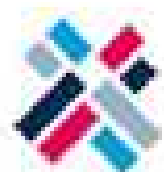# MEASURING EXPORT COMPETITIVENESS (MEC) DATABASE:

WHAT CAN WE LEARN ABOUT FRENCH COMPETITIVENESS AND THE GLOBAL CONTEXT?

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

December 16, 201

THE MEASURING EXPORT COMPETITIVENESS DATABASE

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 FRANCE

CHANGES IN EXPORT MARKET SHARES PROXY COMPETITIVENESS GAINS

FRANCE, EXPORT GROWTH AND CHANGES IN MARKET SHARES, 2006Q1-2015Q2
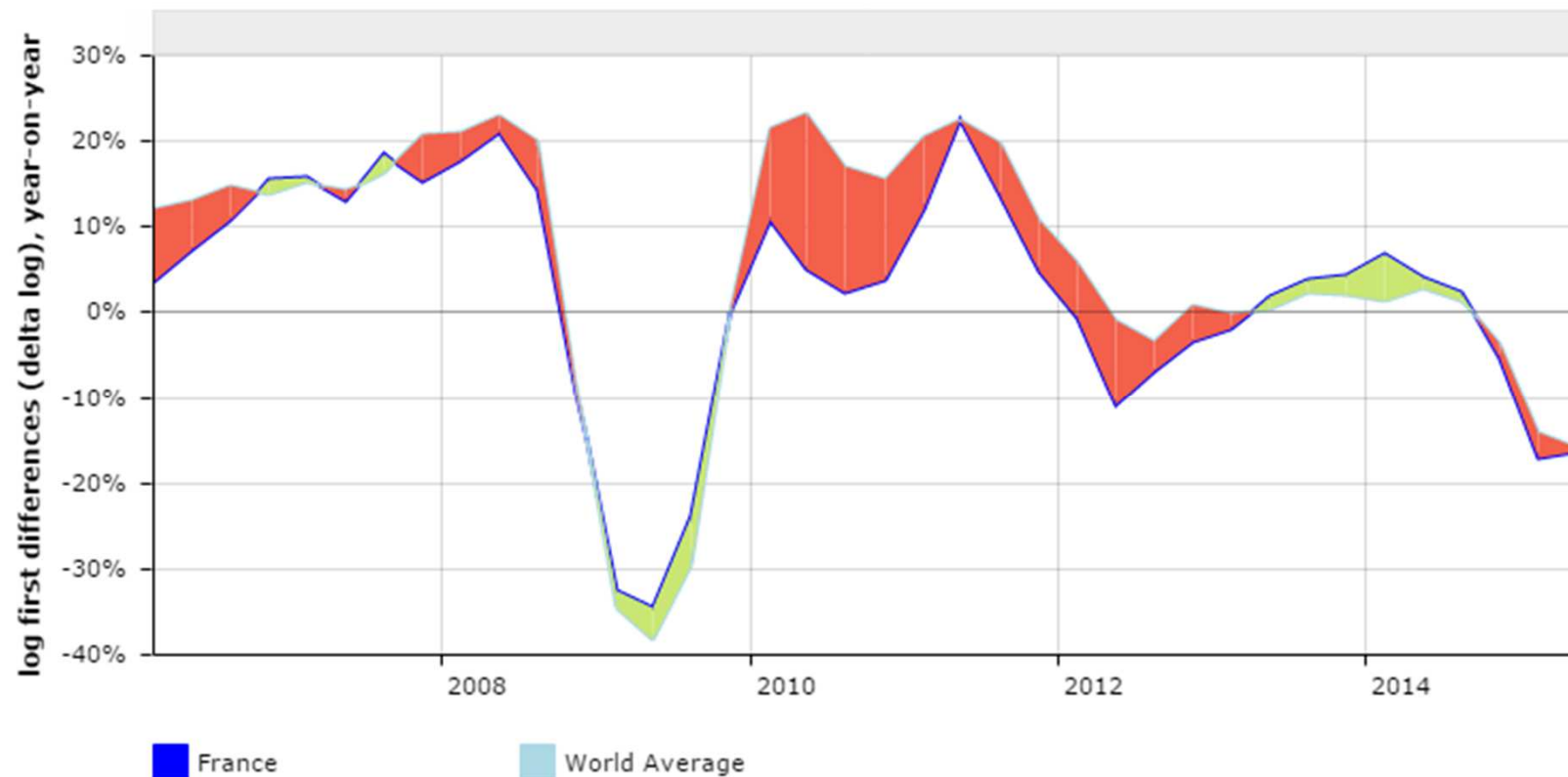
BUT MARKET SHARE CHANGES CAN BE DRIVEN BY SUPPLY SIDE PUSH OR DEMAND SIDE PULL FACTORS

