vdots			\dots	w	w	\vdots
	k		w	\dots	w	w	$kw(1+r)^{n-k+1}$
	\vdots				\vdots	\vdots	\vdots
	n	w	w	\dots	w	w	$nw(1+r)$
	\vdots	\vdots	\vdots		\vdots	\vdots	

Working capital

Credit needed to build production chain

$$w \sum_{j=1}^n j (1+r)^{n-j+1}$$

First-order condition for n that maximises steady state profit:

$$n \simeq \frac{1}{r} \ln \left(\frac{\theta - w}{w(1+r)^2} + \frac{1}{1+r} \right)$$

For multinational firm, gross exports to output is:

$$\frac{\text{Gross sales}}{\text{Final good sale}} = \frac{n+1}{2}$$

This paper

- ▶ Stronger dollar tightens credit supply
- ▶ Firms' working capital cost ↑
- ▶ GVC activity ↓
- ▶ Exports ↓

Mechanism works not only during episodes of crises, but also in normal (non-crisis) times

35% of global trade is financed by the banking system, rest from firms' own resources (BIS, 2014)

80%+ denominated in dollars

Mexico as a laboratory for our study

- ▶ Exports: data from S&P Panjiva, product-volumes-destinations (4.6 million observations, 8 digit HS code, Mexico Customs)
- ▶ Loan level data: match borrowing firm and lending bank; listed firms reports to Bolsa Mexicana, Capital IQ
- ▶ Bank funding sources: Crane, Capital IQ, Fitch

Sample period: 2011q1- 2017q1

Broad dollar index appreciated $> 30\%$ after Taper Tantrum

Identification: disentangling credit supply effect

- ▶ Firm A borrows from Bank C, Firm B borrows from Bank D
- ▶ Both firms export the same product to the same country in the same period
- ▶ Bank C more reliant on USD funding than Bank D

A and B are exposed to the same demand shock but to different credit supply shocks following dollar appreciation

- ▶ Bank C deleverages more than Bank D
- ▶ Bank C reduces dollar credit to Firm A more than Bank D to Firm B
- ▶ Firm A's working capital is squeezed more; suffers larger decline in exports

Dollar credit exposure index for export firms

Cross-sectional variation in banks' funding structure:

MMF_b = reliance of bank b on US MMF funding

Cross-section variation in export firms' indirect exposure to dollar wholesale funding:

$$FMMF_i = \sum_b \omega_{ib} MMF_b$$

where ω_{ib} is share of credit received by firm i from bank b

Identification

- ▶ By matching borrowing firms and lending banks at the loan level, we construct a firm-level index that captures the firm exposure to banks with dollar funding
 - ▶ Higher the index, higher the exposure to banks with dollar funding
 - ▶ US dollar affects exports differentially across firms depending on the exposure of their banks to dollar funding
- ▶ Bilateral trade information allows control for non-credit shocks
 - ▶ Product-time, destinations-time, firm fixed effects; horseracing tests

Global banks

Bank Name	US MMF funding (\$ billions)	MMF/ST debt
	end 2012	end 2012
Non-US banks		
ING Bank	17.02	68.8%
Skandinaviska Enskilda	18.7	68.8%
Bank of Nova Scotia	52.53	57.4%
Toronto-Dominion Bank	36.97	56.9%
Credit Suisse	61.44	29.3%
Sumitomo Mitsui	54.15	28.8%
ABN Amro Bank	11.63	24.1%
Rabobank	28.47	21.9%
Credit Agricole	34.36	10.4%
Mitsubishi UFJ Financial Group	55.56	10.3%
Societe Generale	36.59	9.3%
Mizuho Financial Group	33.70	8.0%
Barclays Bank PLC	58.30	7.5%
BNP Paribas	51.38	7.4%
HSBC Holdings PLC	24.75	6.7%
Standard Chartered Bank	2.65	5.6%
Deutsche Bank AG	60.54	5.1%
UBS	13.07	3.0%
RBS	27.47	2.9%
Commerzbank AG	2.04	0.7%
Bank of China limited	0.55	0.5%
Banco Santander	0.12	0.1%

