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Regulatory harmonisation and its impact on trade in services

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Regulatory harmonisation and trade in services
- volumes and choice of mode

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Research questions:

- Impact of domestic regulation on volume of bilateral services trade
- Impact of domestic regulation on choice between FDI and exports (GATS modes 3 and 1)
Structure presentation

- Regulation as service trade barrier
- Model and testable hypotheses
- Data and empirical strategy
- Results
- Conclusions & policy implications

Low tradability or high barriers?

- Strong international market segmentation in services
  - tiny share in international trade, but 2/3 of GDP

- Explanatory factors:
  - technology / tradability:
    - proximity producer / consumer
    - no "death of distance": physical, language, culture
  - alternative supply channels for border-crossing exports:
    - FDI, franchising / licensing
  - Policy-related trade barriers
    - discriminatory policies: against foreign suppliers
    - non-discriminatory, but heterogeneous domestic policies
Non-discriminatory policies as trade barriers (1)

- **Discriminatory policies for foreign suppliers**
  - import tariffs hardly relevant
  - non-tariff barriers dominate:
    - red tape: import or FDI licenses, quantity restrictions
    - discriminatory demands: e.g. nationality, local address
  - important items at WTO / GATS negotiations

- **Non-discriminatory policies:**
  - side-item at WTO / GATS negotiations
  - maybe even more important as trade barrier

Non-discriminatory policies as trade barriers (2)

- **Different motives for regulations:**
  - ensure quality of the service (information asymmetry)
  - externalities, market power
  - protecting interests of state-owned firms, national champions, domestic interest groups

- **Types of regulatory non-tariff barriers:**
  - licenses and permits
  - educational qualifications (diplomas, certificates)
  - membership local professional association
  - local professional insurance
  - nationality / residence requirements for management
  - must have local office
  - operational restrictions: inputs, marketing, juridical
- **Trade impact of regulation was blind spot**
  - most services used to be hardly traded
  - path dependency in regulation
  - Result: regulatory heterogeneity
  - National regulation levels have come down in recent decade
  - But so far little attention for policy heterogeneity

- **Economic implications for service providers**
  - Hardly any recognition of home country qualifications or reputations
  - Cost of foreign regulation come on top of domestic regulation
  - affect fixed market-entry costs
  - costs are country-specific
    - => sunk-cost entry barrier

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**Costs of policy heterogeneity for individual services firm**

[Graph showing costs of service product across home market, export market 1, export market 2, export market 3, with additional notes on average costs in case of mutual recognition and average costs per export market in case of regulation heterogeneity.]
Some implications

- Firm size foreign suppliers goes up
  - Local adaptation costs hardly differ with firm size
  - SME will experience most problems (extensive margin)
  - Average foreign services firm becomes larger (cet.par.)

- Extensive margin impact differs by country size
  - Large markets: sunk regulation-related entry costs have smaller impact (each foreign firm can expect more post-entry sales)
  - Small country: policy heterogeneity has big impact on entry foreign services firms

Regulatory impacts on services trade

<table>
<thead>
<tr>
<th>Extensive trade-margin impact</th>
<th>Intensive trade-margin impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>Mode choice</td>
</tr>
<tr>
<td>Mode 3</td>
<td>* Fixed / sunk entry cost of national market</td>
</tr>
<tr>
<td>Mode 1</td>
<td>* Fixed / sunk entry cost of national market</td>
</tr>
</tbody>
</table>
Simple model

- Characteristics
  - Dixit-Stiglitz preference structure model with different varieties and origin countries
  - variable trade costs between countries i,j (iceberg type)
  - fixed trade costs (policy heterogeneity) per country pair i, j
  - fixed trade costs FDI > fixed trade costs exports (e.g., Helpman, Melitz, Yeaple)
  - producers are ranked according to a Pareto distribution (Chaney 2008)
  - rest of model is like in standard gravity model (GDP for market size)

