

Repo and FX Swap: A Tale of Two Markets

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Disclaimer

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How much does it cost to borrow US dollars?

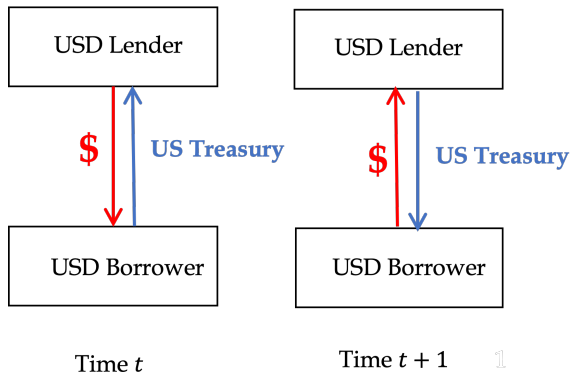
- ▶ Repo and FX swaps are the most important short-term funding markets for U.S. dollar liquidity
- ▶ Despite many similarities, they are distinct along important dimensions.
- ▶ Dealers/banks play a central role in both markets.

This paper: Demystify both markets for euro-area banks and examine their joint dynamics on regular and stress days, based on micro transaction-level data.

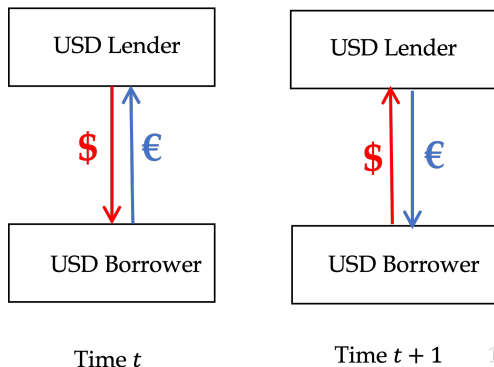
Overview of Repo and FX Swap Markets

Dollar funding in repo and FX swap markets

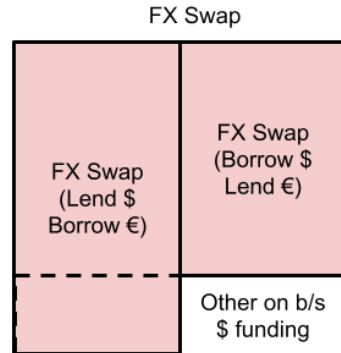
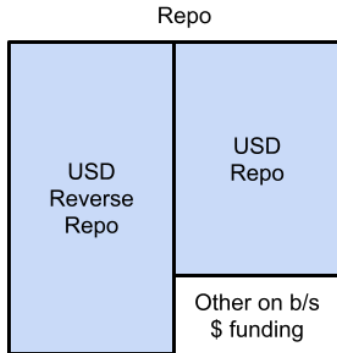
Repo Market



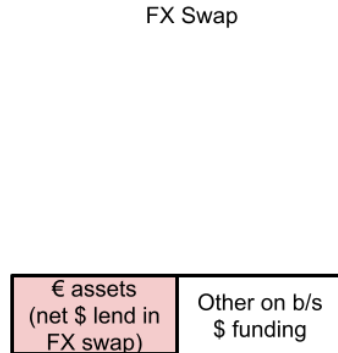
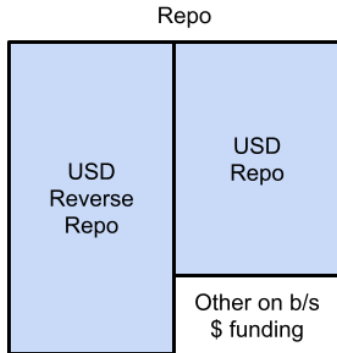
FX Swap Market



Bank Balance Sheet Implications: Total Activity



Bank Balance Sheet Implications: On Balance Sheet



Trading Patterns

Transaction data for both FX swap and repo markets

FX swap market: Money Market Statistical Reporting (MMSR)