FRANCE, DECOMPOSITION OF CHANGES IN EXPORT MARKET SHARES, 2006Q1-2015Q2

5
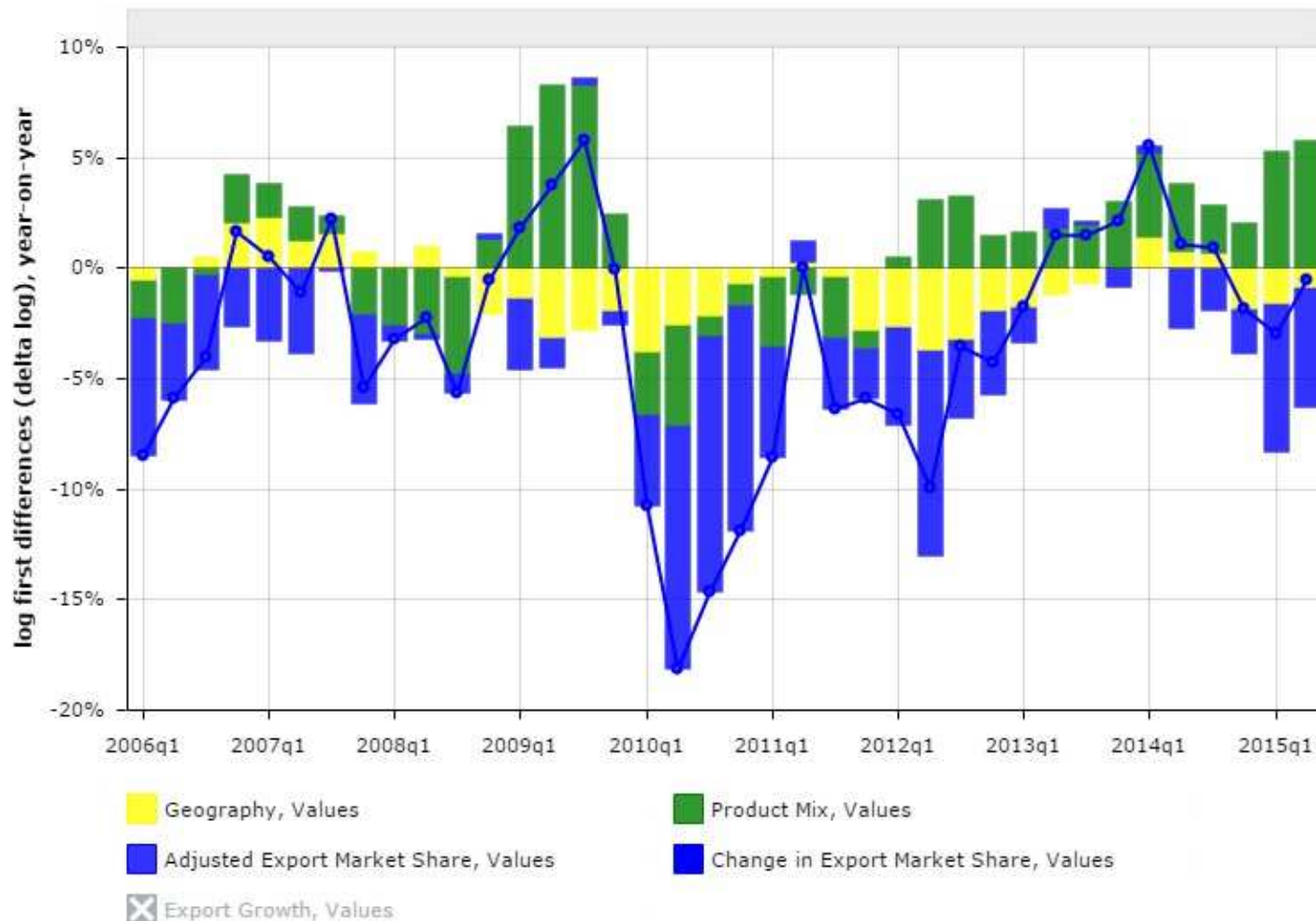
ZOOM ON THE LAST THREE YEARS

FRANCE, DECOMPOSITION OF CHANGES IN EXPORT MARKET SHARES, 2012Q1-2015Q2
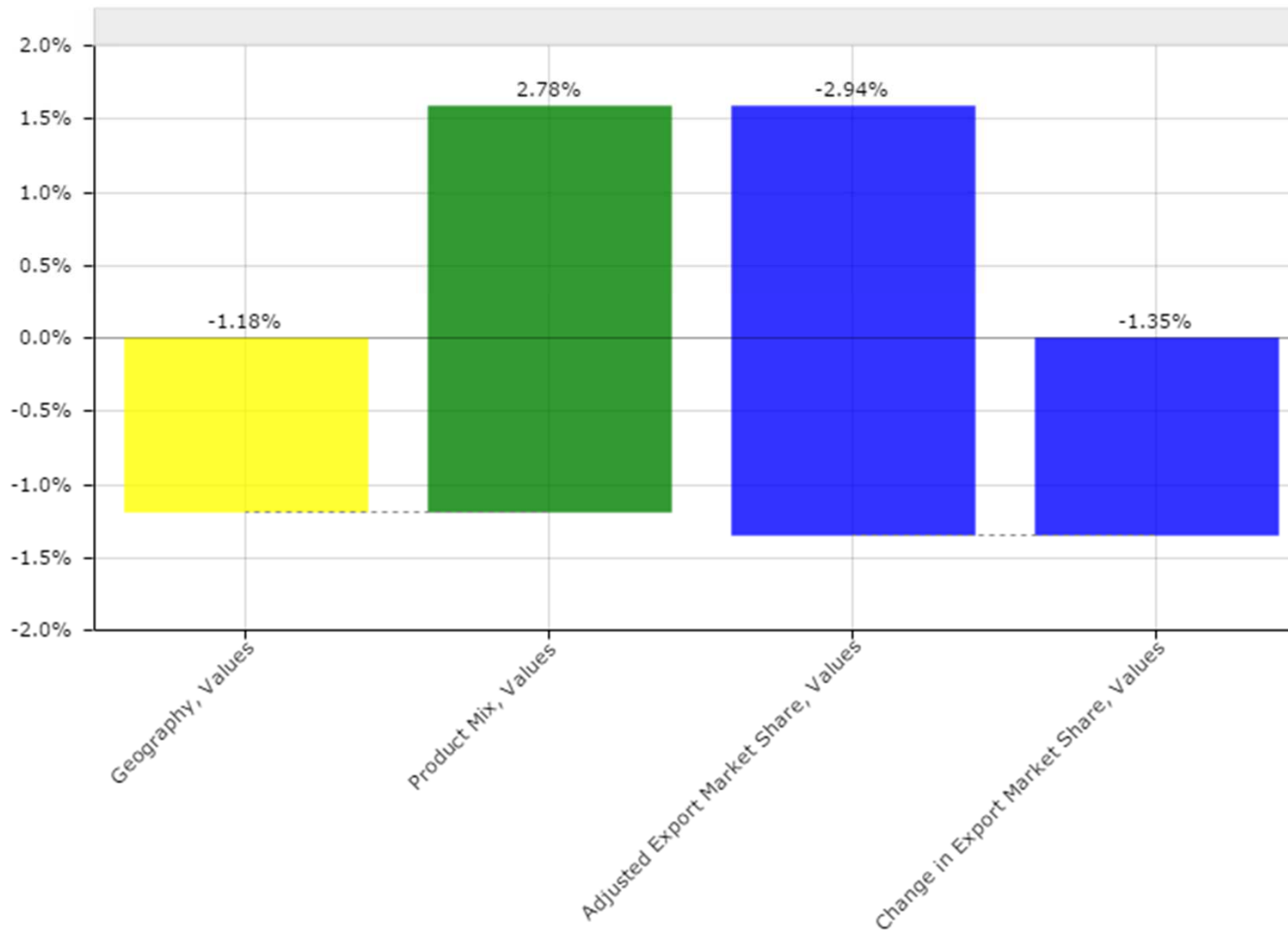
FRENCH SPECIALIZATION IN HIGHLY DEMANDED PRODUCTS PARTIALLY OFFSET MARKET SHARE LOSSES

