Online Appendix to

"Monetary Policy Transmission through the Exchange Rate Factor Structure"

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(not for publication)

Appendix A. Forward Currency Flows

We analyze currency flows in forward contracts, which contain information about the amount of carry trade positions opened at a given point in time. Forwards differ by maturity, so by observing what maturity currency market participants most heavily trade we can gauge their response to monetary policy shocks. If participants trade longer maturity forwards, it indicates that they expect the foreign currency to experience a longer price appreciation. This ties directly to the expected duration of the impact of monetary policy shocks on exchange rates.

To test our hypothesis, we start by running regressions of forward currency flows on our monetary policy shock measure and by varying the maturity of the forward contracts. As before, we focus on the impact of investment funds as they are the largest directional group of traders:

$$OF(F_{i,t+m}) = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t+m}, \quad \text{(A.1)}$$

where $F_{i,t+m}$ is the forward contract associated with currency i that is opened at time t and matures m periods later, $OF(F_{i,t+m})$ is the corresponding forward currency flow, and X_i denotes our currency risk characteristics, that is, dollar and carry betas. In $\mathbf{W}_{i,t}$ we include the log change in the monthly average relative bid-ask spread and the spot exchange rate as controls.

Both the dependent variable and regressors are in standardized units for comparability across maturities. Table A.1 shows the responses for one-month, three-month, and one-year maturities. In line with the evidence for spot transactions, we find that for one-month contracts outflows from the US to foreign countries with positive carry betas pick up following a monetary expansion. Specifically, the interaction term for the carry beta confirms that riskier currencies receive disproportionately larger flows. In terms of economic magnitudes, a one standard deviation increase in the carry beta raises the forward flow by 0.03 of a standard deviation, constituting a substantially smaller economic effect compared to what we found for the spot market.

When looking at longer horizons, we see that the interaction coefficients for carry betas become insignificant at the three-month horizon before turning negative one year out. Thus, at the 12-month horizon, the carry trade positions begin to unwind as funds

reduce their exposure to foreign currencies. Contrarily, the interaction effects for dollar betas are insignificant at the one- and three-month horizon but are highly significant at the 12-month mark. Overall, these results are consistent with monetary policy shocks having an economic effect on forward flows that lasts for at least one month, but is not expected to last beyond twelve.

We interpret the results in this section in light of the evidence presented in Lustig et al. (2019), who find that carry trade returns are generally most pronounced at short maturities and typically decline with maturity. Of course, our results are not conclusive on how investment funds implement the carry trade as forward contracts are but one method to do so. Alternatively, funds can buy some foreign currency in the spot market (see Section IV.A) and use the proceeds to buy foreign government securities. That said, our results do indicate that funds prefer short-term forwards to take on currency risk and that they take on larger positions in riskier currencies.

Table A.1. Forward Currency Flows of Funds and the FX Factor Structure

	1M		**3M**		**12M**	
	(1)	(2)	(3)	(4)	(5)	(6)
carry $\text{beta}_{\text{i,t}}$	0.01		−0.05		−0.11	
	[0.07]		[0.68]		[1.44]	
dollar $\text{beta}_{\text{i,t}}$		−0.22		−0.19*		−0.08
		[1.15]		[1.87]		[0.70]
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$	0.03*		0.00		−0.07***	
	[1.94]		[0.34]		[4.97]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.10*		0.02		−0.15***
		[1.76]		[0.38]		[2.96]
$\Delta \log$ bid-ask $\text{spread}_{\text{i,t}}$	0.00	0.00	0.01	0.01	−0.01	0.01
	[0.19]	[0.06]	[0.70]	[0.59]	[0.25]	[0.17]
$\Delta \log S_{i,t}$	−0.03	−0.04	−0.02	−0.02	−0.02	−0.02
	[1.42]	[1.58]	[0.74]	[0.91]	[0.95]	[0.62]
Overall R^2 in %	61.08	62.21	62.80	63.58	32.39	32.11
Total # of Obs.	1242	1242	1242	1242	1242	1242
Avg. #Time periods	138	138	138	138	138	138
#Currencies	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes
Time series FE	yes	yes	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $OF(F_{i,t+m}) = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t+m}$, where $OF(F_{i,t+m})$ is the $m = 1, 3$ or 12 months forward flow by *funds* measured in \$bn in currency pair i in month t. $X_{\text{i,t}}$ denotes either the *carry* $\textit{beta}_{\text{i,t}}$ or *dollar* $\textit{beta}_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry and dollar factor, respectively. MPS_t is our monetary policy shock measure in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\mathbf{W}_{i,t}$ may include the following control variables: $\Delta \log$ *bid-ask spread*$_{\text{i,t}}$ is the log change in the monthly average relative bid-ask spread and $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from September 2012 to March 2024.

Appendix B. Additional Results

Table B.1. Summary Statistics — Systematic Currency Risk Measures

	Carry beta				Dollar beta			
	T1	T2	T3	ACF	T1	T2	T3	ACF
USDAUD	0.00	0.00	100.00	97.40	6.60	12.54	80.86	81.77
USDCAD	0.00	48.84	51.16	99.44	63.70	36.30	0.00	99.64
USDCHF	91.09	8.91	0.00	99.04	23.76	49.83	26.40	99.44
USDEUR	59.41	40.59	0.00	98.23	0.33	58.75	40.92	99.52
USDGBP	16.50	83.50	0.00	99.60	41.58	58.42	0.00	96.88
USDJPY	86.80	13.20	0.00	99.05	73.60	18.48	7.92	99.36
USDNOK	26.07	43.56	30.36	99.09	0.00	36.30	63.70	99.28
USDNZD	0.00	5.94	94.06	98.90	0.00	19.80	80.20	99.02
USDSEK	20.13	55.45	24.42	98.29	90.43	9.57	0.00	97.27

