



Greek export performance: Tangible Signs of improvement but much more is required



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ECONOMIC RESEARCH AND INVESTMENT STRATEGY

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Purpose of the Study – Key Findings

Greece's External Sector Performance

**A Critical Evaluation of Greece's Merchandise Trade
Advantage & Quality**

A Sectoral & Corporate View of Greek Merchandise Exports

Greece & Global Value Chains (GVCs)

Appendix



Throughout the crisis era one of the focal points of structural reforms was the **transformation** of the economic growth paradigm of Greece **from a “closed” consumption driven economy to an “open” investment and export driven one**. Despite initial high hopes, **until recently this change** in the course of the Greek economy **remained elusive**. Yet, **slowly but steadily change** is happening and exports are getting traction. In fact, in 2018 the external sector made a positive contribution to overall GDP growth.

In the present study we attempt to contribute to the discourse on the issue of the **“missing Greek exports”** on more than one levels. Our ambition is to move beyond a simple descriptive narrative on the volume and destination of Greek merchandise exports and dwell upon issues such as:

- i. which are the **product categories** that Greece enjoys a **comparative-competitive export advantage**,
- ii. examine the association between Greek exports and **product sophistication** and complexity,
- iii. present a **top-down analysis** of the number and size of the Greek exporting firms and,
- iv. last but not least examine the extent of **Greece’s participation to the Global Value Chains**.

Based on our analysis the key findings are the following:

- The **gap between exports and imports**, as a % of GDP, **closed** during the crisis period. The return of external sector to balance was the result of a **stabilization in imports** (to around 34% in 2017) and a **substantial pick-up in exports** (to 33% in 2017 up from 23% in 2008).
- Despite this recent improvement, in a global context, Greece remains a **“closed economy”**. In particular, Greek trade openness as a percentage of GDP accounts to 67% versus 90% of EA19 average in 2017.
- Greece has global revealed **comparative advantage in 22** out of 63 product groups, accounting to **69.5% of Greek exports**, and excluding “petroleum products” to **40.4%**.
- **Greece has comparative advantage mostly in exported goods with low global productivity level**, accounting to **31.9%** of Greek exports.
- Excluding petroleum products, **only 8.5%** of Greek exports **have comparative advantage and at the same time are of high global productivity level**.
- Greece **could increase its export potential** by emphasizing in goods of high productivity level that now has comparative disadvantage and their total current share is estimated at 15.6%.
- When measuring the productivity level associated with a country’s exported goods, Greece exhibits a **moderate sophistication level of its export basket** and ranks 51st out of 172 countries.
- The **technological content** of Greek exports **is low**. In 2017, the share of high technology products in Greek exports stood at 4.3%, **the lowest in EU28**.

- Only a **small percentage** of Greek enterprises (mostly SMEs) exports, estimated around 2-3% in 2016.
- Consequently, **Greek exports are highly concentrated**. The top 5 exporters account for 23% of total goods exports. The top 1,000 firms account for 81% of Greek exports.
- The wholesale trade and the manufacture of refined petroleum products are the **two big exporting “star-sectors”**.
- **Greece’s participation** in the global value chain **increased** over the past decade from 36% in 2005 to 40% in 2015.
 - That was mainly **due to** the increased **backward participation**. Greek gross exports embody more foreign value added than ten years ago to 25% from 19%.
 - On the other hand, regarding the **forward participation**, the Greek content in foreign exports as a percentage of gross exports fell behind to 15% of gross exports from 17%.

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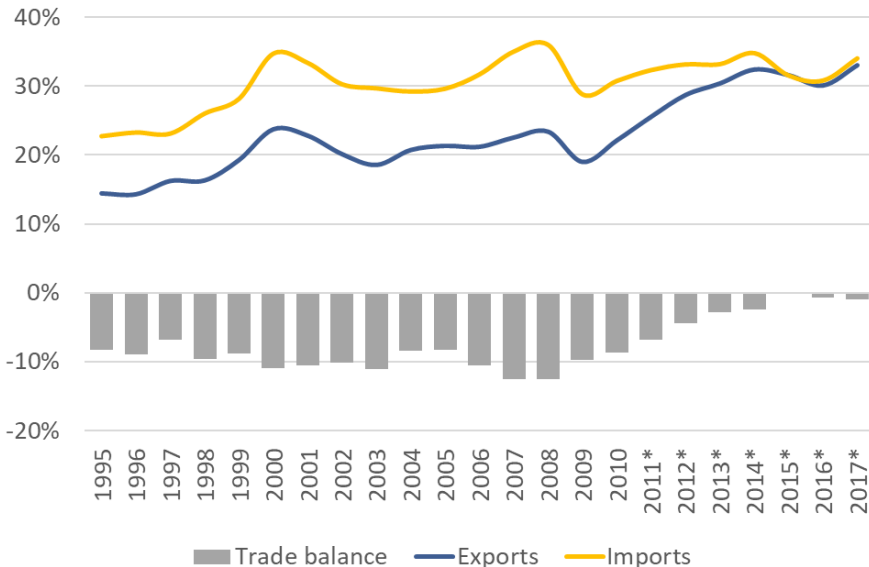
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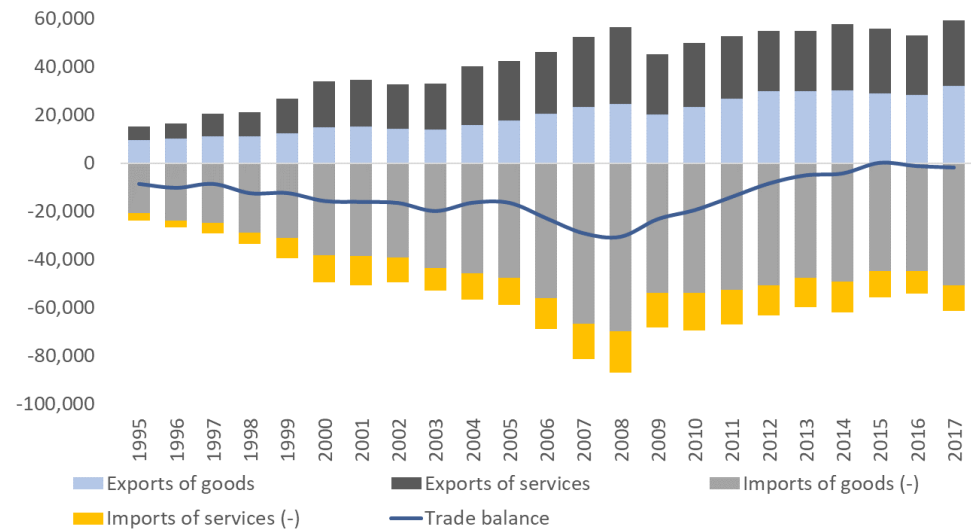
Appendix

- The **gap between exports and imports**, as a % of GDP, **closed** during the crisis period.
- The return of external sector to balance was the result of a **stabilization in imports** (to around 34% in 2017) and a **substantial pick-up in exports** (to 33% in 2017 up from 23% in 2008).
- As a result, for the first time since 1995, **the external sector was balanced in 2015** and only marginal in deficit (€1.8bn) in 2017.

External trade, Greece (% of GDP)



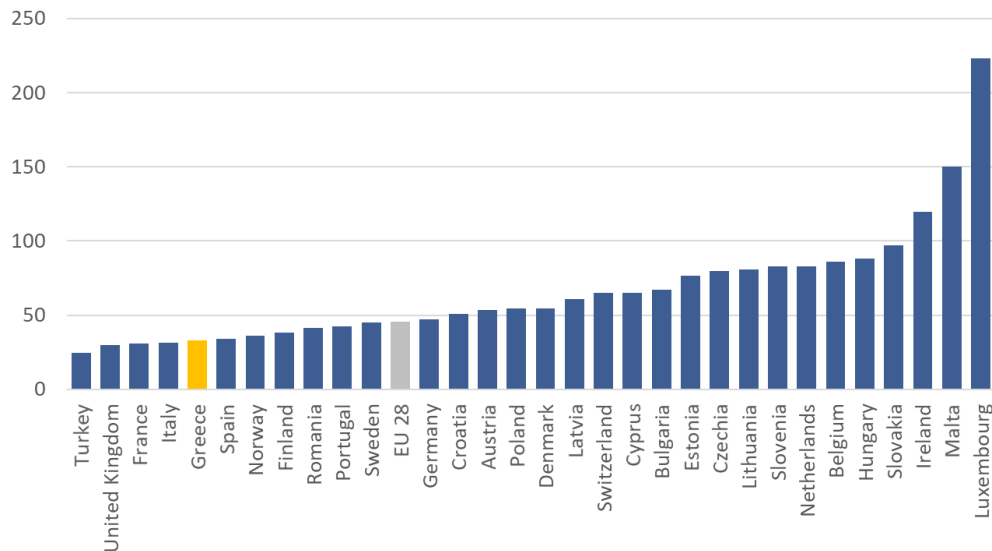
Trade balance – Goods and services, Greece (current prices, € mn)



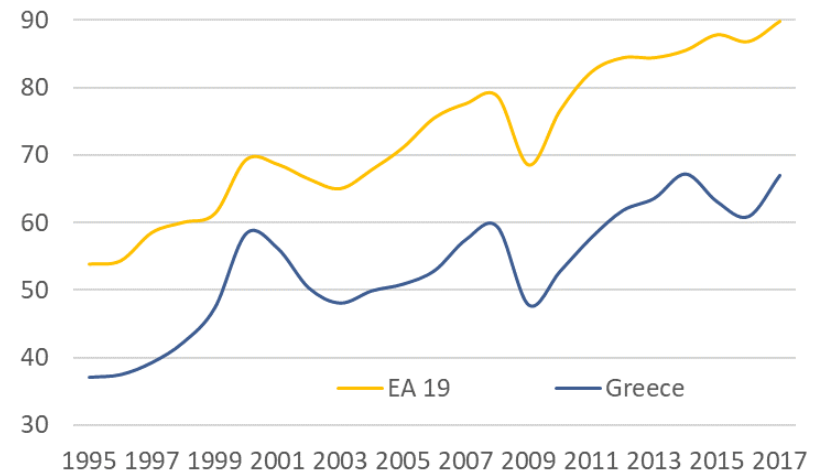
*provisional data

- Despite this recent improvement, in a global context, **Greece remains a “closed economy”**. Greece ranks last in the EU28 with exports to GDP at 33% versus a EU28 average of 45.7%
- Looking at trade openness more generally (i.e. imports + exports as % of GDP) Greece’s performance is improving, yet the gap to EU19 is maintained. In particular, Greek trade openness as a percentage of GDP accounts to 67% versus 90% of EA19 average in 2017.

