Financial Choice in a Non-Ricardian Model of Trade

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Financial Choice

The combination of financial frictions faced by firms or investors

- Firms choose between different credit instruments.
- The market for each credit instrument has different transaction costs.
- We propose that there is feedback between the decision to use different credit instruments and the decision to produce/export
How do financial choice and trade interact?

- Does financial choice affect export behavior and the real exchange rate? (Yes)

- Does access to export markets affect firms’ choice between different financial instruments, including aggregate measures of financial development? (Yes)
Results: Twitter version

- Increased access to export markets boosts the relative size of the bond market, but making bank credit cheaper generates export-led growth.

- Targeted development of either financial market yields similar welfare effects, much smaller than increasing access to export markets.

- Targeted financial market development impacts the real exchange rate differently through intra-industry reallocation across firms of different size.
The problem

- No unified analytical framework: separate literatures on financial choice v. trade

- Both influence the distribution of firm size
  - Targeted financial market development can influence the distribution of firm size
  - Gains from trade may occur through intra-industry reallocation
  - Macroeconomic implications of interaction?

- Interaction:
  - Size of goods market (openness) is a constraint on firms’ ability to overcome financial transaction costs
  - Use of a particular financial instrument affects marginal cost of capital and thus the profitability of exporting
Exports and financial choice (I)

Countries with trend growth in exports have trend growth in the ratio of domestic bond issues to bank credit.
Exports and financial choice (II)

Growth in level of exports positively correlated with growth in the size of local corporate bond markets relative to bank credit across countries.
Related literature I

Financial frictions and trade

- Representative firm
  - Ju and Wei (2008)
  - Antras and Caballero (2009)

- Heterogeneous firms
  - Chaney (2005)
  - Manova (2008)

These models do not consider financial choice
Related literature II

Financial choice in general equilibrium

- closed economy, heterogeneous firms
  - de Fiore and Uhlig (2005)
  - Champonnois (2006, 2010)
  - Ghironi and Lewis (2008)
  - Russ and Valderrama (2009)

- open economy
  - Razin and Sadka (2007): Focus on foreign investor
  - Smith and Valderrama (2009): Representative firm
  - Antras, Desai, and Foley (2009); Carluccio and Fally (2010): External finance versus FDI

These works do not analyze the relationship between financial choice, trade, and the distribution of firm size
A unified model

- Endogenous number of heterogeneous, monopolistically competitive firms in a small open economy (c.f. Ghironi and Melitz 2005)

- Firms use both labor and capital as inputs for production, but must borrow funds to purchase capital

- Firms choose between bank and bond financing
  - “Monitored” bank lending ⇒ low fixed cost, high marginal cost
  - “Unmonitored” bond issues ⇒ high fixed cost, low marginal cost
  - Companion paper motivates these assumptions using (sparse) available data

- Analogous to models of technology adoption (Yeaple 2005, Bustos 2009), but with fully endogenous supply of labor and capital
  - Trade affects relative and absolute size of credit markets (new)
Findings

- Both bank and bond market development increase welfare

- Opposite effects on the extensive margin, aggregate exports, and the real exchange rate
  - Increasing bank efficiency increases the extensive margin of trade and total exports, appreciates the real exchange rate
  - Reducing fixed costs of bond issuance reduces the extensive margin of trade and total exports, depreciates the real exchange rate

- Trade induces financial “upgrading”
  - Increasing access to export markets—by itself—increases the relative size of the bond market, as well as overall financial development
  - Lower financing costs are a new source of gains from trade
## Financial intermediaries: banks and bond markets

Transfer savings from households to firms

### Default

- Fraction $\delta$ of firms default.
- Default means the intermediary incurs monitoring cost $\mu_j$ and receives no interest on a loan or bond issue.

### Bank loans: “monitored lending”

Low fixed cost, $f_l$, high monitoring cost $\mu_l$

### Bonds: “unmonitored lending”

High fixed cost of issuance $f_b$, low monitoring cost $\mu_b$

WLG: $\mu_b \equiv 0$

### Spread between bond rate and bank rate

$$r_l = r_b + \frac{\delta \mu_l}{1 - \delta}.$$
Financial choice and production

- Marginal producer will be a bank borrower if \( \frac{f_b}{f_l} \) is large enough relative to the spread.

- Marginal exporter will be a bank borrower if the fixed cost of exporting \( f_x \) is not “too large”.

- If any bank borrower exports, all bond issuers export.
Numerical Results

Reduce bond issuance costs $f_b$
- from 5: bond issuance costs 10 times as large as fixed cost of bank credit (approximating Pakistan)
- to 1: bond issuance costs twice as large as fixed cost of bank credit (approximating United States)

Reduce bank monitoring costs $\mu$
- from 0.3: approximating level “loss given default” in Latin America
- to 0.1: approximating level “loss given default” in United States/Portugal
\( f_b \) reallocates output toward medium-sized producers

- Largest bank borrowers switch to bond issuance as a source of credit
- Switchers have lower marginal cost of capital, cut their prices
\[ f_b \text{ reallocates output toward medium-sized producers} \]

- Remaining (less efficient) bank borrowers lose market share to switchers.
- Increase in exports among switchers < decrease among quitters.
- Reduction in extensive margin of trade and in aggregate exports.
\[ \mu_l \text{ reallocates output toward smaller producers} \]

- Smallest bond issuers switch to bank loans as a source of credit
- Switchers have higher marginal cost of capital, increase their prices
\( \mu_l \) reallocates output toward smaller producers

- Remaining (less efficient) bank borrowers gain market share from switchers
- Expansion of the extensive margin of trade and increased aggregate exports
The real exchange rate **depreciates** as bond issuance costs fall, but **appreciates** as bank monitoring costs fall.
Extensive margin of trade falls as bond issuance costs fall, rises as bank monitoring costs fall.
Increased access to export markets (↓ τ) generates financial switching into bond issuance

- Increases the relative size of the bond market
  - Some exporters grow enough to switch to bonds
  - Exporters who already issue bonds expand

- Increases the extensive margin of trade and total exports

- Positive correlation between exports and relative size of bond market

- Increases output, consumption, the real wage rate and welfare—financial switching has small influence size of gains
Lowering issuance cost accelerates gains from trade liberalization, lowering monitoring cost dampens them.
## Conclusions

### Bank versus bond market development

- Making bank credit cheaper results in export-led growth
- Targeted bond market development generates growth, but can dampen exports
- Similar welfare effects

### Increased access to export markets

- Generates financial “upgrading”
  - Lowers costs of capital and the reallocates production toward more efficient switchers $\Rightarrow$ lower domestic prices on these goods
  - A new source of gains from trade
- Increases relative size of bond market, total private credit
- Much bigger welfare effect than financial market development, doubles impact of bond market development
Exports and financial choice (I)

Countries with trend growth in exports have trend growth in the ratio of domestic bond issues to bank credit