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TURKEY'S EXPORTS IN A NEW PERSPECTIVE

Trends in Turkish Exports in Value Added,
by Sector and by Destination

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Executive Summary

The 2023 Turkey Export Strategy and Action Plan, which set the target of reaching a value of 500 billion USD in exports by the year 2023, has clearly failed to boost Turkey's exports which had reached only a level of 168 billion USD by the end of 2018. Turkey's export promotion strategy and action plans have been prepared upon a conventional reading of the country's sectoral competitiveness and trade relations with its partners. It is obvious that a mechanical approach to sector-based export promotion and a binary understanding of target destinations as high and low priority countries do not produce meaningful outcomes. The new world of Global Value Chains (GVCs) has arisen with a complex set of production, distribution, and consumption dynamics which would require a more nuanced approach to understanding trade relations between countries than looking at gross trade figures of countries. In this context, this study analyzes trends in the value added (VA) content of Turkish exports between 2005-2015 and how these compare to trends in the total value of Turkish exports, by sector and by destination.

We examined trends in the value added (VA) content of Turkish exports and their final destinations between 2005-2015 with a focus on and beyond the forward participation of Turkey. We have studied (1) "average VA share" for trading partners and for individual sectors, (2) "VA growth share", which is the contribution made to total Turkish export VA growth both for individual sectors and trading partners and (3) the time "trend growth" in Turkish VA exports, expressed relative to average Turkish export VA over that period as a growth rate. Policymakers can assess the performance of specific partners including the EU, the US and Russia and industries in producing VA for export over the time span using trend growth in much the same way as an average growth rate. We suggest that high growth sectors are worthy of greater focus and promotion.

1. Our primary finding is the fact that Turkey has clearly performed better than world average in terms of creating value for final demand in other countries. Turkey's trend growth in exported VA for service and industry were quite similar at 6.4% and 6.3% respectively, and were well above the world growth trend for services (4.3%) and for industry (5.0%). Turkish exported VA is relatively diversified and not dominated by any one subsector. With an average VA share of 54% Turkey's service sector takes a major part of the total VA in foreign countries' final demand,

while the lion's share of the remaining 46% is represented by manufacturing at 34.5%. The remaining 11.5% is a combination of agriculture, utilities and mining.

2. This finding supports earlier research suggesting that services are critical to the competitiveness of Turkey's goods exports. It is abundantly clear that service sectors contribute substantially more to Turkish export VA, and hence the Turkish economy, than gross trade figures would suggest. The Turkish trade policy community should begin to consider preparation of serious strategies to measure and improve the competitiveness of Turkish service industries in foreign trade terms. Within services, most Turkish VA in foreign demand is made up of business services rather than consumer services or construction. Nevertheless, construction and consumer services contribute relatively more to the trend growth of Turkish VA in foreign demand. Among service subsectors, the top categories of Turkish VA in foreign demand have been wholesale, retail trade, transportation and storage as well as other business services and accommodation and food service, which can be considered to be an engine of Turkish exports. In some service industries Turkey has performed better in VA terms than in gross trade. Surprisingly, the most rapid rates of exported VA trend growth are for certain non-traditional subsectors with a low average share of Turkish exported VA – finance, insurance, IT services, and other business services- as well as construction.

3. In Turkey's gross annual exports, the share of manufacturing has been 62% on average whereas in VA terms it takes 34.5% of Turkish VA in foreign final demand. Among non-service sectors, mining and utilities have had the highest trend growth rates while agriculture had a slower trend growth rate at only 4.9%, much lower than the world average growth, which was 7.6% over the period. Manufacturing had trend growth of 6.4% over the period – roughly the same as the service sector and Turkish export VA overall. This is well above the world average trend growth for manufacturing, which was recorded as 4.8%.

4. Turkish exported VA in manufacturing is relatively diversified. Conventional export industries in gross exports terms such as textiles and apparel, basic metals and metal products, and transport equipment have also been among the most important for Turkish manufacturing exports in VA terms, yet with comparatively lower contribution to Turkey's

exports performance than in gross terms. While chemicals and non-metallic mineral production is the second-ranking industry in VA terms, transport equipment, motor vehicles and basic metals contribute proportionately less to Turkey's overall export performance in VA terms than in gross terms.

