

Frictions in Money Markets and Business Models of Global Banks: Evidence from the Japan Repo Premium

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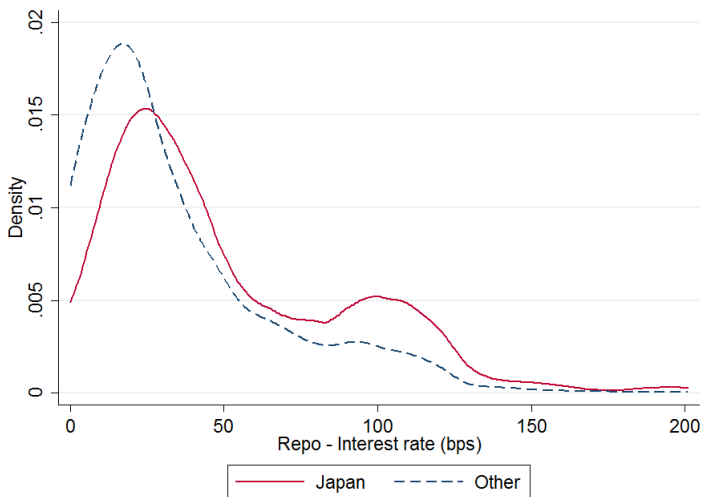
European Central Bank workshop

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Frictions in money markets

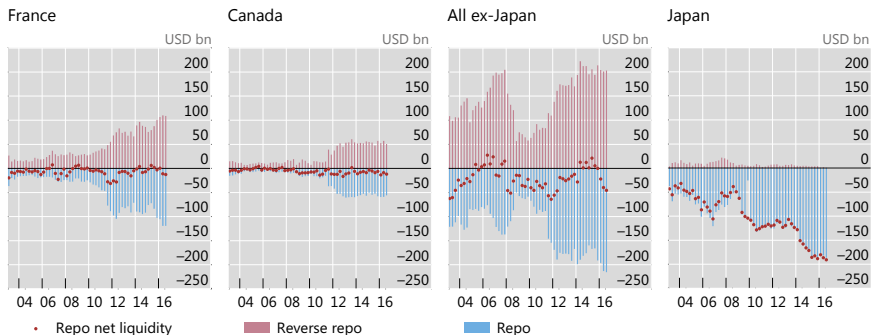
- ▶ There is a “Japan Repo Premium” in US money markets.
 - ▶ JP banks pay more for repos with the *same* risk with US MMFs.

Figure 1: (Smoothed) Unconditional Distribution of Repo Rates with MMFs



Business models of global banks

- ▶ All global banks are matched book repo intermediaries, except JP.
- ▶ ~ 10% JP repos are with MMFs, while 50-60% for FR and CA.
- ▶ Repo intermediation: MMF → non-JP → JP?



Sources: US FFIEC 002 Reports, authors' calculations.

This paper in a nutshell

- ▶ Japanese banks are different from other non-US banks:
 - ▶ JP long-term dollar loans dwarfs other non-US, since euro crisis.
 - ▶ Hence, they have large longer maturity dollar funding needs.
- ▶ Differences in business models & frictions in money markets:
 - ▶ Affect the *price of dollar funding* → JRP
 - ▶ Shape *dollar funding networks*
- ▶ *Price of dollar funding*:
 - ▶ Relationship frictions in repo → bargaining power affects pricing.
 - ▶ JP banks concentrate repos to few MMFs → ↓ Bargaining power
 - ▶ This helps explain the Japan Repo Premium.
- ▶ *Dollar funding networks*:
 - ▶ MMFs provide longer maturity repos to older clients.
 - ▶ Repo intermediation by maturity transformation by non-JP banks.
 - ▶ Economically significant spreads from doing so (~ 17 bps).
 - ▶ Disruptions in repo markets spill over to the FX swap markets.

Contributions to the related literature

- ▶ **US dollar funding and business models of global banks** (Ivashina, Scharfstein & Stein (2015); Bräuning & Ivashina (2017); Correa, Sapriza & Zlate (2017); Acharya & Schnabl (2010); Bruno & Shin (2015); McGuire & von Peter (2012) ; Pozsar (2017))
- ▶ **Relationships in money markets** (Chernenko & Sunderam (2014); Han & Nikolau (2016); Hu, Pan and Wang (2015); Ashcraft and Duffie (2007))
- ▶ **CIP deviations** (Du, Tepper & Verdelhan (2017); Sushko, Borio, McCauley & McGuire (2016); Rime, Schrimpf & Syrstad (2016); Avdjiev, Du, Koch & Shin (2016); Baba, Packer & Nagano (2008))
- ▶ **Money market funds** (Kacperczyk & Schnabl (2013); Di Maggio & Kacperczyk (2017); Christoffersen & Musto (2002); McCabe (2010))

Data

- ▶ **Crane Data:**

- ▶ MMF holdings snapshot. Monthly, 02/2011-09/2017.
- ▶ Date-fund-bank-instrument-value-price-remaining maturity
- ▶ Restrict to GSIB and active banks: Repos, ABCP, CP, CD
- ▶ 195,790 repos; 39 banks, 9 countries
- ▶ 525,503 ABCP, CP, CDs: 49 banks, 14 countries
- ▶ 333 distinct funds, 74 distinct fund families
- ▶ Cleaning: double counting and reporting errors.

