MEASURING EXPORT COMPETITIVENESS DATABASE (MEC.WORLDBANK.ORG):

WHAT CAN WE LEARN ABOUT RECENT ITALIAN COMPETITIVENESS IN THE GLOBAL CONTEXT?

From a collaboration between Banque de France, World Bank Group, and International Trade Centre

Guillaume Gaulier (Banque de France), Gianluca Santoni (CEPII), Daria Taglioni (World Bank), and Soledad Zignago (Banque de France)(*)

(*) The views are those of the authors, and not necessarily reflect those of the institutions to which the authors are affiliated.
METHODOLOGY

A world matrix of imports and exports, with country pair data at the product level

Quarterly data to better control for the timing of any shocks, and we look at changes in value, volume, and prices – to capture real and nominal effects

Decomposition of exports market share growth into three components:

- Exporter’s effect or performance: overall capacity to export any good to any market
- The geographic structure of exports: capacity to export to destination markets with an increasing import demand
- The sectoral structure of exports: specialization in the export of products with a dynamic global import demand

Same procedure as for exports is applied to imports, to quantify country specific demand shocks

A weighted variance analysis of annual growth rates, based on various works: Cheptea, Gaulier, & Zignago (2005), Cheptea, Fontagné & Zignago (2010) and Bricongne, Fontagne, Gaulier, Vicard and Taglioni (2011)
WHAT MEC TELLS ABOUT THE COMPETITIVENESS OF ITALY
IMPROVEMENTS IN EXPORT MARKET SHARES PROXY
COMPETITIVENESS GAINS, RECENTLY

ITALY, EXPORT GROWTH AND CHANGES IN MARKET SHARES, 2006Q1-2016Q2
BUT MARKET SHARE CHANGES CAN BE DRIVEN BY SUPPLY SIDE PUSH OR DEMAND SIDE PULL FACTORS

ITALY, DECOMPOSITION OF CHANGES IN EXPORT MARKET SHARES, 2006Q1-2016Q2

The numbers reported in the tables are log first differences. They represent an approximation of the percentage change in the variable of interest. Strictly speaking, the percentage change in a variable Y at period t is defined as \( \frac{Y(t) - Y(t-1)}{Y(t-1)} \), which is approximately equal to \( \log(Y(t)) - \log(Y(t-1)) \). The approximation is almost exact if the percentage change is small. For example, a 5% percentage change in delta logs is equal to 4.88%, i.e. \( \ln(1+5\%) \approx 0.0488 \).
ZOOM ON THE LAST THREE YEARS

ITALY, DECOMPOSITION OF CHANGES IN EXPORT MARKET SHARES, 2013Q1-2016Q2
ITALIAN EXPORT MARKET SHARES SUFFERED FROM WEAK DEMAND FROM THE EUROZONE AND FALLING PRICES FROM REST OF EUROPE

ITALY, PULL FROM MARKET ORIENTATION, 2005Q1-2008Q2

ITALY, PULL FROM MARKET ORIENTATION, 2013Q1-2016Q2
PRICES DROVE PULL FROM PRODUCT SPECIALIZATION…

ITALY, DECOMPOSITION OF CHANGES IN EXPORT MARKET SHARES, 2013Q1-2016Q2
DRIVEN BY MID- AND HIGH-SKILL MID-TECH AND RESOURCE SECTORS AND PRODUCTS

ITALY, PULL FROM PRODUCT MIX AND SECTORAL ORIENTATION, 2013Q1-2016Q2

GERMANY, PULL FROM PRODUCT MIX AND SECTORAL ORIENTATION, 2013Q1-2016Q2

Diagram showing contributions to market share change in volumes (% points) and contribution to relative price change (in percentage points) for various sectors.
...but specialization in some highly demanded products (besides favorable price dynamics) also supported Italy’s gains in export market shares.

Italy, pull from product mix and sectorial specialization, 2013Q1-2016Q2.