Bank Name	US MMF funding (\$ billions)	MMF/ST debt
	end 2012	end 2012
US banks		
Wells Fargo	17.21	24.9%
Bank of America	69.46	18.8%
The Bank of New York Mellon	3.45	13.7%
Citigroup	42.98	13.5%
JPMC	50.87	12.7%
Goldman Sachs	33.72	12.1%

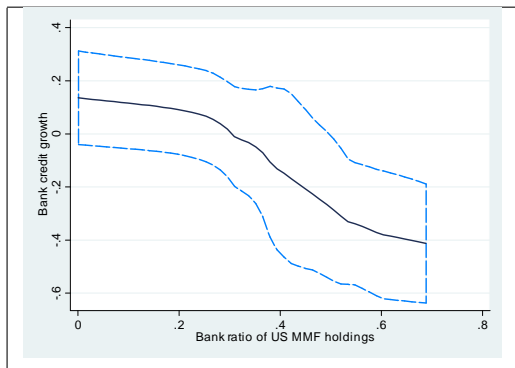
Credit supply and bank dollar funding

$$\Delta C_{ibt} = MMF_b \cdot \Delta USDBroad_t + \psi_i + \tau_t + \lambda_b + \varepsilon_{ibt}$$

- ▶ ΔC_{ibt} is annual change in credit from bank b to firm i from $t - 1$ to t
- ▶ MMF_b is US MMFs liabilities of bank b as ratio of total short-term debt in end-2012
“ MMF_b ” stands for “bank’s MMF exposure”
- ▶ $\Delta USDbroad_t$ is the log difference of the US dollar broad index
- ▶ $\psi_i + \tau_t + \lambda_b$ are firm, time, and bank fixed effects
- ▶ q1 2013 to q1 2016

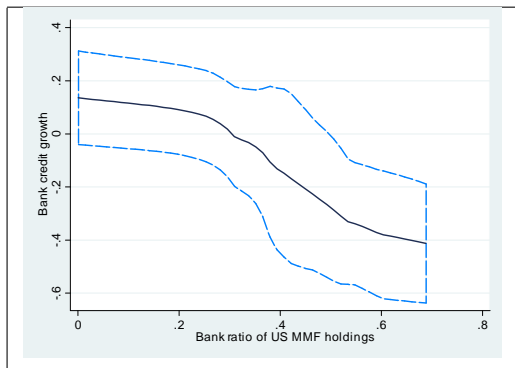
May 22, 2013: Taper Tantrum event, started a prolonged period of dollar appreciation (30%, until early 2016) and capital outflows after a period of weak dollar (2009-2012)

Credit supply and bank dollar funding



- ▶ Local polynomial smooth plot of the annual growth in bank credit over the period 2013-2016 as a function of the bank's exposure to MMF funding.

Credit supply and bank dollar funding



- ▶ Local polynomial smooth plot of the annual growth in bank credit over the period 2013-2016 as a function of the bank's exposure to MMF funding.
- ▶ **Dollar credit is strongly (negatively) correlated with bank's reliance on dollar funding**

Credit supply and bank dollar funding

	(1)	(2)	(3)	(4)
Dep. variable	ΔC_{ibt}	ΔC_{ibt}	ΔC_{ibt}	ΔC_{ibt}
Sample	Global	Global	All	All
MMF_b	0.7100 [1.0266]			
ΔUSD_{broad}	7.4818 [5.0571]			
$MMF_b \cdot \Delta USD_{broad}$	-35.3801** [13.1948]	-44.3683*** [15.5802]	-39.2631* [22.8845]	-37.2976* [21.9530]
Constant	-0.1719 [0.3906]	-1.0935*** [0.3886]	0.4842 [4.9303]	-0.0101 [0.1826]
# banks	28	28	129	134
Observations	300	300	799	891
R-squared	0.254	0.335	0.254	0.320
Firm FE	✓	✓	✓	
Firm controls			✓	
Time FE		✓	✓	
Bank FE		✓	✓	✓
Firm-Time FE				✓

Credit supply and bank dollar funding

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Sample	Global	Global	All	All
MMF_b	0.7100 [1.0266]			
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$MMF_b \cdot \Delta USD_{broad}$	-35.3801** [13.1948]	-44.3683*** [15.5802]	-39.2631* [22.8845]	-37.2976* [21.9530]

