

Merchant Bank Trade Financing and the British Economy, 1880-1913

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09.06.2016

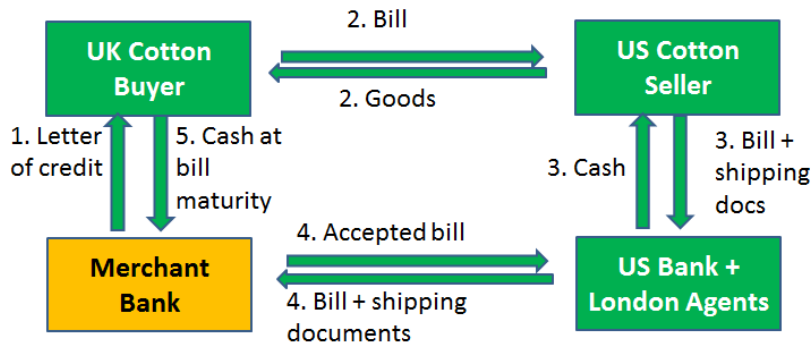
Outline

- 1 Introduction
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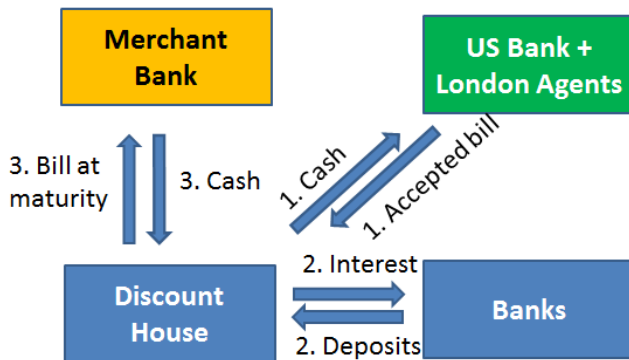
Introduction

- 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



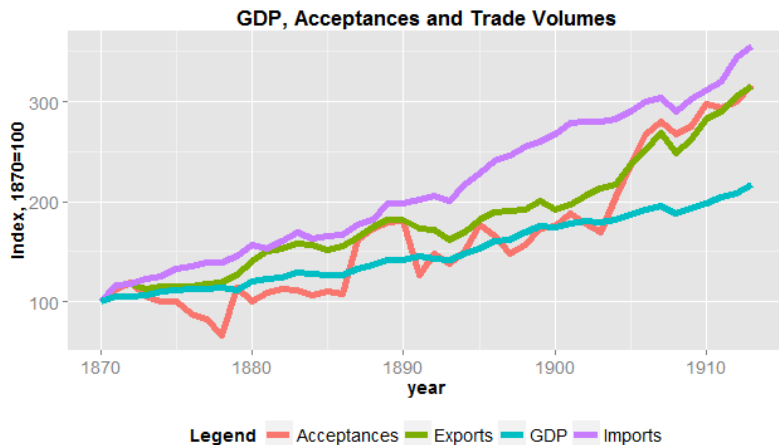
Example of a Transaction 2/2



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



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 \implies non-constant volatility

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

$$\mathbf{y}_t = \boldsymbol{\alpha}_t + \sum_{i=1}^{\rho} \mathbf{B}_{i,t} \mathbf{y}_{t-i} + \mathbf{u}_t; \mathbf{u}_t \sim N(\mathbf{0}, \boldsymbol{\Omega}_t) \quad (1)$$

- $\mathbf{y}_t = [GDP, Trade, Acceptances, interest\ rate]'$
- Model evolution of elements of $M \times 1$ vector $\boldsymbol{\alpha}_t$ and $M \times M$ matrices $\mathbf{B}_{i,t}$, $\boldsymbol{\Omega}_t$ 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

$$\mathbf{x}_t = \mathbf{\Lambda}^f \mathbf{f}_t + \mathbf{e}_t \quad (2)$$

With 2 factors:

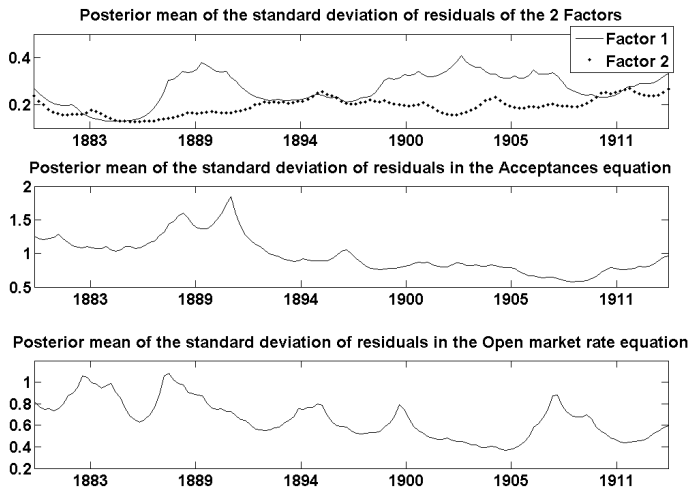
$$\begin{bmatrix} x_{1,t} \\ x_{2,t} \\ \vdots \\ x_{N,t} \end{bmatrix} = \begin{bmatrix} \lambda_{11} & \lambda_{21} \\ \lambda_{12} & \lambda_{22} \\ \vdots & \vdots \\ \lambda_{1N} & \lambda_{2N} \end{bmatrix} \begin{bmatrix} f_{1,t} \\ f_{2,t} \end{bmatrix} + \begin{bmatrix} e_{1,t} \\ e_{2,t} \\ \vdots \\ e_{N,t} \end{bmatrix}$$

- Augment TVP-VAR with 2 factors (results robust to using 3).
- ⇒ TVP-FAVAR (Korobilis, 2013)

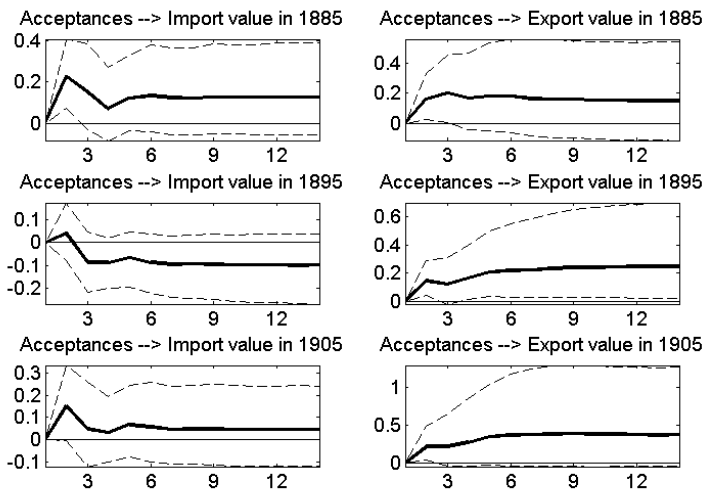
$$\mathbf{y}_t = \begin{bmatrix} \mathbf{f}_t \\ \mathbf{z}_t \end{bmatrix} = \boldsymbol{\alpha}_t + \sum_{i=1}^{\rho} \mathbf{B}_{i,t} \begin{bmatrix} \mathbf{f}_{t-i} \\ \mathbf{z}_{t-i} \end{bmatrix} + \mathbf{u}_t; \mathbf{u}_t \sim N(\mathbf{0}, \boldsymbol{\Omega}_t) \quad (3)$$

- $\mathbf{z}_t = [\textit{acceptances}, \textit{market interest rate}]'$ - series treated as completely observed
- Possible to calculate impulse responses from acceptances to the "common component" of each x_i