5. In foreign demand trend growth transport equipment and electronics have substantially lower shares of total Turkish VA than their share of average VA in foreign demand as in the case of agriculture. In contrast, even though the metals and machinery subsectors have smaller average VA shares in foreign demand, their shares of VA trend growth are larger. Metals and machinery subsectors have been among Turkey's most rapidly growing producers of VA for export and as a result have made a substantial contribution to overall Turkish economic growth. Within manufacturing, those that are most rapidly growing such as wood products and machinery represent much smaller shares of average Turkish export VA than slower growing subsectors such as textiles and chemicals. Also, computers and electronics have been among the slowest growing subsectors (negative, in the case of computer, electronic and optical products) during this time period.

6. Sectoral findings might have several policy repercussions. First of all, policymakers have a choice in exports promotion based upon VA figures: to focus on promotion of exports by Turkey's largest sectors, or to focus on those that have offered the best prior export growth performance. While targeting higher technology manufacturing we would advise policy makers not to neglect stable industries, in which Turkey has some competitive advantage and is able to take a larger share of the overall value chain as these may provide greater economic benefits for Turkey.

7. Targeting export markets require differentiated strategies for a cluster of countries. Since Turkish intermediate goods and services are re-exported and constitute the part of the value of the demand in final destinations that is invisible in gross statistics, policymakers should consider revised figures in assessing how to handle relations with partners and the trade barriers that Turkish exporters face when exporting their goods and services. Clearly, for Turkey some of its target markets are more important in VA terms than in gross value terms. For instance, while Russia takes 7.66% of Turkey's gross exports, in VA terms its share is higher (7.93%). Such a positive difference is more extreme in the case of the United States (1.59%) and there are visible positive differences also for the UK, France, China,

Saudi Arabia and some other countries.

8. The EU should be approached as a whole with a nuanced strategy. There is negative difference between VA share of the EU and its gross exports average share. This difference is the proof of Turkey's strong incorporation with European value chains in that in many product categories these EU countries are not final destinations for Turkish VA. Considering the transit role of the EU for Turkey in reaching out to farther final destinations and Turkey's deep integration with the European value chains it would be appropriate to develop more sophisticated strategies for export promotion to and through the EU as a whole rather than its individual members.

9. We found that over the period 2005-2015 on average (at least) 54.5% of Turkish export VA went to European countries, with almost 44.7% going to EU member states and 9.8% going to non-EU European countries such as Russia. The North American, Central & South American and East & Southeast Asian regions each account for less than 10% of total Turkish export VA. However, the EU overall contributed only 22.7% of the trend growth in Turkish export VA over the period of 2005-2015 versus 44.7% of average Turkish export VA because of a series of crises around the Greek financial downturn. Also, it is apparent that growth in Turkish export VA can be volatile, particularly for small and distant countries and those with major economic shocks during the period.

10. Russia seems to be most important non-EU trade partner. The most important final demand market for Turkey among non-EU countries over the period 2005-2015 has been Russia in spite of the much larger economies of the United States, Japan or China. Despite existing barriers to Turkish exports to Russia and the lack of a bilateral preferential trade agreement Turkey is able to transfer a proportionally higher ratio of VA to Russia than its gross export figures suggest. It is highly probable that Turkey exports VA to Russia via intermediate goods and services exports to the EU and other transit countries.

11. Our overall regression results suggested that average Turkish VA in final demand has a positive relationship with the economic size, population, per capita income as well as the ratio of services to GDP of the partner economy. There seems to be a negative association between the average Turkish VA in final demand and distance and manufacturing value added within gross GDP of a given

country. The partner country's budget balance does not seem to have a significant relationship with average Turkish VA. Finally, membership to the EU-28 seems to have a negative relationship when it is regressed together with EU-15 membership which has a positive relationship.

12. Exceptionally, the British market has been substantially more important than the French one for Turkish VA exports in spite of their equivalent size, perhaps due to British trade deficits. Turkish policymakers might consider specific strategies for the UK, especially for the post-Brexit era, considering its revealed importance in VA terms.

13. Distance seems to matter more for non-EU trade partners. In terms of average Turkish export VA Asian and South and Central American countries tend to demand much less Turkish VA than their size would suggest. The highest growth rates are found in East and Southeast Asia and South and Central America as well as certain key Middle Eastern markets such as Saudi Arabia.