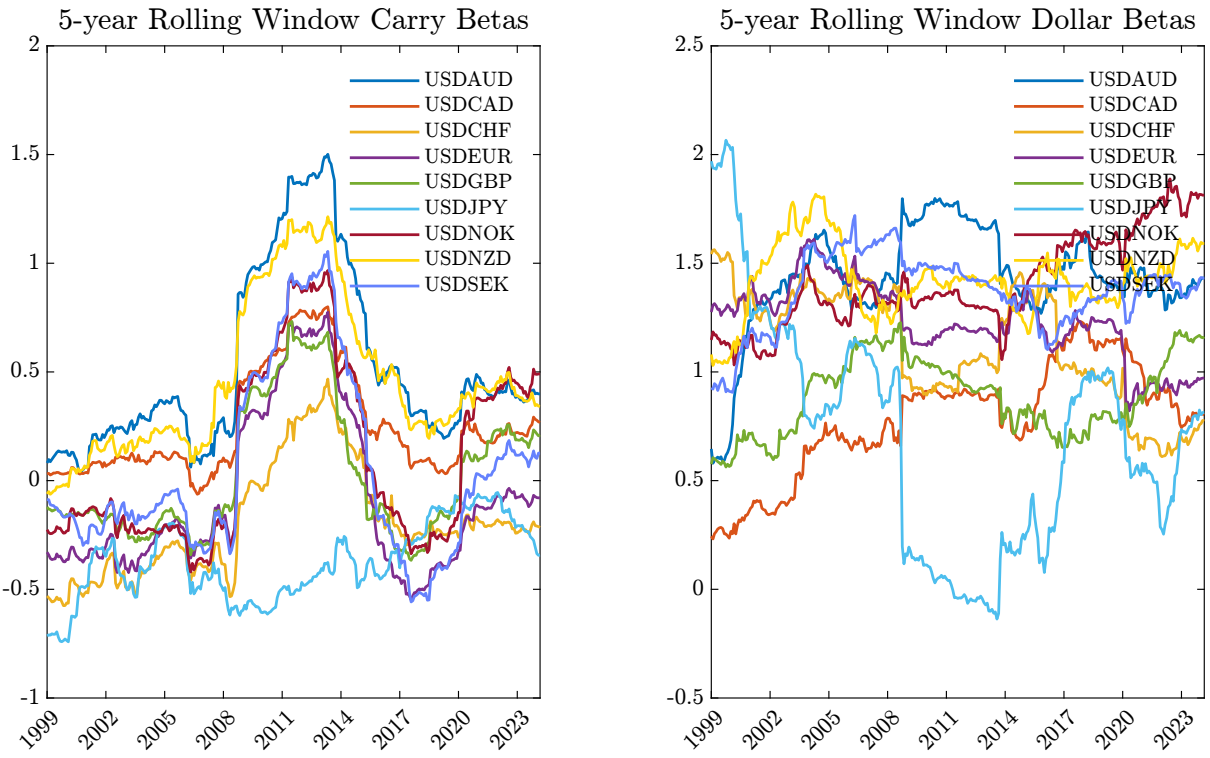
Note: This table reports various summary statistics of the systematic currency risk measures shown in the table headers. The columns labelled $T1$, $T2$, $T3$ show the relative frequency of a given currency pair being assigned to each of the three portfolio tertiles (i.e., $T1$, $T2$, $T3$). Reading example: around 87.13% of the time USDJPY is part of the first tertile $T1$ (low-risk-currencies) when sorting based on carry betas. The columns labelled *ACF* show the first-order autocorrelation coefficient of the risk measures themselves. A higher reading corresponds to higher levels of time-series persistence. The sample covers the period from January 1999 to March 2024.

Table B.2. Correlations of Dollar Betas, Carry Betas, and Gravity Variables

	January 1994 - December 1999		**January 2000 - August 2012**		**September 2012 - March 2024**	
	ρ(dollar, carry)	ρ(dollar, log(distance))	ρ(dollar, carry)	ρ(dollar, log(distance))	ρ(dollar, carry)	ρ(dollar, log(distance))
G10	26.19***	50.41***	27.87***	51.97***	45.37***	20.86***
	[3.12]	[12.51]	[3.98]	[12.14]	[6.52]	[5.31]
Total # of Obs.	648	648	1,368	1,368	1,251	1,251
All Countries	38.31***	31.14***	38.34***	25.35***	45.20***	−8.58***
	[4.09]	[8.31]	[6.61]	[7.10]	[10.79]	[2.68]
Total # of Obs.	1,795	1,795	3,791	3,791	3,808	3,808

Note: This table reports the Pearson correlation coefficient ρ between dollar betas (*dollar*), carry betas (*carry*), and the log of physical distance (*log(distance)*) between countries. All numbers are in percent. The row labelled *G10* is based on 9 currencies against the dollar, whereas *All* is based on a set of 28 currency pairs studied in Verdelhan (2018). The test statistics based on robust standard errors (Newey and West, 1994) are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample is monthly and spans from January 1994 to March 2024.

Figure B.1. Carry and Dollar Betas



Note: This figure plots carry and dollar betas across G10 currency pairs that are based on 60-month rolling window regressions of currency excess returns on the carry and dollar factor, respectively. The sample is monthly and covers the period from January 1999 to March 2024.

Table B.3. Currency Flows of Funds and Dollar Betas vs Gravity Variables

	(1)	(2)	(3)	(4)	(5)	(6)
MPS_t	−0.04					
	[0.43]					
dollar $\text{beta}_{\text{i,t}}$	0.13	0.12	0.09		0.09	
	[0.70]	[0.78]	[1.22]		[1.21]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_\text{t}$	0.08	0.07	0.07		0.10***	
	[1.13]	[0.93]	[1.18]		[3.85]	
carry $\text{beta}_{\text{i,t}}$						0.09
						[0.71]
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_\text{t}$						0.07***
						[6.04]
$\log(\text{Distance})_\text{i}$			−1.82**	0.09	−1.81**	−1.67**
			[2.25]	[1.29]	[2.25]	[2.15]
$\log(\text{Distance})_\text{i} \times \text{MPS}_\text{t}$				−0.31***	−0.31***	−0.27***
				[10.30]	[12.51]	[11.45]
Shared language_i			0.12		0.12	0.08
			[0.91]		[0.91]	[0.69]
Colonial link_i			−0.25***		−0.25***	−0.25***
			[5.18]		[5.27]	[5.09]
Shared border_i			−1.98**		−1.97**	−1.85**
			[2.41]		[2.41]	[2.36]
$\Delta \log$ bid-ask $\text{spread}_{\text{i,t}}$	−0.03	−0.03**	−0.02	−0.02***	−0.02	−0.01*
	[1.57]	[2.39]	[1.28]	[3.41]	[1.28]	[1.67]
$\Delta \log S_{i,t}$	−0.02	−0.06	−0.05	−0.07	−0.06	−0.05
	[0.52]	[0.95]	[0.86]	[1.10]	[1.06]	[0.92]
Overall R^2 in %	19.25	13.14	21.88	13.47	22.93	22.88
Avg. #Time periods	138	138	138	138	138	138
#Currencies	9	9	9	9	9	9
Currency FE	yes	no	no	no	no	no
Time series FE	no	yes	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $OF(S_{i,t}) = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t}$, where $OF(S_{i,t})$ is the order flow by *funds* in \$bn in currency pair i in month t. $X_{\text{i,t}}$ denotes either the *carry* $\text{beta}_{\text{i,t}}$ or *dollar* $\text{beta}_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry and dollar factor, respectively. *log(Distance)*$_\text{i}$ is the log of the physical distance between the US and a foreign country i. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\mathbf{W}_{i,t}$ may include the following control variables: $\Delta \log$ *bid-ask* $\text{spread}_{\text{i,t}}$ is the log change in the monthly average relative bid-ask spread and $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample covers the period from September 2012 to March 2024.

