Outline

1. Introduction
2. Data
3. Methodology
4. Results
5. Conclusion
6. Appendix
How do changes in the supply of trade credit impact the economy?

- Significant research interest after the recent financial crisis (Amiti and Weinstein, 2011)
- Constraints on trade credit had negative impact on exporting firms $\implies$ effects on the rest of the economy

Quantitative research in economic history still limited

- Historical literature highlights importance of trade credit instruments (such as acceptances) for exports and financial system
Example of a Transaction 1/2

1. Letter of credit
2. Goods
3. Cash
4. Accepted bill
5. Cash at bill maturity

UK Cotton Buyer

US Cotton Seller

Merchant Bank

US Bank + London Agents

3. Bill + shipping docs
4. Bill + shipping documents
Example of a Transaction 2/2
This project

- Formally tests whether if there was a relationship between merchant bank trade financing and the economy
  - Uses models which allow for certain nonlinearities & changing volatility in this link

- Creates a sample of acceptance credit data from surviving merchant bank records

- Result: link between acceptance credit and trade significant, but declined over time
Acceptances and Trade

![Graph showing GDP, Acceptances, and Trade Volumes from 1870 to 1910]

**Legend**
- Red: Acceptances
- Green: Exports
- Cyan: GDP
- Purple: Imports

Sources: Exports and Imports from Feinstein (1972), GDP from Solomou and Weale (1991)

Walter Jansson  
Faculty of History & Centre for Financial History University of Cambridge  
*Merchant Bank Trade Financing and the British Economy, 1880-1913*
Methodology: TVP-VAR

- Vector autoregressive (VAR) models common in macroeconomics for examining macro-financial linkages
- But these fail to account for important features:
  - Structural change - are relationships we model constant?
  - Shocks to economy + financial system $\rightarrow$ non-constant volatility

$\Rightarrow$ Use TVP-VAR (Primiceri, 2005; Cogley and Sargent, 2005)

$$y_t = \alpha_t + \sum_{i=1}^{\rho} B_{i,t} y_{t-i} + u_t; u_t \sim N(0, \Omega_t)$$ (1)

- $y_t = [GDP, Trade, Acceptances, interest rate]'$
- Model evolution of elements of $M \times 1$ vector $\alpha_t$ and $M \times M$ matrices $B_{i,t}, \Omega_t$ as random walks
No quarterly GDP data exists for pre-WW1 Britain

Following Bernanke et al. (2005), common approach is to summarize large amount of macroeconomic data into factors, which are then inserted into a VAR instead of GDP.

These capture co-movement between several macroeconomic variables & reduce omitted variable bias

\[ x_t = \Lambda^f f_t + e_t \]  \hspace{1cm} (2)

With 2 factors:

\[
\begin{bmatrix}
  x_{1,t} \\
  x_{2,t} \\
  \vdots \\
  x_{N,t}
\end{bmatrix}
= \begin{bmatrix}
  \lambda_{11} & \lambda_{21} \\
  \lambda_{12} & \lambda_{22} \\
  \vdots & \vdots \\
  \lambda_{1N} & \lambda_{2N}
\end{bmatrix}
\begin{bmatrix}
  f_{1,t} \\
  f_{2,t}
\end{bmatrix}
+ \begin{bmatrix}
  e_{1,t} \\
  e_{2,t} \\
  \vdots \\
  e_{N,t}
\end{bmatrix}
\]
Augment TVP-VAR with 2 factors (results robust to using 3).

TVP-FAVAR (Korobilis, 2013)

\[ y_t = \begin{bmatrix} f_t \\ z_t \end{bmatrix} = \alpha_t + \sum_{i=1}^{\rho} B_{i,t} \begin{bmatrix} f_{t-i} \\ z_{t-i} \end{bmatrix} + u_t; u_t \sim N(0, \Omega_t) \] (3)

\[ z_t = [\text{acceptances}, \text{market interest rate}]' \] - series treated as completely observed

Possible to calculate impulse responses from acceptances to the "common component" of each \( x_i \)
Changing error volatilities - TVP model warranted

Posterior mean of the standard deviation of residuals of the 2 Factors

Posterior mean of the standard deviation of residuals in the Acceptances equation

Posterior mean of the standard deviation of residuals in the Open market rate equation
Results using TVP-FAVAR, 1880-1913 data

Acceptances --> Import value in 1885

Acceptances --> Import value in 1895

Acceptances --> Import value in 1905

Acceptances --> Export value in 1885

Acceptances --> Export value in 1895

Acceptances --> Export value in 1905
Results using TVP-FAVAR, 1880-1913 data
Results using TVP-FAVAR, 1880-1913 data
Impulse Responses using TVP-FAVAR, 1880-1913 data

Acceptances --> Freight receipts in 1885

Acceptances --> Bank clearings in 1885

Acceptances --> Freight receipts in 1895

Acceptances --> Bank clearings in 1895

Acceptances --> Freight receipts in 1905

Acceptances --> Bank clearings in 1905
Until the turn of the century:
- Acceptances $\uparrow \implies$ International Trade $\uparrow$
  - Consistent with macroeconomic literature on trade credit
But market for acceptances remained important:
- Acceptances $\uparrow \implies$ Capital inflows from continent $\uparrow \implies$
  - Short-term interest rates $\downarrow \implies$ Rest of the economy $\uparrow$
- Importance of allowing for nonlinearities & structural change
Thank you!

Questions?
Results using TVP-FAVAR, 1880-1913 data

Impact response of acceptances from open market rates, $t=2$

Impact response of acceptances from open market rates, $t=3$
Results using TVP-FAVAR, 1880-1913 data

- Open market rate -> Freight receipts in 1885
- Open market rate -> Bank clearings in 1885
- Open market rate -> Freight receipts in 1895
- Open market rate -> Bank clearings in 1895
- Open market rate -> Freight receipts in 1905
- Open market rate -> Bank clearings in 1905
## Table: Data for FAVAR

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Source</th>
<th>Variable Name</th>
<th>Source</th>
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<tr>
<td>UK wheat price</td>
<td>NBER</td>
<td>Exp of railway material</td>
<td>NBER</td>
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<td>Suez Canal Traffic</td>
<td>NBER</td>
<td>unemp</td>
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<td>Tonnage entered</td>
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<td>Export volume</td>
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<td>Currency in circulation</td>
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<td>Import volume</td>
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<td>Import value</td>
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<td>Pig iron price</td>
<td>NBER</td>
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<td>Bank clearings</td>
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<td>Global Financial Data</td>
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<td>Investor's Monthly Manual</td>
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Bibliography II


