Is finance a binding constraint for SME participation in trade?

Evidence from 8,080 Asian Firms

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Structure of talk

1. Context and outline of study
2. Framework for the study
3. Macro Trends - finance, SMEs and trade
4. Firm level microeconometric results
5. Conclusions and implications
Recent experience shows finance-trade link

- Great trade collapse after the global financial crisis highlights finance-trade link
- Trade recovery, to some degree, due to massive monetary and fiscal stimulus
- Developing countries in Asia exporting their way back to growth

Worthwhile exploring trade-finance nexus in Asia and its implications for SMEs – crucial for inclusive growth
Outline of study on finance-trade link

• Draw on body of trade, industrial organization and finance literature emphasizing firm heterogeneity

• Focus: inter-relationships between finance, trade and other firm characteristics

• Large, recent World Bank dataset
  – 6 economies (PRC, Malaysia, Thailand, Philippines, Indonesia & Vietnam) and many sectors
  – Covers 8,080 randomly selected firms
Macroeconomic links

• Finance and economic growth
  – Finance—by channeling savings to entrepreneurs and allowing risk sharing—improves chances of successful innovation, thereby accelerating growth (King & Levine, *JME*, 1993)

• Trade and finance are linked
  – 2007 Financial crisis associated with sharp declines in global GDP and trade volume (Baldwin, 2009)
    • Tightened credit conditions during crisis may have discouraged some trade transactions from taking place
  – Two-way feedback: Financially developed economies have higher export shares, yet exports also determine which industries a country needs more working capital for (*JIE*, 2002; *JFE*, 2007)
Microeconomic evidence

• New new trade theory (Melitz 2003) emphasizes firm heterogeneity:
  ✓ Differences between firms + considerable sunk costs of exporting = only some firms will be productive enough to export

• Firms with better access to finance tend to self-select as exporters AND continue to export (Bernard & Jensen, 2004; Bellone et al., 2010)

• Foreign ownership, skills, technology, age etc also matter for exporting (Wilmore, 1992, Rasiah, 2004; Srinivasan and Archana, 2011)
Firm Size and Exports

• Most studies assume that large firms are more competitive than SMEs in exports (Zhao and Li, 1997, van Dijk, 2002)
  ✓ Large firms have more resources to meet fixed costs of exporting
  ✓ Scale economies means large firms have lower average and marginal costs

• Apart from scale economies, SMEs are at a disadvantage in exporting because of:
  ✓ Relative resource constraints (finance, skills technology and networks/marketing)
  ✓ Suffer disproportionately from market imperfections and regulations
Econometric modeling

• Baseline regression:

\[ y_{it} = X'_{it} \beta + \varepsilon_{it} \]

Where \( i = \text{firm}, \; t = \text{year} \)
\( y = \text{export participation} \)
\( X = \text{firm characteristics} \)

Firm characteristics (Controls): age, foreign ownership, patent ownership, foreign license, worker education, having audited financial statements

• Seemingly Unrelated Regressions (SUR) for export share, firm size, external finance
Asia’s trade with the world 1990-2012 US $ Billions

Source: UN Comtrade, accessed November 2013
Notes: ADB’s definition of Asia includes Central Asia, South Asia, East Asia and South East Asia and the Pacific. AFC – Asian Financial Crisis, GFC – Global Financial Crisis

Total Loans in the Asia-Pacific
US $ Millions

Source: Economist Intelligence Unit, accessed Jan. 2014
Notes: Includes Australia, PRC, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Taipei, Thailand, Viet Nam
SMEs are important...

SMEs account for at least 60 percent of total employment and 30 percent of GDP in ASEAN and PRC, according to various estimates.

