

From data to facts in derivatives markets

Session on “Networks of financial derivatives and systemic risk”

Iñaki Aldasoro¹

¹Bank for International Settlements

January 19, 2017

2nd FINEXUS Conference on Financial Networks and Sustainability
University of Zurich

Disclaimer: based on work with several coauthors; the views expressed here are solely those of the authors and do not necessarily represent the views of the BIS nor the institutions of affiliation of coauthors

Introduction - The importance of (granular) data

“Sometimes, I think, one forgets in our science that it is an empirical science relying on experience. Just as the natural scientist needs his instruments, so the economic scientist needs his measurements, his observations and data constructed with similar care” [Leontief (1971), p11]

“It is through observation and measurement that you define content and meaning of an economic variable” [Reich (2017), p13]

- ▶ Data as the way of establishing *economic facts*
- ▶ Economic facts as the *starting point* of theorising and modelling, based on “observables” and “measurables”

Introduction - The importance of (granular) data

“Sometimes, I think, one forgets in our science that it is an empirical science relying on experience. Just as the natural scientist needs his instruments, so the economic scientist needs his measurements, his observations and data constructed with similar care” [Leontief (1971), p11]

“It is through observation and measurement that you define content and meaning of an economic variable” [Reich (2017), p13]

- ▶ Data as the way of establishing *economic facts*
- ▶ Economic facts as the *starting point* of theorising and modelling, based on “observables” and “measurables”

Introduction - The importance of (granular) data

“Sometimes, I think, one forgets in our science that it is an empirical science relying on experience. Just as the natural scientist needs his instruments, so the economic scientist needs his measurements, his observations and data constructed with similar care” [Leontief (1971), p11]

“It is through observation and measurement that you define content and meaning of an economic variable” [Reich (2017), p13]

- ▶ Data as the way of establishing *economic facts*
- ▶ Economic facts as the *starting point* of theorising and modelling, based on “observables” and “measurables”

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

This talk: four economic questions and data lessons

1. What is the structure of derivatives (CDS) market and how can data be aggregated at sector/country level?
→ *Data quality in reporting (eg LEIs)*
2. How can systemic importance be computed in the presence of derivatives?
→ *Granularity in the cross-section*
3. How do banks actually use the market?
→ *Granularity in cross-section + time*
4. What can shape dollar funding networks? Does this affect related derivatives markets?
→ *Granularity in "timing"*

1. “Shedding light on dark markets”

[Abad, Aldasoro, Aymanns, D’Errico, Fache Rousová, Hoffmann, Langfield, Neychev & Roukny, ESRB OP 11, 2016]

EMIR data from DTCC compared with the BIS’s global OTC derivatives survey

(notional amounts outstanding)

	Interest rate derivatives	Credit derivatives	Foreign exchange derivatives
EMIR data from DTCC, EU aggregate	€247,428bn	€8,291bn	€39,629bn
BIS semi-annual survey, global aggregate	€353,303bn	€11,310bn	€64,810bn
Ratio (EMIR/BIS)	70%	73%	61%

Source: DTCC OTC interest rate, credit and foreign exchange derivatives datasets (based on the 02/11/15 trade state report) and BIS semi-annual OTC derivatives survey from end-2015.

Note: DTCC aggregates are obtained from Tables 4, 7 and 11 as the sum of the “final values” at the bottom of each table plus all observations in the lower part of the table below “Non-LEI counterparties” (excluding intra-group positions).

Matrix of share of interactions between market participants, weighted by notional

Buy \ Sell	G16 Dealers	Banks	Other financials	ICPFs	Non-financial	Other	Total
G16 Dealers	29.5%	17.4%	7.1%	0.3%	4.2%	2.4%	60.9%
Banks	18.5%	1.9%	0.9%	0.0%	0.1%	0.0%	21.3%
Other financials	8.2%	1.1%	0.4%	0.0%	0.1%	0.1%	10.0%
ICPFs	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5%
Non-financial	4.4%	0.1%	0.2%	0.0%	0.0%	0.0%	4.6%
Other	2.5%	0.0%	0.1%	0.0%	0.0%	0.0%	2.7%
Total	63.5%	20.6%	8.6%	0.4%	4.4%	2.5%	100.0%

Note: “Other” includes Government, Central Bank, CCPs and empty or unidentified sectors. The red squares refer to the intensity of the respective sector-to-sector relationship.