FRANCE, PULL FROM PRODUCT MIX AND SECTORIAL SPECIALIZATION, 2012Q1-2015Q2
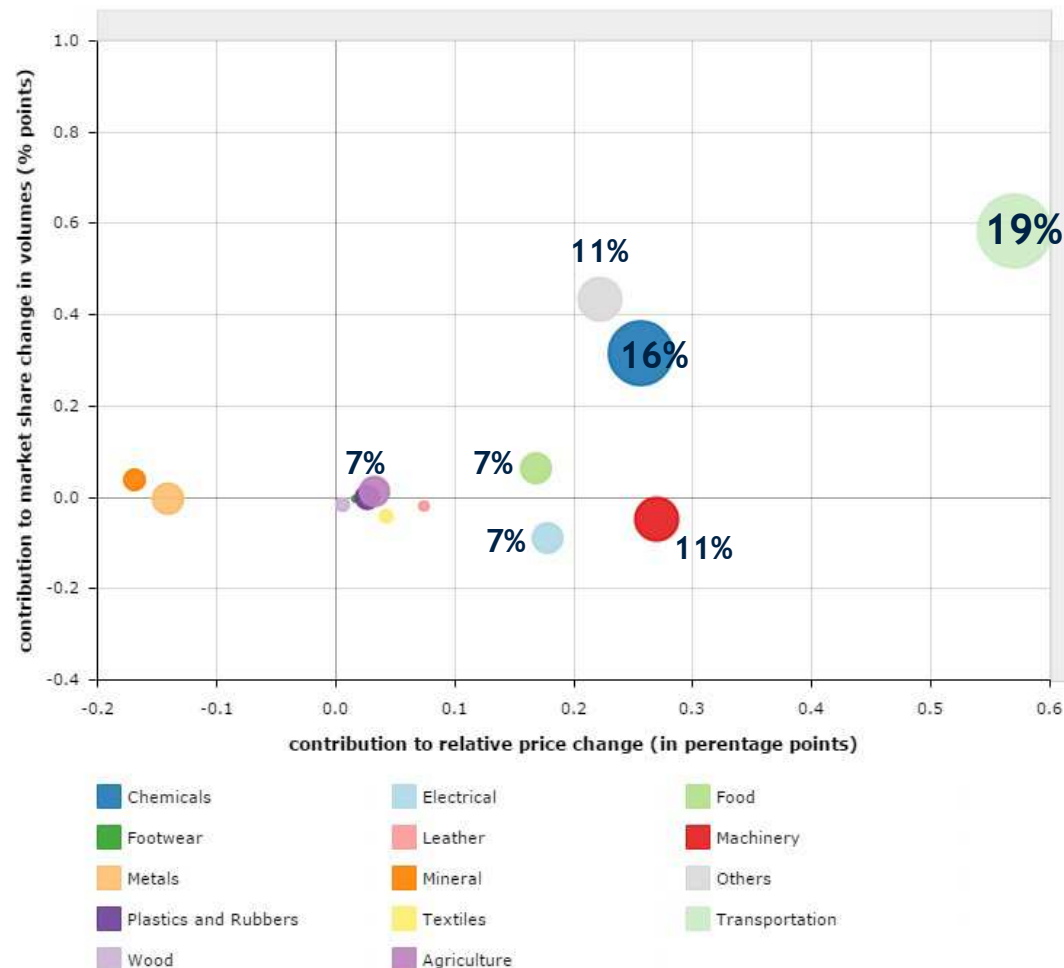
DRIVEN BY SECTORS AND PRODUCTS WITH HIGH SKILL CONTENT, WHICH HAVE HAD A DYNAMIC DEMAND SINCE 2012, UNLIKE MID–SKILL IN WHICH GERMANY SPECIALIZES

FRANCE, PULL FROM PRODUCT MIX AND SECTORAL ORIENTATION, 2012Q1-2015Q2
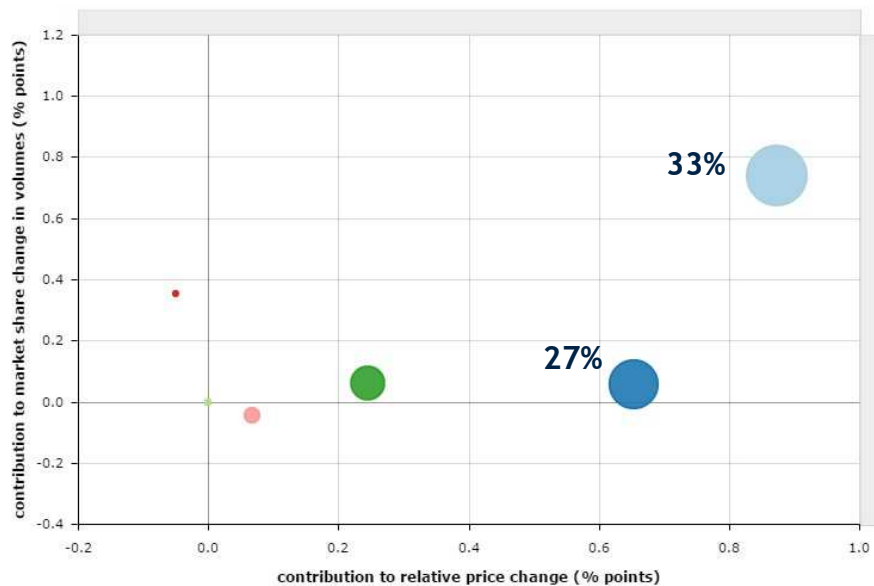
GERMANY, PULL FROM PRODUCT MIX AND SECTORAL ORIENTATION, 2012Q1-2015Q2
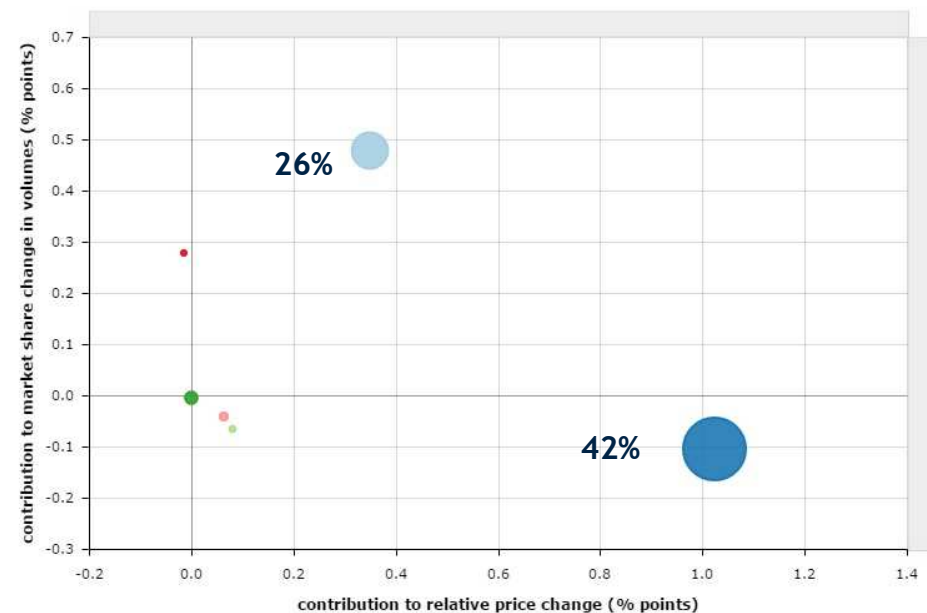
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BUT FRENCH EXPORT MARKET SHARES SUFFERED FROM WEAK DEMAND ON ITS MAIN IMPORTING MARKETS