- ▶ **FFIEC 002 filings:**

- ▶ Balance sheets of US branches and agencies of foreign banks
- ▶ Quarterly: 1994Q1-2016Q4

- ▶ **BIS International Banking Statistics**

- ▶ **Bloomberg (Basis), Markit (CDS), Annual reports, FR Y-9C**

The Japan Repo Premium

	(1)	(2)	(3)	(4)	(5)	(6)
	Repo rate	Repo rate	Repo rate	Repo rate	Repo rate	Repo rate [†]
Log(value)	-0.378** (0.153)	0.0256 (0.106)	-0.0718 (0.0971)	0.394*** (0.0874)	0.459*** (0.0857)	0.161* (0.0898)
Rem. maturity	0.458*** (0.0221)	0.347*** (0.0197)	0.354*** (0.0197)	0.349*** (0.0187)	0.355*** (0.0188)	
Agency		1.711*** (0.261)	1.681*** (0.250)	0.837*** (0.296)		
Other coll.		26.03*** (0.963)	26.61*** (0.969)	24.31*** (0.882)		
5Y CDS			0.0261*** (0.00519)	0.0226*** (0.00459)	0.0255*** (0.00469)	0.00329** (0.00152)
JP	4.519*** (1.298)	3.185*** (0.970)	2.972*** (0.968)	1.503* (0.778)	1.276* (0.724)	1.431** (0.542)
Observations	184,705	184,705	172,798	172,796	172,043	24,627
R-squared	0.752	0.823	0.826	0.841	0.890	0.923
Date FE	✓	✓	✓	✓	✓	✓
Fund Type FE	✓	✓	✓	✓	✓	✓
Fund FE				✓	✓	
Date*Collateral FE					✓	
Date*Fund FE					✓	

[†]: specification (6) represents a regression only for overnight Treasury repos. Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively.

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Fund FE				✓	✓	
Date*Collateral FE					✓	
Date*Fund FE					✓	

[†]: specification (6) represents a regression only for overnight Treasury repos. Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively.

Counterparty risk or cross-subsidization do not explain it

No Japan premium for riskier instruments & no cross-subsidization

	(1) Non-repo	(2) Non-repo	(3) Non-repo	(4) Full	(5) Non-prime
Log(value)	0.325*** (0.104)	-0.130 (0.0950)	-0.165* (0.0968)	-0.501*** (0.0907)	0.175*** (0.0613)
Rem. maturity	0.0621*** (0.00512)	0.0615*** (0.00501)	0.0644*** (0.00503)	0.0879*** (0.00605)	0.0802*** (0.0115)
5Y CDS			0.0345*** (0.00525)	0.0257*** (0.00337)	0.00225 (0.00200)
JP	-3.875*** (0.382)	-4.319*** (0.328)	-4.073*** (0.336)	-3.899*** (0.308)	2.537*** (0.431)
JP#repo				5.282*** (0.893)	
Observations	285,032	285,032	258,661	431,196	85,182
R-squared	0.831	0.838	0.843	0.868	0.959
Date FE	✓	✓	✓		
Instrument FE		✓	✓	✓	✓
Date*Fund FE				✓	✓

Columns (1)-(3) restrict the instrument to ABCP/CP/CD (i.e. non-repos). Column (4) considers the entire market (i.e. repos and non-repos) and interacts the JP dummy with a dummy for repo contracts; instrument fixed effects in this regression control separately for ABCP, CP, CD, and the three different types of collateral within repo contracts (Treasury, Government Agency and Other). Column (5) considers only Non-Prime funds (i.e. funds that only do repos). Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Repo is absorbed in the instrument FE.