Export performance, 2017 (exports as % of GDP)



Trade openness (exports + imports as % of GDP)



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As stated in the introduction, **one of our main objectives** is to move away from a superficial presentation of Greece's merchandise export volumes and export destinations and **delve deeper into the structural problem of Greek export competitiveness.**

In order to achieve that we proceed in 4 discrete steps:

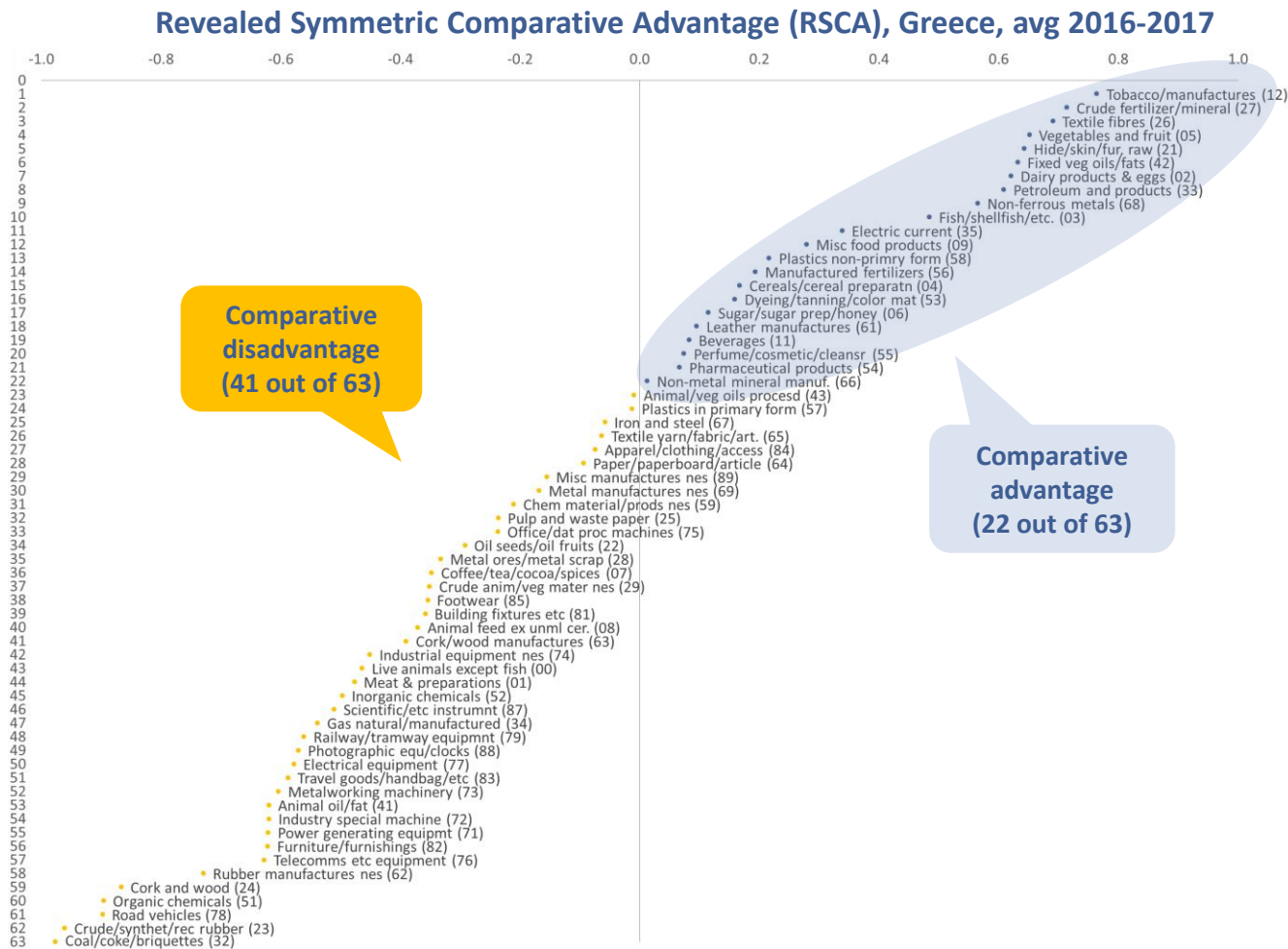
- a) First, we use the well-known Balassa Index to **identify the product-categories** where Greece enjoys a **comparative competitive advantages** vis-à-vis the rest of the world.
- b) Then, we employ the so-called PRODY Index (introduced by Hausman et al., 2007*) **to rank the main product categories** from first-to-last according to each products' **degree of sophistication and quality.**
- c) Then, we combine (a) and (b) to establish **a link between** Greece's main **"export – champions"** and their **degree of complexity and (technological) sophistication.**
- d) Last but not least, we estimate the average degree **of "sophistication" of Greek merchandise exports basket** using the EXPY Index (introduced by Hausman et al., 2007*) and compare it with the rest of the world.

* Hausman R., Hwang J. and Rodrik D. (2007), "What exports matters", *Journal of Economic Growth*, Vol 12, Iss 1, pp. 1-25.
For more detail, see the appendix.

Despite popular belief, Greece has a significant comparative advantage in a number of products



- Out of 63 product groups, Greece has global revealed **comparative advantage in 22** of them, accounting to **69.5% of Greek exports**. Excluding petroleum products the percentage falls to 40.4%.
- The products with the highest comparative advantage are the *tobacco and its manufactures, crude fertilizer etc.* and *textile fibres*.

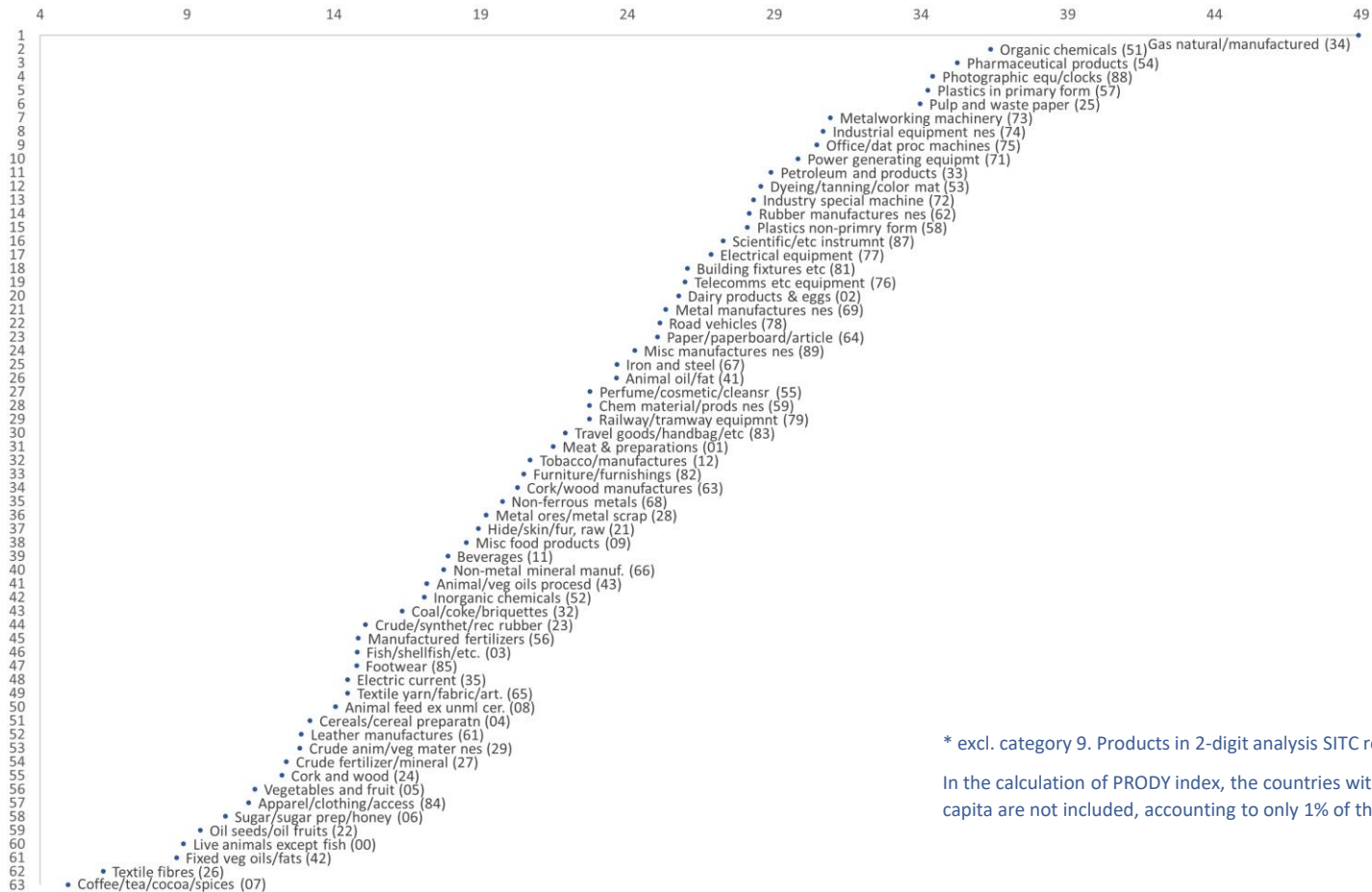


Connection of the comparative advantage and the GDP per capita of countries' exported goods



- Adopting the methodology of Hausmann et al. (2007), we estimated the **PRODY Index**, which is a proxy of the **global implied productivity level of exported products** based on the revealed comparative advantage and the GDP per capita of the countries that export them.
- Based on our calculated global “hierarchy in goods space”, the products with the highest global implied productivity level are *gas natural etc., organic chemicals and pharmaceutical products*.

PRODY Index, PPP, constant 2011 international \$ in thousand, World, avg 2016-2017



* excl. category 9. Products in 2-digit analysis SITC rev.4.

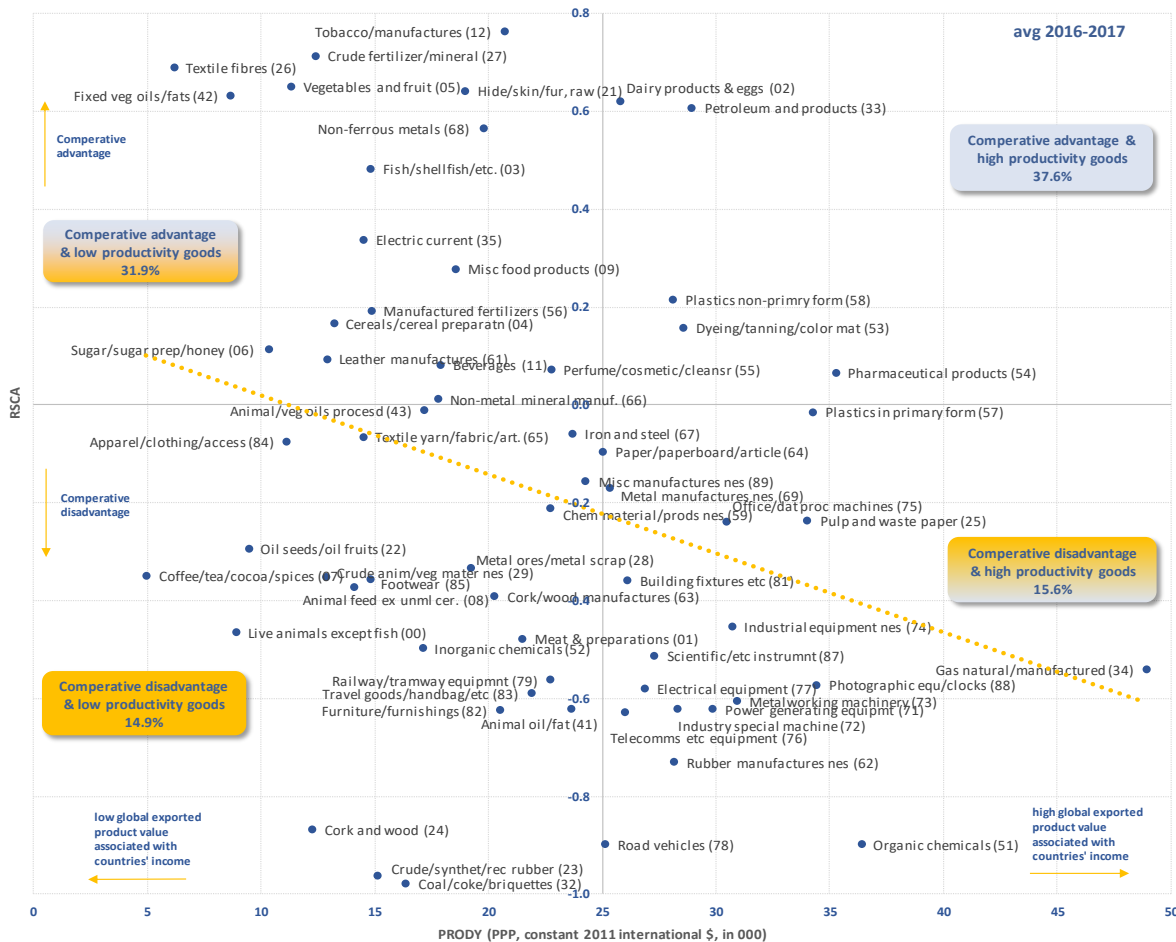
In the calculation of PRODY index, the countries with no available GDP per capita are not included, accounting to only 1% of the world's total exports.

Greece has a negative correlation between comparative advantage and global productivity level of its exported products.



- Our main finding is that Greece has comparative advantage mostly on goods with low global productivity level, which account for **31.9%** of Greek exports.
- Excluding petroleum products, **only 8.5%** of Greek exports have comparative advantage and are of high global productivity level.
- Greece **could increase its export potential** by emphasizing in goods of high global productivity level that now has comparative disadvantage and their total current share is estimated at 15.6%.