FRANCE, PULL FROM MARKET ORIENTATION, 2010Q1-2012Q4
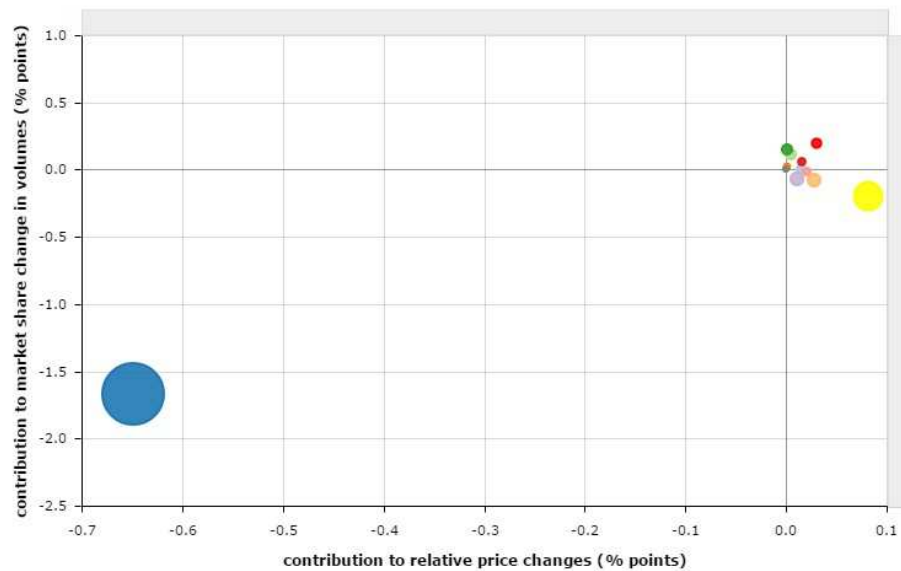
FRANCE, PULL FROM MARKET ORIENTATION, 2013Q1-2015Q2
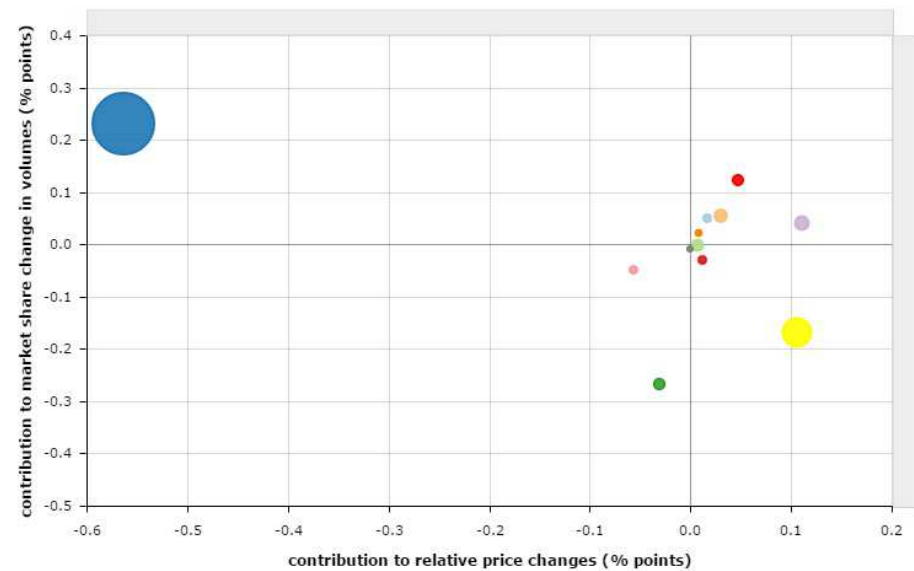
WEAK GERMAN, SPANISH AND ITALIAN DEMAND AFFECTED FRENCH MARKET SHARES BUT EURO DEVALUATION HELPED

IMPORTS / DEMAND (%) - Quantity			
	Crisis & rebound 08Q4-11Q2	Post-crisis 11Q3-14Q2	Euro Deval 14Q3-15Q2
Germany	-0.4	-2.3	0.9
France	-2.3	-4.2	0.0
Italy	-3.8	-5.7	1.8
Spain	-5.6	-2.9	4.8
Euro Area	**-2.3**	**-2.6**	**1.1**

IMPORTS / DEMAND (%) - Unit Values			
	Crisis & rebound 08Q4-11Q2	Post-crisis 11Q3-14Q2	Euro Deval 14Q3-15Q2
Germany	-1.2	-0.1	-3.4
France	-0.4	0.5	-3.5
Italy	-1.1	-1.0	-3.9
Spain	-1.7	-0.8	-3.1
Euro Area	-1.1	-0.4	-3.5

SUPPLY SIDE PUSH FACTORS SET FRANCE APART FROM NEIGHBORS, NOT BAD SPECIALIZATION

The 4 large Euro Areas economies: All in one chart, 2010q1-2015q2
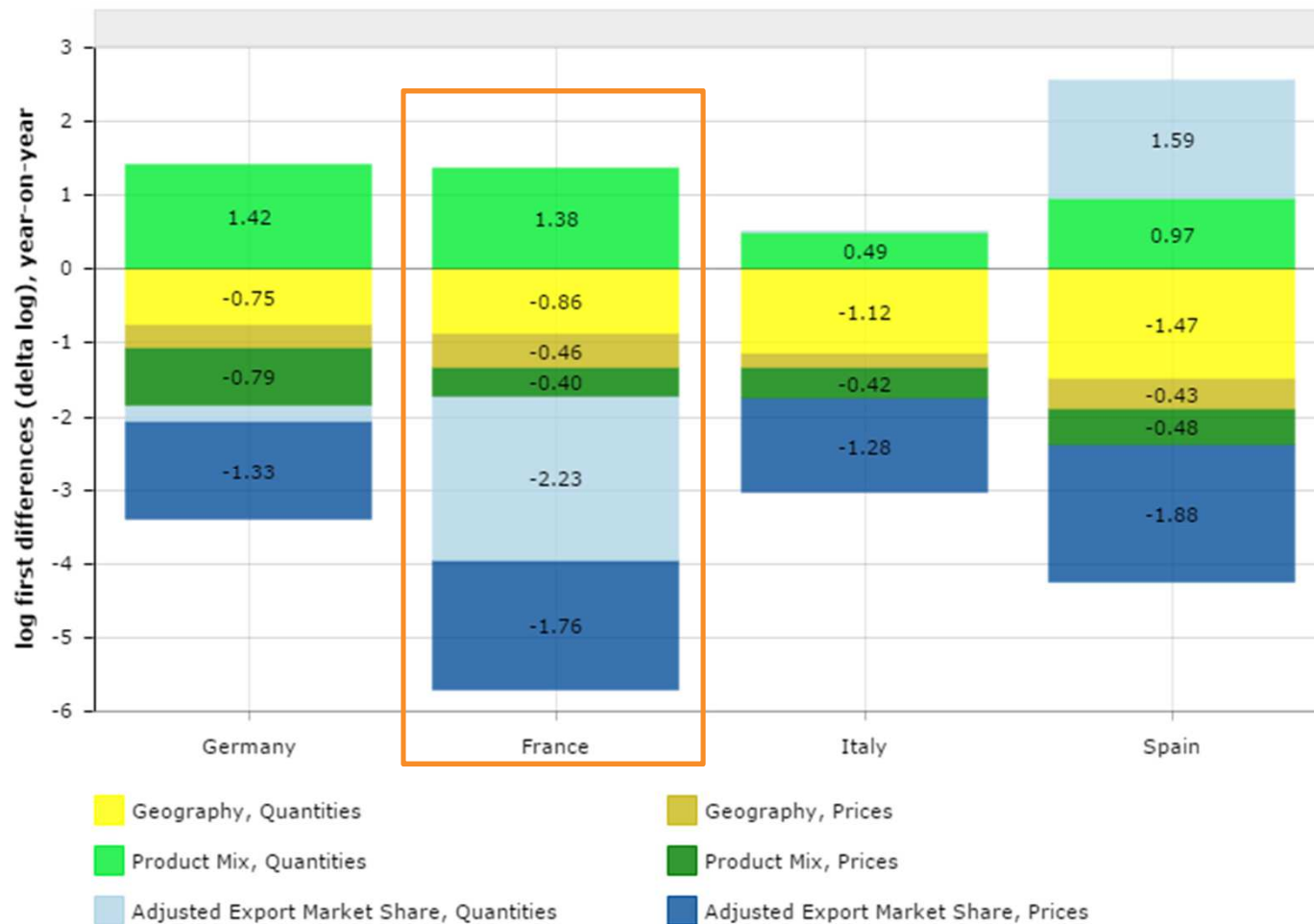
FRANCE LESS ABLE THAN NEIGHBORS TO PROFIT OF WEAK EURO, DESPITE LOWER PERFORMANCE GAP

