



BANK OF ENGLAND

Appendix to Staff Working Paper No. 964

FX option volume

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Tianyu Wang

March 2022

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ISSN 1749-9135 (on-line)

Table A.1. FX Option Volume: Currency Pairs

This table displays, in \$bn, the average daily volume of foreign exchange (FX) options traded over-the-counter by currency pair. We observe derivatives trades submitted to the DTCC Derivatives Repository in which at least one of the counterparties is a UK-regulated entity. Our sample covers the period between November 2014 and December 2016. ‘Dealer-Dealer’ refers to the interdealer segment, while ‘Dealer-Client’ denotes the dealer-client segment of the currency option market. ‘Client-Client’ captures transactions between clients.

	Total	Dealer-Dealer	Dealer-Client	Client-Client
AUD	7.919	6.200	1.711	0.008
CAD	5.837	4.173	1.663	0.000
CHF	3.094	2.275	0.818	0.001
EUR	47.001	35.408	11.570	0.023
GBP	9.851	7.377	2.446	0.027
JPY	33.132	26.288	6.837	0.007
NZD	2.001	1.514	0.486	0.000
BRL	4.547	3.595	0.951	0.001
HKD	0.800	0.578	0.222	0.000
INR	1.460	1.042	0.398	0.020
KRW	3.049	2.349	0.698	0.001
MXN	3.378	2.671	0.707	0.000
NOK	0.251	0.153	0.097	0.000
RUB	0.499	0.392	0.104	0.003
SEK	0.205	0.125	0.080	0.000
SGD	2.896	2.269	0.626	0.001
TRY	1.932	1.447	0.484	–
TWD	1.400	1.067	0.332	0.000
ZAR	1.215	0.906	0.307	0.001
ALL	130.465	99.832	29.414	0.094

Table A.2. FX Option Volume: Counterparty Sectors

This figure displays, in \$bn, the average daily volume of foreign exchange (FX) options traded over-the-counter by counterparty sector. We observe derivatives trades submitted to the DTCC Derivatives Repository in which at least one of the counterparties is a UK-regulated entity. Our sample covers the period between November 2014 and December 2016. We group clients into real money investors (asset managers, pension funds, insurance firms, sovereign institutions, and other financials), hedge funds, non-dealer banks (commercial banks, prime brokerage firms, and non-bank firms offering trading services), and other clients (corporates, central banks, monetary authorities, and unclassified clients).

	Hedge Funds	Real Money	Non-dealer Banks	Other Clients
AUD	0.603	0.454	0.472	0.181
BRL	0.149	0.387	0.312	0.103
CAD	0.545	0.652	0.267	0.198
CHF	0.420	0.181	0.112	0.106
EUR	4.622	3.268	2.136	1.544
GBP	0.811	0.727	0.508	0.401
HKD	0.103	0.053	0.037	0.028
INR	0.119	0.085	0.042	0.152
JPY	3.004	1.895	1.187	0.752
KRW	0.281	0.233	0.094	0.091
MXN	0.257	0.201	0.160	0.089
NOK	0.028	0.018	0.035	0.016
NZD	0.193	0.146	0.092	0.055
RUB	0.016	0.040	0.024	0.023
SEK	0.006	0.020	0.037	0.017
SGD	0.295	0.142	0.126	0.063
TRY	0.106	0.098	0.223	0.057
TWD	0.174	0.094	0.026	0.039
ZAR	0.078	0.080	0.111	0.038
Total	11.809	8.775	6.001	3.974

Table A.3. Portfolios sorted by FX Option Volume: Alternative Scaling Methods

This table reports average annualized portfolio excess returns and exchange rate returns for currency portfolios sorted by lagged FX option volumes. Volume is standardized over a rolling window of M (M=5 or M=63) trading days prior to the volume signal (N=1 or N=3), as outlined in the text. The frequency is daily and the sample is from December 2014 to December 2016. Column “LMH” (Low minus High) reports average returns for long-short portfolios in currencies with the lowest versus highest volume. Returns and standard deviations are annualized and shown in percentages. SR is annualized Sharpe Ratio. Numbers in brackets are t-statistics based on Newey-West standard errors.

		P_1	P_2	P_3	P_4	LMH	P_1	P_2	P_3	P_4	LMH
		(Low)			(High)		(Low)			(High)	
		<i>Panel A: Excess Returns</i>					<i>Panel B: Exchange Rate Returns</i>				
N=1; M=5	mean	4.57	-0.43	-11.79	-10.49	15.06	4.40	-0.50	-11.96	-10.64	15.04
	t-stat	[0.76]	[-0.07]	[-1.76]	[-2.20]	[2.61]	[0.73]	[-0.08]	[-1.78]	[-2.24]	[2.61]
	std	9.98	9.36	10.98	9.53	9.84	9.98	9.37	10.99	9.52	9.83
	SR	0.46	-0.05	-1.07	-1.10	1.53	0.44	-0.05	-1.09	-1.12	1.53
N=1; M=63	mean	7.23	-2.03	-6.19	-10.35	17.57	7.17	-2.12	-6.30	-10.47	17.64
	t-stat	[1.23]	[-0.36]	[-0.79]	[-2.09]	[2.88]	[1.23]	[-0.38]	[-0.80]	[-2.11]	[2.90]
	std	8.95	8.72	11.00	9.99	9.00	8.95	8.72	11.00	9.98	9.00
	SR	0.81	-0.23	-0.56	-1.04	1.95	0.80	-0.24	-0.57	-1.05	1.96
N=3; M=21	mean	-6.82	-2.24	-10.24	-11.93	18.75	6.68	-2.35	-10.34	-12.09	18.78
	t-stat	1.13	-0.41	-1.40	-2.17	2.79	1.11	-0.43	-1.41	-2.21	2.80
	std	10.28	8.98	11.03	9.98	10.55	10.27	8.98	11.03	9.98	10.54
	SR	0.66	-0.25	-0.93	-1.19	1.78	0.65	-0.26	-0.94	-1.21	1.78