14. Policymakers can use clustering in developing more sophisticated VA-based export strategies in the future. We employed a K-means clustering methodology in order to identify groups of destination countries that exhibit similar patterns in the level and trend of Turkish export value added share across sectors. Four clusters came out of

the analysis which can easily be labelled as low-growth, moderate-growth and high-growth country groupings and also the group of "Most Important Trading Partners" of Turkey. Interestingly, only for Turkey's largest trading partners are the average VAs important enough to drive the clustering. Therefore, it is our recommendation that Turkey should continue giving special status to relations in particular with France, Germany, Great Britain, Russia, and the United States of America aside from the EU as a whole. Policymakers should consider developing a more sophisticated and well-tailored VA-based export promotion strategy for this group of countries. For other countries, policymakers should focus on overall bilateral trading relationships, particularly with fast-growing economies, as opposed to a focus on trade treatment and promotion of narrow sectors.

15. Our study focused on Turkey's forward participation in GVCs. Policymakers should consider backward participation as well in developing a more sophisticated set of trade strategies. Since GVC participation is through imports as well as exports and through inward and outward foreign direct investment (FDI) a more holistic approach to export and FDI promotion is needed. Such a holistic approach will call for enhanced coordination between government bodies responsible of trade, industry, and foreign direct investment.

I. Introduction

Since the late 1980s, the shape of international trade has changed with the emergence of a new form of international production organization based on cross-border production and referred to as the Global Value Chains or GVCs. Global value chains include all production operations that firms engage in, whether in their home countries or foreign territories, in order to manufacture final products. GVCs increase competition but also interdependence among countries. Although countries compete to attract jobs and investments, they are increasingly dependent on each

other's demand, capital and production. With GVCs, the comparative advantages of countries are also redefined according to stages of production more than types of goods or industrial sectors. Global trade has been re-structured from one based on trade in goods to one based on trade in tasks, which also brings about the transformation of production structures and foreign trade composition in both developed and developing countries. This new paradigm shift also introduces another dimension to be taken into account in a policy debate of trade competitiveness.

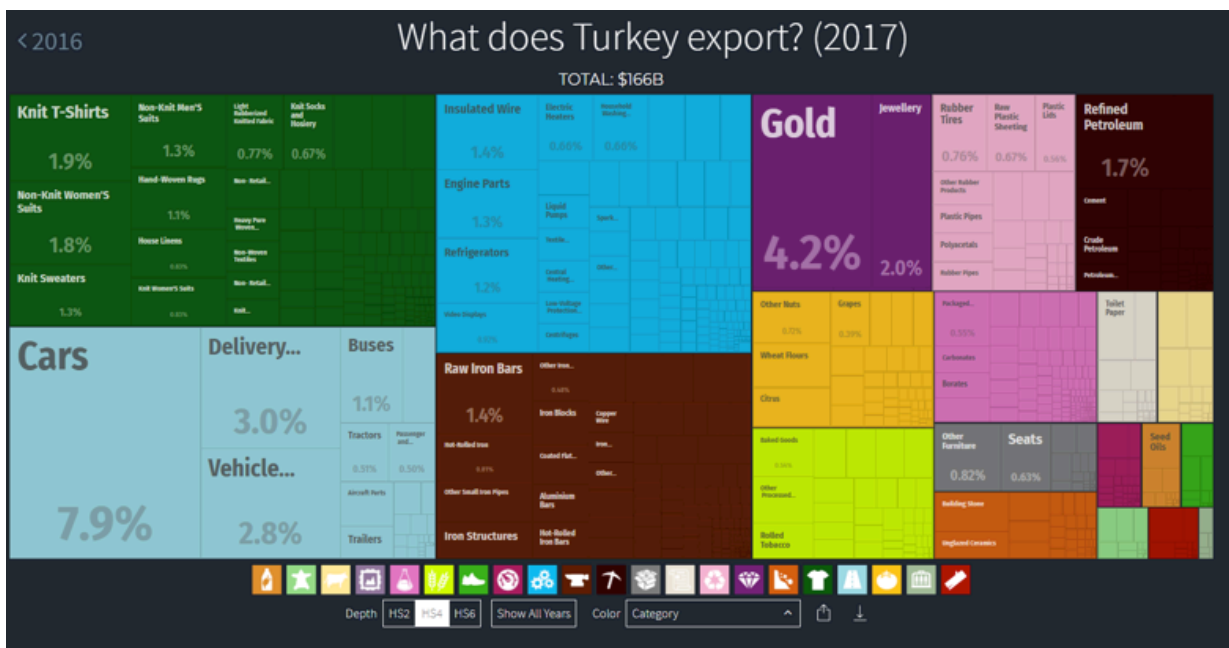


Figure 1 Turkey's total exports (2017)