Table B.4. Monetary Policy Shocks and Systematic Currency Risk — Monthly

Dep. variable: dollar betas	USDAUD	USDCAD	USDCHF	USDEUR	USDGBP	USDJPY	USDNOK	USDNZD	USDSEK
Intercept (α)	0.062	0.046	−0.034	−0.009	0.068	−0.049	0.066	0.050	0.081
	[0.999]	[0.849]	[0.684]	[0.176]	[1.439]	[0.702]	[1.110]	[0.791]	[1.292]
MPS_t	−0.097	−0.133	0.231*	0.239	0.042	0.153	−0.077	−0.016	0.159*
	[0.993]	[1.444]	[1.670]	[1.416]	[0.543]	[1.528]	[0.787]	[0.199]	[1.737]
$\bar{R}^2$ in %	0.62	1.44	5.02	5.41	−0.16	2.02	0.27	−0.31	2.22
#Obs	302	302	302	302	302	302	302	302	302
Dep. variable: carry betas	USDAUD	USDCAD	USDCHF	USDEUR	USDGBP	USDJPY	USDNOK	USDNZD	USDSEK
Intercept (α)	0.007	0.007	0.023	0.009	0.013	0.047	0.026	0.025	0.001
	[0.103]	[0.115]	[0.360]	[0.112]	[0.181]	[0.669]	[0.398]	[0.358]	[0.015]
MPS_t	−0.160	−0.186	−0.094*	−0.147**	−0.194*	0.018	−0.227	−0.148**	−0.150*
	[1.535]	[1.586]	[1.695]	[1.992]	[1.855]	[0.553]	[1.387]	[2.355]	[1.661]
$\bar{R}^2$ in %	2.24	3.14	0.56	1.84	3.47	−0.30	4.85	1.88	1.94
#Obs	302	302	302	302	302	302	302	302	302

Note: This table reports results from *monthly* regressions of the form $\Delta y_{i,t} = \mu_i + \beta MPS_t + \epsilon_{i,t}$, where the dependent variable is the first-difference in either the dollar or the carry beta, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). Both dependent and independent variables are measured in units of standard deviations. The numbers inside the brackets are the corresponding test statistics based on robust standard errors (Newey and West, 1987), correcting for heteroskedasticity and serial correlation. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample covers the period from January 1999 to March 2024.

Table B.5. Summary Statistics — CLS Forward Flows

		USDAUD			USDCAD			USDCHF			USDEUR			USDGBP		
		1M	3M	12M	1M	3M	12M	1M	3M	12M	1M	3M	12M	1M	3M	12M
Corporates	Std.	0.52	0.45	0.42	0.80	0.73	0.70	0.57	0.57	0.57	4.78	3.81	3.49	1.99	1.41	1.23
	Share	0.26	0.36	0.36	0.19	0.28	0.29	1.01	0.96	0.91	1.99	2.25	2.19	0.73	1.03	0.99
Funds	Std.	3.55	3.03	2.63	15.90	15.55	15.50	4.98	3.11	2.46	16.72	13.26	11.46	12.08	6.37	5.89
	Share	3.62	6.11	10.56	7.40	8.44	10.19	1.04	6.09	8.72	5.53	9.48	13.48	3.47	7.63	12.51
NBFIs	Std.	0.49	0.46	0.46	1.02	1.03	1.03	1.48	1.45	1.46	1.51	1.54	1.46	1.78	1.56	1.56
	Share	3.59	3.40	3.20	2.08	2.03	1.99	4.90	4.42	4.22	3.51	3.30	3.21	4.22	3.82	3.61
Banks	Std.	4.54	4.18	4.02	31.49	31.31	31.40	5.13	4.71	4.24	17.32	15.43	14.70	10.21	8.24	8.06
	Share	92.54	90.12	85.87	90.34	89.25	87.53	93.06	88.53	86.15	88.97	84.97	81.12	91.58	87.52	82.89

		USDILS			USDJPY			USDNOK			USDNZD			USDSEK		
		1M	3M	12M	1M	3M	12M	1M	3M	12M	1M	3M	12M	1M	3M	12M
Corporates	Std.	0.03	0.03	0.03	1.27	0.96	0.94	0.12	0.12	0.12	0.06	0.04	0.04	0.19	0.18	0.18
	Share	0.14	0.14	0.14	0.76	0.89	0.86	0.51	0.45	0.40	0.03	0.08	0.08	1.35	1.31	1.19
Funds	Std.	0.21	0.28	0.15	5.45	5.17	4.85	0.76	0.69	0.58	1.78	1.26	1.18	1.11	1.05	0.98
	Share	1.57	1.63	3.52	5.01	6.33	8.72	4.55	6.51	12.58	0.03	3.61	7.15	13.11	15.57	20.56
NBFIs	Std.	0.08	0.07	0.07	1.02	0.98	0.96	0.10	0.10	0.10	0.15	0.15	0.15	0.12	0.12	0.12
	Share	0.86	0.85	0.83	3.38	3.27	3.17	3.66	3.26	2.98	3.94	3.72	3.48	3.45	2.95	2.82
Banks	Std.	1.46	1.38	1.42	7.55	7.12	6.54	1.74	1.59	1.57	1.81	1.78	1.69	1.93	1.71	1.63
	Share	97.43	97.38	95.52	90.85	89.51	87.25	91.29	89.78	84.04	96.00	92.59	89.29	82.08	80.18	75.43

Note: This table collects summary statistics for the CLS forward order flow data across three maturities: 1-month (*1M*), 3-month (*3M*), and 1-year (*12M*). The columns labelled *Std.* report the standard deviation of monthly order flows (buy volume minus sell volume) in $bn broken down by four categories of market participants, namely, corporates, funds, non-bank financials (NBFIs), and non-dealer banks (Banks). The rows labelled *Share* are computed based on the sum of buy and sell volume and reflect the relative share (summing up to 100% for each currency pair) in percent of trading volume associated with each of the four groups of market participants. The sample covers the period from September 2012 to March 2024.