Source: DTCC OTC credit derivatives single-name dataset (based on the processed 02/11/15 trade state report).

1. “Shedding light on dark markets” (cont.)

Summary of net and gross positions in CDSs by sector

	No of contracts	Gross notional (EUR bn)	Net notional (EUR bn)	Net/Gross (%)
G16 dealers	1,014,550	5890	-69.9	-1.2
Banks	96,256	676	5.5	0.8
Other financials	63,810	264	53.0	20.1
Non-financials	36,095	264	5.6	2.1
Insurance and pension funds	3,593	35	0.9	2.5

Source: DTCC OTC credit derivatives single-name dataset (based on the processed 02/11/15 trade state report).

Positions of banks and dealers on euro area sovereign reference entities, by country of counterparty

(€ bn)

	Based on LEI			Based on GUO-LEI		
	Buy	Sell	Net	Buy	Sell	Net
Domestic	5.6	1.4	4.2	6.7	2.7	4.0
EA exc. domestic	108.0	115.0	-7.0	109.0	117.0	-8.0
Other EU	225.0	222.0	3.0	59.2	59.3	-0.1
US	83.0	95.3	-12.3	235.0	245.0	-10.0
CH	7.5	8.1	-0.7	30.6	30.4	0.2
JP	0.0	0.0	0.0	22.3	24.4	-2.1
Other	1.3	1.7	-0.4	1.4	1.5	-0.1

- ▶ Aggregation by sectors and countries
- ▶ Aggregation up the hierarchy
- ▶ *Only possible with quality reporting!*

1. “Shedding light on dark markets” (cont.)

Summary of net and gross positions in CDSs by sector

	No of contracts	Gross notional (EUR bn)	Net notional (EUR bn)	Net/Gross (%)
G16 dealers	1,014,550	5890	-69.9	-1.2
Banks	96,256	676	5.5	0.8
Other financials	63,810	264	53.0	20.1
Non-financials	36,095	264	5.6	2.1
Insurance and pension funds	3,593	35	0.9	2.5

Source: DTCC OTC credit derivatives single-name dataset (based on the processed 02/11/15 trade state report).

Positions of banks and dealers on euro area sovereign reference entities, by country of counterparty

(€ bn)

	Based on LEI			Based on GUO-LEI		
	Buy	Sell	Net	Buy	Sell	Net
Domestic	5.6	1.4	4.2	6.7	2.7	4.0
EA exc. domestic	108.0	115.0	-7.0	109.0	117.0	-8.0
Other EU	225.0	222.0	3.0	59.2	59.3	-0.1
US	83.0	95.3	-12.3	235.0	245.0	-10.0
CH	7.5	8.1	-0.7	30.6	30.4	0.2
JP	0.0	0.0	0.0	22.3	24.4	-2.1
Other	1.3	1.7	-0.4	1.4	1.5	-0.1

- ▶ Aggregation by sectors and countries
- ▶ Aggregation up the hierarchy
- ▶ *Only possible with quality reporting!*

1. “Shedding light on dark markets” (cont.)

Summary of net and gross positions in CDSs by sector

	No of contracts	Gross notional (EUR bn)	Net notional (EUR bn)	Net/Gross (%)
G16 dealers	1,014,550	5890	-69.9	-1.2
Banks	96,256	676	5.5	0.8
Other financials	63,810	264	53.0	20.1
Non-financials	36,095	264	5.6	2.1
Insurance and pension funds	3,593	35	0.9	2.5

Source: DTCC OTC credit derivatives single-name dataset (based on the processed 02/11/15 trade state report).