Conventionally, statistics provide information on “gross exports” of countries which only consider final products and ignore the importance or value of intermediate goods of foreign origin used in the manufacturing of those final products. With rising globalization, a significant portion of global gross trade is actually composed of intermediate goods. In this regard, a GVC analysis provides a more realistic and meaningful picture in regards to countries' export performances. GVC participation is usually measured by looking into the trade patterns of countries in value added (VA) terms. In GVCs, the VA is calculated as the difference between the value of output and the value of intermediate inputs utilized in production. In this respect, gross exports represent a sum of both domestic VA and foreign VA contents. The former is composed of domestic VA sent to foreign consumers in a direct manner plus domestic VA re-imported in the original country, and domestic VA exported to third parties and usually called

“forward participation.” On the other hand, the foreign value-added content of gross exports are made of foreign imports which are embedded in the exports of the country and identified as “backward participation.” The GVC participation of a country is given by the aggregation of its backward and forward participation rates. Trade in Value Added (TiVA) indicators produced by the WTO, OECD and some other institutions offer new insights into the commercial relations among economies and provide a broad view of where value is created along each stage of GVCs (OECD 2013). In the new world of GVCs, enhancing export competitiveness is possible only through increasing and upgrading GVC participation in world markets since enhanced participation is associated with cost reduction and productivity improvement in export activities. From a policy perspective, in GVCs Turkey will see strong export value added growth when focusing on promoting and developing sectors in which Turkey can take higher

value-added stages of production and in which Turkish intermediate goods exports allow greater access to global markets for Turkish value added through foreign channels.

Despite the lack of comprehensive data until very recently, scholars and institutions including the World Bank and the OECD have produced some significant earlier studies on Turkey's engagement with GVCs and its trade in VA terms. The GVC participation of Turkey has been analyzed by scholars who mostly focused on backward participation and in some cases also compared Turkey with its peers and other MENA countries.¹ Overall studies suggest that Turkey's participation in GVCs has been increasing over the past few decades across some key sectors such as textiles/apparel, food and automotive. Especially important in this increase was Turkey's integration with the European Union (EU) following the establishment of a Customs Union between the parties in 1996. In this context, Turkey's backward participation index has reportedly increased between 1995 and 2008 (from 11.2% to 26.3%) whereas forward participation index rose from 13.5% to 16.6% during the same period (Özmen and Yolcu-Karadam 2014).² Dividing the production process of traded goods into five classifications as primary goods intermediate inputs, semi-finished products, parts and accessories and consumption goods- Taymaz et al. (2011) suggested that Turkey has specialized in downstream labor-intensive segments of GVCs. Similarly, according to the World Bank (2014) Turkey's participation in GVCs is at similar levels with other middle-income economies,³ yet Turkey's specialization is mostly in the middle of the value chains- labor-intensive manufacturing, with particular exceptions in the apparel sector (World Bank 2014). One of Turkey's advantages in terms of its integration with value chains and potential to upgrade within those chains is its "good connectivity," in particular with European markets, whereas trade costs stand larger for distant markets. Furthermore, we also know that Turkey's economy and its export competitiveness depend largely on its service sectors which provide critical inputs to manufacturing such as utilities including transport and ICT, financial services and other business services such as consulting, legal, and marketing services (Ibid.).