Table B.6. Currency Flows of Funds and the FX Factor Structure — Ranking

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		0.05			0.05		0.05	
		[0.46]			[0.49]		[0.48]	
dollar $\text{beta}_{\text{i,t}}$			0.03			0.03	0.02	
			[0.25]			[0.32]	[0.19]	
UMVE $\text{beta}_{\text{i,t}}$				−0.15				−0.15
				[0.87]				[1.04]
MPS_{t}	0.03	−0.14**	−0.01	−0.07***				
	[0.86]	[2.07]	[0.24]	[6.08]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.20***			0.20***		0.34***	
		[2.71]			[2.61]		[4.19]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			0.06			0.05	−0.20***	
			[1.22]			[1.01]	[3.00]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.12***				0.12***
				[5.05]				[4.58]
$\Delta \log$ bid-ask $\text{spread}_{\text{i,t}}$		−0.03	−0.03	−0.02	−0.01	−0.02	0.02	−0.01
		[1.36]	[1.59]	[1.45]	[0.74]	[0.90]	[0.86]	[1.19]
$\Delta \log S_{i,t}$		−0.01	−0.02	−0.02	−0.02	−0.03	−0.02	−0.04
		[0.35]	[0.52]	[0.55]	[0.38]	[0.66]	[0.45]	[0.77]
Overall R^2 in %	18.76	19.71	18.89	20.21	31.04	30.22	31.44	31.57
Total # of Obs.	1251	1242	1242	1242	1242	1242	1242	1242
Avg. #Time periods	139	138	138	138	138	138	138	138
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $OF(S_{i,t}) = \mu_i + \alpha_t + \gamma X^R_{i,t} + \beta MPS_t + \varphi(X^R_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t}$, where $OF(S_{i,t})$ is the order flow by *funds* in \$bn in currency pair i in month t. $X^R_{i,t}$ denotes the cross-sectional rank of either the *carry* $\text{beta}_{\text{i,t}}$, *dollar* $\text{beta}_{\text{i,t}}$, or *UMVE* $\text{beta}_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\mathbf{W}_{i,t}$ may include the following control variables: $\Delta \log$ *bid-ask* $\textit{spread}_{\text{i,t}}$ is the log change in the monthly average relative bid-ask spread and $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample covers the period from September 2012 to March 2024.

Table B.7. Currency Flows of Funds and the FX Factor Structure — Scheduled FOMC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		0.02			−0.01		−0.15	
		[0.37]			[0.05]		[1.11]	
dollar $\text{beta}_{\text{i,t}}$			0.13			0.14	0.21	
			[0.71]			[0.77]	[1.01]	
UMVE $\text{beta}_{\text{i,t}}$				−0.18				−0.12
				[1.53]				[0.97]
MPS_{t}	0.02***	0.01	0.05**	0.07***				
	[5.51]	[0.93]	[2.21]	[2.84]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.02**			0.02**		0.07*	
		[2.38]			[2.24]		[1.77]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.04**			−0.04	−0.18*	
			[2.48]			[0.95]	[1.80]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.06***				0.07***
				[3.91]				[4.97]
$\Delta \log$ bid-ask $\text{spread}_{\text{i,t}}$		−0.02	−0.02	−0.01	−0.01	−0.02	−0.01	−0.01
		[1.34]	[1.47]	[1.24]	[0.62]	[0.55]	[0.63]	[0.50]
$\Delta \log S_{i,t}$		−0.02	−0.02	−0.03	−0.04	−0.04	−0.04	−0.04
		[0.47]	[0.47]	[0.81]	[0.70]	[0.63]	[0.67]	[0.89]
Overall R^2 in %	18.73	18.76	19.14	20.80	30.18	30.62	31.01	30.87
Total # of Obs.	1251	1242	1242	1242	1242	1242	1242	1242
Avg. #Time periods	139	138	138	138	138	138	138	138
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $OF(S_{i,t}) = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t}$, where $OF(S_{i,t})$ is the order flow by *funds* in \$bn in currency pair i in month t. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes around *scheduled* FOMC announcements following Kuttner (2001). $\mathbf{W}_{i,t}$ may include the following control variables: $\Delta \log$ *bid-ask spread*$_{\text{i,t}}$ is the log change in the monthly average relative bid-ask spread and $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample covers the period from September 2012 to March 2024.

Table B.8. Currency Flows of Funds and the FX Factor Structure — Weekly

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		0.02			0.04		0.00	
		[0.91]			[0.31]		[0.03]	
dollar $\text{beta}_{\text{i,t}}$			−0.01			0.08	0.08	
			[0.04]			[0.46]	[0.46]	
UMVE $\text{beta}_{\text{i,t}}$				−0.03				−0.10
				[0.54]				[1.02]
MPS_{t}	0.03	0.02	0.04	0.06*				
	[1.55]	[1.48]	[0.49]	[1.91]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.03**			0.04**		0.08***	
		[2.13]			[2.39]		[3.82]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.01			−0.01	−0.17***	
			[0.22]			[0.22]	[2.74]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.05**				0.07***
				[2.35]				[2.62]
$\Delta \log$ bid-ask $\text{spread}_{\text{i,t}}$		0.00	0.00	0.00	−0.02**	−0.02**	−0.02**	−0.02**
		[0.04]	[0.03]	[0.11]	[2.29]	[2.41]	[2.30]	[2.46]
$\Delta \log S_{i,t}$		−0.06*	−0.06**	−0.06**	−0.07**	−0.07**	−0.07**	−0.07**
		[1.95]	[1.97]	[1.97]	[2.25]	[2.26]	[2.33]	[2.43]
Overall R^2 in %	8.32	8.80	8.66	8.82	21.01	20.92	21.20	21.43
Total # of Obs.	5445	5436	5436	5436	5436	5436	5436	5436
Avg. #Time periods	605	604	604	604	604	604	604	604
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $OF(S_{i,t}) = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t}$, where $OF(S_{i,t})$ is the order flow by *funds* in \$bn in currency pair i in "calendar week" t. Our calendar week starts on a Thursday, because scheduled FOMC announcements end on Wednesdays. $X_{\text{i,t}}$ denotes either the *carry* $\text{beta}_{\text{i,t}}$, *dollar* $\text{beta}_{\text{i,t}}$, or *UMVE* $\text{beta}_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\mathbf{W}_{i,t}$ may include the following control variables: $\Delta \log$ *bid-ask* $\text{spread}_{\text{i,t}}$ is the log change in the monthly average relative bid-ask spread and $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample covers the period from September 2012 to March 2024.