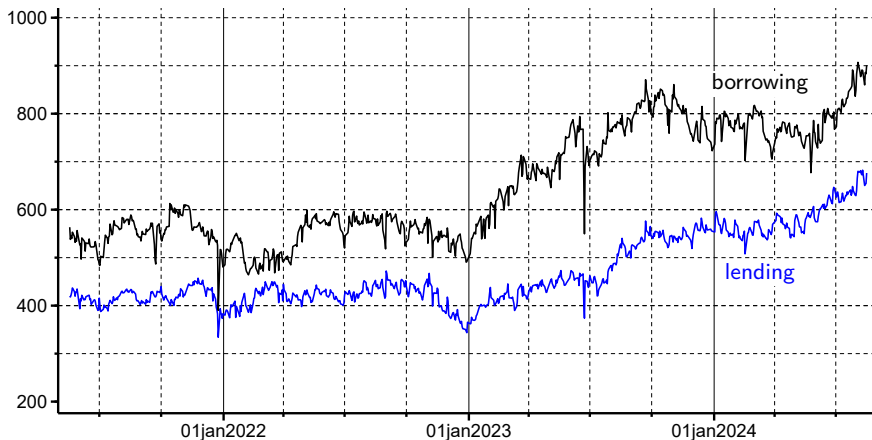
- ▶ Sample starting in 2017, maturities of up to one year
- ▶ EUR/USD FX swaps of 40+ MMSR-reporting banks (“MMSR banks”)

Repo market: Securities Financing Transactions Regulation (SFTR)

- ▶ Sample starting in 2021
- ▶ Includes USD-denominated repos, broad range of European financial institutions
- ▶ Full transaction details (incl. date, counterparty, sector, price)
- ▶ Focus on overlapping sample: 2021-2024, maturities of up to one year, MMSR bank on at least one side
- ▶ Link transaction-level data from both markets at individual institution level
- ▶ EUR-USD CIP deviation: difference between implied dollar interest rate by swapping EUR OIS rate and USD OIS rate

Dealer banks are net USD borrowers in repos

Gross USD repo lending and borrowing positions (bn euro, MMSR banks)

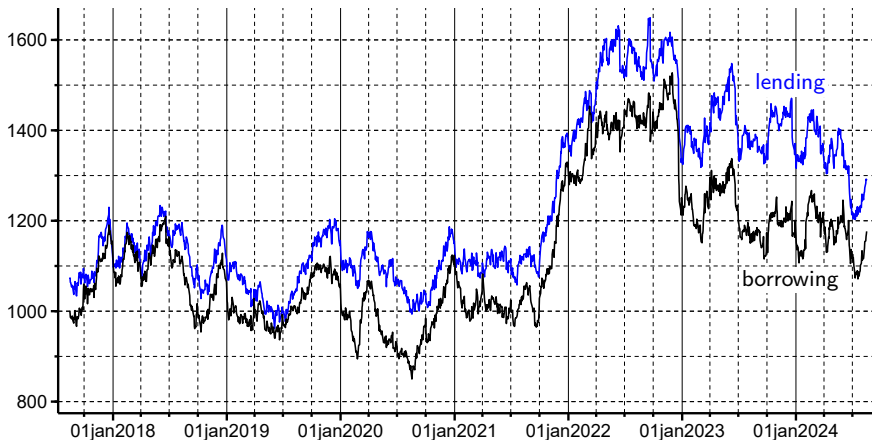


Positions of MMSR banks for maturities ≤ 1 yr, excluding intragroup positions.

Source: SFTR – For confidentiality reasons, some trade dates are suppressed.