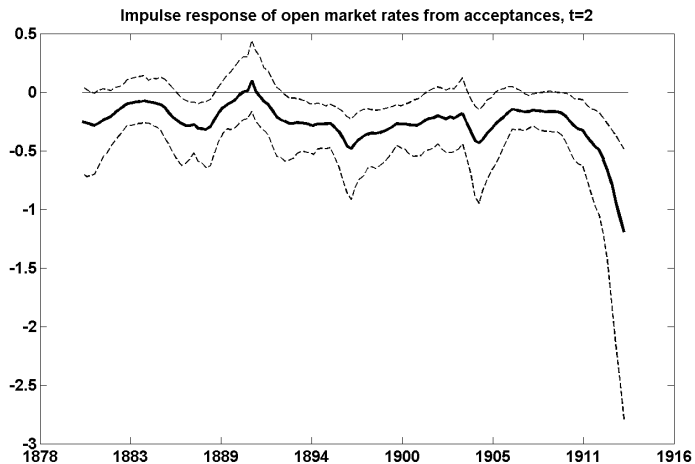
Changing error volatilities - TVP model warranted



Results using TVP-FAVAR, 1880-1913 data

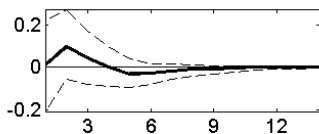


Results using TVP-FAVAR, 1880-1913 data

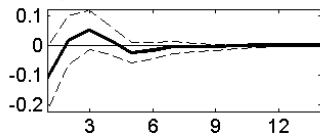


Results using TVP-FAVAR, 1880-1913 data

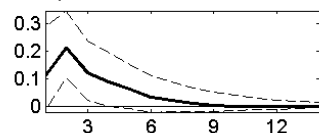
Acceptances --> rate ParvsLdn in 1885



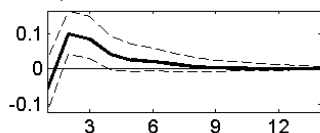
Acceptances --> rate BervsLdn in 1885



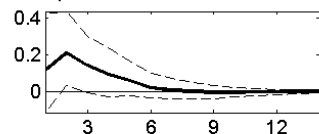
Acceptances --> rate ParvsLdn in 1895



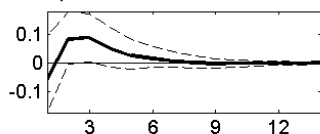
Acceptances --> rate BervsLdn in 1895



Acceptances --> rate ParvsLdn in 1905

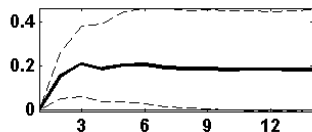
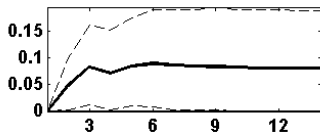


Acceptances --> rate BervsLdn in 1905

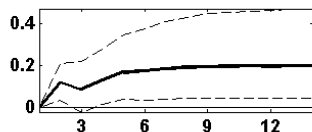
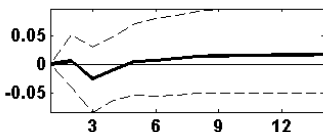


Impulse Responses using TVP-FAVAR, 1880-1913 data

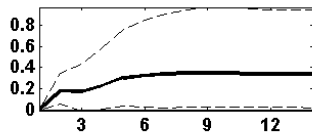
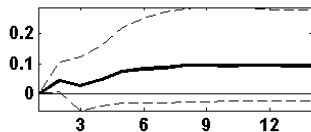
Acceptances --> Freight receipts in 1885 **Acceptances --> Bank clearings in 1885**



Acceptances --> Freight receipts in 1895 **Acceptances --> Bank clearings in 1895**



Acceptances --> Freight receipts in 1905 **Acceptances --> Bank clearings in 1905**



Conclusion

Until the turn of the century:

- Acceptances $\uparrow \implies$ International Trade \uparrow
 - Consistent with macroeconomic literature on trade credit