Table B.9. Currency Flows of Funds and the FX Factor Structure — G10 + EMs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		0.02			0.01		−0.10	
		[0.48]			[0.10]		[0.84]	
dollar $\text{beta}_{\text{i,t}}$			0.06			0.11	0.14	
			[0.46]			[0.82]	[1.01]	
UMVE $\text{beta}_{\text{i,t}}$				−0.17				−0.05
				[1.58]				[0.56]
MPS_{t}	0.02	0.01	0.00	0.03				
	[0.74]	[0.30]	[0.02]	[1.00]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.04*			0.04*		0.11***	
		[1.84]			[1.70]		[2.63]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			0.03			0.02	−0.21***	
			[0.60]			[0.35]	[3.08]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.03*				0.03*
				[1.78]				[1.74]
$\Delta \log$ bid-ask $\text{spread}_{\text{i,t}}$		−0.03	−0.02	−0.03	−0.02	−0.01	0.00	−0.01
		[1.38]	[1.49]	[1.44]	[0.87]	[0.81]	[0.16]	[0.94]
$\Delta \log S_{i,t}$		−0.02	−0.02	−0.03	−0.03	−0.03	−0.03	−0.04
		[0.81]	[0.73]	[1.36]	[0.87]	[0.76]	[0.81]	[1.04]
Overall R^2 in %	21.17	21.36	21.30	22.47	29.20	29.37	29.71	29.21
Total # of Obs.	1807	1794	1794	1794	1794	1794	1794	1794
Avg. #Time periods	139	138	138	138	138	138	138	138
#Currencies	13	13	13	13	13	13	13	13
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $OF(S_{i,t}) = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \kappa \mathbf{W}_{i,t} + \epsilon_{i,t}$, where $OF(S_{i,t})$ is the order flow by *funds* in \$bn in currency pair i in month t. $X_{\text{i,t}}$ denotes either the *carry beta*$_{\text{i,t}}$, *dollar beta*$_{\text{i,t}}$, or *UMVE beta*$_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\mathbf{W}_{i,t}$ may include the following control variables: $\Delta \log$ *bid-ask spread*$_{\text{i,t}}$ is the log change in the monthly average relative bid-ask spread and $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample covers the period from September 2012 to March 2024.

Table B.10. Predicting Foreign Interbank Rates with US Libor Rates

	(1)	(2)	(3)	(4)	(5)
Δ US $\text{Libor}_{\text{t-1}}$	0.30**	0.29**	0.29		
	[2.21]	[2.56]	[0.48]		
carry $\text{beta}_{\text{i,t}}$		−0.10**		−0.12	
		[2.25]		[1.50]	
dollar $\text{beta}_{\text{i,t}}$			0.02		−0.01
			[0.23]		[0.18]
carry $\text{beta}_{\text{i,t}} \times \Delta$ US $\text{Libor}_{\text{t-1}}$		0.09		0.05	
		[0.50]		[0.23]	
dollar $\text{beta}_{\text{i,t}} \times \Delta$ US $\text{Libor}_{\text{t-1}}$			0.02		0.09
			[0.03]		[0.14]
Overall R^2 in %	9.52	11.05	9.55	59.94	59.59
Total # of Obs.	2513	2513	2513	2513	2513
Avg. #Time periods	279	279	279	279	279
#Currencies	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes
Time series FE	no	no	no	yes	yes

Note: This table reports results from monthly fixed effects panel regressions of the form $\Delta y_{i,t} = \mu_i + \alpha_t + \beta \Delta US\ \ Libor_{t-1} + \gamma X_{i,t} + \varphi(X_{i,t} \times \Delta US\ \ Libor_{t-1}) + \epsilon_{i,t}$, where the dependent variable is the change in the interbank lending rate by foreign currency i (e.g., TIBOR for Japanese yen) one period ahead and $\Delta US\ Libor_t$ is the change in the US dollar Libor. We include both country- and time-fixed effects μ_i and α_t, respectively. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$ or *dollar* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency excess returns on the carry and dollar factor, respectively. Both dependent and independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for serial correlation up to 3 lags are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

Table B.11. Summary Statistics — DealScan

Currency	#Obs	Mean	Std.	5%	25%	50%	75%	95%
AUD	284	499.8	581.7	35.4	133.5	287.9	664.9	1,447.4
CAD	287	939.4	919.1	106.4	312.9	641.1	1,255.7	2,663.3
CHF	72	271.2	505.5	14.4	36.3	113.2	235.5	1,382.4
EUR	303	5,831.8	5,434.0	701.8	2,394.4	4,610.2	7,465.5	14,594.7
GBP	289	1,990.8	1,973.4	157.4	694.7	1,401.2	2,479.1	5,628.9
JPY	183	372.2	515.0	7.4	69.1	196.6	472.1	1,366.4
NOK	39	205.6	439.5	23.2	38.6	62.5	160.5	1,155.1
NZD	88	97.1	128.1	8.6	28.2	53.6	110.7	350.5
SEK	73	268.3	523.9	7.6	52.3	143.1	302.8	765.9

Note: This table reports the average *Mean*, standard deviation *Std.*, and the 5, 25, 50, 75 and 95 percentile of the total aggregate loan amount intermediated by global US banks in a given currency (first column). The second column indicates how many months have non-zero loan amounts. All numbers are in $mn, except for the number of observations *#Obs* in the second column. An observation corresponds to the portion of syndicated loan that can be attributed to borrowing from US banks in a given currency aggregated over a month. The sample covers the period from January 1999 to March 2024.