By country

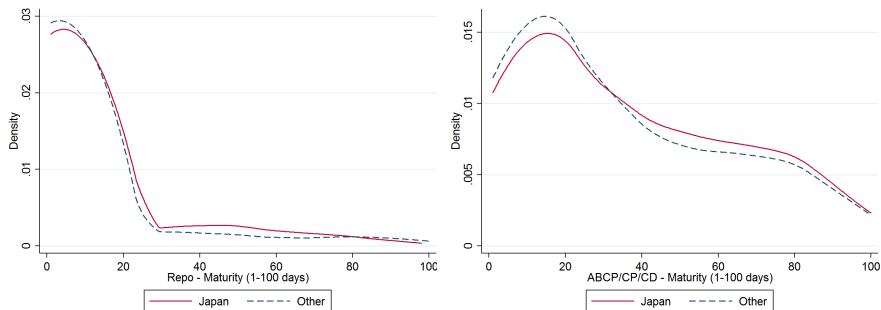
CDS Spreads

Time Series

Business models of global banks - Facts

- ▶ JP long-term dollar loans dwarf other non-US, since euro crisis.
Both globally and in the US
- ▶ The maturity profile of MMF liabilities of JP banks is longer.

Figure 2: (Smoothed) Maturities: Repo versus non-repo



Business models of global banks - Facts

- ▶ JP banks are net dollar suppliers to HQ, EU net receivers from HQ. Interoffice positions
- ▶ All global banks are matched-book repo intermediaries, except JP. Both globally and in the US
- ▶ Majority of JP repos not from MMFs, opposite for others.

Hypothesis 1: Relationships matter in pricing of repos.

- ▶ 1.a. Relationships with *funds* matter in pricing of repos.
 - ▶ The more “important” a *fund* is for a bank, the higher is the price.
 - ▶ The more “important” a bank is for a *fund*, the lower is the price.
- ▶ 1.b. Relationships with *fund families* matter in pricing of repos.
 - ▶ The more “important” a *fund family* is for a bank, the higher is the price.
 - ▶ The more “important” a bank is for a *fund family*, the lower is the price.

Measuring relationships

- ▶ How important is a fund (or family $BV_t^{\{b,ff\},m}$) for a bank, in a given market m ($m \in \{repo, non - repo\}$) and date t ?

$$BV_t^{\{b,f\},m} = \frac{\sum_{b,f} Value_t^m}{\sum_{f=1}^{F_b} Value_t^{\{b\},m}} \quad (1)$$

- ▶ $\uparrow BV_t^{\{b,f\},m}$ (or $BV_t^{\{b,ff\},m}$) $\Rightarrow \uparrow$ fund bargaining power
- ▶ How important is a bank for a fund (family, $FV_t^{\{b,ff\},m}$), in a given market m ($m \in \{repo, non - repo\}$) and date t ?

$$FV_t^{\{b,f\},m} = \frac{\sum_{f,b} Value_t^m}{\sum_{b=1}^{B_f} Value_t^{\{f\},m}} \quad (2)$$

- ▶ $\uparrow FV_t^{\{b,f\},m}$ (or $FV_t^{\{b,ff\},m}$) $\Rightarrow \downarrow$ fund bargaining power

Summary statistics of relationships

Japanese banks' repos are concentrated within a few fund families.

Table 1: Average shares of funds ($BV_t^{\{b,f\},m}$) and families ($BV_t^{\{b,ff\},m}$) for banks, by instrument and country

	$BV_t^{\{b,ff\},m}$		$BV_t^{\{b,f\},m}$	
	Repo	Non-repo	Repos	Non-repo
Japan	40.2	10.9	7.9	2.8
Rest	14.3	10.6	2.9	3.5

Table 2: Average shares of banks for funds ($FV_t^{\{b,f\},m}$) and fund families ($FV_t^{\{b,ff\},m}$), by instrument and country

	$FV_t^{\{b,ff\},m}$		$FV_t^{\{b,f\},m}$	
	Repo	Non-repo	Repos	Non-repo
Japan	5.8	7.0	12.3	7.3
Rest	10.6	5.6	14.1	6.0

Relationship with fund family explains repo pricing

	Fund (1.a.)	Fund Family (1.b)
	Repo rate	Repo rate
JP	2.866*** (1.046)	1.502 (1.098)
$BV_{t-1}^{\{b,f\},repo}$	0.0118 (0.0195)	
$FV_{t-1}^{\{b,f\},repo}$	-0.00221 (0.0123)	
$BV_{t-1}^{\{b,ff\},repo}$		0.0521*** (0.0123)
$FV_{t-1}^{\{b,ff\},repo}$		-0.0448*** (0.0114)
Observations	156,542	168,104
R-squared	0.827	0.828
Date FE	✓	✓
Fund Type FE	✓	✓
Collateral FE	✓	✓
Controls	✓	✓

Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Controls include Log(value), 5Y CDS, Rem. maturity.

Hypothesis 2: Relationships matter in the entire market.

Identification: The same fund family and the same bank have different values for BV and FV in repo versus non-repo markets.