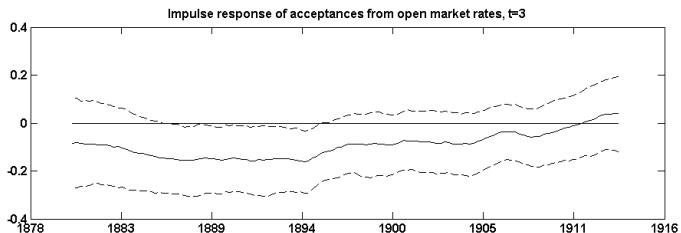
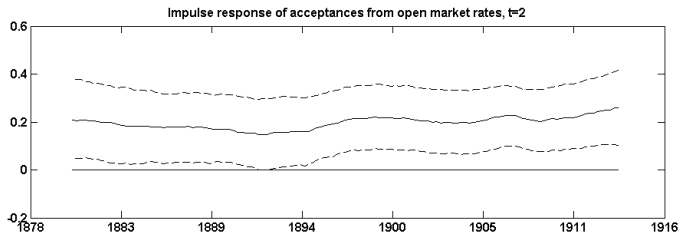
But market for acceptances remained important:

- 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!

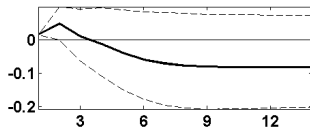
Questions?

Results using TVP-FAVAR, 1880-1913 data

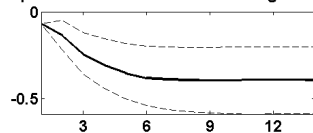


Results using TVP-FAVAR, 1880-1913 data

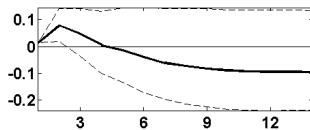
Open market rate \rightarrow Freight receipts in 1885



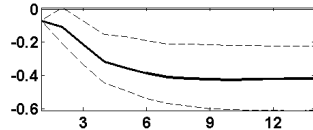
Open market rate \rightarrow Bank clearings in 1885



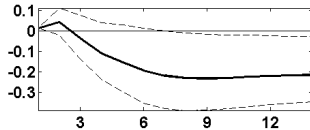
Open market rate \rightarrow Freight receipts in 1895



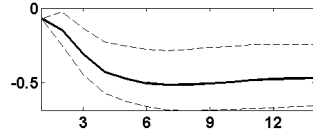
Open market rate \rightarrow Bank clearings in 1895



Open market rate \rightarrow Freight receipts in 1905



Open market rate \rightarrow Bank clearings in 1905



Appendix

Table: Data for FAVAR

Variable Name	Source	Variable Name	Source
UK wheat price	NBER	Exp of railway material	NBER
Suez Canal Traffic	NBER	unemp	NBER
Tonnage entered	NBER	Export volume	NBER
Currency in circulation	NBER	Export value	NBER
Freight receipts	NBER	FRA import val	NBER
Import volume	NBER	FRA export val	NBER
Import value	NBER	Coal export price	NBER
Ldn clearings, SE Cirng. days	NBER	Pig iron price	NBER
Bank clearings	NBER	Nonferrous price	NBER
US railway traffic	NBER	chemical prices	NBER
Current Account	NBER	metal prices	NBER
Pig Iron Stocks	NBER	textile import price	NBER
US pig iron production	NBER	oil price	NBER
Tonnage cleared	NBER	textile export price	NBER
NYvsLdn spread	NBER	iron and steel pr	NBER
ParvsLdn spread	NBER	Consyield	NBER
BervsLdn spread	NBER	German mkt idx	NBER
BOE Other deposits	NBER	Fixed income securities index	NBER
BOE Reserves of notes and coin	NBER	Railway share idx	Global Financial Data
BoE Reserves to liabilities	NBER	Stock Mkt index	Global Financial Data
BoE rate	NBER	Paid in k	Investor's Monthly Manual

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