- ▶ **Banks exposed to dollar funding reduce credit more when the dollar appreciates**
- ▶ **Financial channel in action**

Exports and bank dollar funding

$$\Delta X_{ipdt} = \beta \cdot \Delta USDbroad_{t-1} \cdot FMMF_i + \varphi_{tp} + v_{td} + \psi_i + \varepsilon_{ipdt}$$

- ▶ ΔX_{ipdt} is the quarterly log difference of the volume of exports of product p to destination c by firm i , q3 2013-q1 2017
- ▶ $FMMF_i$ is a time invariant variable that captures the firm's exposure to banks more dependent on US dollar wholesale funding pre-Taper Tantrum computed as:
- ▶ $\varphi_{tp} + v_{td} + \psi_i$ are time-product, time-destination, and firm fixed effects

Exports and bank dollar funding

$$\Delta X_{ipdt} = \beta \cdot \Delta USD_{broad_{t-1}} \cdot FMMF_i + \varphi_{tp} + v_{td} + \psi_i + \varepsilon_{ipdt}$$

This specification allows us to compare the growth in exports of the same product and to the same destination across firms that borrow from banks with different exposure to dollar funding shocks.

$\Delta USD_{broad_{t-1}} \cdot FMMF_i$ captures sensitivity of the firm's credit to fluctuations in the broad dollar index

Exports and bank dollar funding

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Volume	Volume	Volume	Volume	Value	Value	TEU
$\Delta USDbroad * FMMF_i$	-4.6355*** [1.7300]	-10.8226*** [3.7800]	-8.7606*** [2.7663]	-9.3910** [4.2843]	-12.9056** [5.0267]	-11.1315*** [2.8496]	-10.2164*** [3.4685]
Constant	0.0000 [0.0012]	0.0056** [0.0026]	0.0043** [0.0019]	0.0082*** [0.0030]	0.0269*** [0.0035]	0.0286*** [0.0017]	0.0046* [0.0023]
Time-destination FE	✓		✓	✓	✓		✓
Time-product FE		✓	✓	✓	✓	✓	✓
Product FE	✓						
Destination FE		✓					
Firm FE	✓	✓	✓	✓	✓	✓	✓
Sample	All	All	All	USA dest excluded	All	US dest only	All
Observations	58,901	50,363	50,174	37,781	50,174	15,395	49,405
R-squared	0.100	0.238	0.307	0.320	0.266	0.069	0.305

Exports and bank dollar funding

Dependent variable	(3) Volume	(4) Volume	(5) Value
$\Delta USDbroad * FMMF_i$	-8.7606*** [2.7663]	-9.3910** [4.2843]	-12.9056** [5.0267]
Constant	0.0043** [0.0019]	0.0082*** [0.0030]	0.0269*** [0.0035]
Time-destination FE	✓	✓	✓
Time-product FE	✓	✓	✓
Firm FE	✓	✓	✓
Sample	All	USA dest excluded	All
Observations	50,174	37,781	50,174
R-squared	0.307	0.320	0.266

Exports and bank dollar funding

Dependent variable	(3) Volume	(4) Volume	(5) Value
$\Delta USDbroad * FMMF_i$	-8.7606*** [2.7663]	-9.3910** [4.2843]	-12.9056** [5.0267]
Constant	0.0043** [0.0019]	0.0082*** [0.0030]	0.0269*** [0.0035]

Firms that are exposed to dollar-funded banks (who suffer a decline in credit supply) experience a slowdown in exports

On average, following a one percent US broad dollar appreciation, firms in the upper $FMMF_i$ tercile suffer a reduction of export volumes by 1% more than firms in the lower $FMMF_i$ tercile on a quarterly basis.