With fresh data provided by the OECD-WTO Trade in Value Added (TiVA) database which is built upon new Input-Output tables released by national governments, we expect the provision of new and more up-to-date insights into Turkey's trade in value added and the country's participation in the GVCs. Our study uses the 2018 version of the TiVA database, which contains 64 economies and 36 sectors, for the years 2005 to 2015. The database brings together indicators based on the VA origins (both country and industry) of exports, imports and final demand. The paper looks into trends in the value added (VA) content of Turkish exports between 2005-2015. Its focus is on and beyond the forward participation of Turkey. By providing tables of descriptive statistics and data visualization we analyse how these trends compare to trends in the total value of Turkish exports, by sector and by destination. To this aim, we apply filtering techniques to separate trend from noise components in patterns of Turkish destination-sector export value-added. We apply a panel regression approach in order to identify the destination country determinants of sectoral export value added share for Turkey. Finally, we employ a K-means clustering methodology in order to identify groups of destination countries that exhibit similar patterns in the level and trend of Turkish export value added shares across industry and service sectors. Our analysis is based on estimates of national value added embedded in exports, rather than sectoral value added per se. As a result, the picture painted regarding sectors with high or low value added is different. Conventional concepts of high value-added sectors look at those that use few intermediate inputs, directly producing a greater portion of the value of sectoral output. In our analysis, a sector which makes use of inputs produced in Turkey will be considered high value added while those which make use of imported inputs will not. With these results, we identify the best target export sectors and target trading partners in terms of the level and trend in Turkish export value added.

The paper is divided into two parts. The first part focuses on sectoral trends to understand Turkish export performance in VA. The second part analyses the share of final demand countries in Turkish exports measured in VA terms.

¹ See for instance Muhtaseb and Daoud (2015), Gündoğdu and Saraçoğlu (2016), Kowalski et al. (2015), and Özçelik (2018).

² Consequently, according to Özmen and Yolcu-Karadam the 74% rise in total participation (from 24.7 to 42.9) was chiefly because of the growth in backward participation (Özmen and Yolcu-Karadam 2014).

³ Turkey's participation rate was almost the same as that of India, Italy, the UK or Japan. Its participation is reported by the World Bank to be bigger than the participation rates of peer middle-income economies such as Mexico, Brazil and Argentina, and is slightly higher than the Chinese rate of participation (World Bank 2014).

II. Understanding Turkish export performance in VA terms (2005-2015)

a. Overview

We begin by evaluating Turkish export performance over the time period of 2005 and 2015 by considering both direct and indirect exports, based on (1) the (Turkish) sector of initial production and (2) the country in which the Turkish value added (VA) is ultimately consumed. Direct exports need no further explanation, though here only the value added by the exporting sector (not the total value of the export) is considered. Indirect exports could refer either to Turkish intermediate goods used to produce export goods in Turkey, or Turkish intermediate goods that are exported, used in production of final goods for export and sent to another country of final demand. In this way, Turkish manufacturing sector VA in Russian final demand will include both VA from final goods manufactured in Turkey as well as VA from Turkish intermediate goods exported to Germany and used to produce exports for sale in the Russian market. The total Turkish manufacturing VA associated with manufacturing exports to Russia valued at 1 million would; however, be substantially less than 1 million, as 1 million in manufacturing exports would incorporate less than 1 million in Turkish manufacturing VA. Firstly, this is the case because the Turkish manufacturing sector makes use of Turkish non-manufacturing intermediate inputs, which make a contribution of VA and secondly because the Turkish manufacturing sector makes use of foreign intermediate inputs as well and foreign intermediate inputs do not contribute to Turkish value added.

We consider export performance along three related measures. The first is the average value added for a given sector in a given country's final demand, expressed as either a percentage of all Turkish VA exported by that sector or as a percentage of all Turkish VA consumed in that final demand country. Average VA share for a country is that market's share of all Turkish export VA. Average VA share for a sector is that sector's share of all Turkish export VA.

The second is the contribution made to total Turkish export VA trend growth, expressed as either a percentage of all Turkish VA exported by that sector or as a percentage of all Turkish VA consumed in that final demand country. VA growth share represents the overall contribution to Turkish export VA growth from that market or sector. We have calculated the Turkish export VA growth rate for total VA exported as 6.4%. This is above the world growth rate which is 4.6% (figures for separate sub-sectors are listed in the Appendix).

If export VA from a sector or to a country grows at the same rate as Turkish export VA overall – 6.4% - measure 1 (the average VA for that Turkish sector in a total non-Turkish final demand) and measure 2 (contribution made to total Turkish export VA growth) will be equal. (3) The third measure is the time trend in Turkish VA exports, expressed relative to average Turkish export VA over that period as a growth rate.

Methodology Box 1. Definitions for average value added share, value added growth share, and trend growth

The primary variable $VA_{y,i,t}$ refers to Turkish export value added from sector or subsector I , consumed at time t in market for final demand y .