- Trade (mode 3) depends on vector of factor prices ctry i, market size both countries, fixed trade costs
- Trade (mode 1): same, but also variable trade costs

Augmented gravity equation

- Dep. vars: Foreign Affiliate Sales_ij / exports_ij in sector s
- Expl var: combined GDP plus GDP dissimilarity S_ij
  \[ S_ij = \left[ 1 - \left( \frac{Y_i}{Y_i + Y_j} \right)^2 - \left( \frac{Y_j}{Y_i + Y_j} \right)^2 \right] \]
- D_ij : vector with usual gravity vars (bilateral distance; dummy for shared border; dummy for common language; dummy for common colonial past; dummy for EU membership)
- hg_reg_ij : bilateral policy heterogeneity (0 ≤ hg_reg_ij ≤ 1)
- country and time dummies

\[ \ln FAS^{ij} = a_0 + a_1 \ln(Y_i + Y_j) + a_2 \ln S_{ij} + \ln D_{ij} + a_3 hg_{reg} + \lambda_i + \gamma_j + \mu_{ij} \]

\[ \ln Exports^{ij} = a_0 + a_1 \ln(Y_i + Y_j) + a_2 \ln S_{ij} + \ln D_{ij} + a_3 hg_{reg} + \lambda_i + \gamma_j + \mu_{ij} \]
Estimation

- PPML estimator proposed by Santos Silva & Tenreyo (2006)
  - deals with zero observations (zero bilateral FDI)
  - yields unbiased efficient estimates in presence of heteroskedasticity
  - avoids OLS overestimating the impact of distance

- Added interaction terms
  - interaction between policy restrictiveness (i,j) and distance

\[
FDI_{ij}^{*} = \exp(a_0 + a_1 \ln(Y_i + Y_j) + a_2 \ln S_{ij} + a_3 \ln D_{ij} + a_{4 reg_i}^{*} \ln D_{ij} + a_{4 reg_j}^{*} \ln D_{ij} + a_{6 reg_{ij}}^{*} \ln \lambda_a + \gamma_j + \mu_i)
\]

\[
Exports_{ij}^{*} = \exp(a_0 + a_1 \ln(Y_i + Y_j) + a_2 \ln S_{ij} + a_3 \ln D_{ij} + a_{4 reg_i}^{*} \ln D_{ij} + a_{4 reg_j}^{*} \ln D_{ij} + a_{6 reg_{ij}}^{*} \ln \lambda_a + \gamma_j + \mu_i)
\]

Data

- Bilateral FDI stocks (dataset prepared by OECD-CPB)
  - correlates strongly with FAS, but more country available

- Bilateral services trade: OECD and UN, 60 countries

- Regulation intensity:
  - OECD data set product-market regulation (PMR), OECD ctrs
    - with sub-indices for State Control, Barriers to Competition, Admin. Barriers to Start-ups, Regulatory Transparency, Barriers to Trade & FDI
  - World Bank Cost of Doing Business database): 180 ctrs
    - with sub-indices: Starting a Business, Enforcing Contracts, Trading Across Borders, Getting Credit, Employing Workers
Quantifying policy heterogeneity

- Setup of this indicator:
  - sunk policy compliance costs differ by country pair, but generally form a non-observable, latent variable
  - bilateral differences in economic policies can be used as a proxy for this
  - we developed a count-based parameter that summarises policy differences using detailed policy data
  - we code domestic policies in terms yes/no data, or ≤6 different categories per policy item
  - then digitalise bilateral dissimilarities per policy item (1 if different, 0 if identical)
  - Averaging scores over all policy items

- Reliability of this indicator as proxy for the latent variable (sunk policy-related entry costs) increases in the number of measuring points

Properties of heterogeneity indicator

- Increases in degree of regulation differences
  - regulation contents
  - implementation
- Aggregation possible over multiple regulation dimensions
- Yields a single quantitative indicator
- Specific for each country pair
- Aggregation independent of subjective weights
- No *a priori* subjective judgment about specific policies
- Decomposable with respect to different regulation areas
Data for policy heterogeneity indicator