	Full Market	Full Market
	Rate	Rate
$BV_{t-1}^{\{b,ff\},m}$	0.0654*** (0.0165)	0.0253* (0.0150)
$FV_{t-1}^{\{b,ff\},m}$	0.0170 (0.0178)	0.0529** (0.0202)
JP # $BV_{t-1}^{\{b,ff\},m}$	0.0459** (0.0214)	0.0570*** (0.0208)
JP # $FV_{t-1}^{\{b,ff\},m}$	-0.181*** (0.0497)	-0.153*** (0.0476)
Observations	412,008	411,924
R-squared	0.825	0.861
Date FE	✓	
Fund Type FE	✓	✓
Instrument FE	✓	✓
FundFamily FE	✓	
Bank FE	✓	
Date*FundFamily FE		✓
Date*Bank FE		✓
Controls	✓	✓

Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Controls include Log(value), 5Y CDS, Rem. maturity. JP is captured in bank FE.

Inelastic long-maturity US dollar demand of JP banks

Hypothesis 3: Given the long-term US dollar exposure of Japanese banks on the asset side, they have a relatively inelastic demand for longer-maturity US dollar funding.

- ▶ 3.1. The Japan Repo Premium is larger for longer maturity repos.
- ▶ 3.2. Since non-repo markets are longer-term US dollar funding markets, the US MMF reform was a negative supply shock. As a result, in the non-repo market, the prices Japanese banks pay rose more than others.

Hypothesis 3.1. JRP is larger for longer maturities.

	Repo rate
JP	-0.332 (1.128)
JP # Rem.maturity	0.177** (0.0888)
$BV_{t-1}^{\{b,ff\},repo}$	0.0522*** (0.0125)
$FV_{t-1}^{\{b,ff\},repo}$	-0.0434*** (0.0115)
Observations	168,104
R-squared	0.829
Date FE	✓
Fund Type FE	✓
Collateral FE	✓
Controls	✓

Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Controls include Log(value), 5Y CDS, Rem. maturity.

Hypothesis 3.2. MMF reform and the pricing of non-repos

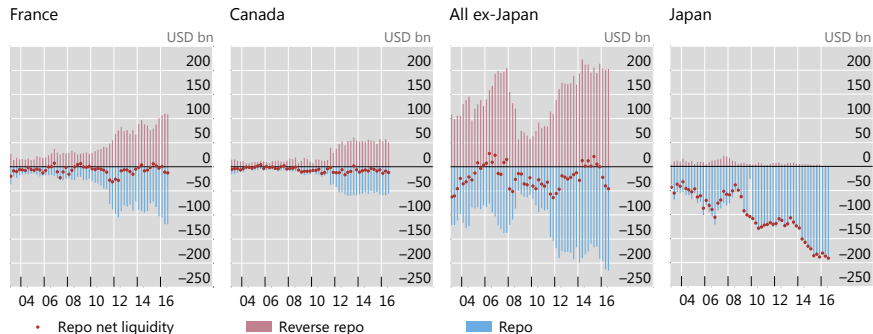
In the non-repo market, the prices Japanese banks pay rose more than others.

Identification: Since non-repo markets are longer-term US dollar funding markets, the US MMF reform was a negative supply shock.

	Rate
$\Delta NonrepoFunding_{t,t-1}$	-0.107*** (0.0246)
JP#post_reform	3.138** (1.350)
Observations	254,774
R-squared	0.863
Date FE	✓
Fund Type FE	✓
Instrument FE	✓
FundFamily FE	✓
Bank FE	✓
Controls	✓

Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Controls include Log(value), 5Y CDS, Rem. maturity. JP and post_reform are absorbed in bank and date FE, respectively. Post-reform is a dummy variable that is equal to 1 after October 2016.

US dollar intermediation - puzzles remain



Sources: US FFIEC 002 Reports, authors' calculations.

- ▶ Why do Japanese banks not do repos with MMFs?
 - ▶ Why not divide existing repos to more funds?
 - ▶ Why not bring the repos currently not with MMFs into this market?
- ▶ Is there room for intermediation where other banks provide terms that MMFs are unable/unwilling to provide?

Why do JP banks not diversify existing repos with MMFs?

Hypothesis 4: Building relationships is costly. In particular, funds provide longer maturity repos to long-term clients.

	Rem. maturity
ReIn length	0.0260 (0.0163)
JP#ReIn length	0.130** (0.0531)
Observations	184,411
R-squared	0.285
Collateral FE	✓
Fund Type FE	✓
Date*FundFamily FE	✓
Date*Bank FE	✓

Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. JP is absorbed in date*bank FE.

How much would other banks make by repo intermediation?