THE 4 LARGE EURO AREAS ECONOMIES: ALL IN ONE CHART, 2014Q3-2015Q2
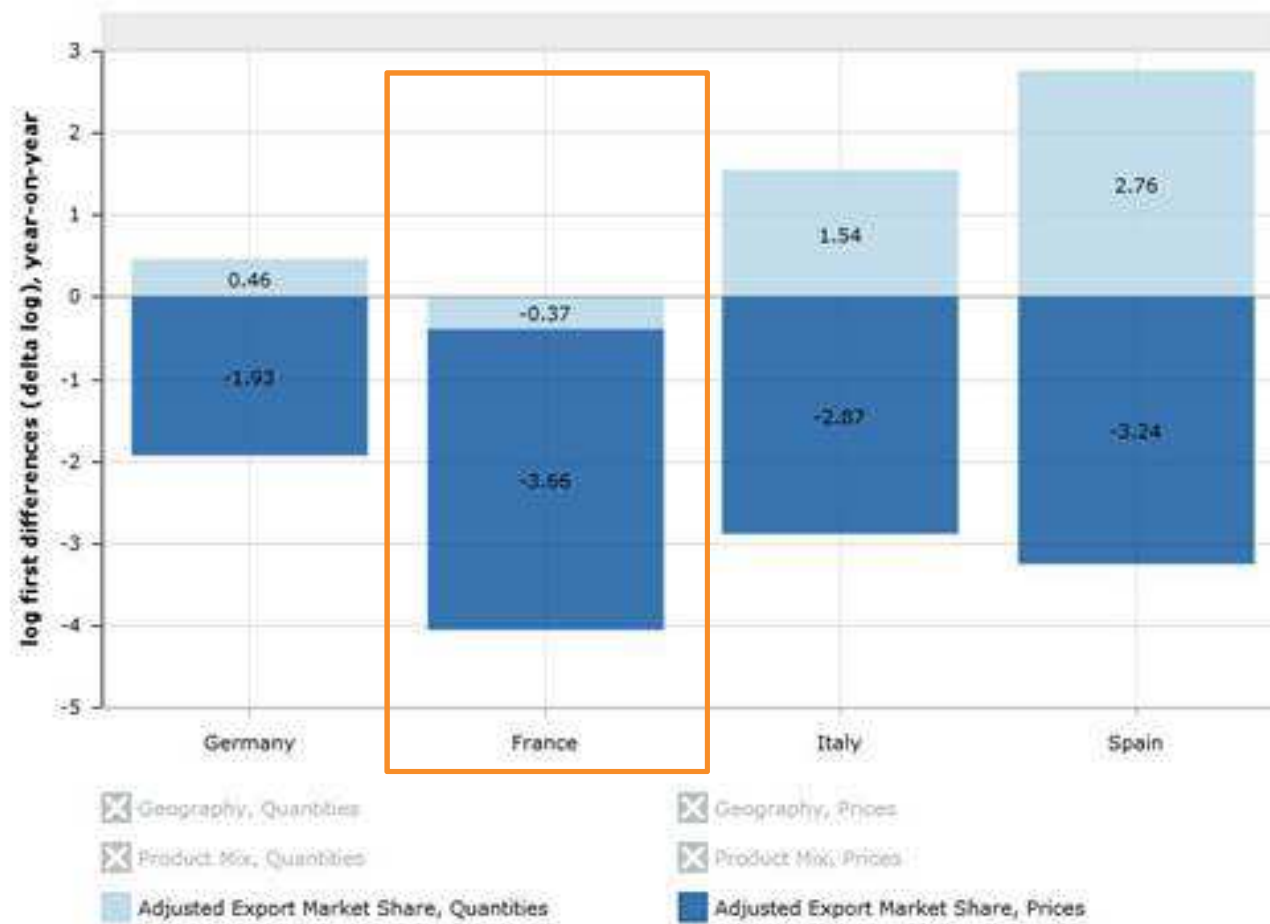
THE MONETARY UNION MEANS THAT THERE ARE IMPORTANT PRICE COMOVEMENTS IN MARKET SHARE CHANGES…

ADJUSTED MARKET SHARE CORRELATIONS – TOP 100 EXPORTERS (AVG. 2008Q1-2015Q2). VALUES DECOMPOSITION
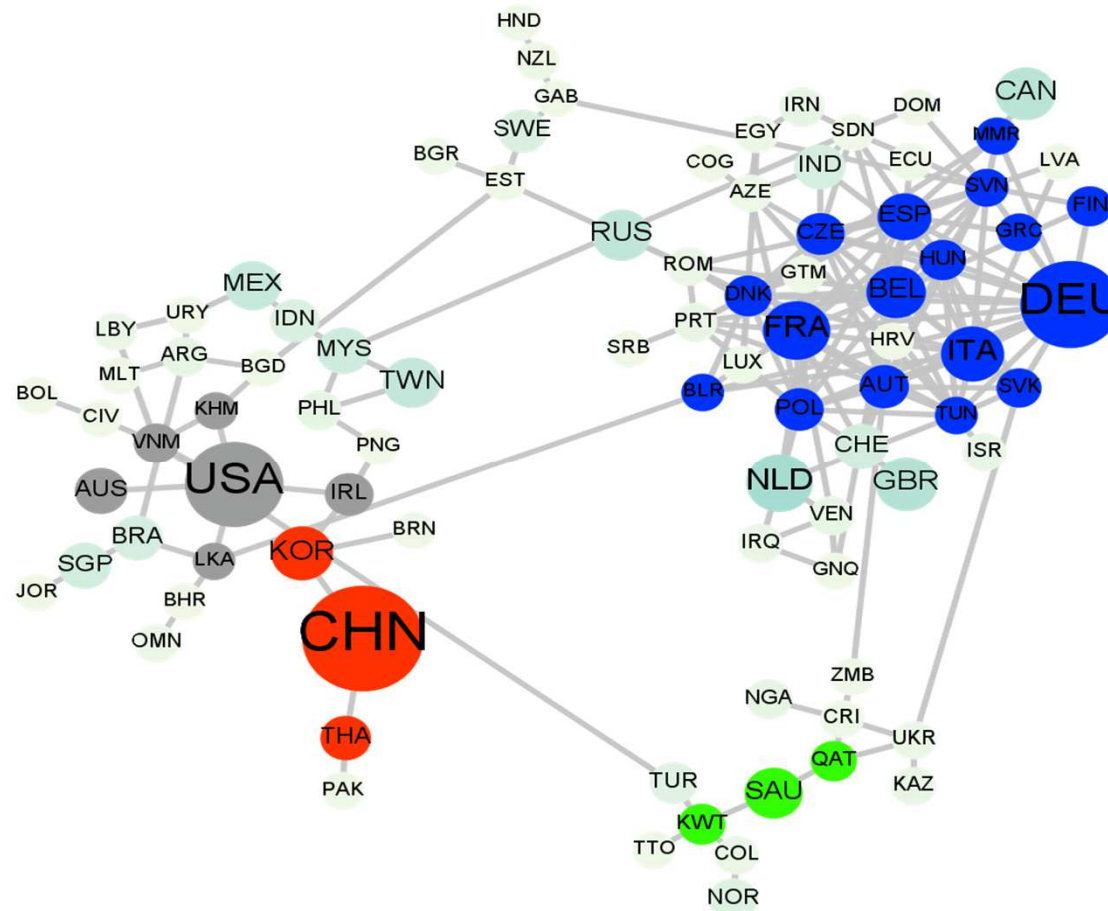
…POSSIBLY STRONGLY INFLUENCED BY SHARING A COMMON CURRENCY…