Exports, GVCs, and bank dollar funding

Sample	(1) Intermediate goods	(2) Consumption goods
$\Delta USD_{broad} * FMMF_i$	-3.8072** [1.6089]	4.7559 [23.8856]
Time-destination FE	✓	✓
Product FE	✓	✓
Firm FE	✓	✓
Constant	0.0034** [0.0014]	-0.0049 [0.0080]
Observations	35,395	18,146
R-squared	0.112	0.158

Exports of intermediated goods of firms that are exposed to dollar-funded banks experience a slowdown in exports

Intermediate goods require higher financing needs and are more negatively affected by tighter financial conditions

Invoicing versus Financial channel

- ▶ **Bruno and Shin (2015) Financial Channel:**

a broad-based appreciation of the dollar \uparrow the tail risk in the bank's global credit portfolio, bank credit supply \downarrow , firms' working capital costs \uparrow , exports \downarrow

Δ **USDbroad** is the relevant exchange rate

Invoicing versus Financial channel

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a broad-based appreciation of the dollar \uparrow the tail risk in the bank's global credit portfolio, bank credit supply \downarrow , firms' working capital costs \uparrow , exports \downarrow

Δ **USDbroad** is the relevant exchange rate

▶ **Gopinath et al (2019) Invoicing Channel:**

prices are sticky and invoiced in USD
if the destination country weakens against the US dollar,
exports \downarrow

Δ **USD_destination** - bilateral dollar exchange rate against the destination country is the relevant exchange rate

Invoicing versus Financial channel

Dep variable:	(1)	(2)	(3)	(4)
Δ Exports	Financial channel	USA only	Invoicing channel	Financial + Invoicing
Δ USD broad	-2.0797*** [0.3935]	-1.4940*** [0.4712]		-1.7030*** [0.3862]
Δ USD_ <i>destination</i>			-1.3491*** [0.2892]	-0.9371*** [0.2801]
Constant	0.0429*** [0.0100]	0.0396*** [0.0127]	0.0284*** [0.0092]	0.0443*** [0.0100]
Firm-product- destination FE	✓	✓	✓	✓
Observations	196,543	74,826	195,697	195,697
R-squared	0.074	0.068	0.074	0.074

Period: q1 2011 - q1 2017

Both channels are at work, but the magnitude of the financial channel is bigger (elasticity of exports declines by 1.7 vs. 0.9)

Invoicing versus Financial channel

Dep variable: Δ Exports	(5)	(6)
Sample of firms	Dollar funded	Dollar funded
Channel	Invoicing	Invoicing+Financial
Δ USD broad		-2.4855***
		[0.9043]
Δ USD_ <i>destination</i>	-1.0243**	-0.5025
	[0.4455]	[0.4436]
Constant	0.0041	0.0368
	[0.0198]	[0.0242]
Firm-product- destination FE	✓	✓
Observations	49,323	49,323
R-squared	0.076	0.077

Period: post Taper Tantrum

The financial channel dominates in the case of dollar-funded firms that are subject to dollar credit supply shocks

Conclusions

- ▶ Dollar exchange rate is an important determinant of exports, but *in the opposite direction* to the trade channel of exchange rate
- ▶ Firms exposed to banks more dependent on US dollar funding suffer a larger negative effect on exports following an appreciation of the dollar
- ▶ Dollar exchange rate feeds through bank credit supply to the exporting firm
 - ▶ More pronounced for firms with long GVCs
- ▶ *What happens in financial markets doesn't always stay in financial markets*
- ▶ Dollar exchange rate is barometer of dollar credit conditions

Total bank credit

Year	Total credit (MXN billions)	From global banks (MXN billions)
2012	500.7	248.9
2013	501.3	225.8
2014	477.3	175.4
2015	426.3	164.7
2016	460.5	144.6

Firm descriptive statistics

	2012		2016	
	mean	median	mean	median
No of lenders	4.7	3	3.7	2
Volume exports (Mil kg)	2554	73.8	2667.7	46.4
Value exports (Mil USD)	1274.5	42.2	672.7	27.2
No of destinations	21.3	12	19.4	12
No of products	176.2	55.5	162.4	50
No of products-destinations	480.2	103	456.8	86

Exports and MMFs



Bank credit post Taper Tantrum

	(1)	(2)	(3)	(4)	(5)	(6)
Period	2013-14	2013-14	2013-14	2013-16	2013-16	2013-16
Sample	Global banks	All banks	All banks	Global banks	Global banks	All banks
MMF_b	-2.1255*** [0.6192]			-2.2291*** [0.5759]	-2.1972*** [0.6684]	-0.9218** [0.4069]
<i>Global</i>		-0.0617 [0.1600]	0.1429 [0.1909]			
$MMF_b \cdot Global$			-1.3554** [0.6105]			
Constant	0.5471*** [0.1482]	0.2870*** [0.0894]	0.2878*** [0.0896]	-0.0109 [0.1259]	0.1819 [0.1925]	-0.2014** [0.0887]
# banks	27	121	121	22	28	134
Observations	123	355	355	212	300	891
R-squared	0.410	0.136	0.144	0.292	0.265	0.123
US banks	✓	✓	✓		✓	✓
Firm FE	✓	✓	✓	✓	✓	✓
Time FE				✓	✓	✓