If a non-JP bank borrows ON, lends to a JP bank at 30 days, charging the MMF price

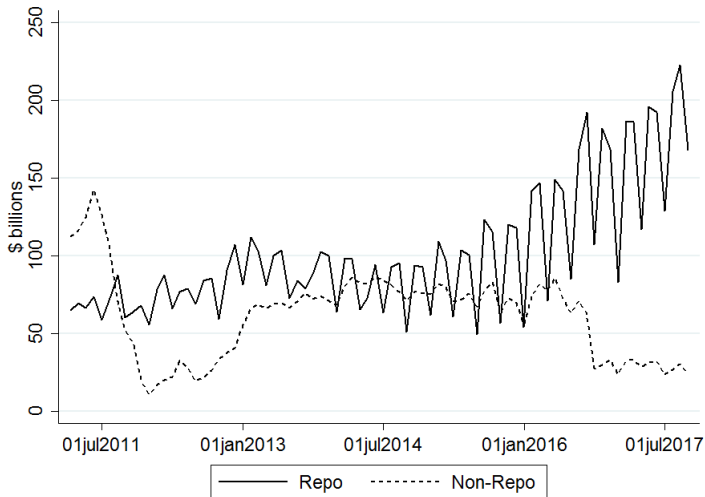
This is an arbitrage for European banks since their leverage ratio calculation is only at quarter ends. Alternative to Fed funds arbitrage which earns around 8 bps.

	Repo rate
Rem. maturity	0.342*** (0.0193)
JP	1.189 (0.931)
JP # Rem.Maturity	0.173* (0.0883)
30-day int. spread	16.6 bps
Observations	172,798
R-squared	0.827
Date FE	✓
Collateral FE	✓
Fund Type FE	✓
Controls	✓

Standard errors double-clustered at the bank-fund and time level in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Controls include Log(value) and 5Y CDS.

Spillovers to other US dollar funding markets

Figure 3: French banks' repo and non-repo borrowing from MMFs



French quarter-end repo retreat and the JPY/USD basis

Hypothesis 5.1. : If FR banks intermediate repos to JP banks, q-end FR repo withdrawal should increase the JPY/USD basis.

Hypothesis 5.2. : Only short maturities would be affected, since soon after repo goes back to normal.

	(1)	(2)	(3)	(4)	(5)	(6)
	1W	1M	3M	1Y	3Y	5Y
Δ FR repo	-1.27** (0.57)	0.37 (0.22)	-0.03 (0.09)	-0.01 (0.04)	-0.03 (0.03)	-0.01 (0.04)
Observations	24	24	23	25	25	25
R-squared	0.39	0.13	0.01	0.01	0.02	0.00

	(1)	(2)	(3)	(4)	(5)	(6)
	1W	1M	3M	1Y	3Y	5Y
Δ EA repo	-1.25* (0.67)	0.27* (0.16)	-0.03 (0.09)	0.01 (0.03)	-0.00 (0.03)	0.01 (0.04)
Observations	24	25	23	25	25	25
R-squared	0.35	0.07	0.00	0.00	0.00	0.00

Robust standard errors in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Changes are computed as $Month_{QE} - Month_{QE-1}$

French quarter-end repo retreat and the JPY/USD basis

Hypothesis 5.1. : If FR banks intermediate repos to JP banks, q-end FR repo withdrawal should increase the JPY/USD basis.

Hypothesis 5.2. : Only short maturities would be affected, since soon after repo goes back to normal.

Δ JPY/USD basis versus Δ repos with MMF by French banks

	(1)	(2)	(3)	(4)	(5)	(6)
	1W	1M	3M	1Y	3Y	5Y
Δ FR repo	-1.27** (0.57)	0.37 (0.22)	-0.03 (0.09)	-0.01 (0.04)	-0.03 (0.03)	-0.01 (0.04)
Observations	24	24	23	25	25	25
R-squared	0.39	0.13	0.01	0.01	0.02	0.00

Δ JPY/USD basis versus Δ repos with MMF by European banks

	(1)	(2)	(3)	(4)	(5)	(6)
	1W	1M	3M	1Y	3Y	5Y
Δ EA repo	-1.25* (0.67)	0.27* (0.16)	-0.03 (0.09)	0.01 (0.03)	-0.00 (0.03)	0.01 (0.04)
Observations	24	25	23	25	25	25
R-squared	0.35	0.07	0.00	0.00	0.00	0.00

Robust standard errors in parentheses. ***, **, * denote significance at the 1, 5 and 10% level respectively. Changes are computed as $Month_{QE} - Month_{QE-1}$