ADJUSTED MARKET SHARE CORRELATIONS - TOP 100 EXPORTERS (AVG. 2008Q1-2015-Q2). PRICE DECOMPOSITION
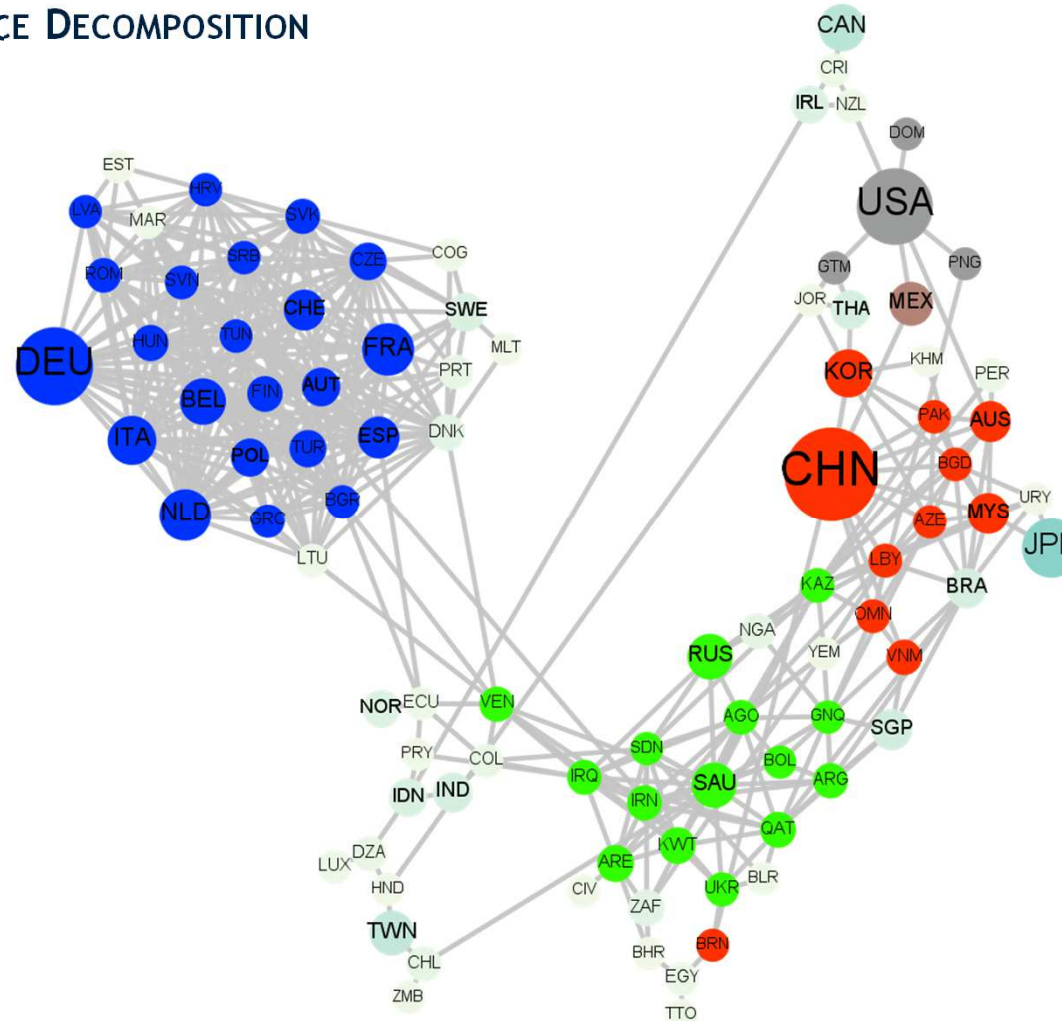
ADJUSTED MARKET SHARE CORRELATIONS – TOP 100 EXPORTERS (AVG. 2008Q1-2015-Q2). QUANTITIES DECOMPOSITION
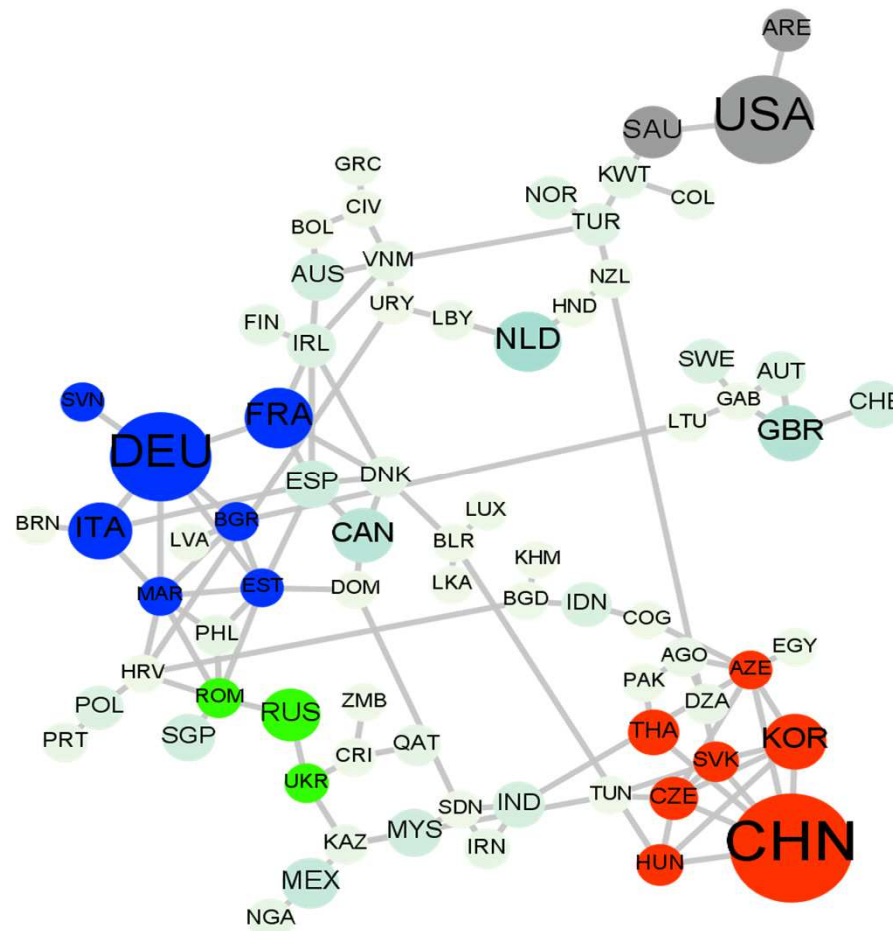
CONCLUSION

