The Origination and Distribution of Money Market Instruments: Sterling Bills of Exchange During the First Globalization

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Workshop on Monetary and Financial History
Federal Reserve Bank of Atlanta
May 15-17, 2017
Motivations

- Safe and highly liquid money market instruments essential to functioning of any financial system

- The informational problem in money market instruments
  - Money market instruments often consist of *private bank debts* backed by risky collateral
  - Liquidity requires that agents do not question the value of the collateral
  - Underlying debt needs to be *information-insensitive* (Dang, Gorton and Holmström, 2012; Gorton, 2012)
“Markets are liquid when [...] no one knows anything about the collateral value and everyone knows that no one knows anything. In that situation it is very easy to transact.”

Gorton (2012)
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- Illustration: the 2007/08 financial crisis
  - Repos, ABCP backed by MBS considered as quasi-money by market participants... until 2007 housing market collapse
  - Investors started questioning the value of the collateral ➔ freeze of money markets and financial crisis
This paper

- We study the origination and distribution of pre-WW1 money market instruments

- The Sterling Bill of Exchange
  - An instrument of short-term trade finance
  - High *informational asymmetries* between lenders (London bill holders) and debtors (private firms in UK or abroad)
  - Yet, sterling bill considered highly liquid money market instrument
Bills of Exchange’s Liquidity

“Money is more readily advanced upon them than upon any other species of obligation.”

Adam Smith (1776), Wealth of Nations, chapter 2

“With Britain on the Gold Standard ... [sterling] bills were the same as gold, as they could always be discounted in the London Discount Market, the proceeds converted into gold ... and the gold taken out of the country.”

Gillett Brothers (1952), The Bill on London
This paper

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  - The Sterling Bill of Exchange
    - An instrument of short-term trade finance
    - High *informational asymmetries* between lenders (London bill holders) and debtors (in UK or abroad)
    - Yet, sterling bill considered highly liquid money market instrument

- How were bills of exchange produced?

- What were the chains of origination and distribution?

- How were private debts transformed into highly liquid monetary instruments?
Outline

I. The Bill of Exchange: description and background

I. Source and Data

I. Anatomy of the Money Market

I. Conclusions
I. The Bill of Exchange
Description and Background
I. The Bill of Exchange

- Sterling bills
  - Intermediaries involved in the origination/distribution
  - A flexible instrument
Bill of exchange
Origination and Distribution

1. Sends goods

2. Draws a bill

3. Negotiates

4. Negotiates

5. Presents

6. Accepts

7. Discounts

Drawer (Exporter)

Remitter

Payee

Acceptor

Discounter

Importer

Place A

London

Place B
Bill of exchange

Maturity

Place A

- Remitter
- Drawer (Exporter)

London

- Payee
- Acceptor
- Discounter

Place B

- Importer
I. The Bill of Exchange

- How sterling bills worked
  - Intermediaries involved in the origination/distribution
  - A flexible instrument

- The names on a bill
  - **Drawer** = Borrower
  - **Acceptor** = Guarantor
  - **Discounter** = Lender
Sterling Bill, 01/1910

N° 729

£ 940-7-

Fifteen days after sight of this First of Exchange (Second unpaid) Pay to the Order of

The Hark National Bank, New York

Five hundred and forty pounds sterling

Value received and charge the same to account of

To

The London Joint Stock Bank

London, England

y. Jones & Co.
I. The Bill of Exchange

- How sterling bills worked
  - Intermediaries involved in the origination/distribution
  - A flexible instrument

- The names on a bill
  - **Drawer** = Borrower
  - **Acceptor** = Guarantor
  - **Discounte**r = Lender

- Who were the drawers/acceptors/discounters?