Positions of banks and dealers on euro area sovereign reference entities, by country of counterparty

(€ bn)

	Based on LEI			Based on GUO-LEI		
	Buy	Sell	Net	Buy	Sell	Net
Domestic	5.6	1.4	4.2	6.7	2.7	4.0
EA exc. domestic	108.0	115.0	-7.0	109.0	117.0	-8.0
Other EU	225.0	222.0	3.0	59.2	59.3	-0.1
US	83.0	95.3	-12.3	235.0	245.0	-10.0
CH	7.5	8.1	-0.7	30.6	30.4	0.2
JP	0.0	0.0	0.0	22.3	24.4	-2.1
Other	1.3	1.7	-0.4	1.4	1.5	-0.1

- ▶ Aggregation by sectors and countries
- ▶ Aggregation up the hierarchy
- ▶ *Only possible with quality reporting!*

1. “Shedding light on dark markets” (cont.)

Summary of net and gross positions in CDSs by sector

	No of contracts	Gross notional (EUR bn)	Net notional (EUR bn)	Net/Gross (%)
G16 dealers	1,014,550	5890	-69.9	-1.2
Banks	96,256	676	5.5	0.8
Other financials	63,810	264	53.0	20.1
Non-financials	36,095	264	5.6	2.1
Insurance and pension funds	3,593	35	0.9	2.5

Source: DTCC OTC credit derivatives single-name dataset (based on the processed 02/11/15 trade state report).

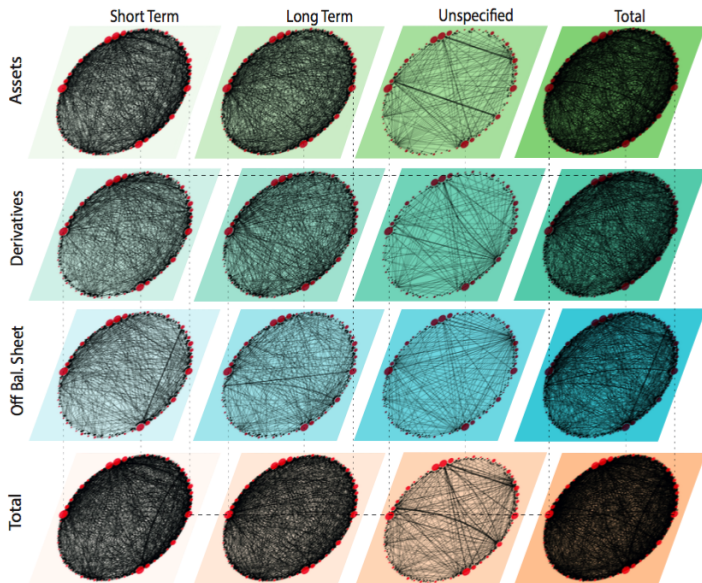
Positions of banks and dealers on euro area sovereign reference entities, by country of counterparty

	(€ bn)					
	Based on LEI			Based on GUO-LEI		
	Buy	Sell	Net	Buy	Sell	Net
Domestic	5.6	1.4	4.2	6.7	2.7	4.0
EA exc. domestic	108.0	115.0	-7.0	109.0	117.0	-8.0
Other EU	225.0	222.0	3.0	59.2	59.3	-0.1
US	83.0	95.3	-12.3	235.0	245.0	-10.0
CH	7.5	8.1	-0.7	30.6	30.4	0.2
JP	0.0	0.0	0.0	22.3	24.4	-2.1
Other	1.3	1.7	-0.4	1.4	1.5	-0.1

- ▶ Aggregation by sectors and countries
- ▶ Aggregation up the hierarchy
- ▶ *Only possible with quality reporting!*

2. Systemic importance in multiplex networks

[Aldasoro & Alves, JFS 2017]