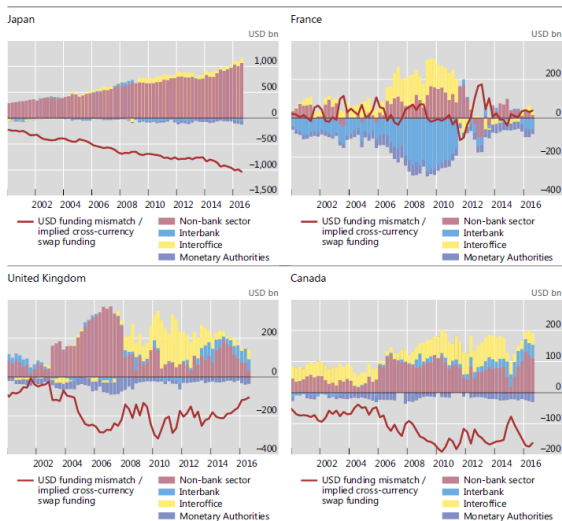
Conclusion

- ▶ Frictions in money markets:
 - ▶ Identity of the borrower/relationships/bargaining matters in pricing in money markets.
- ▶ Business models of global banks have diverged since 2011:
 - ▶ JP banks continue to have inelastic long-term dollar demand.
 - ▶ Euro banks changed from loans to repo int. and FFR arbitrage.
- ▶ The combination of frictions + diverging models:
 - ▶ Affect the *price of dollar funding*
 - ▶ Shape *dollar funding networks*
- ▶ Repo + Unsecured + FX swap markets are interconnected.
- ▶ Policy implications for emerging post-crisis fault lines.

APPENDIX

Balance sheets: Globally

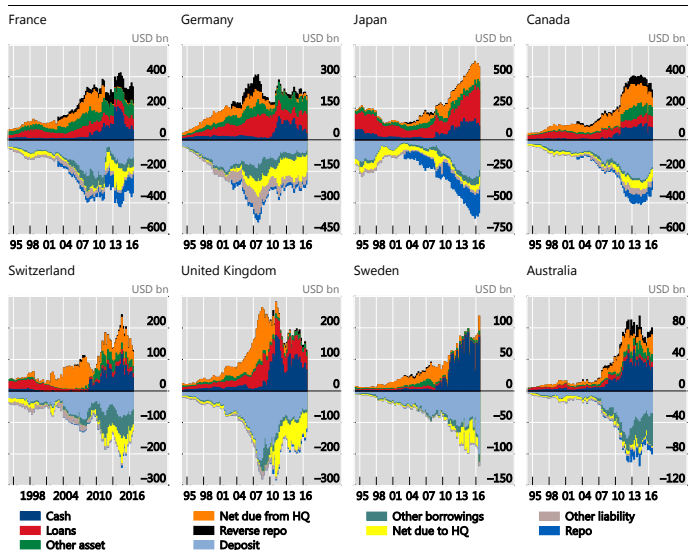
Figure 4: US dollar exposures by country



Note: Net exposures denominated in US dollars by counterparty sector

Source: BIS locational banking statistics by nationality, BIS consolidated banking statistics

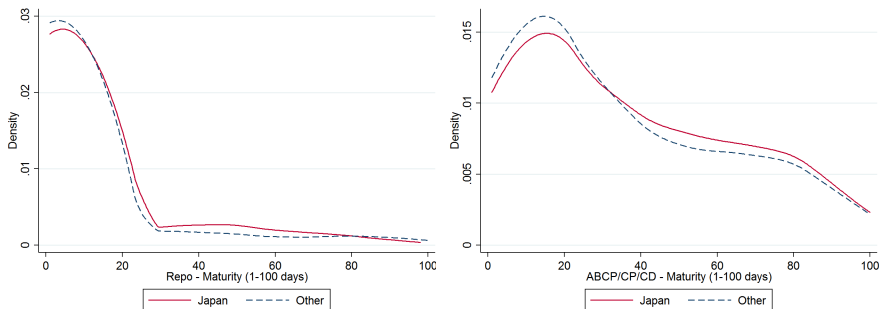
Balance sheets: US branches and agencies