Dealer banks are net USD lenders in FX swap

Gross USD FX swap lending and borrowing position (bn euro, MMSR banks)

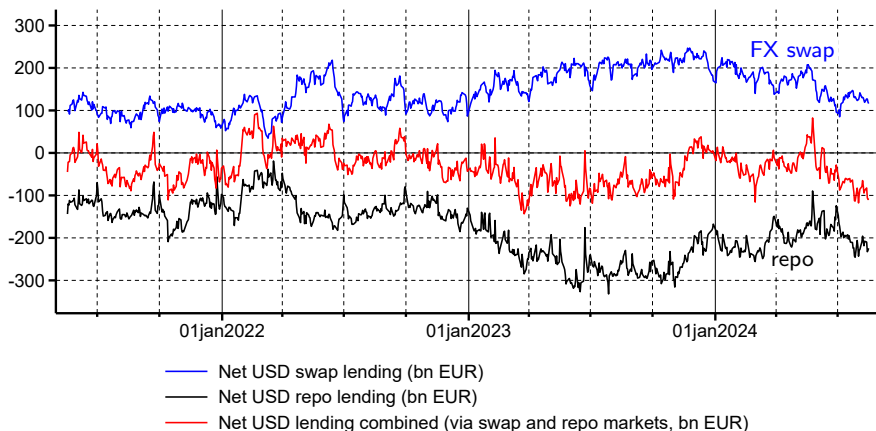


Implied positions of MMSR banks for maturities ≤ 1 yr

Source: MMSR – For confidentiality reasons, some trade dates are suppressed.

Net US dollar lending in FX swap and repo markets

Net USD lending position (bn euro, MMSR banks)



Net US dollar lending of MMSR banks for maturities ≤ 1 yr: FX swap (blue) and repo (black), their sum (red)

Source: MMSR, SFTR – For confidentiality reasons, some trade dates are suppressed.

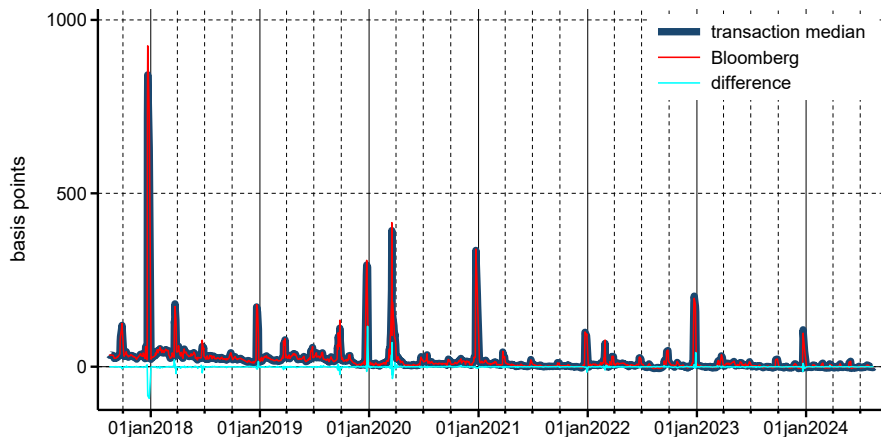
Key Comparisons for USD Borrowing and Lending

	FX Swap	Repo
Gross Borrow/Lend	€1–1.6T	€500–900B
Net Position	+ €100–200B	– €100–200B
Maturity Profile	2/3 vol. >30d	Mostly <30d
Top Borrowing	Interbank	NBFIs (MMFs)
Top Lending	Interbank	NBFIs (HFs)
Borrowing Geography	Diversified	U.S. dominates
Lending Geography	Europe Dominates	BOT (e.g. Cayman)

Funding cost

Bloomberg quotes line up with swap transaction prices

Deviations from CIP: transaction medians vs. Bloomberg quotes (1wk FX swaps, bp)



Vol-wgt. median 1W CIP deviations (dark blue), Bloomberg 1W CIP deviations (red), difference (light blue)

Source: MMSR, Bloomberg – For confidentiality reasons, some trade dates are suppressed.