Bank-specific ratios

	(5)	(6)
Dep. variable	ΔC_{ibt}	ΔC_{ibt}
Sample	Global	Global
Liquidity ratio	-1.0677	
	[2.3022]	
Liquidity ratio $\cdot \Delta USD_{broad}$	7.6093	
	[29.8768]	
Capital ratio		-0.0423
		[0.0822]
Capital ratio $\cdot \Delta USD_{broad}$		0.3305
		[0.8167]
Constant	0.3421	0.3446
	[0.7779]	[0.9638]
# banks	27	25
Observations	296	242
R-squared	0.232	0.253
Firm FE	✓	✓
Time FE	✓	✓

Other shocks?

	(1)	(2)	(3)	(4)	(5)
<i>MMF_b</i>	-1.6095***	4.4139	-2.2103***	-1.8097***	-0.9230
	[0.5237]	[7.1407]	[0.6313]	[0.5636]	[2.2412]
Oil price	0.0016				
	[0.0083]				
<i>MMF_b</i> ·Oil price	0.0277				
	[0.0277]				
GDP		-0.2516			
		[0.7559]			
<i>MMF_b</i> ·GDP		-2.2054			
		[2.5482]			
Δ USD_MX			-0.0278		
			[0.0191]		
<i>MMF_b</i> · Δ USD_MX			0.0029		
			[0.0728]		
VIX				0.0058	
				[0.0156]	
<i>MMF_b</i> ·VIX				-0.0754	
				[0.0474]	
Term spread					0.5679**
					[0.2343]
<i>MMF_b</i> ·Term spread					-0.7477
					[1.0276]
Constant	0.4509**	1.1729	0.7782***	0.3891***	-0.4790
	[0.1692]	[2.2024]	[0.2001]	[0.1324]	[0.4802]
Observations	300	300	300	300	300
R-squared	0.254	0.254	0.263	0.252	0.266

Firm characteristics

	(1)	(2)	(3)	(4)	(5)	(6)
	Low	High	High	Oil&Energy	All	All
Sample of firms	mismatch	mismatch	mismatch	excluded		
MMF_b	1.5372	1.9701	1.7955	0.6573		
	[1.6390]	[1.6272]	[1.6394]	[1.2252]		
$MMF_b \cdot \Delta USDbroad$	-22.7086	-42.5343*	-39.6246*	-40.2896***		
	[19.0068]	[21.5767]	[21.5695]	[10.6985]		
Global credit					0.3830	0.4788
					[0.5603]	[0.8133]
Global credit $\cdot \Delta USDbroad$					8.9960	15.1612
					[8.6433]	[12.3918]
Constant	-0.1655	-0.2507**	0.2137**	0.0257	-0.5650***	-0.5581**
	[0.1434]	[0.0959]	[0.0823]	[0.2388]	[0.1546]	[0.2177]
All banks	✓	✓	✓			
Global banks				✓		
Non-global banks					✓	
Mexican banks						✓
# banks	79	104	104	22	106	25
# firms	23	23	23	36	51	48
Observations	358	500	500	240	591	303
R-squared	0.099	0.138	0.201	0.326	0.151	0.248

Exports and GVCS

Sample	(1) Intermediate goods	(2) Consumption goods	(3) Dollar funded	(4) Non-dollar funded	(5) All	(6) Dollar funded
$\Delta USDbroad * FMMF_i$	-3.8072** [1.6089]	4.7559 [23.8856]				
$\Delta USDbroad$ * <i>Intermediate</i>			-2.9328*** [0.7578]	0.7154 [1.7386]		
$\Delta USDbroad$ * <i>Working Capital</i>					-7.2279* [4.1634]	-10.5567* [6.3026]
Time-destination FE	✓	✓	✓	✓	✓	✓
Time-product FE					✓	✓
Product FE	✓	✓	✓	✓		
Destination FE						
Firm FE	✓	✓	✓	✓	✓	✓
Constant	0.0034** [0.0014]	-0.0049 [0.0080]	0.0243*** [0.0078]	0.0158 [0.0112]	0.0066 [0.0050]	0.0029 [0.0083]
Observations	35,395	18,146	43,706	9,710	49,600	40,387
R-squared	0.112	0.158	0.112	0.269	0.308	0.313