2. Systemic importance in multiplex networks (cont.)

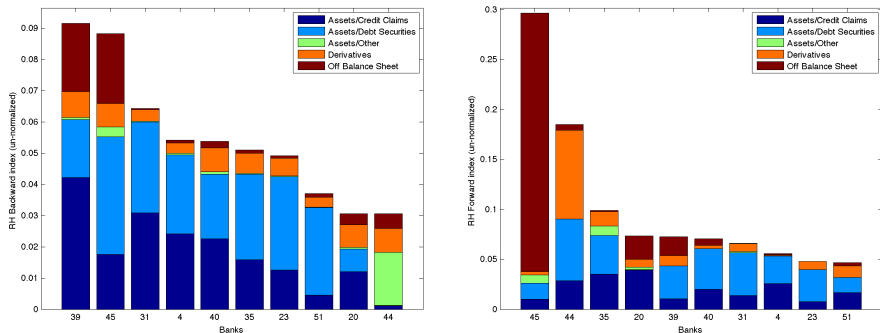


Figure: Backward (L) & forward (R) index for syst. banks by instrument

- ▶ Importance in interconnectivity → more than size: contribution of *derivatives* smaller than exp. share ($\sim 25\%$)
- ▶ Network with small share of exposures (*OffBS* $\sim 1/7$) can be a major driver of systemic importance of specific banks
- ▶ *Only possible with good bilateral cross-sectional data!*

2. Systemic importance in multiplex networks (cont.)

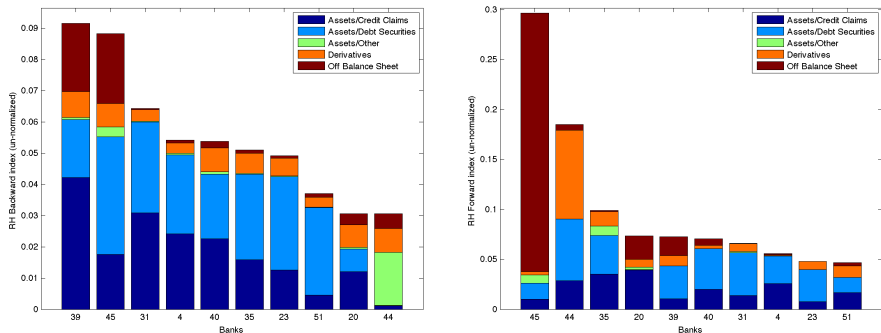


Figure: Backward (L) & forward (R) index for syst. banks by instrument

- ▶ Importance in interconnectivity → more than size: contribution of *derivatives* smaller than exp. share ($\sim 25\%$)
- ▶ Network with small share of exposures (*OffBS* $\sim 1/7$) can be a major driver of systemic importance of specific banks
- ▶ *Only possible with good bilateral cross-sectional data!*

2. Systemic importance in multiplex networks (cont.)

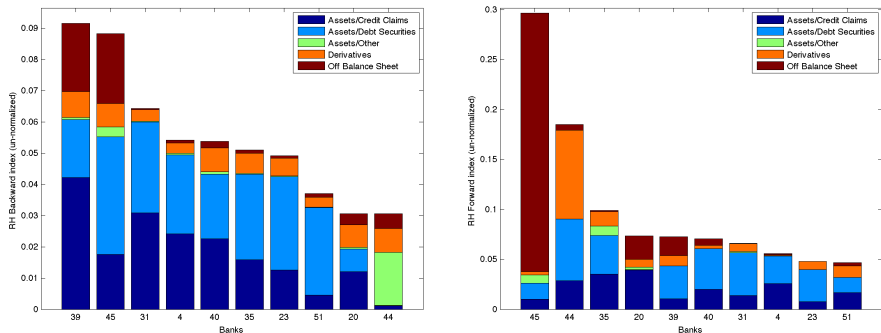


Figure: Backward (L) & forward (R) index for syst. banks by instrument

- ▶ Importance in interconnectivity → more than size: contribution of *derivatives* smaller than exp. share ($\sim 25\%$)
- ▶ Network with small share of exposures (*OffBS* $\sim 1/7$) can be a major driver of systemic importance of specific banks
- ▶ *Only possible with good bilateral cross-sectional data!*

