Shifts in International Trade and Value Added: Insights into the Drivers of Growth

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Global Trade has Grown and Collapsed Impressively

Regional composition of world exports, 1975-2009

Source: UN COMTRADE.
Global Shift in Production Towards Emerging Markets

- Major share of world trade and production still in advanced economies
- Yet dynamics are much stronger in emerging economies
- Emerging economies have reached or surpassed their pre-crisis trend level on average in 2010
- Advanced economies still considerably below pre-crisis trend level in 2010

Source: own calculations.
Overview of the Presentation

Analyse long-term developments of world trade:

1.) structural changes (decomposition analysis):
   - in terms of products
   - in terms of countries
   - role of sector-by-country composition

2.) trade response to output (elasticity of exports to output):
   - by sector
   - by region

3.) What are the implications for Central- and Eastern Europe (CESEE)?
Motivation

The recent trade collapse has inspired a rapidly growing number of studies on the elasticity of trade to output.

The trade response to output growth is found to have increased considerably over time (Irwin 2002, Freund 2009)

This is explained by changes in global production networks (fragmentation), decline in trade costs, etc.

Our additions to this growing body of literature:

- Link trade growth to structural change in output
- Use sector specific price deflators
Preview - Main Conclusions

Structural change explains a lot of the „rapid“ trade growth.

This implies that the evidence for policy and falling transport / trade costs in driving globalization may be more limited than often emphasized in the literature.

In particular CESEEs have moved rapidly into more trade intensive manufacturing activities, hence domestic structural change has been highly important in driving their export performance.

However, structural change will continue to be of utmost importance for the region, given the discrepancy between their current specialization patterns and global industrial dynamics in trade.
Dataset

Export and output data for 196 countries and 25 industries
1988-2009

Deflate exports by industry-specific US import price index (reflecting world prices)
Deflate output by industry-specific US PPI

Classify countries into 6 regions
   EU-15
   CEE-10 (= 10 CESEE EU members)
   CIS & Balkan
   NAFTA
   Latin America
   South East Asia (ASEAN + JP, CN, IN, KR)

Data sources: UN COMTRADE, UNIDO, US BLS
Structural Change in World Exports
Relative Importance of Transport Equipment Is Declining

World: Export Shares of Individual Industries, 1990 and 2007

in % of total trade

Source: UN COMTRADE.
Pronounced Structural Change in New Members

CEE-10: Export Shares of Individual Industries, 1995 and 2007

in % of total trade

Source: UN COMTRADE.
Structural Decomposition of Real Export Growth

Export growth (DX) = A + B + C

A: pure growth effect, global export growth without structural change
B: effect of initial sectoral specialisation, deviation from the global industry structure
C: effect of growth differential in individual sectors, shift in industry composition in a country‘s exports

Large values of B + C indicate a high importance of structural change
Structural Decomposition of World Export Growth 1995-2007

Large growth differentials between regions (CEE-10, CIS and Asia most dynamic)

Contribution of moving-into-fast-growing-sectors to overall export growth is highly positive in CEE-10

Negative contribution of initial specialisation in CEE-10

Importance of structural change is observed in CEE-10, but not so much in Asia

Source: own calculations.
Structural Decomposition of CEE-10 Export Growth 1995-2007

in percentage points, X growth in %

Source: own calculations.
Response of Exports to Output Growth Revisited
Trade growth and GDP growth

The relationship between export growth and GDP depends on the composition of GDP growth. It also depends on how we measure export growth:

\[ g_{X, \text{goods}} - g_{\text{GDP}} = (g_{X, \text{goods}} - g_{V_A, \text{goods}}) + \]

\[ + \theta_{\text{services}} [g_{V_A, \text{goods}} - g_{V_A, \text{services}}] \]

Change in trade growth over time can result from:

- Changes in structure of GDP itself (if some sectors are more trade intensive)
- How we measure total trade growth

We focus on goods trade relative to goods output in the following!
Estimating the Elasticity of Exports to Output

Simple regression over exporters $s$, industries $i$ and time $t$ (1995-2007):

\[ d \ln X_{sit} = \alpha + \beta \cdot d \ln(\text{output})_{sit} + \mu_{si} + \varepsilon_{sit} \]

Difference in deflators: relevant differences in price developments of cars, electrical machinery and precision instruments (together 17% of total trade)

<table>
<thead>
<tr>
<th></th>
<th>estimated elasticity</th>
<th>deflators used</th>
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<tbody>
<tr>
<td>Total $X_{st} / \text{GDP}_{st}$</td>
<td>3.4</td>
<td>GDP-deflator</td>
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<td>Man. $X_{st} / \text{GDP}_{st}$</td>
<td>2</td>
<td>sector specific</td>
</tr>
<tr>
<td>Man. $X_{st} / \text{Man. VA}_{st}$</td>
<td>0.19</td>
<td>sector specific</td>
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Source: Freund 2009, own calculations.

Difference in base: GDP (= 30% goods and 70% services) versus Manufacturing Value Added (=100% goods)
### Elasticity of Exports to Output Over Time and by Regions

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<tr>
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<td><strong>common coefficient:</strong></td>
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<tr>
<td>value added</td>
<td>0.19 ***</td>
<td>0.14 ***</td>
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<td>Obs.</td>
<td>622</td>
<td>281</td>
<td>402</td>
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<td>Countries</td>
<td>81</td>
<td>69</td>
<td>78</td>
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<tr>
<td>adj. $R^2$</td>
<td>0.098</td>
<td>0.060</td>
<td>0.102</td>
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<td><strong>regional differences:</strong></td>
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<tr>
<td>EU-15</td>
<td>0.26 ***</td>
<td>0.23 ***</td>
<td>0.20 ***</td>
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<tr>
<td>CEE-10</td>
<td>0.30 ***</td>
<td>0.38 ***</td>
<td>0.09 ***</td>
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<tr>
<td>NAFTA</td>
<td>0.10</td>
<td>0.54 ***</td>
<td>0.74 ***</td>
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<td>LatAm</td>
<td>0.05 ***</td>
<td>-0.03 ***</td>
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<tr>
<td>Asia</td>
<td>0.38 ***</td>
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<td>Countries</td>
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<td>adj. $R^2$</td>
<td>0.124</td>
<td>0.098</td>
<td>0.128</td>
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</tbody>
</table>

**Source:** own calculations.

Output-elasticity of trade has increased over time.

Large regional differences.

Strongest trade reaction to output growth in EU-15, CEE-10 and Asia.
Elasticities of Exports to Value Added by Industries

Source: own estimations.

Average elasticity
Implications for CEEs
Implications for CESEE: Structural Change Remains an Important Driver of Growth

In particular CESEE showed successful restructuring towards fast growing sectors.

In the past this implied increasing specialisation on motor vehicles besides machinery and electronic goods.

However, in a longer term perspective, trade in motor vehicles is becoming less important in relative terms.

(Further, trade in machinery and cars was severely hit in the recent crisis, corroborating the negative impact on Eastern Europe.)

Therefore, domestic restructuring remains important for the region, as global trade patterns partly move away from CESEE‘s current specialisation.
Conclusions

Stylized fact: trade grows faster than GDP

Long-term analysis of structural change in trade shows that changes in the sectoral and regional composition of trade have in fact driven trade growth to a large extent.

This result is important, as it offers an alternative explanation of the rise and fall of trade: Changes in the composition of trade itself (i.e. countries moving into trade-intensive sectors), rather than the nature of trade and production (i.e. global supply chains).

This may also imply that we overestimate the effect of falling trading costs and global supply chains.