Diagram showing contributions to market share change in volumes (% points) and relative price change (in percentage points) for various sectors including Chemicals, Other, Food, Metals, Apparel and Textiles, Transport Eq., Machinery, and Others.
PRICES AND QUANTITY DYNAMICS FOR SUPPLY SIDE PUSH FACTORS DIFFER FROM PRICE DIMENSION OF PRODUCT SPECIALIZATION

ITALY, DECOMPOSITION OF CHANGES IN EXPORT MARKET SHARES, 2013Q1-2016Q2
WEAK EURO AREA DEMAND AFFECTED ITALIAN MARKET SHARES BUT EURO DEVALUATION MAY HAVE HELPED

<table>
<thead>
<tr>
<th>IMPORTS / DEMAND (%) - Quantity</th>
<th>Crisis &amp; rebound 08Q4-11Q2</th>
<th>Post-crisis 11Q3-14Q2</th>
<th>Euro Deval 14Q3-15Q2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>-0.4</td>
<td>-2.3</td>
<td>0.9</td>
</tr>
<tr>
<td>France</td>
<td>-2.3</td>
<td>-4.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Italy</td>
<td>-3.8</td>
<td>-5.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Spain</td>
<td>-5.6</td>
<td>-2.9</td>
<td>4.8</td>
</tr>
<tr>
<td>Euro Area</td>
<td><strong>-2.3</strong></td>
<td><strong>-2.6</strong></td>
<td><strong>1.1</strong></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>IMPORTS / DEMAND (%) - Unit Values</th>
<th>Crisis &amp; rebound 08Q4-11Q2</th>
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<tbody>
<tr>
<td>Germany</td>
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<td>-0.1</td>
<td>-3.4</td>
</tr>
<tr>
<td>France</td>
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<td>0.5</td>
<td>-3.5</td>
</tr>
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<td>-1.0</td>
<td>-3.9</td>
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<td><strong>-3.5</strong></td>
</tr>
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ITALY AND SPAIN MORE ABLE THAN GERMANY AND FRANCE TO PROFIT OF WEAK EURO

THE 4 LARGE EURO AREAS ECONOMIES: ALL IN ONE CHART, 2014Q3-2016Q2

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**Graph Description:**

- **Italy:** 1.92% increase in adjusted export market share, driven by a 2.51% increase in export quantities and a 2.06% decrease in export prices.
- **France:** 2.55% increase in adjusted export market share, driven by a 1.50% increase in export quantities and a 0.33% decrease in export prices.
- **Germany:** 0.33% decrease in adjusted export market share, driven by a 1.40% decrease in export prices.
- **Spain:** 2.72% increase in adjusted export market share, driven by a 1.50% increase in export quantities and a 2.72% decrease in export prices.

**Legend:**
- X Geography, Quantities
- X Product Mix, Quantities
- □ Adjusted Export Market Share, Quantities
- X Geography, Prices
- X Product Mix, Prices
- □ Adjusted Export Market Share, Prices
- X Export Growth, Values
NEVERTHELESS THE MONETARY UNION MEANS THAT THERE ARE IMPORTANT PRICE CO-MOVEMENTS IN MARKET SHARE CHANGES...

*Adjusted Market Share Correlations - Top 100 Exporters (Avg. 2008Q1-2015Q2). Values Decomposition*
…CONCERNING PERFORMANCE MEASURED IN VOLUMES

Adjusted market share correlations - top 100 exporters (Avg. 2008Q1-2015Q2). Quantities decomposition
...BUT POSSIBLY STRONGLY INFLUENCED BY SHARING A COMMON CURRENCY

**Adjusted Market Share Correlations - Top 100 Exporters (Avg. 2008Q1-2015-Q2). Price Decomposition**
What China does matters globally: growth of global trade and growth of China’s adjusted market share
**SUPPLY SIDE DEVELOPMENTS IDIOSYNCRATIC TO CHINA, (NET OF OTHER EFFECTS) NOT ONLY CONTRIBUTE TO EXPLAIN GLOBAL TRADE SLOWDOWN…**