Source: Various statistical agencies (ASEAN SME data, Business in Asia, DTI Philippines, PRC Ministry of Industry and Information Technology)
...yet not very much in trade

Share in total exports

Source: Various statistical agencies (ASEAN SME data, Business in Asia, DTI Philippines, PRC Ministry of Industry and Information Technology)
Impact of Business Environment on SMEs

Perceived Major Obstacles to Conducting Business, SME firms (% of SME firms)

<table>
<thead>
<tr>
<th>Major Obstacles</th>
<th>All countries</th>
<th>Malaysia</th>
<th>Thailand</th>
<th>Philippines</th>
<th>Indonesia</th>
<th>Viet Nam</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Access to credit</td>
<td>(35%)</td>
<td>(31%)</td>
<td>(60%)</td>
<td>(45%)</td>
<td>(39%)</td>
<td>(39%)</td>
</tr>
<tr>
<td>3. Electricity</td>
<td>(30%)</td>
<td>(24%)</td>
<td>(55%)</td>
<td>(37%)</td>
<td>(37%)</td>
<td>(37%)</td>
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</tr>
</tbody>
</table>

- **“Other” obstacles** – trust deficit hampers intra-firm cooperation; smuggling also disincentive
- **Supply-side factors** – Lack of access to finance; inadequate worker skills; high electricity costs; poor transport systems
- **Policy incentives** – high corporate tax rates; economic uncertainty; cumbersome customs and corruption
Finance is a global SME concern

From the IFC report “Closing the Credit Gap for Formal and Informal MSMEs” (2013)
Finance is an Asian SME concern

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Credit Gap</th>
<th>Credit Gap per SME</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>$62.73B</td>
<td>$262,048</td>
</tr>
<tr>
<td>Thailand</td>
<td>$11.83B</td>
<td>$758,737</td>
</tr>
<tr>
<td>Indonesia</td>
<td>$11.77B</td>
<td>$172,479</td>
</tr>
<tr>
<td>Malaysia</td>
<td>$7.96B</td>
<td>$757,412</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>$4.28B</td>
<td>$253,296</td>
</tr>
<tr>
<td>Philippines</td>
<td>$2.03B</td>
<td>$356,207</td>
</tr>
</tbody>
</table>

“Credit gap” is the difference between formal credit provided to SMEs and total estimated potential need for formal credit based on McKinsey & Co. estimates. Source; IFC Enterprise Finance Gap Database (2011).

In East Asia and the Pacific, between 60-70 percent or about 8 million of all formal SMEs do not have sufficient access to finance (IFC, 2013).
Firm level microeconometric results

Importance of bank loans by firm size
Percentage of firms, bank loans <25% of capital

Source: Author’s calculations on WB Enterprise Survey data. Columns represent percentages of category-classified, national samples.
Focus of econometric exercise

• **How is export participation by ASEAN and PRC firms—especially SMEs—affect by the following factors?**
  
  – A firm's external sources of finance (access to credit)
  – Firm size and other firm-specific characteristics (e.g. foreign ownership, having foreign license, audited finances)

• **How do all these variables relate to each other?**
  
  – In what direction and by how much do external finance, firm size, and export participation affect each other?
## Baseline export function estimates

<table>
<thead>
<tr>
<th></th>
<th>PRC</th>
<th>ASEAN</th>
<th>PRC + ASEAN, by industry type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Labor-intensive</td>
<td>Capital-intensive</td>
<td>Services</td>
</tr>
<tr>
<td>SME indicator</td>
<td>-31.04*** (4.61)</td>
<td>-104.16*** (3.73)</td>
<td>-131.04*** (7.24)</td>
</tr>
<tr>
<td>Age</td>
<td>0.17 (0.26)</td>
<td>-0.50*** (0.14)</td>
<td>-0.77*** (0.25)</td>
</tr>
<tr>
<td>Bank borrowing</td>
<td>0.43*** (0.14)</td>
<td>0.20*** (0.05)</td>
<td>0.33*** (0.09)</td>
</tr>
<tr>
<td>Non-bank borrowing</td>
<td>-0.27 (0.41)</td>
<td>0.37* (0.21)</td>
<td>0.39 (0.41)</td>
</tr>
<tr>
<td>Trade credit</td>
<td>0.66*** (0.19)</td>
<td>0.26*** (0.08)</td>
<td>0.40*** (0.15)</td>
</tr>
<tr>
<td>Constant</td>
<td>-45.39*** (6.12)</td>
<td>41.50*** (4.41)</td>
<td>67.59*** (8.02)</td>
</tr>
<tr>
<td>Observations</td>
<td>2,523</td>
<td>5,557</td>
<td>1,808</td>
</tr>
</tbody>
</table>