Exports and firm characteristics

	(1)	(2)	(3)	(4)	(5)
$\Delta USDbroad-FMMF_i$	-6.6003*** [2.1003]	-7.1665*** [2.4630]	-5.4440* [2.9871]	-10.7866* [5.6970]	-11.9176*** [3.4513]
Cash	0.3515 [0.3179]	0.3793 [0.4800]			
Size	-0.0175 [0.0947]	-0.0932 [0.1336]			
ROA	0.0160 [0.0118]	0.0070 [0.0129]			
Leverage	-0.0066* [0.0034]				
Distress		0.0416 [0.0446]			
$\Delta USDbroad-Export\%$			-0.0488 [5.2616]		
Trade costs					-0.0482 [0.1168]
$\Delta USDbroad-Trade\ costs$					-2.9846** [1.2638]
Constant	0.4850 [1.1194]	0.8062 [1.4424]	0.0097 [0.0465]	0.0049* [0.0028]	0.4162 [0.5571]
Time-destination FE	✓	✓	✓	✓	
Time-product FE	✓	✓	✓	✓	✓
Destination FE					✓
Firm FE	✓	✓	✓	✓	✓
Observations	45,960	35,077	36,669	41,428	44,851

Exports and other channels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\Delta USDbroad \cdot FMMF_i$		-4.7823			-11.6381***	-11.7539***	-9.1065***
		[4.7428]			[3.1341]	[3.9253]	[2.7280]
$\Delta US_rate \cdot FMMF_i$	-0.5680***	-0.4527	-0.6484***				
	[0.2023]	[0.2963]	[0.2112]				
$\Delta USDbroad_orth \cdot FMMF_i$			-9.6737**				
			[4.1395]				
$\Delta VIX \cdot FMMF_i$				-0.8244	-1.2249**		
				[0.5325]	[0.5809]		
$\Delta BDI \cdot FMMF_i$						-0.4392	
						[0.2810]	
$\Delta StockMarket \cdot FMMF_i$							0.0745**
							[0.0311]
Constant	0.0016	0.0042**	0.0031**	-0.0023***	0.0055***	0.0073**	0.0013
	[0.0012]	[0.0019]	[0.0014]	[0.0004]	[0.0020]	[0.0032]	[0.0021]
Observations	50,174	50,174	50,174	50,174	50,174	50,174	50,174
R-squared	0.307	0.307	0.307	0.307	0.307	0.307	0.307

Financial and Trade Channel

	(1)	(2)	(3)	(4)	(5)	(6)
Destination Sample	USA	USA	EU	EU	EU	Canada
Bilateral	MX-USD	MX-USD	MX-Eur	MX-Eur	MX-Eur	MX-CAD
	orthog	orthog				
$\Delta USDbroad$		-1.5372*** [0.4729]		-4.0668*** [1.0463]		-3.2823*** [1.1270]
$\Delta Bilateral$	-0.4415 [0.4182]	-0.5210 [0.4179]	-0.2126 [0.6329]	0.1047 [0.6296]		-0.2121 [0.5879]
$\Delta USDbroad * FMMF_i$					-16.0125* [8.7924]	
$\Delta Bilateral * FMMF_i$					-0.2226 [4.4105]	
Constant	0.0232** [0.0118]	0.0401*** [0.0127]	0.0261 [0.0244]	0.0666** [0.0261]	0.0444** [0.0182]	0.0528 [0.0341]
Firm-product-destination FE			✓	✓		
Firm-product FE	✓	✓				✓
Time-destinat. FE					✓	
Time-product FE					✓	
Firm FE					✓	
Observations	74,900	74,900	13,347	13,347	3,385	7,893
R-squared	0.067	0.067	0.079	0.083	0.535	0.064