I = Sector or Subsector, Y = Final Demand Market for Turkish goods, t = Time (year)

Definition of Avg. VA Share

$$VA\ Growth\ Share_y = \frac{\widehat{\beta}_1_y}{\sum_y \widehat{\beta}_1_y}$$

$$VA\ Growth\ Share_i = \frac{\widehat{\beta}_1_i}{\sum_i \widehat{\beta}_1_i}$$

Definition of VA Growth Share

$$Avg\ VA\ share_y = \frac{\sum_t \sum_i VA_{y,i,t} / 11}{\sum_t \sum_y \sum_i VA_{y,i,t} / 11}$$

$$Avg\ VA\ share_i = \frac{\sum_t \sum_y VA_{y,i,t} / 11}{\sum_t \sum_y \sum_i VA_{y,i,t} / 11}$$

Definition of Trend Growth

Each $VA_{y,i,t}$ is regressed on t such that $VA_{y,i,t} = \hat{\beta}_{y,i} + \widehat{\beta}_1_{y,i,t}$

We report only trend growth for $\sum_y VA_{y,i,t} = \hat{\beta}_i + \widehat{\beta}_1_{i,t}$ & $\sum_i VA_{y,i,t} = \hat{\beta}_y + \widehat{\beta}_1_{y,t}$

$$Trend\ Growth_y = \frac{\widehat{\beta}_1_y}{\left(\sum_t \sum_i VA_{y,i,t} / 11\right)}$$

$$Trend\ Growth_i = \frac{\widehat{\beta}_1_i}{\left(\sum_t \sum_y VA_{y,i,t} / 11\right)}$$

b. Share of VA from Turkish industries in foreign countries' final demand

Recent OECD data suggest that the services content of Turkey's gross exports was registered at 51.2% in 2015, roughly unchanged from 2005 levels, and slightly below the OECD average of 54%. Over the decade of 2005-2015, Turkey has continued to increase its export orientation, with the domestic VA content driven by foreign final demand growing across most sectors. Motor vehicles, basic metals and other transport equipment were the sectors with the highest levels of export orientation whereas ICT and electronics saw a substantial drop from 2005 levels of over 70% to around 40% (OECD 2018). A significant portion of domestic production has gone to foreign final demand. Overall, 20% of Turkey's domestic value added in 2015 stemmed from consumption abroad, up from 18.2%

a decade earlier. Contributing sectors ranged from motor vehicles (55.9%), basic metals (52.8%), and other transport equipment (52.8%) at the higher end, to information and communication (13%) at the lower end (Ibid.). Finally, of the total value of Turkey's imports of intermediate goods and services in 2015, 29.1 % was eventually embedded in exports, largely below the OECD average of 45.5%, but above its share in 2005 (25.2%). The originating industries with the biggest shares of intermediate imports utilized (in Turkey's exports, specifically) were motor vehicles (46.5%), textiles and apparel (35.9%), and basic metals (34%) (Ibid.).

Against this background, our analysis suggests that between 2005 and 2015, the share of services in Turkish

value added in foreign countries' final demand has averaged approximately 54%, with the remaining 46% consisting of industry (including utilities and agriculture). When viewed in terms of gross trade, the ten-year average of the share of services within total Turkish trade was registered at only 32.7%. The difference is derived from the value contribution of Turkish service industries to Turkish goods exports. This finding supports the earlier research suggesting that services are essential to the competitiveness of Turkey's goods exports. Interestingly, within services, most Turkish VA in foreign demand is made up of business services rather than consumer services or construction as clearly seen in

Figure 2. However, construction and consumer services contribute relatively more to the trend growth of Turkish VA in foreign demand as discussed below and shown in Figure 6. Service sectors contribute substantially more to Turkish export VA, and hence the Turkish economy, than gross trade figures would suggest. Since the difference comes from service sector inputs used in production of export goods by other sectors, this suggests that policymakers focus on trade treatment of gross final and intermediate goods exports but also competitiveness of domestic business services sectors.