Revealed Symmetric Comparative Advantage (RSCA) of Greece vs PRODY Index

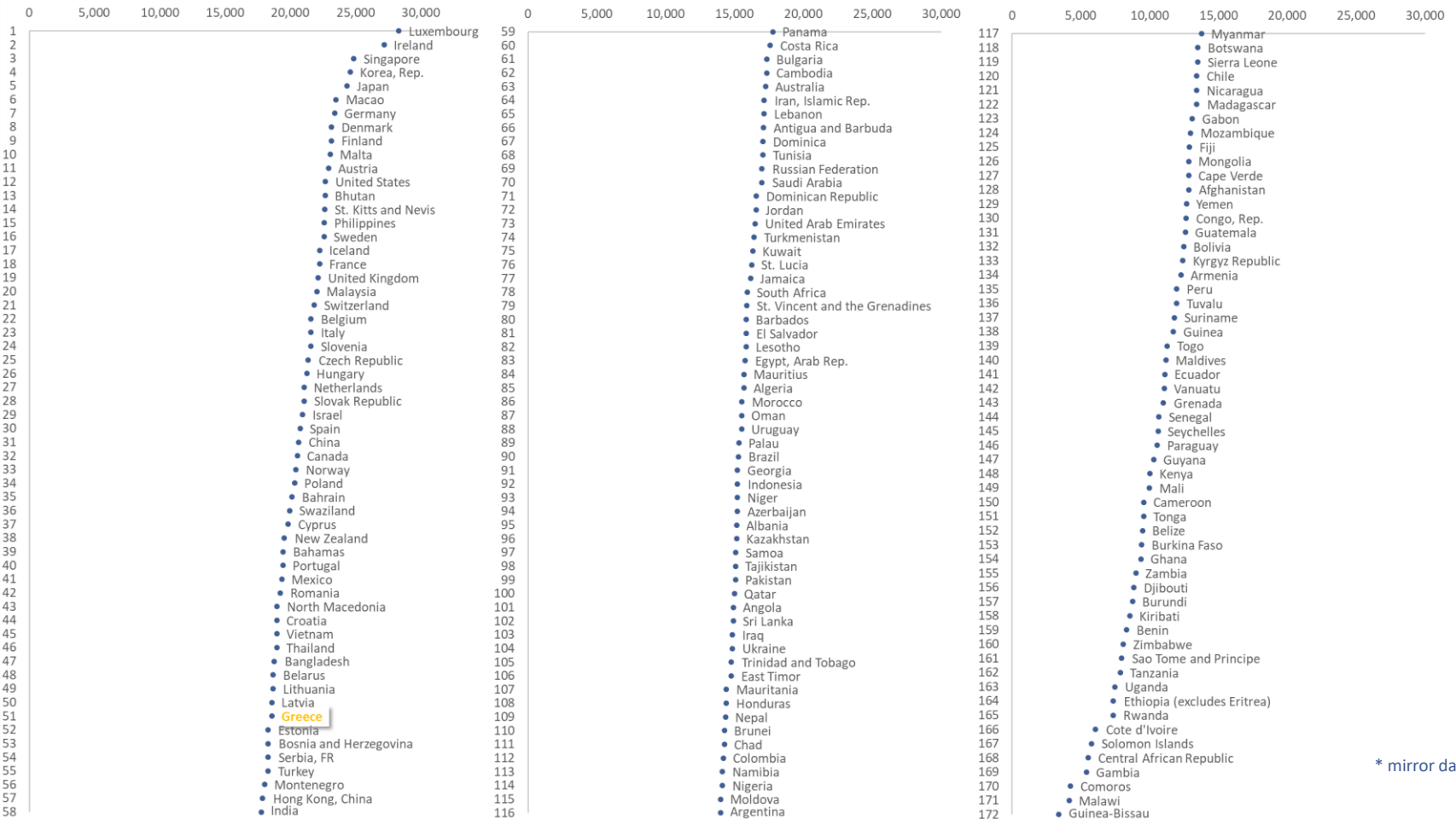


Based on the degree of sophistication of the “basket” of Greek exports, Greece ranks 51st out of 172 countries



- Based on the EXPY Index (Hausmann et al., 2007), which measures the productivity level associated with a country’s exported goods and as consequence its degree of sophistication, **Greece ranks 51st out of 172 countries.**
- Greece’s position is lower not only than developed but also than several developing economies, revealing a **moderate sophistication and productivity level of Greek export basket.**

Productivity level associated with countries’ export basket – EXPY Index, avg 2015-2016 (\$ PPP constant prices 2005)

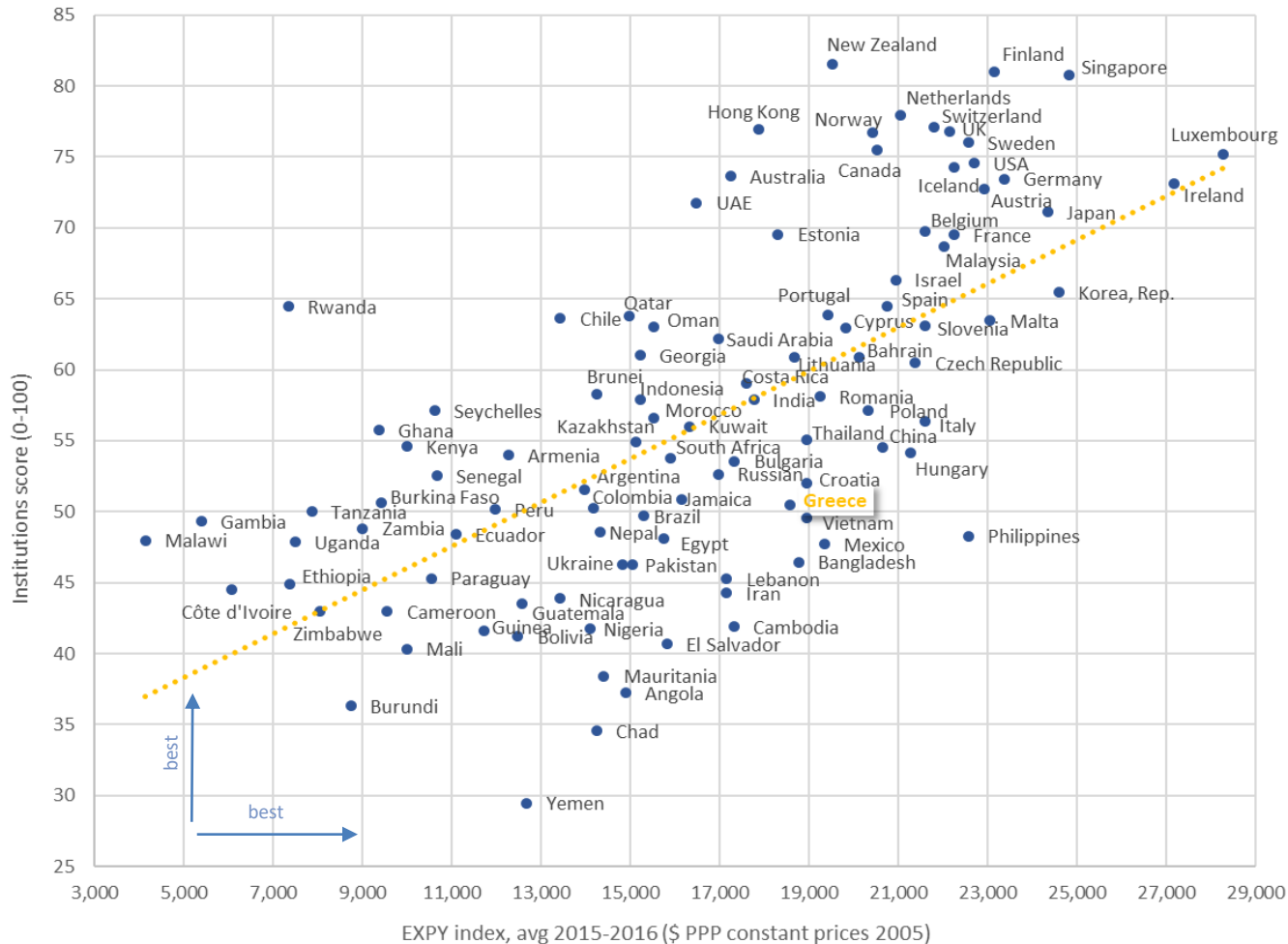


* mirror data

Product Sophistication Rankings & Quality of Institutions Index



- Countries with higher institutions index seems to record a higher EXPY score. Based on the Institutions score, Greece ranks 87th out of 140 countries.
- Greece has a low score mainly in components such as quality of land administration, strength of auditing and reporting, future orientation of government, efficiency of legal framework in settling disputes, burden of government regulation and efficiency of legal framework in challenging regulations.



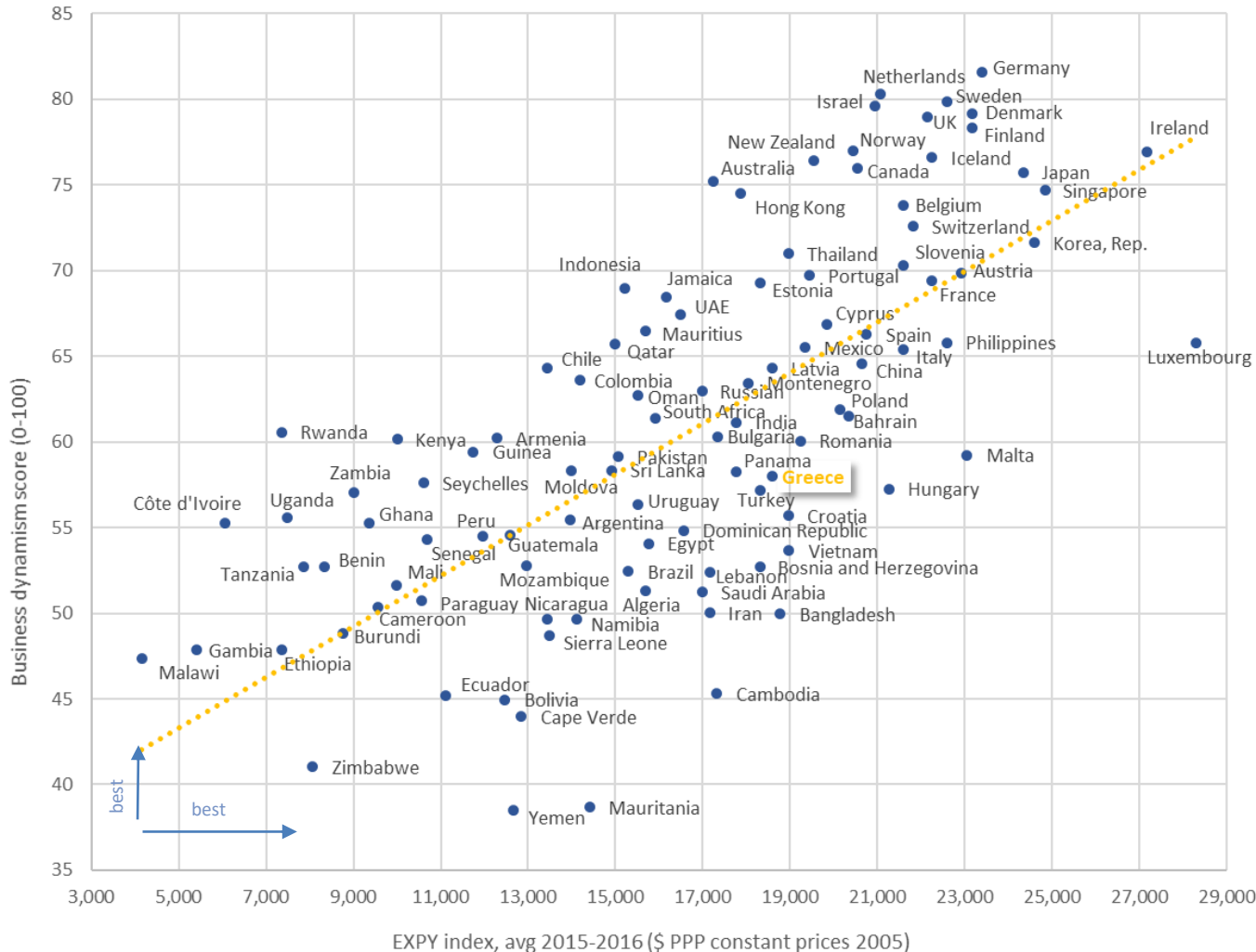
Definition

What does the Institutions Index capture?