- Two data sources used:
  - OECD International Regulation database
    - 200 items of product-market regulation per country
    - Sub-divided by 7 policy areas
    - 25 OECD countries,
  - World Bank Cost of Doing Business database
    - 46 business-related policy characteristics and policy-implementation items
    - Sub-divided by 10 business-environment areas
    - 160+ countries,
    - 1998 (Djankov), 2003-2008

- Gives a whole range of indicators for bilateral policy heterogeneity, with some overlaps

Impact of bilateral policy heterogeneity on services trade through mode 3 (FAS)

<table>
<thead>
<tr>
<th></th>
<th>Overall Product-Market Regulation</th>
<th>Barriers to Trade and FDI</th>
<th>Domestic Competition Policies</th>
<th>Starting a Business (WB)</th>
<th>Trading across Borders (WB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln (GDPi + GDPj)</td>
<td>3.524***</td>
<td>1.674***</td>
<td>1.961</td>
<td>2.493</td>
<td>2.604***</td>
</tr>
<tr>
<td>ln Sij</td>
<td>2.256**</td>
<td>1.390***</td>
<td>1.527</td>
<td>1.622</td>
<td>21.675***</td>
</tr>
<tr>
<td>ln distance lij</td>
<td>-0.423***</td>
<td>-0.467***</td>
<td>-0.490***</td>
<td>-0.360***</td>
<td>-0.259</td>
</tr>
<tr>
<td>Comm. border</td>
<td>0.353***</td>
<td>0.392***</td>
<td>0.403***</td>
<td>0.352***</td>
<td>0.335**</td>
</tr>
<tr>
<td>Comm. lang.</td>
<td>0.558***</td>
<td>0.672***</td>
<td>0.682***</td>
<td>0.329***</td>
<td>0.447***</td>
</tr>
<tr>
<td>Colonial past</td>
<td>0.167</td>
<td>0.0901</td>
<td>0.0666</td>
<td>0.154*</td>
<td>0.290*</td>
</tr>
<tr>
<td>Both EU</td>
<td></td>
<td></td>
<td></td>
<td>0.608***</td>
<td>0.684**</td>
</tr>
<tr>
<td>Policy heterog.</td>
<td>-1.343**</td>
<td>-0.160</td>
<td>-1.163**</td>
<td>-0.673***</td>
<td>-0.471**</td>
</tr>
<tr>
<td>Orig reg x dist</td>
<td>-0.0877***</td>
<td>-0.324**</td>
<td>0.0184</td>
<td>0.04</td>
<td>-0.323</td>
</tr>
<tr>
<td>Dest. reg x dist</td>
<td>0.0406</td>
<td>0.311</td>
<td>0.0353</td>
<td>-0.152</td>
<td>0.089</td>
</tr>
<tr>
<td>n</td>
<td>596</td>
<td>400</td>
<td>596</td>
<td>1950</td>
<td>650</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.937</td>
<td>0.943</td>
<td>0.936</td>
<td>0.919</td>
<td>0.917</td>
</tr>
</tbody>
</table>
Scenario analysis with regression results for impact regulatory heterogeneity on inward FDI

<table>
<thead>
<tr>
<th>Overall indicator (PMR)</th>
<th>Barriers to competition (PMR)</th>
<th>Starting a business (WB)</th>
<th>Trade across borders (WB)</th>
<th>Overall indicator (WB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9%</td>
<td>11%</td>
<td>15%</td>
<td>25%</td>
<td>27%</td>
</tr>
</tbody>
</table>

Statistically significant heterogeneity indicators by policy area (PMR=OECD, WB=World Bank-derived)