Table A.4. Portfolios sorted by FX Option Volume: Time-to-Expiration

This table reports average annualized portfolio excess returns and exchange rate returns for currency portfolios sorted by lagged FX option volumes. We report results for option volumes grouped by their time-to-expiration: within one month, between one month and three months, between three months and six months, and above six months. Volume is standardized over a rolling window of 21 trading days prior to the volume signal, as outlined in the text. The frequency is daily and the sample is from December 2014 to December 2016. Column “LMH” (Low minus High) reports average returns for long-short portfolios in currencies with the lowest versus highest volume. Returns and standard deviations are annualized and shown in percentages. SR is annualized Sharpe Ratio. Numbers in brackets are t-statistics based on Newey-West standard errors.

		P_1 (Low)	P_2	P_3	P_4 (High)	<i>LMH</i>
Expiration (≤ 1 month)]	mean	4.29	-8.77	-8.65	-8.97	13.26
	<i>t</i> -stat	[0.68]	[-1.40]	[-1.16]	[-1.35]	[2.41]
	std	9.15	8.98	11.03	9.57	8.23
	SR	0.47	-0.98	-0.78	-0.94	1.61
Expiration (≤ 3 month, > 1 month)	mean	1.68	-3.78	-7.32	-10.25	11.93
	<i>t</i> -stat	[0.27]	[-0.58]	[-1.13]	[-1.59]	[2.11]
	std	9.26	9.14	10.28	9.24	8.18
	SR	0.18	-0.41	-0.71	-1.11	1.46
Expiration (≤ 6 months, > 3 month)	mean	0.47	-3.02	-9.69	-8.35	8.83
	<i>t</i> -stat	[0.08]	[-0.45]	[-1.33]	[-1.25]	[1.66]
	std	8.85	9.89	10.64	9.86	8.07
	SR	0.05	-0.31	-0.91	-0.85	1.09
Expiration (> 6 months)	mean	-7.40	-3.42	0.90	-9.04	1.64
	<i>t</i> -stat	[-1.20]	[-0.47]	[0.14]	[-1.37]	[0.28]
	std	9.26	10.59	10.22	9.50	8.50
	SR	-0.80	-0.32	0.09	-0.95	0.19

Table A.5. Portfolios sorted by Bloomberg FX Option Volume: Dollar Demand

This table reports average annualized portfolio excess returns and exchange rate returns for currency portfolios sorted by lagged FX option volumes using alternative Bloomberg data in two subsamples: high versus low dollar demand periods. Volume is standardized over a rolling window of 21 trading days prior to the volume signal, as outlined in the text. The frequency is daily and the sample is from March 2013 to December 2020. Column “LMH” (Low minus High) reports average returns for long-short portfolios in currencies with the lowest versus highest volume. Returns are annualized and shown in percentages. Numbers in brackets are t-statistics based on Newey-West standard errors.

		P_1	P_2	P_3	P_4	LMH	P_1	P_2	P_3	P_4	LMH
		(Low)			(High)		(Low)			(High)	
		<i>Excess Returns</i>					<i>Exchange Rate Returns</i>				
<i>Panel A: Major Currencies</i>											
High Dollar Demand	mean	4.64	-0.05	-1.37	-7.67	12.31	4.91	0.23	-1.07	-7.41	12.32
	t-stat	[0.96]	[-0.01]	[-0.30]	[-1.57]	[2.84]	[1.02]	[0.05]	[-0.24]	[-1.51]	[2.85]
Low Dollar Demand	mean	4.42	-2.64	-1.73	-2.09	6.51	4.63	-2.47	-1.44	-1.84	6.46
	t-stat	[1.12]	[-0.79]	[-0.54]	[-0.52]	[1.45]	[1.17]	[-0.73]	[-0.45]	[-0.46]	[1.44]
<i>Panel B: All Currencies</i>											
High Dollar Demand	mean	0.06	0.77	0.13	-2.68	2.74	-1.31	-0.53	-1.14	-4.10	2.79
	t-stat	[0.02]	[0.18]	[0.03]	[-0.68]	[0.90]	[-0.32]	[-0.13]	[-0.26]	[-1.04]	[0.92]
Low Dollar Demand	mean	-3.98	-1.11	-6.73	-4.12	0.14	-5.41	-2.41	-8.01	-5.59	0.18
	t-stat	[-1.22]	[-0.33]	[-2.18]	[-1.17]	[0.04]	[-1.66]	[-0.71]	[-2.59]	[-1.59]	[0.05]