2. Systemic importance in multiplex networks (cont.)

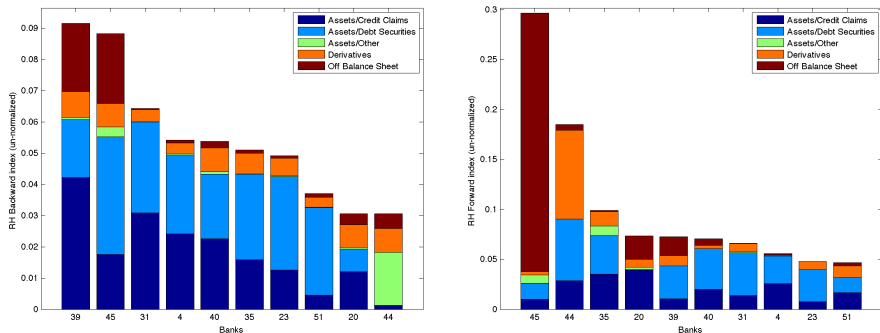


Figure: Backward (L) & forward (R) index for syst. banks by instrument

- ▶ Importance in interconnectivity → more than size: contribution of *derivatives* smaller than exp. share ($\sim 25\%$)
- ▶ Network with small share of exposures (*OffBS* $\sim 1/7$) can be a major driver of systemic importance of specific banks
- ▶ *Only possible with good bilateral cross-sectional data!*

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning

[Aldasoro & Barth, BIS WP 679, 2017]

- ▶ How do banks actually use the CDS market to deal with specific (NFC) credit exposures?
 - ▶ Double-up versus hedging
- ▶ Do banks hedge in particular against risky firms?
- ▶ Do riskier (leverage, wholesale funding, ROA) banks hedge less often?
- ▶ Do banks hedge in order to get capital relief?
- ▶ Do they hedge cross-border loans more often?
- ▶ Do lead arrangers of syndicated loans hedge more than non-lead arrangers?

3. Syndicated loans and CDS positioning (cont.)

- ▶ Merge CDS data (DTCC-EMIR) with syndicated loan data and balance sheet data (Oct-14 to Dec-16)
- ▶ For each lending relationship between bank i and firm j in month t construct “uninsured loan ratio”

$$ULR = \frac{LOAN\ HOLDING_{ijt} - NET\ NOTIONAL\ CDS\ HOLDINGS_{ijt}}{LOAN\ HOLDING_{ijt}} \quad (1)$$

- ▶ Wide coverage:

- ▶ 1,000 types from 140 companies
- ▶ 1,000 types from 140 banks from 140 companies
- ▶ 152 types from 140 companies

3. Syndicated loans and CDS positioning (cont.)

- ▶ Merge CDS data (DTCC-EMIR) with syndicated loan data and balance sheet data (Oct-14 to Dec-16)
- ▶ For each lending relationship between bank i and firm j in month t construct “uninsured loan ratio”

$$ULR = \frac{LOAN\ HOLDING_{ijt} - NET\ NOTIONAL\ CDS\ HOLDINGS_{ijt}}{LOAN\ HOLDING_{ijt}} \quad (1)$$

- ▶ Wide coverage:

3. Syndicated loans and CDS positioning (cont.)

- ▶ Merge CDS data (DTCC-EMIR) with syndicated loan data and balance sheet data (Oct-14 to Dec-16)
- ▶ For each lending relationship between bank i and firm j in month t construct “uninsured loan ratio”

$$ULR = \frac{LOAN\ HOLDING_{ijt} - NET\ NOTIONAL\ CDS\ HOLDINGS_{ijt}}{LOAN\ HOLDING_{ijt}} \quad (1)$$

- ▶ Wide coverage:
 - ▶ Broadest sample: 1022 banks from 28 countries lending to 14660 firms from 144 countries
 - ▶ Narrowest sample: 142 banks from 16 countries lending to 652 firms from 51 countries