<table>
<thead>
<tr>
<th>Total services</th>
<th>Statistically significant heterogeneity indicators</th>
<th>FDI increase after one standard deviation reduction in heterogeneity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall indicator (PMR)</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Barriers to competition (PMR)</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Starting a business (WB)</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>Trade across borders (WB)</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Overall indicator (WB)</td>
<td>27%</td>
</tr>
</tbody>
</table>

Scenario analysis (by sector)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Statistically significant heterogeneity indicators</th>
<th>FDI increase after one standard deviation reduction in heterogeneity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post and telecom</td>
<td>Enforcing contracts (WB)</td>
<td>19%</td>
</tr>
<tr>
<td>Financial services</td>
<td>Overall indicator (PMR)</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Barriers to competition (PMR)</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>State control (PMR)</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Bank supervision (WB)</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Starting a business (WB)</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>Trade across borders (WB)</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Overall indicator (WB)</td>
<td>21%</td>
</tr>
<tr>
<td>Computer and IT services</td>
<td>State control (PMR)</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>Government involvement (PMR)</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>Starting a business (WB)</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Getting credit (WB)</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Trade across borders (WB)</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>Overall indicator (WB)</td>
<td>17%</td>
</tr>
<tr>
<td>Other business services</td>
<td>Trade across borders (WB)</td>
<td>19%</td>
</tr>
</tbody>
</table>
Relation between regulation and choice of mode (total services)

<table>
<thead>
<tr>
<th>Dependent variable: ( X_{ij} ) / FAS_{ij}</th>
<th>OECD-derived indicators</th>
<th>World Bank 'Doing Business'-derived indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PMR</td>
<td>State Control</td>
</tr>
<tr>
<td>In relative GDP per cap</td>
<td>-5.076***</td>
<td>-5.136*</td>
</tr>
<tr>
<td>In distance</td>
<td>0.0227</td>
<td>0.0234</td>
</tr>
<tr>
<td>Border</td>
<td>-0.358</td>
<td>-0.38</td>
</tr>
<tr>
<td>Common language</td>
<td>-0.796**</td>
<td>-0.824**</td>
</tr>
<tr>
<td>Both EU</td>
<td>0.598</td>
<td>0.562</td>
</tr>
<tr>
<td>Colony</td>
<td>-0.213</td>
<td>-0.203</td>
</tr>
<tr>
<td>Regulatory heterogeneity</td>
<td>3.210**</td>
<td>1.659*</td>
</tr>
<tr>
<td>Observations</td>
<td>424</td>
<td>424</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.576</td>
<td>0.575</td>
</tr>
<tr>
<td>memo: impact of one stdev change in</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>Regulat. Heterogeneity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( \Rightarrow \) conclusion: policy heterogeneity (and language differences) tilt mode choice from mode 3 to mode 1

Relation between cross-border trade and FAS (all services, USA 1986-2006)

==> explained by falling policy heterogeneity? (still some work to be done: policy indicators over longer period)

Source: BEA
Conclusions

- Regulatory heterogeneity is a barrier to entry in its own right
  - negatively associated with commercial presence (mode 3)
    - strongest impact in: financial services, computer services
    - magnifies distance-related costs
  - tilts choice of mode towards cross-border trade (mode 1)
- Cross-border trade and commercial presence are complementary foreign supply modes
  - regulat. barriers to mode 3 ⇔ negative impact on mode 1
  - barriers to mode 1 ⇔ negative impact on mode 3 (FDI)
  - probably also complementarity with mode 4 (presence of natural persons)

Policy implications

- Negative impact of regulatory heterogeneity on bilateral services trade is relatively largest in small and remote countries (cet.par.):
  - it magnifies sunk entry costs
  - consider mutual recognition or harmonisation with large trading partners
- Mutual recognition and harmonisation of non-discriminatory domestic policies deserve a more important place in WTO/GATS negotiations
Impact of full harmonization of product market regulation on cross-border trade (mode 1), all services, 2003

Source: Kox and Nordas 2007