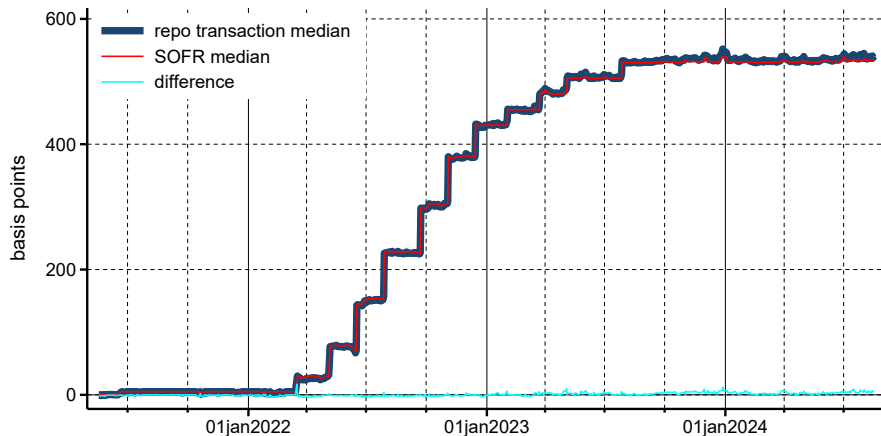
Transaction- vs. quote-based CIP deviations

Difference between transaction- and quote-based CIP deviations (volume-weighted, bp)

		All days				Period-end crossing days			
		TN	1wk	1m	3m	TN	1wk	1m	3m
<i>(a) 2017–2021</i>									
median	avg.	-0.1	-0.6	-0.2	-0.1	17.6	-3.5	-0.4	-0.2
p_{10}	avg.	-5.3	-3.3	-2.1	-1.2	-58.2	-14.7	-4.0	-1.5
p_{90}	avg.	5.8	2.4	1.7	0.9	81.0	11.5	3.4	1.1
<i>CIP level</i>	avg.	21.8	28.8	35.0	35.5	153.3	119.4	56.5	45.8
<i>\$ Funding cost</i>	avg.	149.9	156.6	162.7	163.6	282.2	242.1	181.9	177.2
<i>(b) 2021–2024</i>									
median	avg.	-0.2	-0.3	-0.1	-0.1	1.2	0.1	-0.1	-0.2
p_{10}	avg.	-2.0	-1.5	-1.1	-0.9	-11.4	-5.6	-1.9	-1.2
p_{90}	avg.	2.0	0.9	0.9	0.8	19.6	5.0	1.6	1.2
<i>CIP level</i>	avg.	1.9	4.9	9.2	13.7	46.8	39.3	18.9	28.1
<i>\$ Funding cost</i>	avg.	310.8	317.5	327.7	343.4	350.7	344.5	324.0	349.2

SOFR lines up with transaction repo rates

Repo rate: transaction medians vs. SOFR benchmark (bp)



Vol-wgt. median repo rate for mat. ≤ 1 yr with USD gov. collateral (dark blue), SOFR median rate, difference (light blue)

Source: SFTR, Bloomberg – For confidentiality reasons, some trade dates are suppressed.

Repo spread

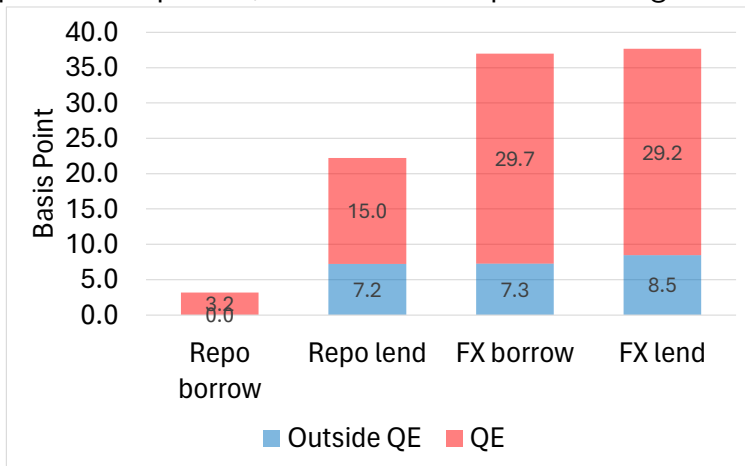
Difference between the repo transaction rate and the corresponding USD OIS rate on repo transactions (volume-weighted, bp, 2021–24)