Security, property rights, social capital, checks and balances, transparency and ethics, public-sector performance and corporate governance.

Source: WEF

- Countries with efficiency and adaptability towards competition in the private sector achieve a higher EXPY score. Based on the Business Dynamism score, Greece is on the 72th position out of 140 countries.
- Greece has a low score mainly in components such as companies embracing disruptive ideas, insolvency recovery rate and growth of innovative companies.



Definition

What does Business Dynamism capture?

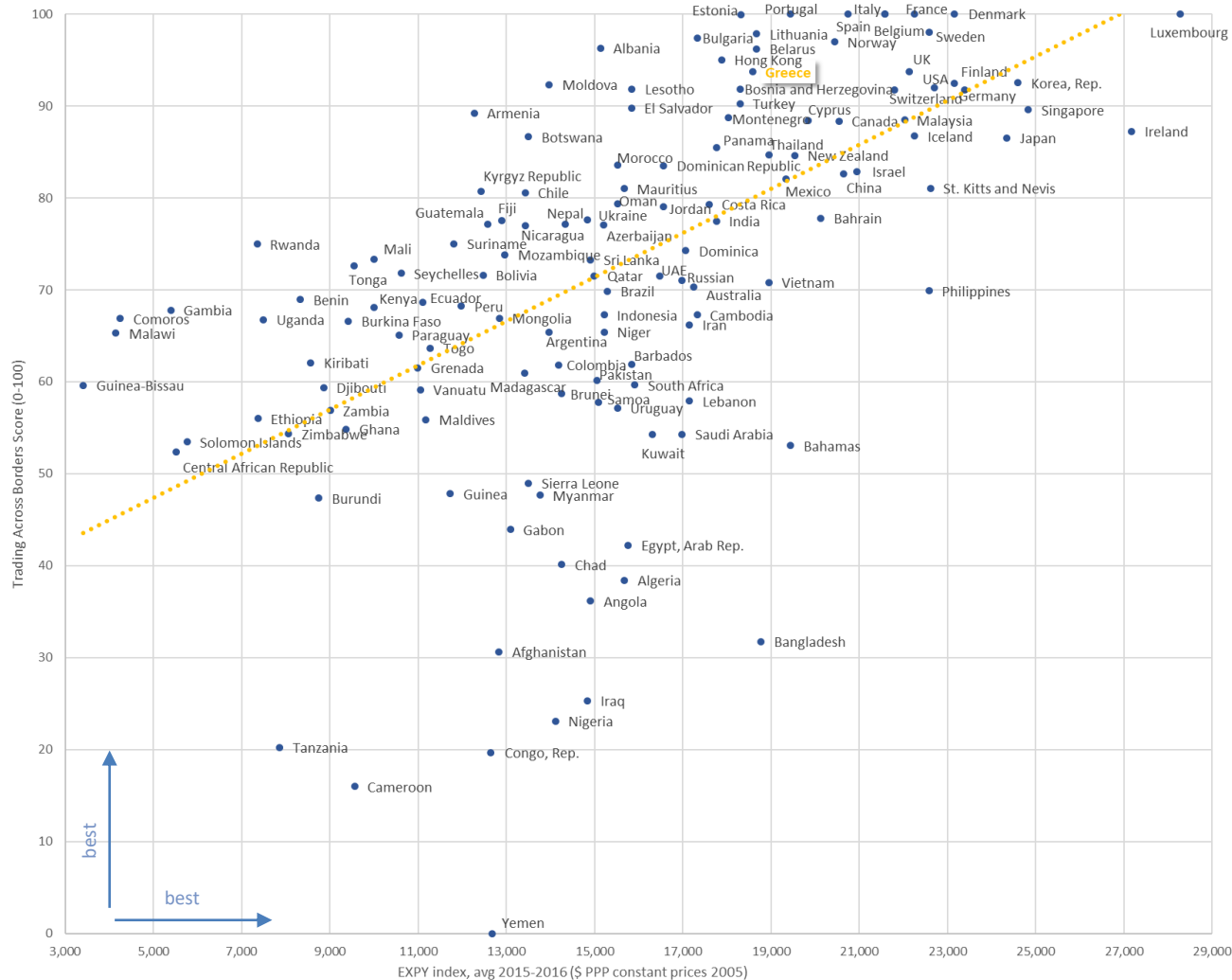
The private sector's capacity to generate and adopt new technologies and new ways to organize work, through a culture that embraces change, risk, new business models, and administrative rules that allow firms to enter and exit the market easily.

Source: WEF

Product Sophistication Rankings & Trading Across Borders Index



- EXPY has a positive correlation with the Trading Across Borders Index.
- Based on the Trading Across Borders score, Greece is on the 31th position out of 190 countries.



Definition

Trading Across Borders records the time and cost associated with the logistical process of exporting and importing goods. Doing Business measures the time and cost (excl. tariffs) associated with three sets of procedures—documentary compliance, border compliance and domestic transport—within the overall process of exporting or importing a shipment of goods.

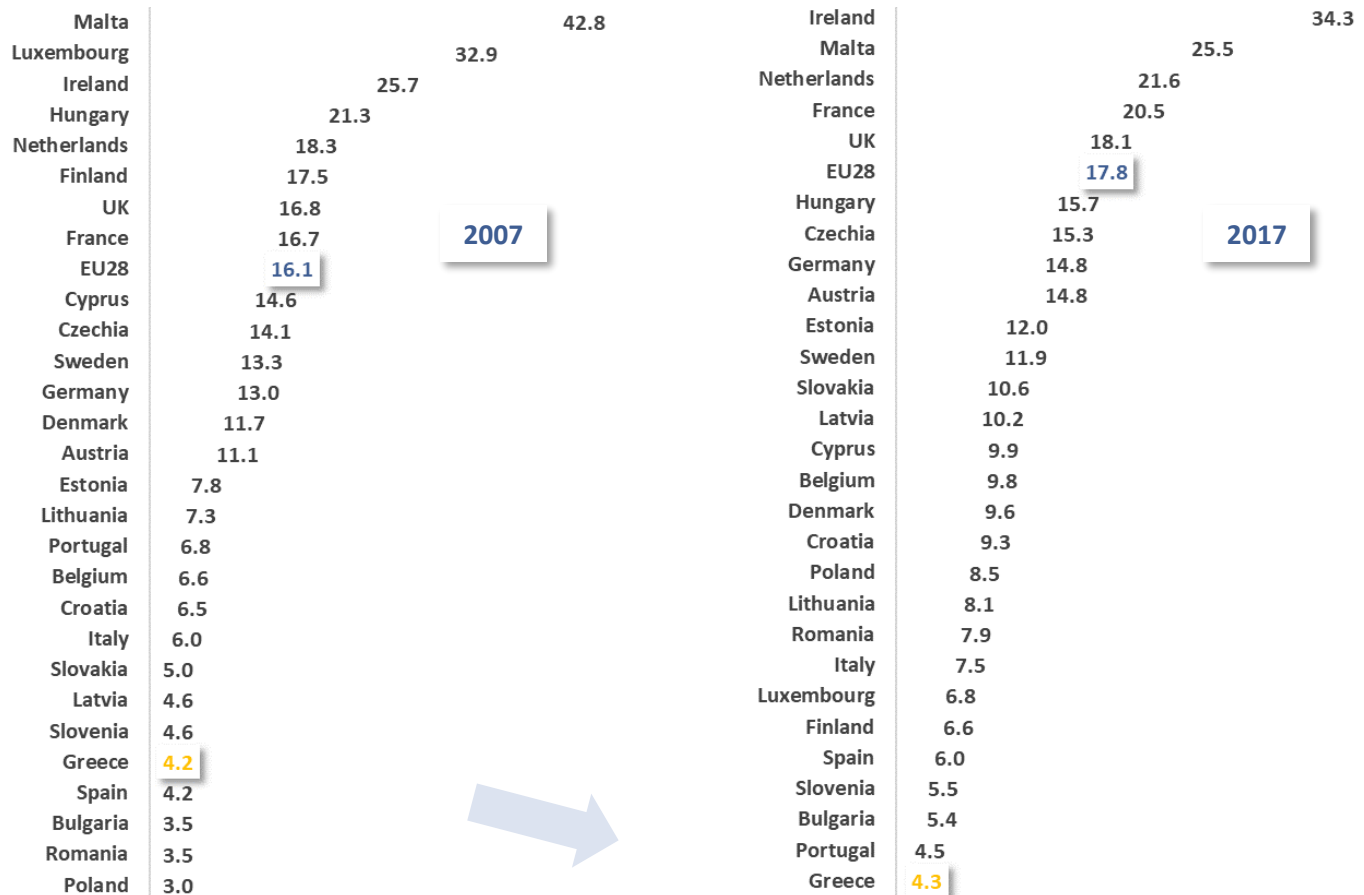
Source: Doing Business 2019

The participation of high technology products in Greek exports remained very low over the past decade



- As it has already been revealed by the previous export performance indices, **the technological content of Greek exports is low.**
- In 2017, **the share of high technology products** in Greek exports stood at **4.3%**, **the lowest in EU28.** This percentage remained **constant** over the past decade, while in the meantime, many other EU28 countries improved their export mix pushing Greece to last place.

Exports of high technology products as share of total exports (%)



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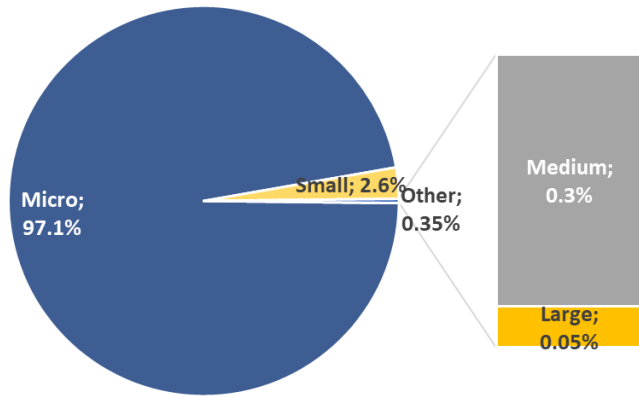
Appendix

The Greek good exports are highly concentrated to a small number of exporting companies



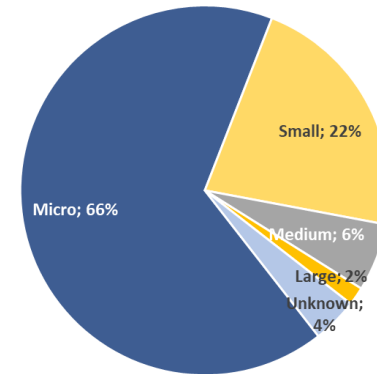
- Out of a total universe of c810K legal entities incorporated in Greece only 18.5K (2%-3% of total) report some kind of exporting activity. Out of these 18.5K, the top 5 exporters account for 23% of total goods exports.
- The top 1,000 firms account for 81% of Greek exports.