Table B.12. Summary Statistics — DealScan by Currency and Country

	AUD	CAD	CHF	EUR	GBP	JPY	NOK	NZD	SEK	Total
United Arab Emirates				16	3					19
Australia	1,028	3		21	26	1		21		1,100
Canada	5	1,594		15	13					1,627
Switzerland		2	85	136	6	1				230
Czech Republic				32	2					34
Denmark	1			71	3	1	2			78
Euro Area	7	6	8	4,194	131	6	1		4	4,357
United Kingdom	10	3		395	1,858	1	2	1	2	2,272
Hong Kong	3		1	15	5	2		1		27
Hungary				38	1					39
Indonesia				5		3				8
India				15	1	14				30
Japan	1	5		1	2	379				388
South Korea	1			18		27				46
Mexico				9				1		10
Malaysia	2		1	2	4	7				16
Norway				53	2		35		2	92
New Zealand	5			1	4			92		102
Philippines				1		6				7
Poland			3	62						65
Saudi Arabia				1						1
Sweden	3			179	5		3		76	266
Singapore	10			7	7	2				26
Thailand					1	19				20
Turkey				294						294
Taiwan	2	1		2	1	4				10
South Africa	3			21	10	1		1		36

Note: This table reports the total number of syndicated loans intermediated by global US banks in a given currency (columns) broken down by borrower country (rows). The sample covers the period from January 1999 to March 2024.

Table B.13. International Lending and the FX Factor Structure — Weekly

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		−0.09			−0.28		−0.80	
		[0.77]			[1.35]		[1.57]	
dollar $\text{beta}_{\text{i,t}}$			0.31			0.26	0.56	
			[1.38]			[0.89]	[1.15]	
UMVE $\text{beta}_{\text{i,t}}$				0.06				−0.21
				[0.31]				[1.48]
MPS_{t}	−0.04	−0.04	0.37	−0.03				
	[0.64]	[0.67]	[1.58]	[0.49]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.05			0.00		0.04	
		[1.49]			[0.07]		[0.71]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.42*			−0.44*	−0.48*	
			[1.74]			[1.82]	[1.79]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.03				0.00
				[0.73]				[0.04]
$\Delta \log S_{i,t}$	−0.11	−0.10	−0.11	−0.10	−0.14*	−0.14*	−0.14*	−0.14**
	[1.46]	[1.39]	[1.46]	[1.42]	[1.85]	[1.93]	[1.84]	[1.99]
Overall R^2 in %	47.10	47.11	47.16	47.10	54.11	54.14	54.21	54.12
Total # of Obs.	11853	11853	11853	11853	11853	11853	11853	11853
Avg. #Time periods	1317	1317	1317	1317	1317	1317	1317	1317
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $\log Loan_{i,t} = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \psi \Delta \log S_{i,t} + \epsilon_{i,t}$, where $\log Loan_{i,t}$ is the natural log of the dollar amount lent by global banks headquartered in the US to corporations domiciled abroad in currency i during "calendar week" t. Our calendar week starts on a Thursday, because scheduled FOMC announcements end on Wednesdays. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\Delta \log S_{i,t}$ is the log change in the spot FX rate expressed as the number of foreign currency units per unit of US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

Table B.14. International Lending and the FX Factor Structure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		−0.01			0.66**		−0.03	
		[0.09]			[2.00]		[0.04]	
dollar $\text{beta}_{\text{i,t}}$			0.86*			0.74*	0.77	
			[1.69]			[1.71]	[1.02]	
UMVE $\text{beta}_{\text{i,t}}$				0.49				0.45
				[1.63]				[1.41]
MPS_{t}	0.01	0.06	0.51	0.05				
	[0.11]	[0.83]	[1.07]	[0.96]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.15***			0.14**		0.17	
		[5.24]			[2.10]		[1.41]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.50			−0.64	−0.69	
			[1.09]			[1.56]	[1.22]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.21***				0.31***
				[4.67]				[2.78]
$\Delta \log S_{i,t}$	−0.05	−0.03	−0.06	−0.06	−0.11	−0.14	−0.12	−0.10
	[0.28]	[0.20]	[0.31]	[0.31]	[0.64]	[0.72]	[0.61]	[0.50]
$\text{MPS}_{\text{i,t}}$	0.14	0.14	0.15	0.15	0.06	0.07	0.06	0.05
	[0.93]	[0.91]	[1.02]	[0.97]	[0.43]	[0.50]	[0.43]	[0.35]
Overall R^2 in %	59.95	59.98	60.22	60.24	65.24	65.34	65.38	65.27
Total # of Obs.	1728	1728	1728	1728	1728	1728	1728	1728
Avg. #Time periods	192	192	192	192	192	192	192	192
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $\log Loan_{i,t} = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_{US,t}) + \psi \Delta \log S_{i,t} + \lambda MPS_{i,t} + \epsilon_{i,t}$, where $\log Loan_{i,t}$ is the natural log of the dollar amount lent by global banks headquartered in the US to corporations domiciled abroad in currency i during month t. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. $MPS_{US,t}$ is our US monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $MPS_{i,t}$ is the monetary policy shock associated with a foreign central bank i based on the estimates in Shah (2022). $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 2001 to December 2016.

Table B.15. International Lending and the FX Factor Structure — Ranking

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		−0.75			−0.75		−0.82	
		[1.18]			[1.08]		[1.15]	
dollar $\text{beta}_{\text{i,t}}$			0.34			0.34	0.41	
			[0.75]			[0.77]	[0.88]	
UMVE $\text{beta}_{\text{i,t}}$				−0.19				−0.19
				[0.78]				[0.80]
MPS_{t}	0.02	0.06	0.50**	0.06***				
	[0.40]	[1.57]	[2.49]	[2.79]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.15***			0.16**		0.20**	
		[6.43]			[2.22]		[2.24]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.50*			−0.62**	−0.77**	
			[1.92]			[2.20]	[2.39]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.19***				0.21***
				[3.96]				[2.81]
$\Delta \log S_{i,t}$	−0.06	−0.04	−0.07	−0.06	0.01	−0.03	−0.01	0.00
	[0.52]	[0.42]	[0.56]	[0.49]	[0.06]	[0.15]	[0.03]	[0.02]
Overall R^2 in %	57.16	57.30	57.22	57.22	62.39	62.32	62.49	62.29
Total # of Obs.	2727	2727	2727	2727	2727	2727	2727	2727
Avg. #Time periods	303	303	303	303	303	303	303	303
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $\log Loan_{i,t} = \mu_i + \alpha_t + \gamma X^R_{i,t} + \beta MPS_t + \varphi(X^R_{i,t} \times MPS_t) + \psi \Delta \log S_{i,t} + \epsilon_{i,t}$, where $\log Loan_{i,t}$ is the natural log of the dollar amount lent by global banks headquartered in the US to corporations domiciled abroad in currency i during month t. $X^R_{i,t}$ denotes the cross-sectional rank of either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