**THE SUPPLY-SIDE: COUNTRIES’ CONTRIBUTIONS TO CHANGES IN EXPORTS, MEASURED BY “ADJUSTED” EXPORT MARKET SHARES, QUANTITIES**

<table>
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<th>Country</th>
<th>Export growth</th>
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<td>Pre-crisis 06Q1-08Q3</td>
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</tr>
<tr>
<td>United States</td>
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<td>0.1</td>
</tr>
<tr>
<td>China &amp; Honk Kong</td>
<td>1.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Other developed</td>
<td>1.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>Rest of the World</td>
<td>0.9</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td><strong>5.4</strong></td>
<td><strong>0.7</strong></td>
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**THE DEMAND-SIDE: COUNTRIES’ CONTRIBUTIONS TO CHANGES IN IMPORTS, MEASURED BY “ADJUSTED” IMPORT MARKET SHARES, QUANTITIES**

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...BUT ALSO INFLUENCE GLOBAL PRICES

CHINA’S EXPORT SPECIALIZATION AND CONTRIBUTION TO WORLD IMPORT PRICES AND VOLUMES (2006Q1-2008Q3)

CHINA’S EXPORT SPECIALIZATION AND CONTRIBUTION TO WORLD IMPORT PRICES AND VOLUMES (2011Q3-2015Q2)
AN INTERESTING SIDE FACT: CHINA NEVER SPECIALIZED IN LOW VALUE EXPORTS, BUT RATHER CHINA’S SPECIALIZATION HAD A DAMPENING EFFECT ON THE WORLD PRICES OF ITS EXPORTS WHEN ITS GROWTH STRATEGY WAS PURELY EXPORT DRIVEN

• Trade acceleration phase.
  • Initial supply-side shock when China started exporting.
  • Chinese domestic demand, including for its own products, low over a prolonged period of time and a large production base compared to world totals
  • Effect: China generated a large export surplus that
    • drove down the world price for goods in which it specialized; and
    • reinforced specialization patterns based on Ricardian comparative advantages and the reallocation of global demand for those products towards Chinese exports (often from domestic supply or regional exports).

• Trade deceleration phase
  • Rebalancing of Chinese growth towards domestic demand, but continued imports.
  • Downward pressure on global price for products in which China specializes is lower, and so is the rate of reallocation of market shares in favor of imports from China.
CONCLUSION

The application of the database to Italy has allowed an analysis of the main drivers of Italian export competitiveness.

It is suggesting that in the recent years Italy has gained market shares, in spite of unfavorable product effects.

The main drag to its export performance was due to unfavorable price effects on the supply side.

Meanwhile the devaluation of the euro may have offset a weak demand from some of its main export partners.

Findings confirm Krugman’s thesis on the importance of supporting EA demand to help EA countries to recover from the crisis years.

Besides looking at country specific analyses from wide across the world, the database also allows to look at systemic issues such as the global trade slowdown. See Gaulier et al (2015), chp. 5 in Hoekman eds. “The Global Trade Slowdown: A New Normal?”
Thank you

For further information
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METHODOLOGY
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Same procedure applied to imports allows to also quantify country specific shocks

A weighted variance analysis of annual growth rates, following Cheptea, Gaulier, & Zignago (2005), Cheptea, Fontagné & Zignago (2010) and Bricongne et al. (2011)
Step 1: Computation of Mid-Point Growth Rates.