Shares of total number of enterprises* (~812K) by size, 2016



Shares of total number of exporters (18.5K) by size, 2016

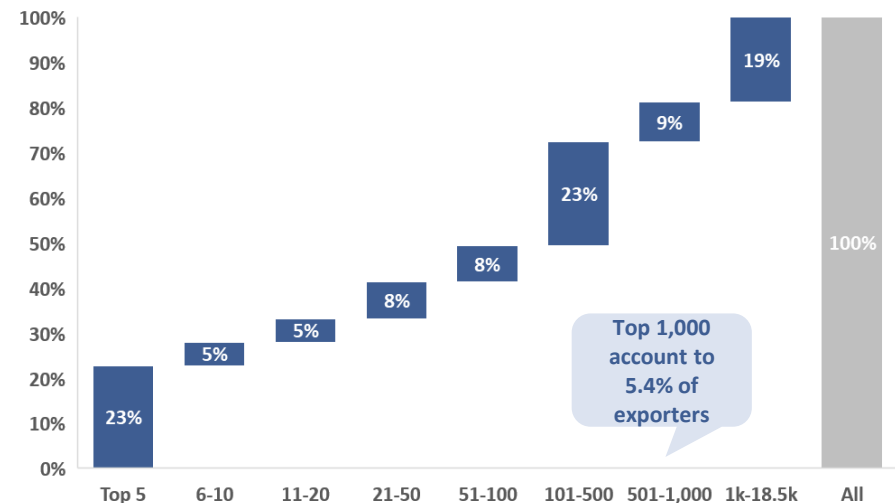
Out of them only



... whereas the exporters are highly concentrated



Concentration of total Greek exports by exporters, 2016



*non-financial business sectors (NACE rev. 2 sections B-J, L, M, N)

The wholesale trade and the manufacture of refined petroleum products are the two big exporting “star-sectors”



- At a sectoral level, the sector whose firms account for ¼ of Greek exports is the “wholesale trade” sector. Yet, the informational content of this fact is almost zero, given that the wholesale sector contains an assortment of firms from a wide variety of other sectors that act as intermediaries and have no actual productive activity *per se*.
- The second star sector is the “manufacture of refined petroleum” whose enterprises export 21.5% of total exports.
- Finally, companies in the “food product” and “basic metal” manufacturing exhibit notable exporting performance contributing about 8% to total goods exports each.

Share of export value by sector, 2016



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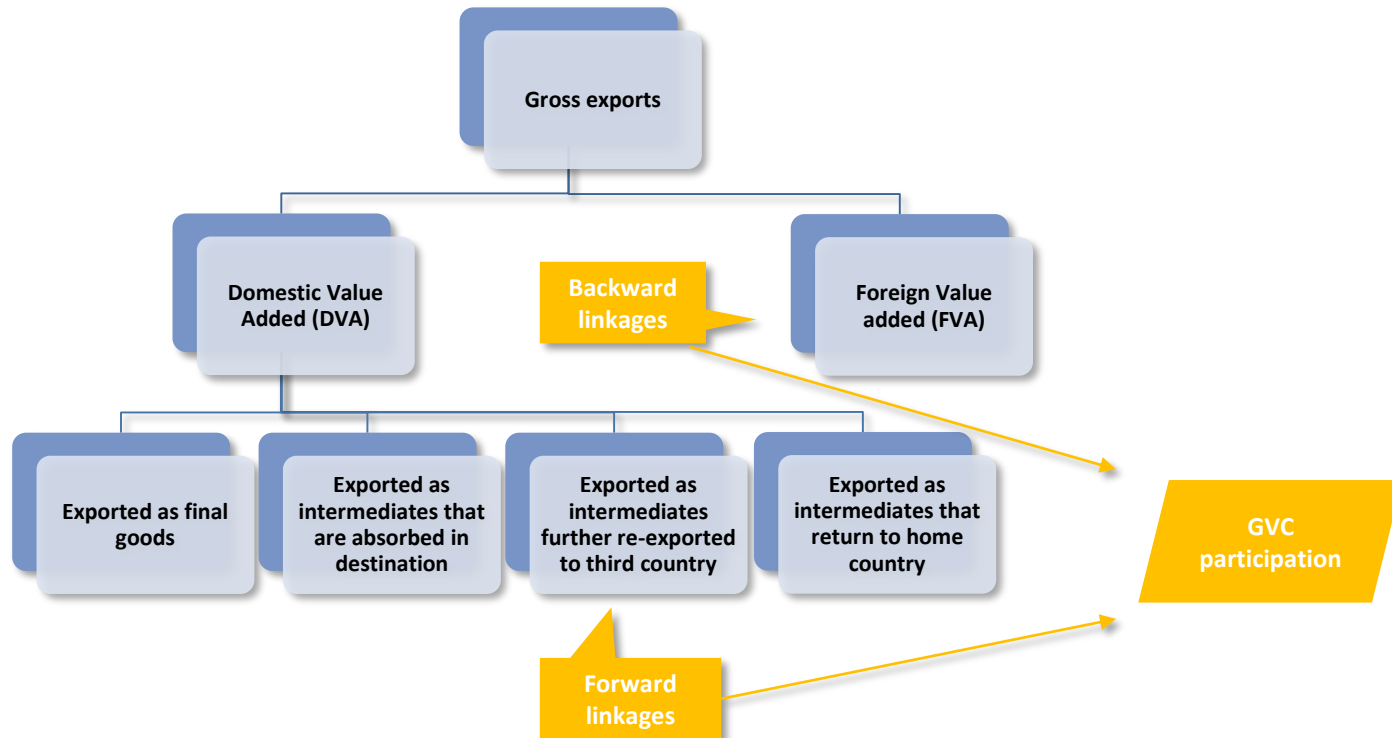
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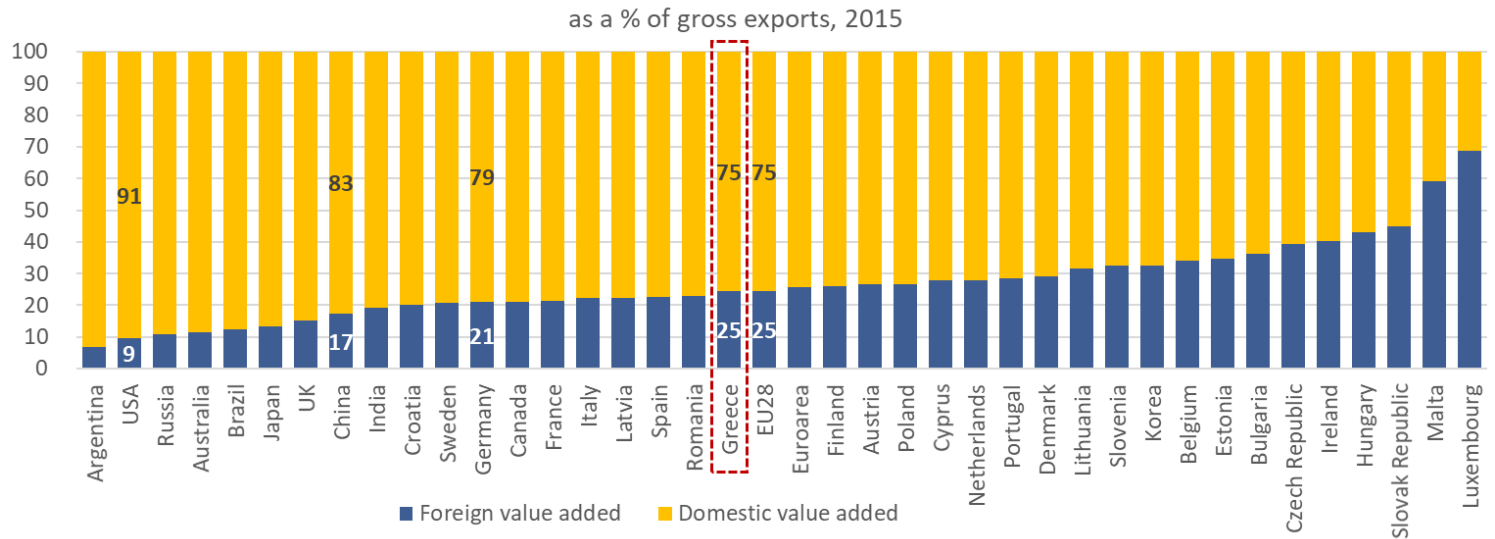
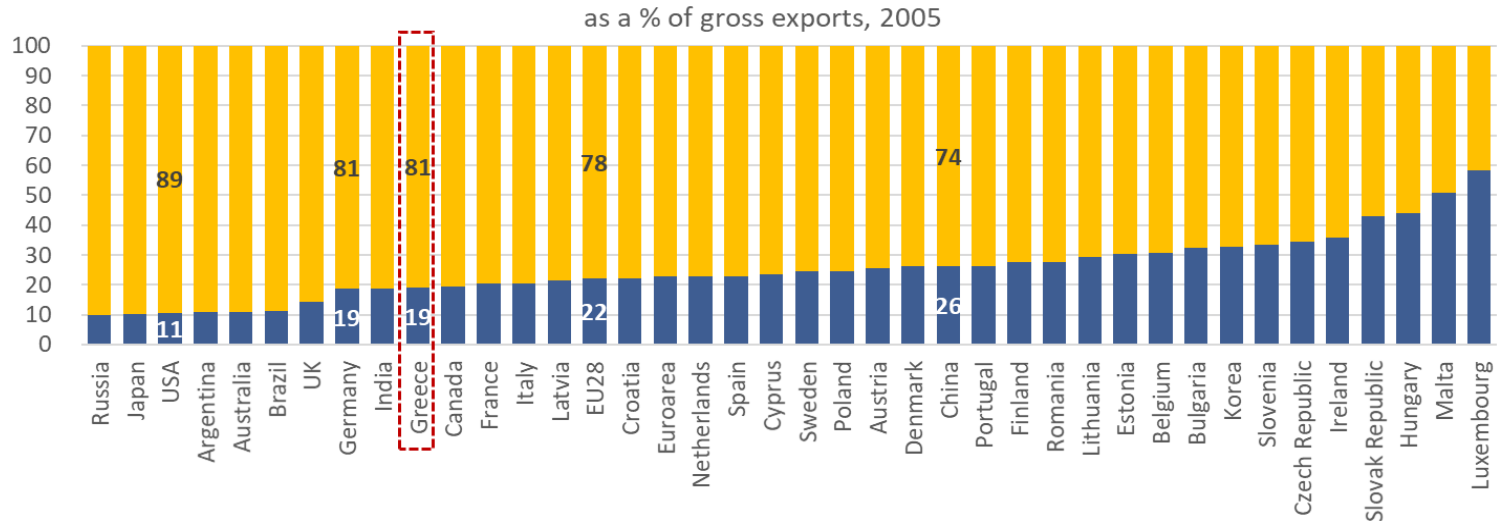
- One relatively novel feature in international economics is the fact that global trade, over the past couple of decades, has been growing considerably faster than global GDP. The main driving force behind this phenomenon is the emergence of the so-called “Global Value Chains” (GVCs). This is a catch-all phrase to describe the fact that **due to globalization of production and the decline in transport and shipping costs**, we have witnessed a **fragmentation of the production process** with very few products now produced entirely (from raw materials to finished products) in one country. Instead, most exports relate to intermediate goods that are further processed in the country of destination only to be further re-exported to third countries.
- Hence, **the total level of a country’s participation in the Global Value Chain (GVC) is the sum of backward and forward participation**. Backward participation is the amount of foreign value embedded in the countries’ own total exports. Forward participation is defined as the amount of the country’s exports of intermediate goods to a second country, which are then processed and re-exported to third countries.