Table B.16. International Lending and the FX Factor Structure — Scheduled FOMC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		−0.24			−0.80**		−1.51*	
		[0.83]			[1.99]		[1.89]	
dollar $\text{beta}_{\text{i,t}}$			0.61*			0.56	0.93	
			[1.67]			[1.47]	[1.59]	
UMVE $\text{beta}_{\text{i,t}}$				0.31				0.02
				[1.20]				[0.07]
MPS_{t}	0.07**	0.10***	−0.11	0.14***				
	[2.17]	[3.33]	[0.28]	[3.37]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.14***			0.14***		0.13***	
		[2.94]			[5.35]		[2.82]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			0.21			0.16	0.11	
			[0.46]			[0.36]	[0.25]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.22***				0.47***
				[10.69]				[13.19]
$\Delta \log S_{i,t}$	−0.06	−0.07	−0.07	−0.07	−0.02	−0.01	−0.02	−0.01
	[0.53]	[0.59]	[0.57]	[0.57]	[0.09]	[0.03]	[0.10]	[0.04]
Overall R^2 in %	57.16	57.22	57.35	57.29	62.35	62.39	62.68	62.32
Total # of Obs.	2727	2727	2727	2727	2727	2727	2727	2727
Avg. #Time periods	303	303	303	303	303	303	303	303
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

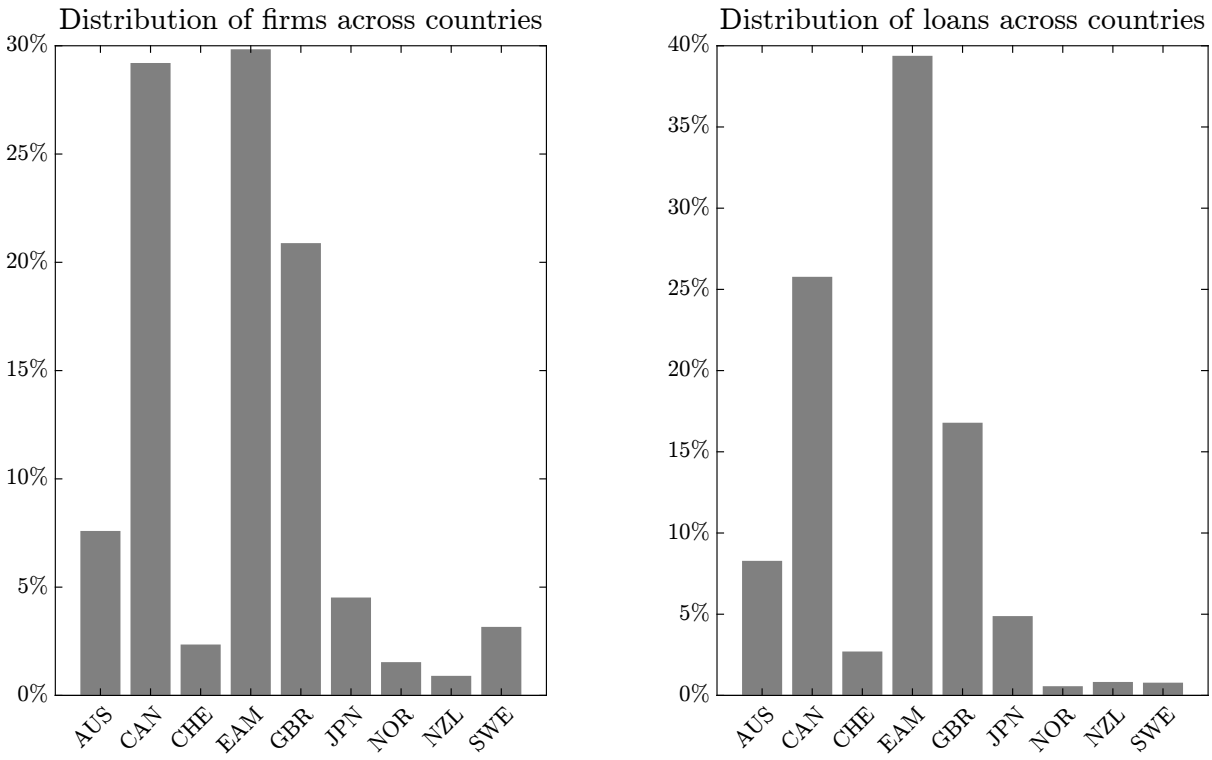
Note: This table reports results from fixed effects panel regressions of the form $\log Loan_{i,t} = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \psi \Delta \log S_{i,t} + \epsilon_{i,t}$, where $\log Loan_{i,t}$ is the natural log of the dollar amount lent by global banks headquartered in the US to corporations domiciled abroad in currency i during month t. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes around *scheduled* FOMC announcements following Kuttner (2001). $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

Table B.17. International Lending and the FX Factor Structure — Pricing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		2.56			−4.18		−10.30	
		[0.61]			[0.53]		[1.01]	
dollar $\text{beta}_{\text{i,t}}$			5.45**			5.29	8.06	
			[2.03]			[1.57]	[1.64]	
UMVE $\text{beta}_{\text{i,t}}$				10.58*				10.23*
				[1.82]				[1.81]
MPS_{t}	−2.26	−1.00	−5.70	−2.42				
	[0.64]	[0.37]	[0.48]	[0.63]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		4.87**			5.68**		5.78***	
		[2.58]			[2.47]		[2.58]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			3.60			4.22	0.47	
			[0.36]			[0.37]	[0.06]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				−0.25				2.99*
				[0.11]				[1.86]
$\Delta \log S_{i,t}$	−1.74	−1.16	−1.76	−2.03	−1.88	−2.58	−1.86	−2.06
	[0.54]	[0.38]	[0.56]	[0.59]	[0.37]	[0.49]	[0.37]	[0.40]
Overall R^2 in %	6.84	6.97	6.92	7.31	17.78	17.71	17.89	17.85
Total # of Obs.	2727	2727	2727	2727	2727	2727	2727	2727
Avg. #Time periods	303	303	303	303	303	303	303	303
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $Spread_{i,t} = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \psi \Delta \log S_{i,t} + \epsilon_{i,t}$, where $Spread_{i,t}$ is the average interest rate being charged over the base rate by global US banks to corporations domiciled abroad in currency i during month t. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\Delta \log S_{i,t}$ is the log change in the spot exchange rate expressed as the number of foreign currency units per unit of US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are reported in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