- Who produced information on the drawers/borrowers?
II. Source and Data
II. Source and Data

- The Bank of England’s *Discount Ledgers*
  - Bank of England was a **big player** in the London bill market
  - Ledgers report systematic information on all bills re-discounted by BoE
  - Drawer’s name/location; Acceptor’s name; Discouter’s name
<table>
<thead>
<tr>
<th>Date of Discount</th>
<th>Folio</th>
<th>Acceptors or Discounters</th>
<th>Discount</th>
<th>With</th>
<th>Upon</th>
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<td></td>
<td>35%</td>
<td>105</td>
<td>10</td>
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## Bank of England’s Discount Ledgers

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<thead>
<tr>
<th>Whence Drawn</th>
<th>Drawer</th>
<th>Date of Discount</th>
<th>Foli o</th>
<th>Acceptors or Discounters</th>
<th>Due</th>
<th>Discounts</th>
<th>Advances</th>
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<tr>
<td>Bombay</td>
<td>Nicol W &amp; Co</td>
<td>May 11</td>
<td>1866</td>
<td>Brought Forward</td>
<td>July 9</td>
<td>98.326</td>
<td>15 1</td>
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<tr>
<td>Montevideo</td>
<td>Barthold E &amp; Co</td>
<td>May 11</td>
<td>214</td>
<td>National Discount Co</td>
<td>Aug 9</td>
<td>5.000</td>
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<tr>
<td>Bombay</td>
<td>Oriental Bank</td>
<td>May 11</td>
<td>1674</td>
<td>Melly Fargo &amp; Co</td>
<td>May 24</td>
<td>859</td>
<td>14 6</td>
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<td>Bombay</td>
<td>Angers R</td>
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<td>Bombay</td>
<td>Robinson &amp; Co</td>
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<td>Bombay</td>
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<tr>
<td>Liverpool</td>
<td>North Western Bank</td>
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<td>Calcutta</td>
<td>Bank of Hindustan</td>
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<td>Shanghai</td>
<td>Jardine M &amp; Co</td>
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<td>Bombay</td>
<td>Oriental Bank</td>
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<td>Karachi</td>
<td>Finlay &amp; Co</td>
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<tr>
<td>Bombay</td>
<td>Nicol W &amp; Co</td>
<td>1487</td>
<td></td>
<td>Nicol D &amp; Co</td>
<td>Aug 11</td>
<td>5.000</td>
<td></td>
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<tr>
<td>Bombay</td>
<td>Nicol W &amp; Co</td>
<td></td>
<td></td>
<td>Nicol D &amp; Co</td>
<td>Aug 11</td>
<td>5.000</td>
<td></td>
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<tr>
<td>Colombo</td>
<td>Stewart G &amp; Co</td>
<td></td>
<td></td>
<td>Arbuthnot L &amp; Co</td>
<td>Aug 16</td>
<td>1.000</td>
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Total: £131,606  9 7
II. Source and Data

- The Bank of England’s *Discount Ledgers*
  - Bank of England was a **big player** in the London bill market
  - Ledgers report systematic information on all bills re-discounted by BoE
    - Drawer’s name/location; Acceptor’s name; Discouter’s name

- Our dataset
  - Information on all individual bills rediscounted by the Bank of England during the year **1906**
  - **23,493 bills**: **4,556** drawers; **1,439** acceptors; **145** discounters
  - Allows reconstructing the **network of agents** involved in the origination of sterling bills

- Limitation
  - We only observe bills rediscounted by the Bank of England
  - Selection bias?
## Ranking of Acceptors

**Chapman (1984) vs. BoE ledgers**

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Kleinworts</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Schröders</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Barings</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Rothschilds</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Brandts</td>
<td>5</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Hambros</td>
<td>6</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Gibbs</td>
<td>7</td>
<td>7</td>
<td>7</td>
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</tbody>
</table>
III. Anatomy of the Money Market
III. Anatomy of the Money Market

- The geography of drawers/borrowers
  - Where were the underlying debts originated?
  - Wide geographical dispersion, esp. in Europe, America, India
The Geography of Drawers/Borrowers - 1906
The Geography of Drawers/Borrowers - 1906
III. Anatomy of the Money Market

- The geography of drawers/borrowers
  - Where were the underlying debts originated?
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  - How was the screening of such diverse borrowers done?