- For a country $i$ exporting a value $x$ to a country $c$ of product $k$ at time $t$, the mid-point growth rate is defined as follows:

$$
g_{ickt} = \frac{x_{ickt} - x_{ick(t-1)}}{1 - \frac{1}{2} \left( x_{ickt} - x_{ick(t-1)} \right)}$$

- weight attributed to each flow $g_{ickt}$ is given by the relative share of the flow in total exports, where total refers to the exports of the whole sample of countries:

$$
S_{ickt} = \frac{x_{ickt} - x_{ick(t-1)}}{\left( \sum_c \sum_i \sum_k x_{ickt} - x \sum_c \sum_i \sum_k x_{ick(t-1)} \right)}
$$
Step 1: Computation of Mid-Point Growth Rates.

- *Quarter-on-quarter* growth rate of the total value of world exports is given by summing each individual flow $g_{ick}$ weighted by $s_{ickt}$:

$$G_t = \sum_c \sum_i \sum_k s_{ickt} \ast g_{ickt}$$

- G is monotonically related to the conventional growth rate measure, and it represents a very good approximation of the latter except for extremely high growth rates. For bigger growth rates the two growth measures are linked by the following identity:

$$\sum_{i,c,k} G_{ick}^t = \sum_{i,c,k} g_{ick}^t \ast s_{ick}^t \approx \ln \left( \frac{\sum_{i,c,k} x_{ick}^t}{\sum_{i,c,k} x_{ick}^{t-1}} \right)$$
ECONOMETRIC SHIFT-SHARE DECOMPOSITION

Step 2: Fixed effects regression

- ANOVA methodology to decompose export (import) growth in a sectoral effect, a geographical effect and a pure competitiveness effect.

- Specifically, we regress the mid-point growth rate on three sets of fixed effects, i.e. exporter, importer and sector/product fixed effects, here denoted with the letter $f$ by means of a weighted OLS estimation.

$$ g_{i\epsilon k} = \alpha + \sum_{i} \phi_i f_i + \sum_{c} \beta_i f_i + \sum_{k} \gamma_k f_k + \varepsilon_{i\epsilon k} $$
Step 2: Fixed effects regression

- We normalize the effects so to quantify them as deviations from the average growth rate of exports (imports) for the overall sample in the dataset, i.e. in our case this roughly corresponds to world export growth.

\[
\phi_i^t = \alpha^t + \phi_i^t + \sum_c s_{ic} \beta_c^t + \sum_k s_{ik} \gamma_k^t
\]

\[
\ln\left(\frac{\sum_{c,k} x_{ick}^t}{\sum_{c,k} x_{ick}^{t-1}}\right) \approx \sum_{c,k} G_{ick}^t = \sum_{c,k} g_{ick}^t * s_{ick}^t = \phi_i^t + \sum_c s_{ic} \tilde{\beta}_c^t + \sum_k s_{ik} \tilde{\gamma}_k^t
\]

\[
\tilde{\beta}_c^t = \beta_c^t - \sum_c s_{ic} \beta_c^t
\]

\[
\tilde{\gamma}_k^t = \gamma_k^t - \sum_k s_{ik} \gamma_k^t
\]
Step 3: Computation of price and quantity effects

The decomposition is further extended to separate quantity from price effects to capture the role played by price adjustments in the period. We follow the procedure used in Bricongne et al (2011), which uses a Tornqvist index to carry out the decomposition (only the intensive margin can be taken into consideration when disentangling price from quantity effects).

We decompose values into quantities and unit values. We compute average price changes, for total exports and vis-à-vis individual trade partners, by means of weighted averages of the elementary price changes. Elementary flows are decomposed as follows:

\[ d \ln(\text{value})_{ick, \frac{t}{t-1}} = d \ln(\text{quantity})_{ick, \frac{t}{t-1}} + d \ln\left(\frac{\text{value}}{\text{quantity}}\right)_{ick, \frac{t}{t-1}} \]

Unit value indices differ from price indices since their changes may be due to price and (compositional) quantity changes. Bias in unit value indices are attributed to changes in the mix of goods exported and to the poor quality of recorded data on quantities. More the data is disaggregated, more this bias is reduced.
Was there a role for internal devaluations? Prices dynamics regarding supply side push factors differ across EA countries.