Figure B.2. Distribution of Firms and Loans



Note: This figure compares the distribution of firms across countries (left panel) to the distribution of loans across countries (right panel) for the following G10 countries (excluding the US): Australia (AUS), Canada (CAN), Switzerland (CHE), Euro Area Member (EAM), United Kingdom (GBR), Japan (JPN), Norway (NOR), New Zealand (NZD), and Sweden (SWE). Reading example: 29.2% of all firms in our sample are domiciled in Canada and 25.7% of all loans syndicated by US banks in a currency that is equal to the reporting currency of the firm (cf., the dependent variable in Table 7) are issued to firms domiciled in Canada. The sample is quarterly and spans from January 1999 to March 2024.

Table B.18. International Lending and the FX Factor Structure — Intensive Margin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		−0.12			−0.13		−0.12	
		[1.43]			[0.93]		[0.78]	
dollar $\text{beta}_{\text{i,t}}$			0.02			−0.04	−0.01	
			[0.62]			[0.45]	[0.09]	
UMVE $\text{beta}_{\text{i,t}}$				0.13**				−0.03
				[2.09]				[0.23]
MPS_{t}	−0.01	−0.01	0.19**	−0.01				
	[0.19]	[0.35]	[2.27]	[0.31]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		−0.03			−0.03		−0.01	
		[0.92]			[0.59]		[0.31]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.22***			−0.24**	−0.23**	
			[2.79]			[2.26]	[2.02]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				−0.01				−0.04
				[0.99]				[0.66]
$\Delta \log S_{i,t}$	0.07**	0.06**	0.07**	0.06**	0.13**	0.13**	0.12**	0.13**
	[2.29]	[2.12]	[2.27]	[2.17]	[2.11]	[2.14]	[1.99]	[2.16]
Overall R^2 in %	55.69	55.96	55.81	56.16	66.71	66.77	66.82	66.64
Total # of Obs.	1618	1618	1618	1618	1618	1618	1618	1618
Avg. #Time periods	180	180	180	180	180	180	180	180
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $\log Loan_{i,t} = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \psi \Delta \log S_{i,t} + \epsilon_{i,t}$, where $\log Loan_{i,t}$ is the natural log of the dollar amount lent by banks domiciled in the US (either bank holding company or subsidiary) to firms domiciled abroad in currency i during month t. We winsorize the dependent variable at the 0.5% level. We remove currency-month observations for which $Loan_{i,t}$ is equal to zero or missing. $X_{\text{i,t}}$ denotes either the *carry* $beta_{\text{i,t}}$, *dollar* $beta_{\text{i,t}}$, or *UMVE* $beta_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\Delta \log S_{i,t}$ is the log change in the spot FX rate expressed as the number of foreign currency units per US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are shown in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

Table B.19. International Lending and the FX Factor Structure — Extensive Margin

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
carry $\text{beta}_{\text{i,t}}$		−0.01			−0.04*		−0.08*	
		[0.61]			[1.83]		[1.84]	
dollar $\text{beta}_{\text{i,t}}$			0.03*			0.03*	0.05*	
			[1.71]			[1.72]	[1.76]	
UMVE $\text{beta}_{\text{i,t}}$				0.01				0.00
				[0.82]				[0.01]
MPS_{t}	0.00	0.00*	0.02***	0.00**				
	[0.48]	[1.78]	[4.07]	[2.00]				
carry $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$		0.01**			0.01***		0.01***	
		[2.57]			[2.73]		[2.88]	
dollar $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$			−0.02*			−0.03**	−0.04**	
			[1.94]			[2.06]	[2.35]	
UMVE $\text{beta}_{\text{i,t}} \times \text{MPS}_{\text{t}}$				0.01***				0.01***
				[3.92]				[3.08]
$\Delta \log S_{i,t}$	−0.01	0.00	−0.01	−0.01	0.00	−0.01	0.00	0.00
	[0.94]	[0.85]	[1.03]	[0.90]	[0.29]	[0.45]	[0.43]	[0.27]
Overall R^2 in %	50.54	50.59	50.75	50.63	56.19	56.27	56.61	56.10
Total # of Obs.	2727	2727	2727	2727	2727	2727	2727	2727
Avg. #Time periods	303	303	303	303	303	303	303	303
#Currencies	9	9	9	9	9	9	9	9
Currency FE	yes	yes	yes	yes	yes	yes	yes	yes
Time series FE	no	no	no	no	yes	yes	yes	yes

Note: This table reports results from fixed effects panel regressions of the form $D_{i,t} = \mu_i + \alpha_t + \gamma X_{i,t} + \beta MPS_t + \varphi(X_{i,t} \times MPS_t) + \psi \Delta \log S_{i,t} + \epsilon_{i,t}$, where $D_{i,t}$ is a dummy variable that is equal to unity if $Loan_{i,t}$, which is the dollar amount lent by banks domiciled in the US (either bank holding company or subsidiary) to firms domiciled abroad in currency i, is non-zero during month t. $X_{\text{i,t}}$ denotes either the *carry beta*$_{\text{i,t}}$, *dollar beta*$_{\text{i,t}}$, or *UMVE beta*$_{\text{i,t}}$ that are based on rolling window regressions of currency returns on the carry, dollar, and UMVE factor, respectively. MPS_t is our monetary policy shock in basis points that we extract from Fed Fund futures rate changes following Kuttner (2001). $\Delta \log S_{i,t}$ is the log change in the spot FX rate expressed as the number of foreign currency units per US dollar. The independent variables are measured in units of standard deviations. The test statistics based on double clustered (by currencies and time) standard errors, allowing for first-order serial correlation are shown in brackets. Asterisks *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels. The sample spans from January 1999 to March 2024.

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