The application of the database to France has allowed an analysis of the main drivers of French export competitiveness

It has demystified myths about an unfavorable product mix of the French export basket, suggesting that the main drivers of the low performance of French exports during the crisis have been supply side competitiveness shortcomings and a weak demand from its main export partners

Findings confirm Krugman's thesis on the importance of supporting EA demand to help EA countries to recover from the Euro Debt crisis

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?", which finds that:
- China's reintegration in the global economy in the 1990-2000s had a juggernaut effect on the volume and structure of world trade
- The export driven export strategy of China has led to price deflation on its export basket, and reorientation of developed countries' exports towards higher value goods and services
- About half of the current global trade slow-down is due to a reorientation of Chinese production towards serving domestic demand
- The weakness of the demand in Europe and a levelling off of the process of global fragmentation of production are other important reasons for the global trade slowdown

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Thank you

For further information
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ANNEX

METHODOLOGY

ECONOMETRIC SHIFT-SHARE DECOMPOSITION

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 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)

Gaulier, Santoni, Taglioni & Zignago

ECONOMETRIC SHIFT–SHARE DECOMPOSITION

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:

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

- 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:

$$s_{ickt} = \frac{x_{ickt} - x_{ick(t-1)}}{\left(\sum_c \sum_i \sum_k x_{ickt} - x \sum_c \sum_i \sum_k x_{ick(t-1)}\right)}$$

Gaulier, Santoni, Taglioni & Zignago

ECONOMETRIC SHIFT–SHARE DECOMPOSITION

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_{ickt} weighted by s_{ickt}:

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

- 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:

$$\sum_{i,c,k} G_{ick}^t = \sum_{i,c,k} g_{ick}^t * s_{ick}^t \approx \ln\left(\frac{\sum\limits_{i,c,k} x_{ick}^t}{\sum\limits_{i,c,k} x_{ick}^{t-1}} \right)$$

Gaulier, Santoni, Taglioni & Zignago

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.

$$g_{ickt} = \alpha + \sum_i \phi_i f_i + \sum_c \beta_i f_i + \sum_k \gamma_k f_k + \varepsilon_{ickt}$$

ECONOMETRIC SHIFT–SHARE DECOMPOSITION

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.

$$\phi_i^t = \hat{\alpha}^t + \hat{\phi}_i^t + \sum_c s_{ic}^t \hat{\beta}_c^t + \sum_k s_{ik}^t \hat{\gamma}_k^t$$

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

$$\tilde{\beta}_c^t = \hat{\beta}_c^t - \sum_c s_{ic}^t \hat{\beta}_c^t \qquad\qquad \tilde{\gamma}_k^t = \hat{\gamma}_k^t - \sum_k s_{ik}^t \hat{\gamma}_k^t$$

Gaulier, Santoni, Taglioni & Zignago

ECONOMETRIC SHIFT–SHARE DECOMPOSITION

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:

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

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.

Gaulier, Santoni, Taglioni & Zignago

USING MEC TO ASSESS THE ROLE OF CHINA IN THE GLOBAL TRADE SLOWDOWN

INTERDEPENDENCES GO BEYOND THE REGIONAL SCOPE: WHAT CHINA DOES MATTERS GLOBALLY

GROWTH OF GLOBAL TRADE AND GROWTH OF CHINA'S ADJUSTED MARKET SHARE
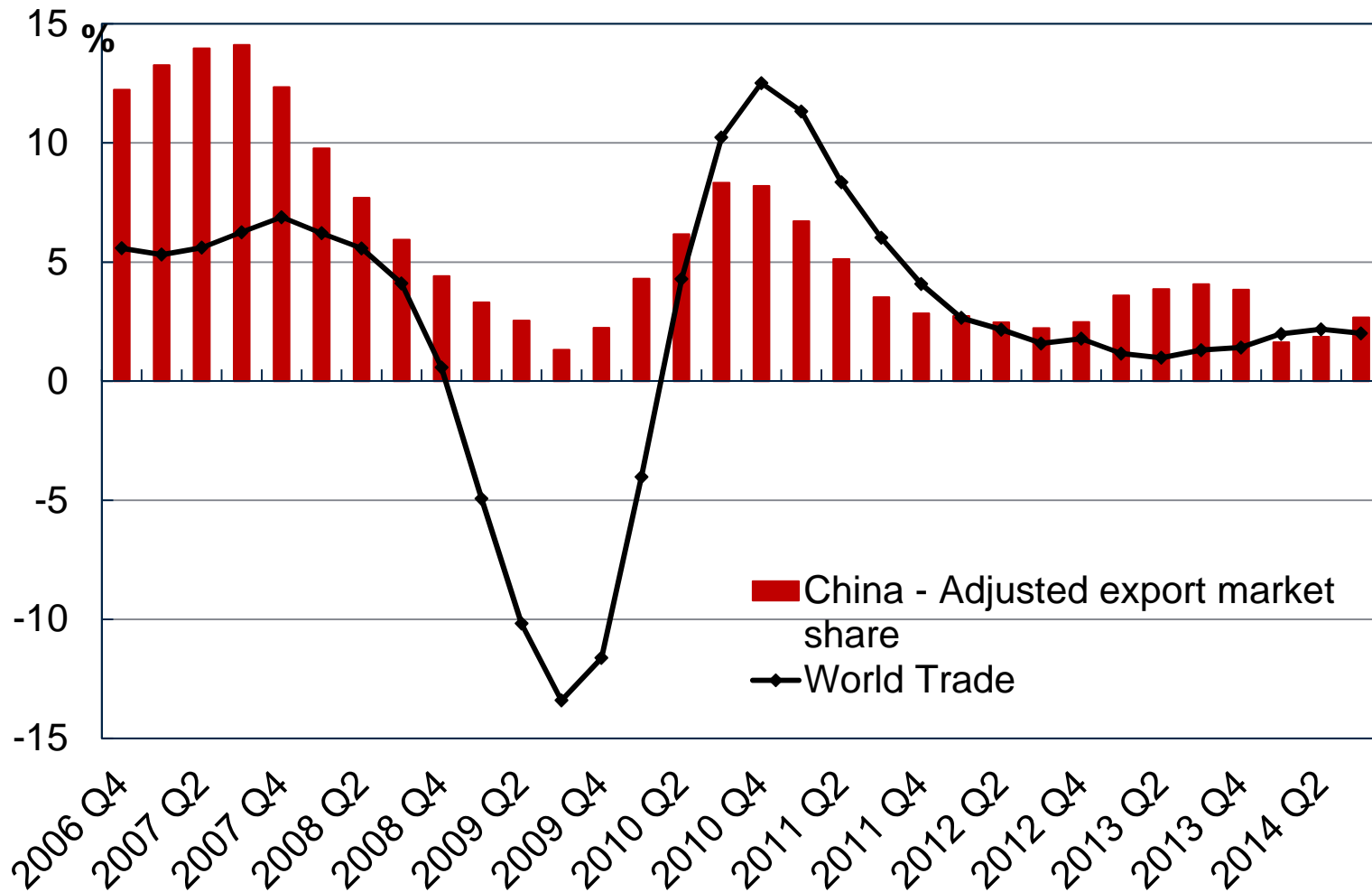
AND SUPPLY SIDE DEVELOPMENTS IDIOSYNCRATIC TO CHINA, NET OF OTHER EFFECTS NOT ONLY CONTRIBUTE TO EXPLAIN GLOBAL TRADE SLOWDOWN…