		All days				Period-end crossing days			
		$\leq 4d$	1wk	1m	3m	$\leq 4d$	1wk	1m	3m
median	avg.	-2.9	-0.7	4.2	3.8	-1.7	-0.9	12.0	-3.7
p_{10}	avg.	-10.4	-12.8	-22.3	-32.1	-23.1	-23.8	-28.1	-55.8
p_{90}	avg.	3.7	4.4	42.9	31.8	3.7	6.7	58.6	14.5
<i>OIS rate</i>	avg.	309.4	312.4	318.2	330.1	278.9	299.8	309.3	321.5

- More cross-sectional dispersion in rates in the repo market than the FX swap market.

Funding cost dispersion across markets

Funding spreads Comparison, normalized to repo borrowing rate outside QE



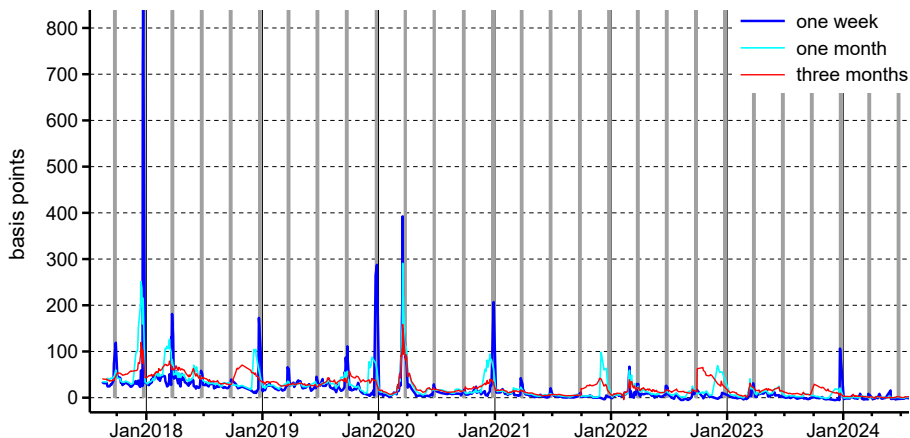
FX swap and repo dispersion across sectors (2021–24)

Counterparty	FX swap market		Repo market	
	borrowing	lending	borrowing	lending
MMSR bank		0.38***		1.02*
Non-MMSR bank	-0.05	0.51**	-1.31	3.47**
Pension & insur.	_*	1.30***	+	5.08***
Oth. non-bank fin.	-0.22	0.57**	0.17	8.02***
Non-financial	-5.70***	6.04***	+	+
Government & CB	3.33***	3.56***	4.21***	0.20
MMSR bank × QE	28.49***	27.27***	-8.58***	-7.62***
Non-MMSR bank × QE	23.64***	25.65***	-8.29***	4.18*
Pension & insur. × QE	+***	17.61***	-	-12.20**
Oth. non-bank fin. × QE	24.47***	23.20***	1.50	11.20***
Non-financial × QE	19.68***	15.58***	+***	-
Government & CB × QE	20.09***	15.58***	11.44***	24.81***
Observations	1,888,179		3,320,788	
Within R^2	0.08		0.01	

Quarter-End Dynamics

Quarter-end price spikes in FX swap funding

Short-term deviations from covered interest rate parity

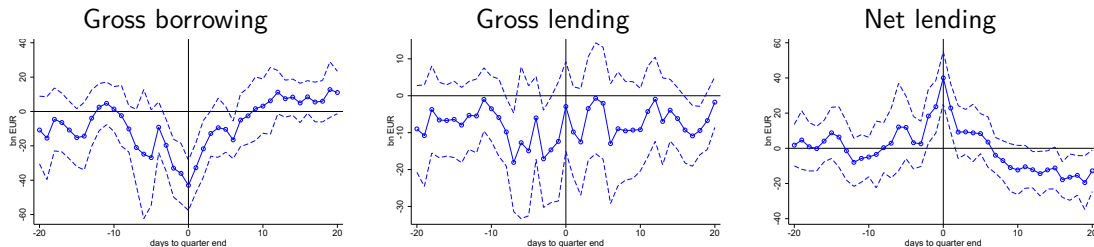


Vol-wgt. USD/EUR CIP deviations (1w = blue, 1m = light blue, 3m = red)