3. Syndicated loans and CDS positioning (cont.)

- ▶ Merge CDS data (DTCC-EMIR) with syndicated loan data and balance sheet data (Oct-14 to Dec-16)
- ▶ For each lending relationship between bank i and firm j in month t construct “uninsured loan ratio”

$$ULR = \frac{LOAN\ HOLDING_{ijt} - NET\ NOTIONAL\ CDS\ HOLDINGS_{ijt}}{LOAN\ HOLDING_{ijt}} \quad (1)$$

- ▶ Wide coverage:
 - ▶ Broadest sample: **1022** banks from **28** countries lending to **14660** firms from **144** countries
 - ▶ Narrowest sample: **142** banks from **16** countries lending to **652** firms from **51** countries

3. Syndicated loans and CDS positioning (cont.)

- ▶ Merge CDS data (DTCC-EMIR) with syndicated loan data and balance sheet data (Oct-14 to Dec-16)
- ▶ For each lending relationship between bank i and firm j in month t construct “uninsured loan ratio”

$$ULR = \frac{LOAN\ HOLDING_{ijt} - NET\ NOTIONAL\ CDS\ HOLDINGS_{ijt}}{LOAN\ HOLDING_{ijt}} \quad (1)$$

- ▶ Wide coverage:
 - ▶ Broadest sample: **1022** banks from **28** countries lending to **14660** firms from **144** countries
 - ▶ Narrowest sample: **142** banks from **16** countries lending to **652** firms from **51** countries

3. Syndicated loans and CDS positioning (cont.)

- ▶ Merge CDS data (DTCC-EMIR) with syndicated loan data and balance sheet data (Oct-14 to Dec-16)
- ▶ For each lending relationship between bank i and firm j in month t construct “uninsured loan ratio”

$$ULR = \frac{LOAN\ HOLDING_{ijt} - NET\ NOTIONAL\ CDS\ HOLDINGS_{ijt}}{LOAN\ HOLDING_{ijt}} \quad (1)$$

- ▶ Wide coverage:
 - ▶ Broadest sample: **1022** banks from **28** countries lending to **14660** firms from **144** countries
 - ▶ Narrowest sample: **142** banks from **16** countries lending to **652** firms from **51** countries

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

3. Syndicated loans and CDS positioning

- ▶ On average, banks do not use the CDS market for hedging purposes; however, there is evidence for some speculation
- ▶ Loans to riskier (safer) firms are insured more (less)
- ▶ Safer (weaker) banks insure more (less)
- ▶ No evidence of usage of CDS for capital relief
- ▶ Cross-border (domestic) loans are hedged less (more)
- ▶ Lead arrangers hedge their exposures more → undermines skin in the game
- ▶ *Only possible with granular panel data!*

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

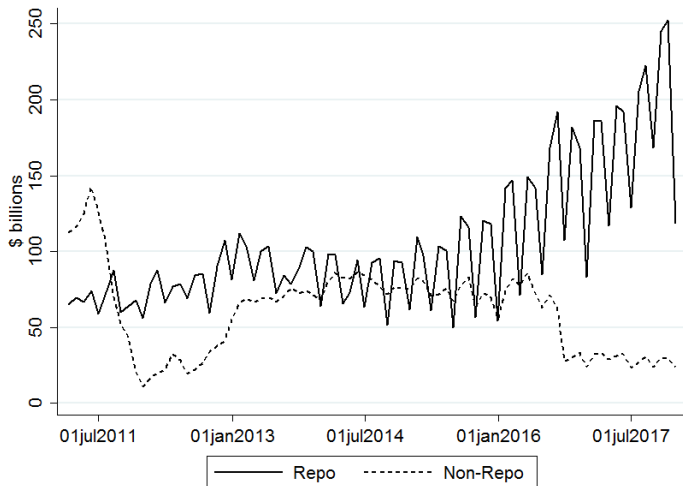
4. MM frictions and global banks' business models

[Aldasoro, Ehlers & Eren, BIS WP (forth.)]