Source: US FFIEC 002 filings, authors' calculations

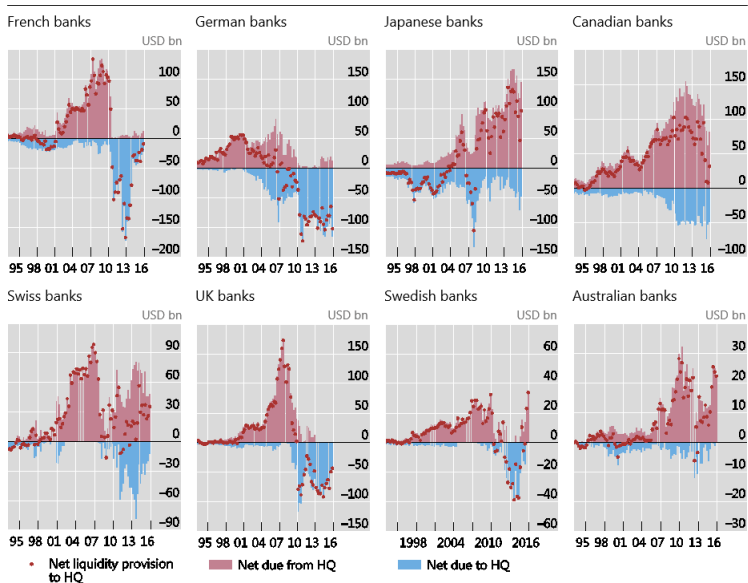
Japanese MMF liabilities are longer-term than others

Figure 5: (Smoothed) Maturities: Repo versus non-repo



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Interoffice positions

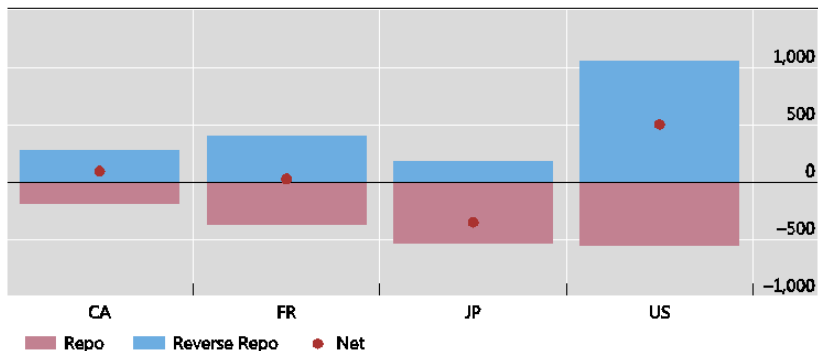


Source: US FFIEC 002 Call Reports, authors' calculations

Matched books at the consolidated level

Figure 6: Repo books by country - Consolidated level

In billions of US dollars



Notes: Aggregate by country for all banks active in the MMF data. Data for CA is for end-October 2016, for JP is end-March 2016 and for FR and the US is end-December 2016. Includes the aggregate repo book at the consolidated level, encompassing all currencies and geographies.

Sources: Banks' Annual Reports, FR-Y9C Reports (Federal Reserve).

CDS spreads: Japanese banks have the lowest

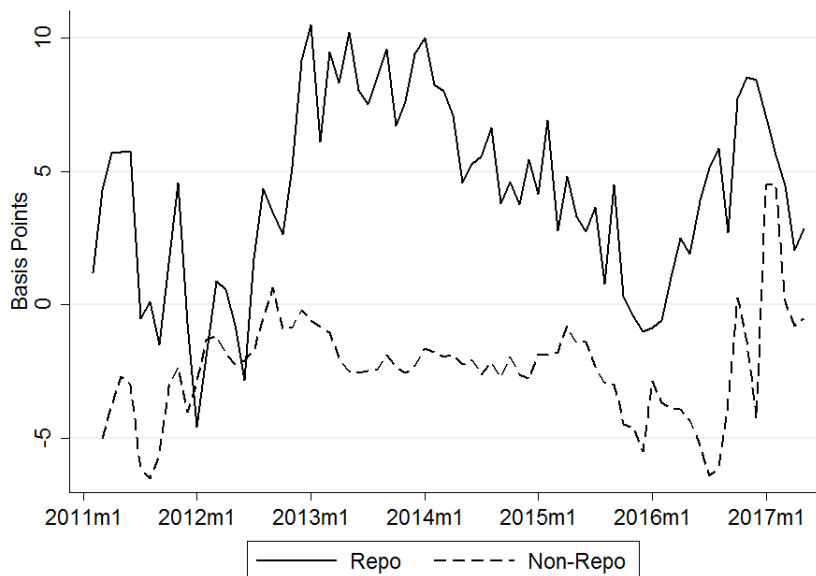
Table 3: Summary Statistics on CDS spreads, by country

Bank nationality	Mean	SD	Min	5 perc	95 perc	Max
Australia	97.1	38.3	47.3	54.6	168.7	222.3
Canada	71.1	27.7	10.2	24.0	118.2	167.5
Switzerland	97.6	42.4	40.8	47.5	179.1	205.9
China	142.1	31.1	94.7	103.4	207.6	291.9
Germany	143.3	59.2	59.3	71.6	259.7	318.5
Spain	179.0	95.6	69.5	72.2	389.6	424.2
Finland	80.6	35.1	39.5	40.6	163.3	189.3
France	129.0	73.4	51.6	59.7	278.1	382.7
United Kingdom	123.7	64.7	43.7	55.5	271.6	368.2
Japan	80.9	35.5	18.1	30.7	156.5	212.5
Netherlands	98.3	50.9	41.6	49.5	205.8	300.7
Sweden	84.5	42.4	34.5	40.5	176.6	227.1
United States	113.9	76.6	31.9	39.9	278.1	502.2

Notes: The table presents the summary statistics of CDS spreads for the banks in our final sample, aggregated by country.