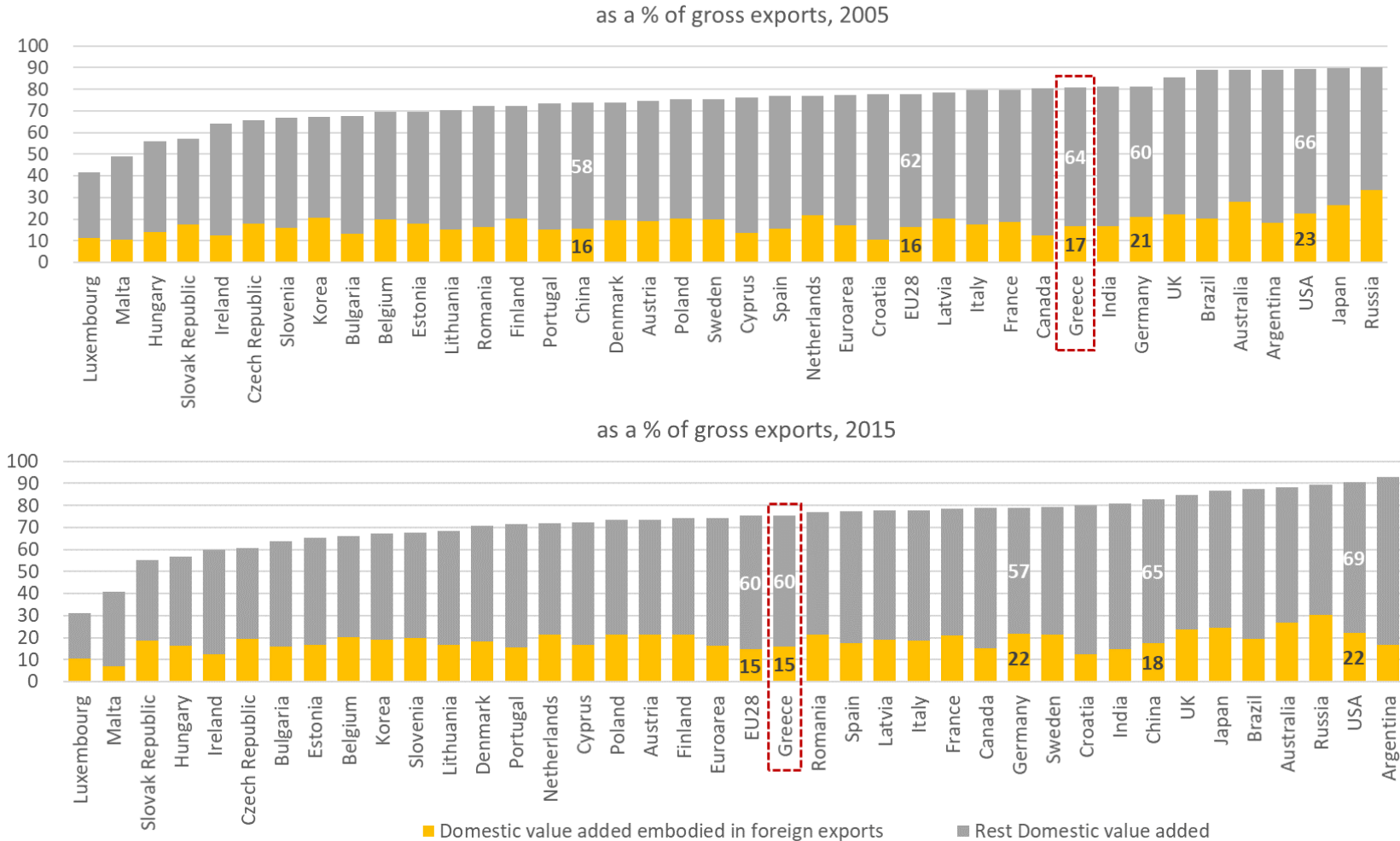
GVC Participation (I): Backward Participation



Looking at the first level of gross exports breakdown in the flow-chart on page 23, we estimate that the domestic value added amounts to 75% of Greek gross exports, while the foreign value added (that is **Greece's backward participation to GVCs**) amounts to 25%.



When we proceed to the second level of gross exports decomposition in the flow-chart on page 23, we estimate that out of the 75% of domestic value added, only **15% is the value of Greek exports to a second country that will be used as an intermediate good** by the second entities to be re-exported to third countries.

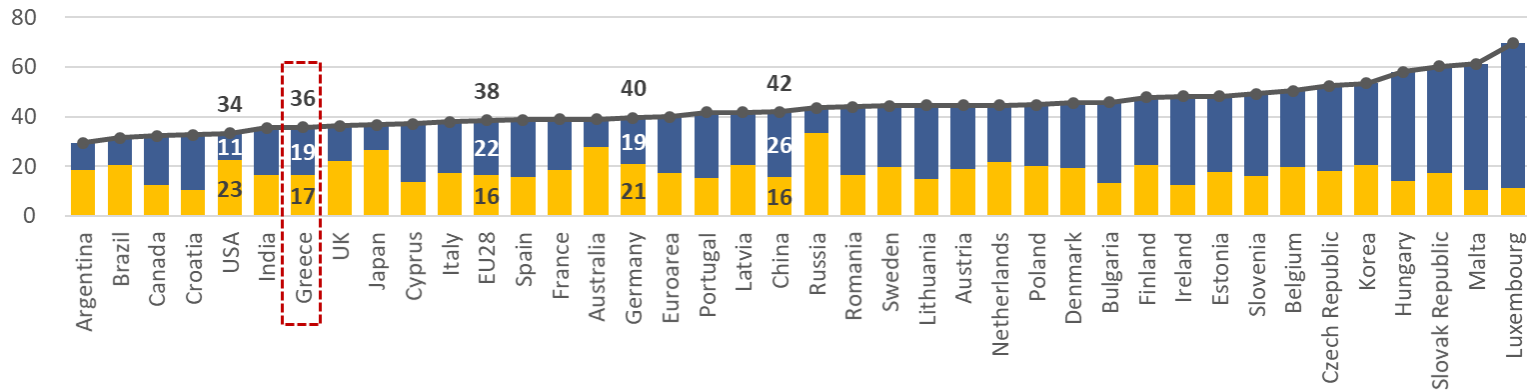


Over a decade the Greek participation in the global value chain increased

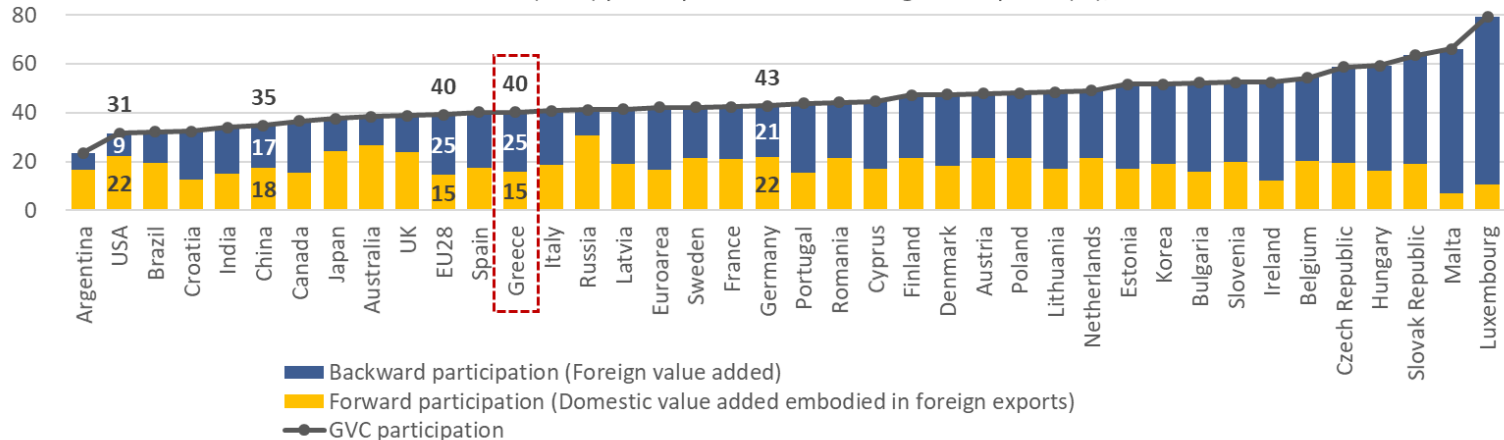


- **Greece's participation** in the global value chain **increased** over the past decade from 36% in 2005 to 40% in 2015.
- That was mainly **due to** the increased **backward participation**. In other words, Greek gross exports embodied more foreign value added than ten years ago to 25% from 19%.
- Regarding the **forward participation**, the Greek content in foreign exports as a percentage of gross exports **fell behind** to 15% of gross exports from 17%.

Global value chain (GVC) participation as share of gross exports (%), 2005

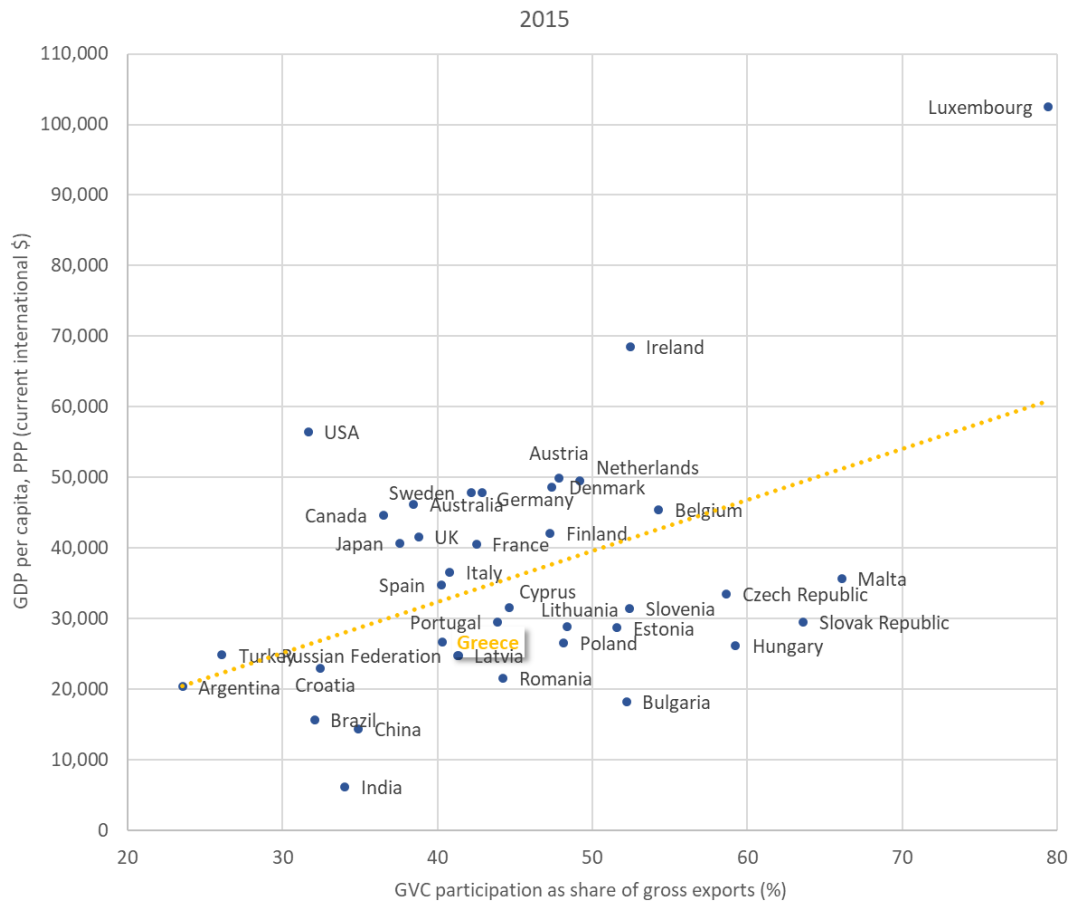


Global value chain (GVC) participation as share of gross exports (%), 2015



■ Backward participation (Foreign value added)
■ Forward participation (Domestic value added embodied in foreign exports)
● GVC participation

- **High GVC participation is not a panacea or a one-directional process.** In fact, large economies such as the USA or Canada have small GVC participation due to the fact that they have the capacity and the resources to capture the entire production line from raw materials to finished goods. Yet for the majority of medium sized economies, we observe a stable positive correlation between economic growth and GVC participation.
- Hence, **improved participation in GVCs could provide an avenue of higher economic and export growth for Greece.**



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When examining a country’s export profile, it is not only interesting its export volume *per se*, it **also matters what the country exports**. This is highly expressed by Hausmann et al. (2007)*, since a country’s export basket is associated with the economic growth. Some of the exported products entail higher productivity and sophistication than others and as a result they impact differently on the economic growth. In this context, the authors have constructed an index, named **PRODY which ranks the exported products based on their implied productivity or income**. This index is basically the weighted average of the GDP per capita of the countries that export each product, with weights the revealed comparative advantage of each country in each product.

The associated level of income or productivity of a product k is calculated as:

$$PRODY_k = \sum_j \frac{\frac{x_{jk}}{X_j}}{\sum_j \frac{x_{jk}}{X_j}} Y_j$$

Where, Y_j is the GDP per capita of country j .