- ▶ Foreign banks collectively as large as US banks in \$ banking
- ▶ Divergent business models since GFC and € crisis
 - ▶ JP banks: inelastic longer maturity demand for \$, large repo books
 - ▶ EA banks: short-term activities, matched repo books
- ▶ MMF important source of \$ funding for non-US banks. Use regulatory filings of MMFs to study implications for
 - ▶ Price of dollar funding
 - ▶ Shape of \$ funding networks
- ▶ One finding: \$ repo intermediation network (MMF→FR→JP)
 - ▶ No bilateral data FR-JP...
 - ▶ Everything's not lost! Test implications

4. MM frictions and global banks' business models (cont.)

- ▶ French banks' quarter-end repo window dressing (different LR implementation)



4. MM frictions and global banks' business models (cont.)

- ▶ \$ funding: global and hierarchical
- ▶ Well-documented post crises phenomenon: CIP deviations (esp. JPY)

Table: Quarter-end effect: JPY basis vs repos w/ MMF by FR banks

	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

Notes: Robust standard errors in parentheses. ***, **, * denote significance at the 10, 5 and 1% level respectively. Changes are computed as $month_{q-end} - month_{q-end-1}$ (the absolute value is taken for changes in French banks' repos with MMFs (in \$billions)). The sample runs from January 2011 (Q1 2011) to September 2017 (Q3 2017). 1W, 1M, 3M, 1Y, 3Y, 5Y refer to the contemporaneous changes in the 1-week, 1-month, 3-month, 1-year, 3-year and 5-year basis, respectively.

- ▶ *Only possible with granular and "timely" data!*

4. MM frictions and global banks' business models (cont.)

- ▶ \$ funding: global and hierarchical
- ▶ Well-documented post crises phenomenon: CIP deviations (esp. JPY)

Table: Quarter-end effect: JPY basis vs repos w/ MMF by FR banks

	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

Notes: Robust standard errors in parentheses. ***, **, * denote significance at the 10, 5 and 1% level respectively. Changes are computed as $month_{q-end} - month_{q-end-1}$ (the absolute value is taken for changes in French banks' repos with MMFs (in \$billions)). The sample runs from January 2011 (Q1 2011) to September 2017 (Q3 2017). 1W, 1M, 3M, 1Y, 3Y, 5Y refer to the contemporaneous changes in the 1-week, 1-month, 3-month, 1-year, 3-year and 5-year basis, respectively.

- ▶ *Only possible with granular and "timely" data!*

4. MM frictions and global banks' business models (cont.)

- ▶ \$ funding: global and hierarchical
- ▶ Well-documented post crises phenomenon: CIP deviations (esp. JPY)

Table: Quarter-end effect: JPY basis vs repos w/ MMF by FR banks

	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

Notes: Robust standard errors in parentheses. ***, **, * denote significance at the 10, 5 and 1% level respectively. Changes are computed as $month_{q-end} - month_{q-end-1}$ (the absolute value is taken for changes in French banks' repos with MMFs (in \$billions)). The sample runs from January 2011 (Q1 2011) to September 2017 (Q3 2017). 1W, 1M, 3M, 1Y, 3Y, 5Y refer to the contemporaneous changes in the 1-week, 1-month, 3-month, 1-year, 3-year and 5-year basis, respectively.

- ▶ *Only possible with granular and "timely" data!*

4. MM frictions and global banks' business models (cont.)

- ▶ \$ funding: global and hierarchical
- ▶ Well-documented post crises phenomenon: CIP deviations (esp. JPY)

Table: Quarter-end effect: JPY basis vs repos w/ MMF by FR banks

	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

Notes: Robust standard errors in parentheses. ***, **, * denote significance at the 10, 5 and 1% level respectively. Changes are computed as $month_{q-end} - month_{q-end-1}$ (the absolute value is taken for changes in French banks' repos with MMFs (in \$billions)). The sample runs from January 2011 (Q1 2011) to September 2017 (Q3 2017). 1W, 1M, 3M, 1Y, 3Y, 5Y refer to the contemporaneous changes in the 1-week, 1-month, 3-month, 1-year, 3-year and 5-year basis, respectively.

- ▶ *Only possible with granular and "timely" data!*

Thank you for your attention!

✉ inaki.aldasoro@bis.org