Time series of the Japan Repo Premium

Figure 7: Average relative prices paid by JP banks, by market



The Japan Repo Premium: vis-à-vis each country

	(1)	(2)	(3)	(4)	(5)	(6)
	Repo rate	Repo rate	Repo rate	Repo rate	Repo rate	Repo rate [†]
Log(value)	-0.373** (0.150)	0.00851 (0.105)	-0.0525 (0.0962)	0.422*** (0.0869)	0.484*** (0.0857)	0.137 (0.0877)
Rem. maturity	0.443*** (0.0220)	0.339*** (0.0194)	0.346*** (0.0195)	0.342*** (0.0186)	0.350*** (0.0187)	
5Y CDS			0.0259*** (0.00526)	0.0241*** (0.00488)	0.0269*** (0.00495)	0.00263* (0.00139)
AU	-2.330 (4.751)	-0.0516 (3.084)	-0.287 (3.049)	-0.156 (3.247)	-0.420 (1.430)	-1.497 (1.256)
CA	-6.305*** (1.359)	-5.146*** (1.052)	-4.568*** (1.065)	-2.441*** (0.870)	-2.111** (0.834)	-1.557*** (0.520)
CH	0.416 (1.736)	-1.137 (1.223)	-0.944 (1.212)	0.0470 (1.005)	0.0313 (0.946)	-1.256** (0.557)
DE	-6.304*** (1.471)	-2.706** (1.026)	-2.475** (1.025)	-1.178 (0.836)	-0.676 (0.791)	-0.360 (0.736)
FR	-6.003*** (1.317)	-3.870*** (0.960)	-4.133*** (0.973)	-2.706*** (0.779)	-2.231*** (0.737)	-1.169** (0.570)
GB	-4.265*** (1.504)	-3.032*** (1.080)	-3.271*** (1.055)	-2.054** (0.919)	-1.824** (0.875)	-1.543*** (0.557)
NL	-7.338*** (1.384)	-5.610*** (1.103)	-6.166*** (1.385)	-2.647** (1.152)	-2.737** (1.072)	-1.656** (0.652)
US	-3.136** (1.436)	-1.966* (1.049)	-1.991* (1.049)	-0.626 (0.820)	-0.561 (0.766)	-1.816*** (0.583)
Observations	184,705	184,705	172,798	172,796	172,043	24,627
R-squared	0.755	0.824	0.828	0.842	0.891	0.923
Date FE	✓	✓	✓	✓	✓	✓
Fund Type FE	✓	✓	✓	✓	✓	✓
Collateral FE		✓	✓	✓		
Fund FE				✓	✓	
Date*Collateral FE					✓	
Date*Fund FE					✓	

No Japan Premium in ABCP/CP/CD: vis-à-vis each country

	(1) Rate	(2) Rate	(3) Rate
AU	6.746*** (0.558)	7.304*** (0.594)	6.906*** (0.611)
CA	5.108*** (0.536)	4.752*** (0.502)	5.686*** (0.571)
CH	5.327*** (0.763)	5.371*** (0.620)	4.907*** (0.655)
CN	12.10*** (1.515)	10.66*** (1.477)	7.875*** (1.567)
DE	4.616*** (0.731)	6.029*** (0.726)	5.103*** (0.757)
ES	2.657 (1.868)	2.255 (2.037)	-2.288 (1.727)
FI	1.210 (1.307)	0.843 (1.281)	1.161 (1.258)
FR	-0.000420 (0.961)	1.837** (0.861)	0.464 (0.795)
GB	3.009*** (0.661)	4.708*** (0.632)	3.066*** (0.635)
NL	3.211*** (0.587)	3.738*** (0.514)	4.438*** (0.530)
SE	-0.274 (0.694)	-0.952 (0.728)	-0.687 (0.690)
US	3.329*** (0.649)	4.493*** (0.537)	3.902*** (0.576)
BE	13.47*** (2.485)	13.15*** (2.492)	
Observations	285,032	285,032	258,661
R-squared	0.835	0.841	0.846
Date FE	✓	✓	✓
Instrument FE		✓	✓
Date*Fund FE			
Controls	✓	✓	✓