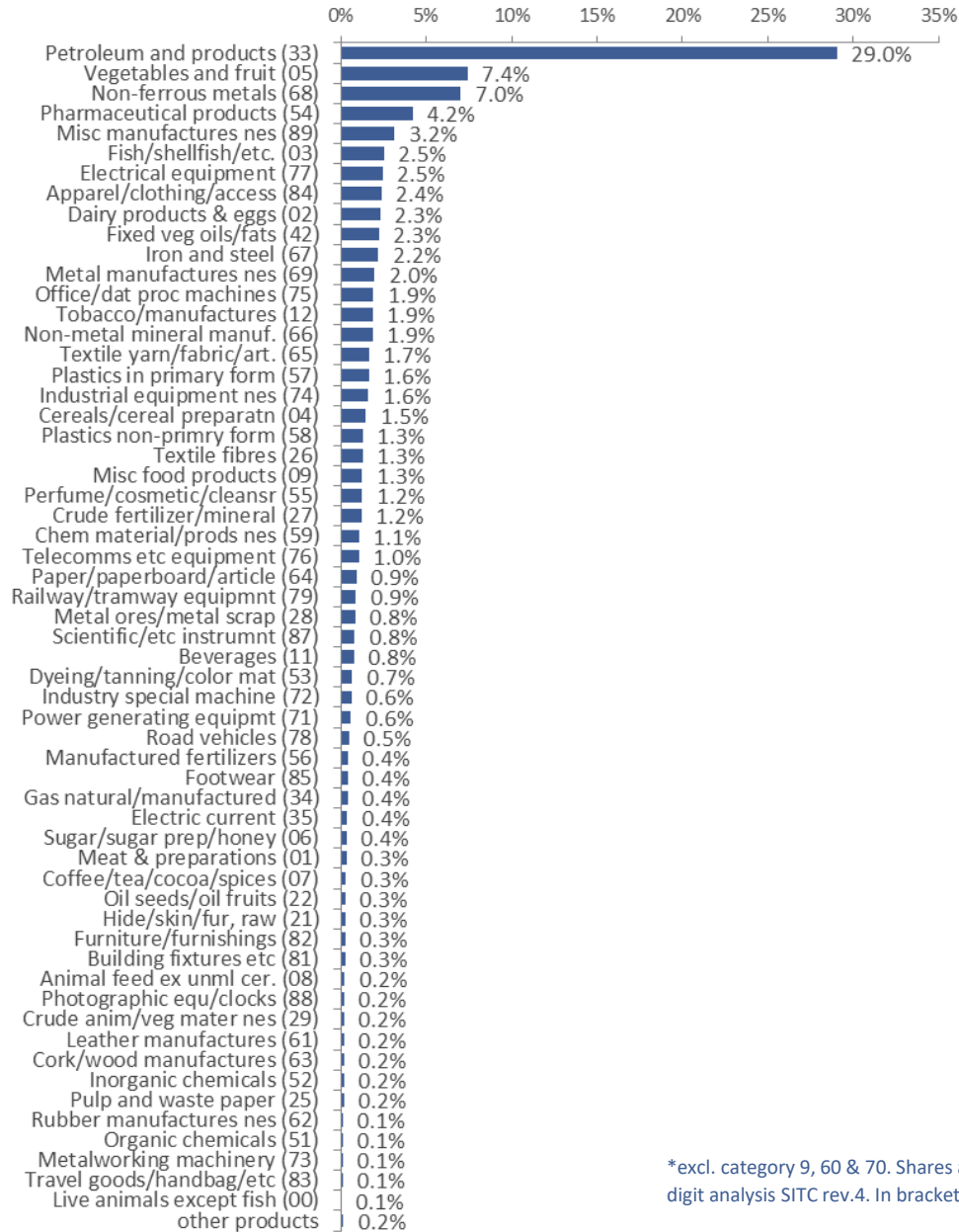
Moving further, Hausmann et al. (2007) examined the level of implied productivity or income associated with a country’s export basket. So, they constructed an index named **EXPY which measures a country’s productivity level related with the sophistication of its exported goods**. The index of each country is the weighted average of PRODY, using as weights the shares of a country’s exported products to its total exports. The formula of EXPY for a country j is the following:

$$EXPY_j = \sum_k \left(\frac{x_{kj}}{X_j} \right) PRODY_k$$

So, when a country scores high EXPY it is implied that its export basket is more sophisticated and of high productivity.

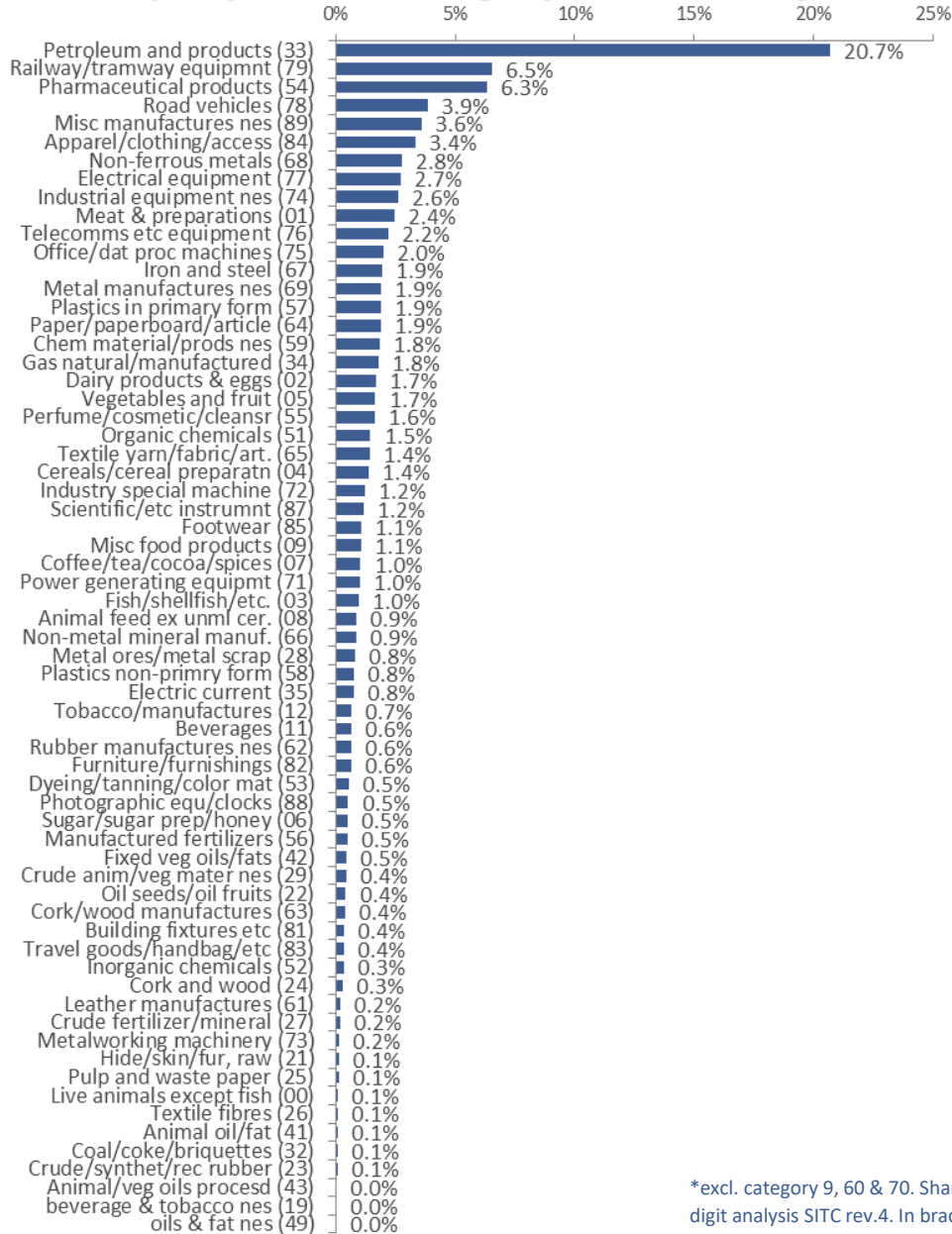
* Hausman R., Hwang J. and Rodrik D. (2007), “What exports matters”, *Journal of Economic Growth*, Vol 12, Iss 1, pp. 1-25.

Export shares per product category, Greece, avg 2016-2017



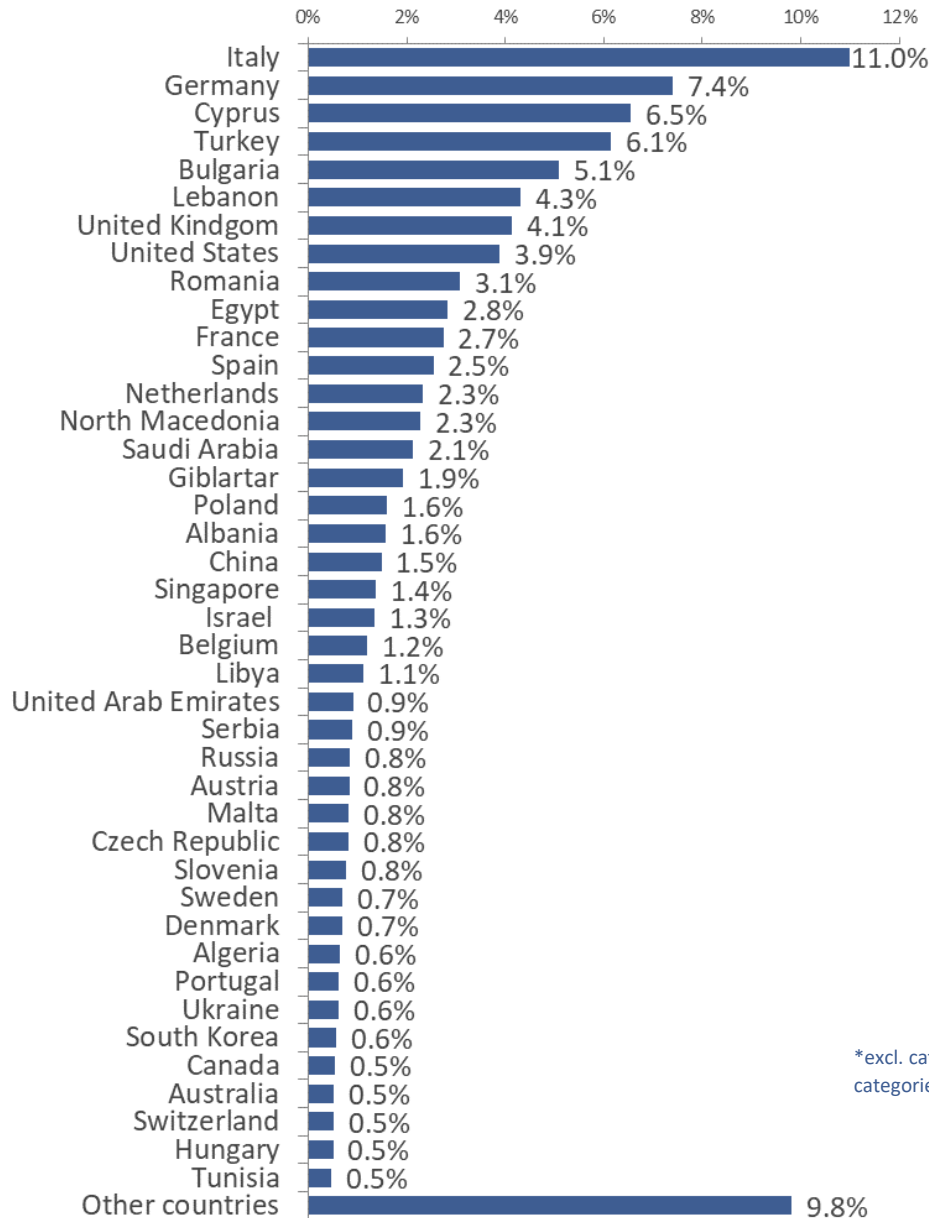
*excl. category 9, 60 & 70. Shares as a result of sum of product categories 1-8. Products in 2-digit analysis SITC rev.4. In brackets the SITC codes of products.