THE SUPPLY-SIDE: COUNTRIES' CONTRIBUTIONS TO CHANGES IN EXPORTS, MEASURED BY "ADJUSTED" EXPORT MARKET SHARES, QUANTITIES

	Export growth			Adjusted market share Contribution		
	Pre-crisis 06Q1-08Q3	Crisis & rebound 08Q4-11Q2	Post-crisis 11Q3-14Q3	Pre-crisis 06Q1-08Q3	Crisis & rebound 08Q4-11Q2	Post-crisis 11Q3-14Q3
Euro Area	1.8	-0.3	0.4	1.4	0.1	0.4
United States	0.3	0.1	0.2	0.2	-0.1	0.1
China & Honk Kong	1.3	0.4	0.3	1.7	0.6	0.6
Other developed	1.1	-0.1	0.3	0.8	-0.5	0.1
Rest of the World	0.9	0.7	0.6	1.3	0.6	0.7
World	**5.4**	**0.7**	**1.8**	**5.4**	**0.7**	**1.8**

THE DEMAND-SIDE: COUNTRIES' CONTRIBUTIONS TO CHANGES IN IMPORTS, MEASURED BY "ADJUSTED" IMPORT MARKET SHARES, QUANTITIES

|	Import growth			Adjusted market share Contribution		
	Pre-crisis 06Q1-08Q3	Crisis & rebound 08Q4-11Q2	Post-crisis 11Q3-14Q3	Pre-crisis 06Q1-08Q3	Crisis & rebound 08Q4-11Q2	Post-crisis 11Q3-14Q3
Euro Area	1.5	-0.3	0.0	1.7	-0.5	-0.1
United States	0.1	-0.2	0.1	0.0	-0.3	0.1
China & Honk Kong	1.0	0.9	0.6	0.8	1.0	0.8
Other developed	0.8	-0.2	0.1	0.7	-0.1	0.1
Rest of the World	2.1	0.5	0.9	2.3	0.7	0.9
World	**5.4**	**0.8**	**1.8**	**5.4**	**0.8**	**1.8**

…BUT ALSO INFLUENCE GLOBAL PRICES

CHINA'S EXPORT SPECIALIZATION AND CONTRIBUTION TO WORLD IMPORT PRICES AND VOLUMES (2006Q1-2008Q3)
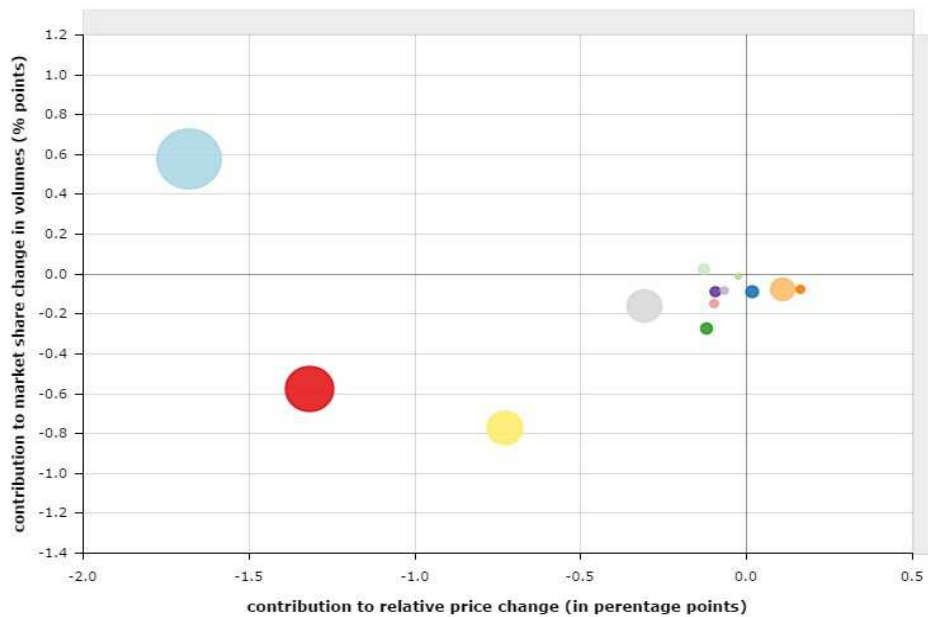
CHINA'S EXPORT SPECIALIZATION AND CONTRIBUTION TO WORLD IMPORT PRICES AND VOLUMES (2011Q3-2015Q2)
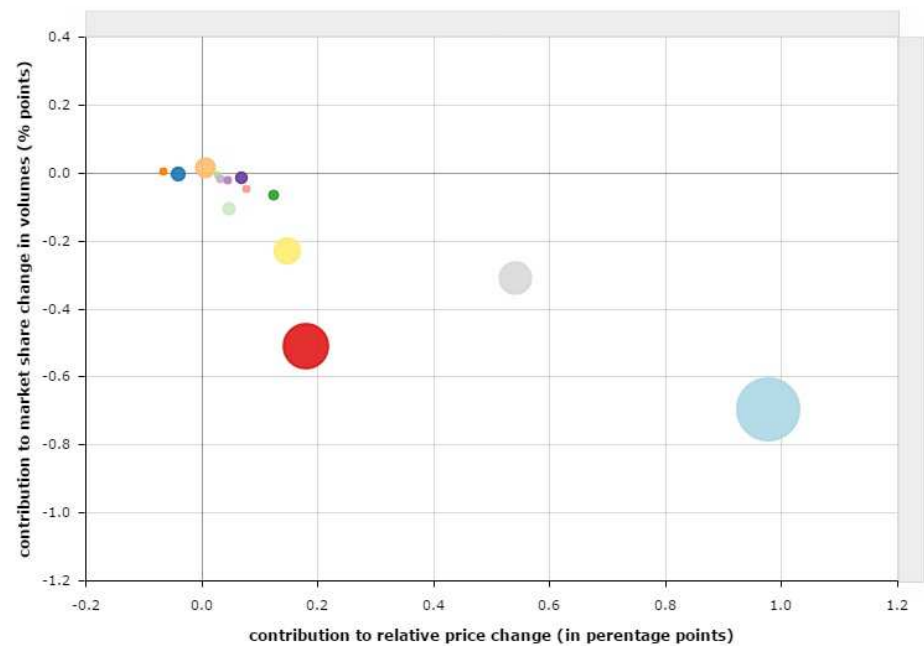
IT IS NOT THAT CHINA SPECIALIZED IN LOW VALUE EXPORTS, BUT RATHER CHINA'S SPECIALIZATION HAD A DAMPENING EFFECT ON THE WORLD PRICES OF ITS EXPORTS

- 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