Dependent variable: Share of exports in firm sales (0-100 percent).
Estimates with firm-level controls do not change results and are reported in a succeeding slide.
## Expanded estimates

<table>
<thead>
<tr>
<th></th>
<th>PROBIT</th>
<th>OLS</th>
<th>TOBIT</th>
<th>SUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME indicator</td>
<td>-0.90***</td>
<td>-21.54***</td>
<td>N.A.</td>
<td>Firm size</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.88)</td>
<td></td>
<td>(employment)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.02</td>
<td>-2.90***</td>
<td>-3.33**</td>
<td>Age</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.37)</td>
<td>(1.42)</td>
<td>-0.01</td>
</tr>
<tr>
<td>Bank borrowing</td>
<td>0.05***</td>
<td>0.05</td>
<td>3.77***</td>
<td>External finance indicator</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.41)</td>
<td>(1.31)</td>
<td>0.003***</td>
</tr>
<tr>
<td>Non-bank borrowing</td>
<td>0.02</td>
<td>0.01</td>
<td>0.45</td>
<td>Foreign ownership</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.30)</td>
<td>(1.33)</td>
<td>0.73***</td>
</tr>
<tr>
<td>Trade credit</td>
<td>(0.05)***</td>
<td>0.26</td>
<td>2.73**</td>
<td>Foreign license</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.39)</td>
<td>(1.29)</td>
<td>-0.20</td>
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<tr>
<td>Firm size (employment)</td>
<td>N.A.</td>
<td>N.A.</td>
<td>14.99***</td>
<td>Patent ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(1.20)</td>
<td>-0.19</td>
</tr>
<tr>
<td>Firm size x</td>
<td>N.A.</td>
<td>N.A.</td>
<td>Yes</td>
<td>Worker education</td>
</tr>
<tr>
<td>external finance</td>
<td></td>
<td></td>
<td></td>
<td>0.16***</td>
</tr>
<tr>
<td>interactions</td>
<td></td>
<td></td>
<td>Yes</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Industry &amp; Country FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Financial certification</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Observations</td>
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<td></td>
<td></td>
<td>8,080</td>
</tr>
</tbody>
</table>

Dependent variable: Share of exports in firm sales (0-100 percent).
• Useful to study finance-trade nexus using micro-data.
  – Adds depth to macro-level analysis and provides policy insights
• Asia’s trade recovery encouraging and need to understand underlying strengths and potential gaps to resilience
• PRC and ASEAN account for bulk of Asia’s trade and global production network activity
• Macro trends suggest:
  – Financial development matters crucially for trade
  – SMEs are important in national economies but not much in trade
  – Lack of access to credit is the major constraint to SME exports (overcoming scale barriers and network/marketing barriers)
• Firm-level results show interdependence between export participation, firm size, and access to credit
  – Finance, firm size, skills and foreign ownership positively affects exporting
  – Exporting also positively affects access to finance

Conclusions and implications
Conclusions and implications (cont)

• Policy questions for further analysis on financial inclusion:
  – Is the missing “middle” (i.e. medium sized firms) significant in PRC and ASEAN? And what barriers existing to SME graduation?
  – What role should central banks in regulating/supervising informal financial institutions for financial inclusion?
  – Should credit policy be broad-based (independent of firm size, industry), targeted, or both?
  – What measures are needed to improve financial education to support financial inclusion?
  – What complementary policies (e.g. export promotion and non-finance SME support) are needed to promote SME exports and their entry into global supply chains?