Import shares per product category, Greece, avg 2016-2017



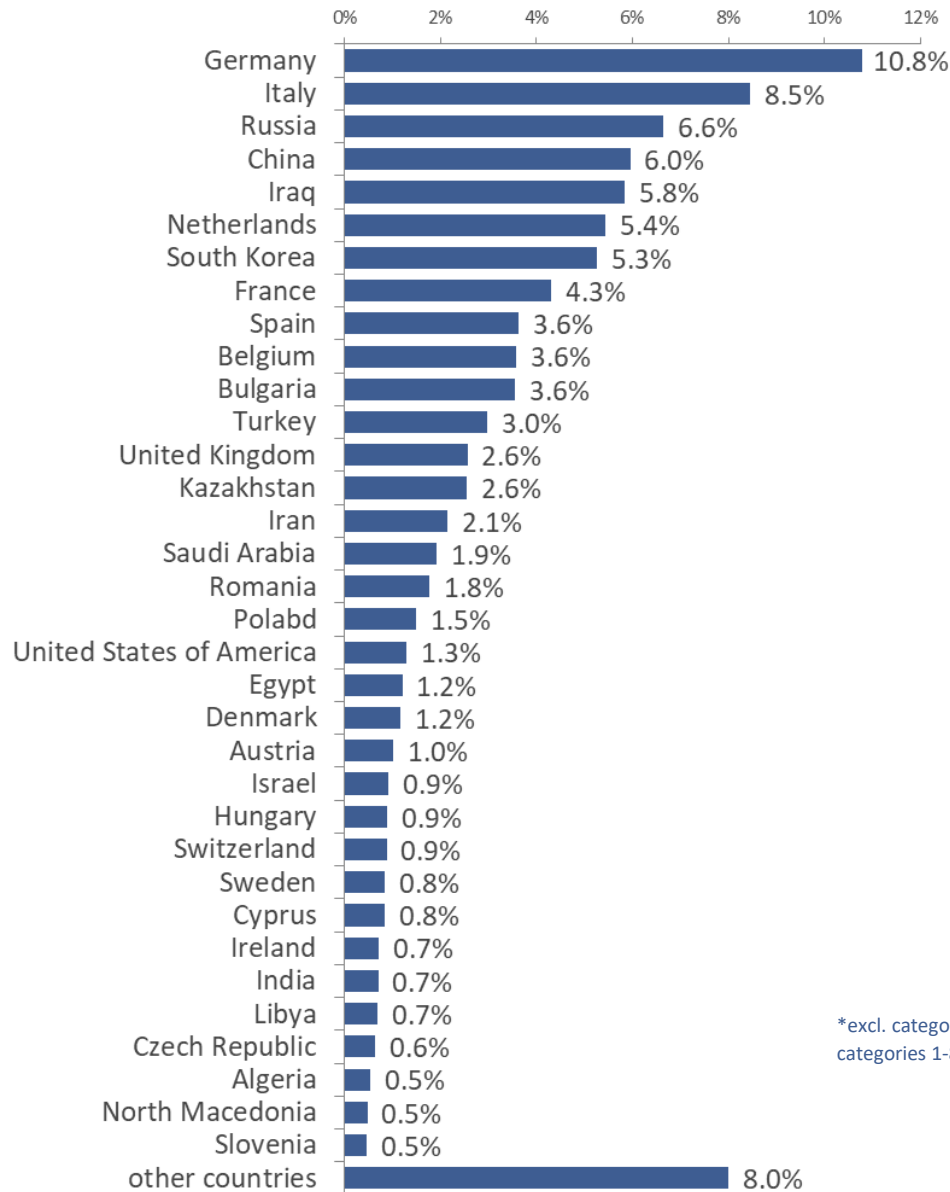
*excl. category 9, 60 & 70. Shares as a result of sum of product categories 1-8. Products in 2-digit analysis SITC rev.4. In brackets the SITC codes of products.

Export shares per country of destination, Greece, avg 2016-2017



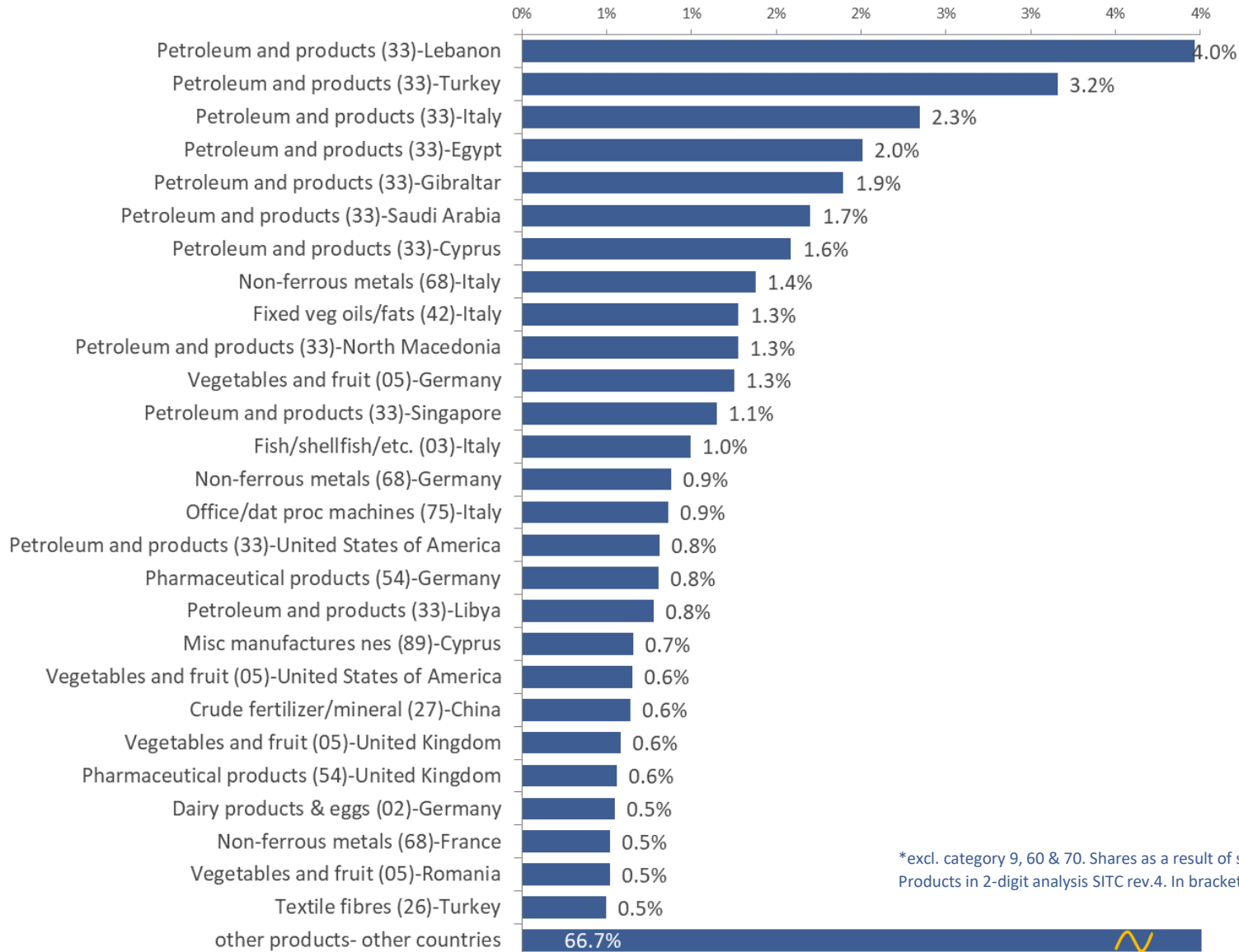
*excl. category 9, 60 & 70. Shares as a result of sum of product categories 1-8.

Import shares per country of origin, Greece, avg 2016-2017



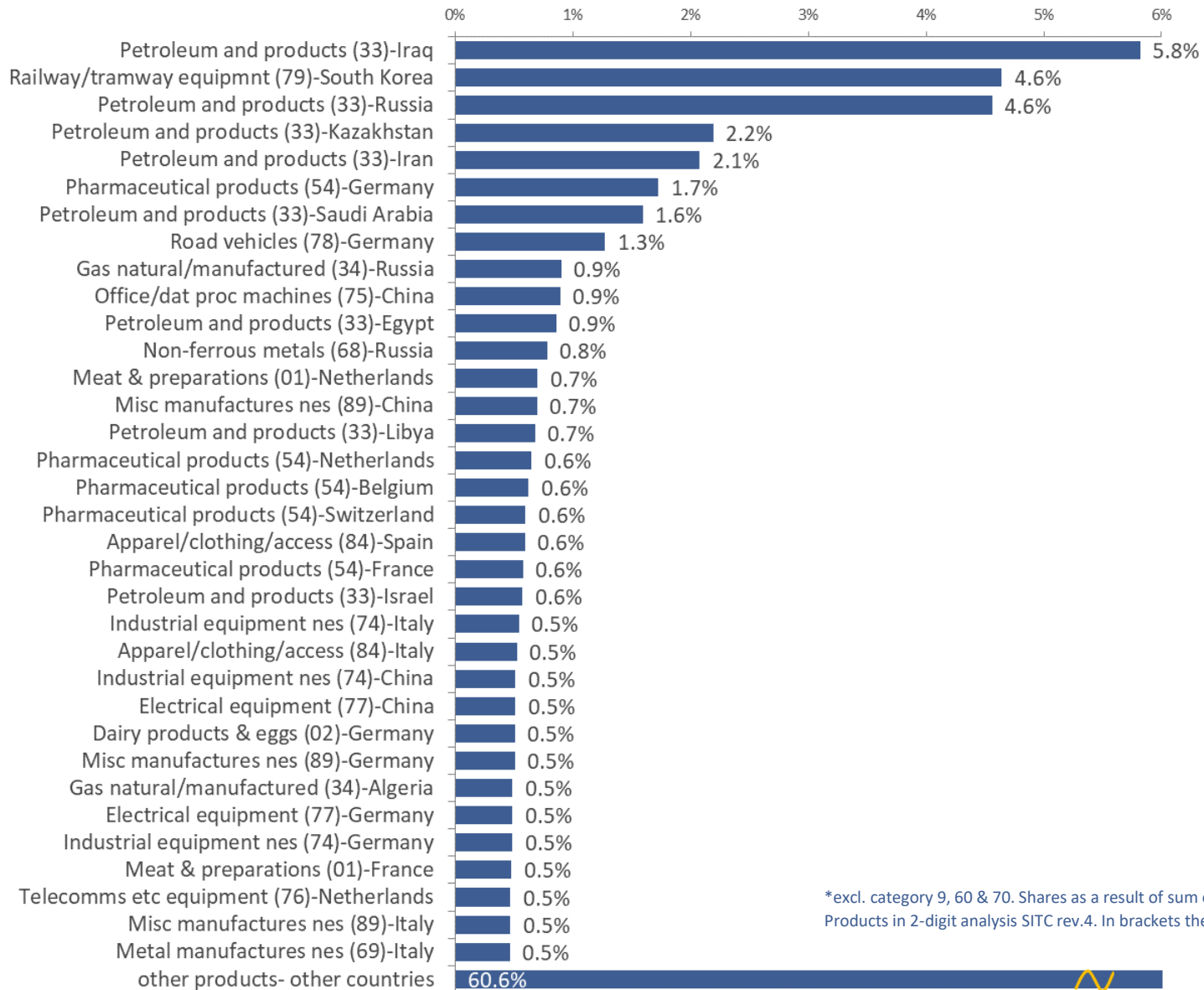
*excl. category 9, 60 & 70. Shares as a result of sum of product categories 1-8.

Export shares per product category & country of destination, Greece, avg 2016-2017



*excl. category 9, 60 & 70. Shares as a result of sum of product categories 1-8. Products in 2-digit analysis SITC rev.4. In brackets the SITC codes of products.

Import shares per product category & country of origin, Greece, avg 2016-2017



*excl. category 9, 60 & 70. Shares as a result of sum of product categories 1-8. Products in 2-digit analysis SITC rev.4. In brackets the SITC codes of products.

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- a. The figures presented herein refer to the past and that the past performance is not a reliable indicator of future performance.
- b. In case the figures refer to simulated past performance, that past performance is not a reliable indicator of future performance.
- c. The return on investments might be positively or negatively affected as a result of currency fluctuations, in case the figures are denominated in a foreign currency (other than Euro).
- d. Any forecasts in relation to future performance, may not be a reliable indicator of future performance.
- e. The tax treatment of the information as well as transactions pertained in this document, depends on each investor's individual circumstances and may be subject to change in the future. As a result, the recipient should seek for independent advice in relation to the applicable tax legislation.

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