- Acceptors as relationship-bankers
  - Acceptors were the guarantors of private international debts
  - How acceptors worked: the case of *Kleinworts & Sons*
Kleinworts’ Clients Ledgers

- Clients accounts ledgers (left)
  - **Credit insurance lines** under which clients can draw bills
  - Specified acceptance **commission** (here 0.5% per annum)
  - List of all **bills drawn** under credit line

- Information books (top)
  - Keep track of all **information** on foreign firms’ position and reputation
  - “On a personal note, the owners are described to us as competent and respectable merchants”
III. Anatomy of the Money Market

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  - How acceptors worked: the case of Kleinworts & Sons

- Did acceptors solve the information problem?
  - Relationship banking theory: bilateral financing preferred to multilateral financing for information-sensitive debts
  - Drawers borrowed from large number of discounters/lenders but dealt with more limited number of acceptors/guarantors
# Acceptors and Discounters per Drawer

All drawers with more than one transaction

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SE</th>
<th>Max.</th>
<th>Min.</th>
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<tbody>
<tr>
<td><strong>Acceptors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Nb of acceptors per drawer</td>
<td>2.81</td>
<td>(0.08)</td>
<td>38.00</td>
<td>1.00</td>
</tr>
<tr>
<td>- % of all acceptors</td>
<td>0.19</td>
<td>(0.01)</td>
<td>2.57</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Discounters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Nb of discounters per drawer</td>
<td>3.35</td>
<td>(0.08)</td>
<td>36.00</td>
<td>1.00</td>
</tr>
<tr>
<td>- % of all discounters</td>
<td>2.28</td>
<td>(0.05)</td>
<td>24.49</td>
<td>0.68</td>
</tr>
</tbody>
</table>
Shared Drawers/Borrowers

Percentage (x) of Fellows with which at least one Drawer is shared

- Acceptors
- Discounters
III. Anatomy of the Money Market

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- Did acceptors solve the information problem?
  - Banking theory: bilateral financing preferred to multilateral financing for information-sensitive debts
  - Drawers borrowed from large number of discounters/lenders but dealt with more limited number of acceptors/guarantors
  - Suggests acceptors’ guarantee made sterling bills information-insensitive
III. Anatomy of the Money Market

- Structure of the acceptance/debt insurance industry
  - **Reputational effects** might have led to market concentration
  - Chapman (1984): prior to WW1, acceptance market became increasingly concentrated around a few merchant banks
  - We see a small number of large acceptors (acceptance houses) and a large number of very small acceptors (probably, merchants)
Frequency Distribution of Drawers By Acceptor and Discounter

- Acceptors
- Discounters

Number of drawers:
- 1
- 2-10
- 11-50
- 51-100
- 101-200
- 201-500
- >500

Percentage of Accept./Disc.
Market Concentration/Penetration
Acceptors vs. Discounters

- Acceptors
  - HHI (left axis)
  - Highest Market Penetration (right axis)

- Discounters
  - HHI (left axis)
  - Highest Market Penetration (right axis)
Concentration Ratios
Acceptors vs. Discounters
III. Anatomy of the Money Market

- Structure of the acceptance/debt insurance industry
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- Profiles of discounters
  - Discounters/lenders could purchase bills on the market or obtain them through their network of correspondents
  - Discounters/lenders with geographically diversified portfolio of bills (bill brokers)
  - London branches of foreign banks had geographically concentrated portfolios of drawers
IV. Conclusions
IV. (Preliminary) Conclusions

- An analysis of the structure of the London money market before WW1
- Great variety of borrowers and origination/distribution chains
- Crucial role played by acceptors/debt guarantors in producing private information on borrowers/debtors
- Acceptors’ guarantee explains why bill holders had no incentive to “ask questions” about underlying debt
- Liquidity of sterling bills not altered unless bad shock affected the acceptors/guarantors’ position (eg. 1914 and 1931 crises)
- Difference with today’s money market instruments (eg. repo): underlying debt not only secured by borrowers’ assets but guaranteed by a third party
“Notice will also be taken of the name of the drawer, even though it is on the name of the acceptor that the bill is judged.”
Discounters’ 2-Mode Network
Discounters’ 2-Mode Network

Max N1 Degree = 75 (52%)

Highest value of line = 137 (3.9%)
Discounters’ 2-Mode Network

N1 = 0 for 20 (16%); N1 = 1 for 14 (11%)

Max N1 Degree = 75 (52%)

Highest value of line = 137 (3.9%)
Acceptor's 2-Mode Network

# of fellow acceptors sharing at least one same drawer
Acceptors’ 2-Mode Network

Max N1 Degree = 185 (13%)

Highest value of line = 45 (1.2%)
Acceptors’ 2-Mode Network

Max N1 Degree = 185 (13%)

N1 = 0 for 582 (40%); N1 = 1 for 159 (11%)

Highest value of line = 45 (1.2%)