Source: MMSR, Bloomberg – For confidentiality reasons, some trade dates are suppressed.

Quarter-end dynamics: Repo

Changes in repo borrowing and lending around quarter ends (2021–2024)



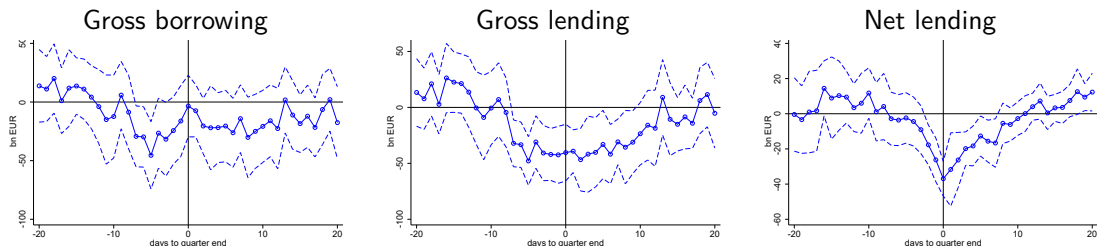
Event window of $[-20d; +20d]$ around 11 quarter ends

Source: SFTR 2021–2024

- Gross repo borrowing declines, gross lending unchanged, net lending expands.

Quarter-end dynamics: FX swap

Changes in FX swap borrowing and lending around quarter ends (2021–2024)

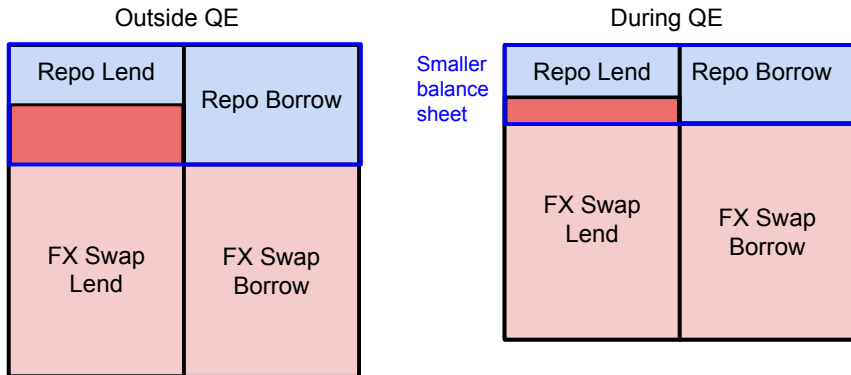


Event window of $[-20d; +20d]$ around 11 quarter ends

Source: MMSR 2021–2024

- Gross FX lending increases (within last week), gross lending declines, net lending declines.

Quarter-end dynamics: Summary



- ▶ During QEs, combined gross borrowing and lending positions decline
 - ▶ Gross repo borrowing declines
 - ▶ Gross FX swap lending declines, particularly FX swap lending financed by repo borrowing

Conclusion

Towards a unified view of USD funding activity in Europe

Structure, pricing, and frictions of repo and FX swap markets

1. Repo and FX swap markets are close **substitutes** for large euro-area banks
2. Dealer **balance sheet constraints** and **market power** are key drivers of price dispersion in both markets.
3. **Repo** transactions are more **balance sheet intensive**, and associated with higher average intermediation spreads.
4. Despite the breakdown of CIP, **FX swap market** is an overall **well-functioning** market, and helps satisfying significant USD liquidity demand during stress days such as QE.