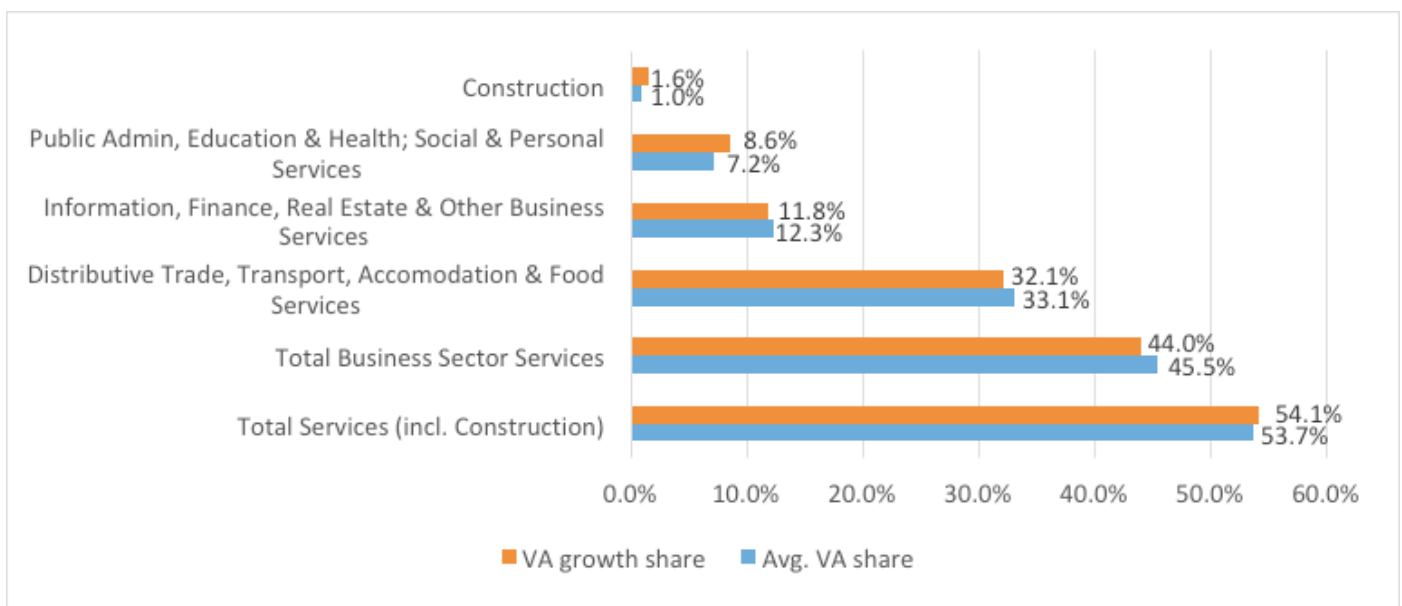


Figure 2 Shares of Turkish export VA : service sector

Among service subsectors (Figure 2), the top categories of Turkish VA in foreign demand have been wholesale, retail trade, transportation and storage as well as other business services (merchandising, operational leasing, technical and professional services, etc.) and accommodation and food service. These service industries can be considered to be an engine of Turkish exports. On the other end of the spectrum, information, IT services and telecommunications have had notably low average shares of Turkish VA in foreign demand together with publishing and audiovisual services. The average share of construction, public administration and health has also been quite low. When contrasted with Turkey's gross trade figures, there is no substantial difference in the percentage shares of subsectors to Turkey's exports performance. Yet, exceptions have been

recorded in some industries which have performed better in VA terms than in gross trade terms. A good example is the category of wholesale, retail trade and repair of motor vehicles whose share in average VA was 16.23% whereas it made up only of 11.35% of average gross exports of Turkey with 18,374 billion USD value of annual average exports. Shares in average VA were also above the shares of average gross exports in other business services such as merchandising, operational leasing, technical and professional services with 4.09% and 0.67% respectively, real estate activities (3.93% and 1%), and transportation and storage (11.94% and 9.21%). In addition, the VA share of accommodation and food services has been 4.97% and below its contribution to gross exports (6,77%) of an average of 11 billion USD annually.

Sector	Avg. gross export value (Million USD)	Gross avg share	VA share	GAP between shares
Wholesale & retail trade; repair of motor vehicles	18,375	11.35%	16.23%	4.88%
Transportation & storage	14,908	9.21%	11.94%	2.73%
Accommodation & food services	10,964	6.77%	4.97%	-1.80%
Arts, entertainment, recreation	1,899	1.17%	1.67%	0.50%
Other social & personal services	1,899	1.17%	1.67%	0.50%
Real estate activities	1,613	1.00%	3.93%	2.94%
Financial & insurance activities	1,193	0.74%	2.44%	1.71%
Information & communication	1,125	0.69%	1.88%	1.18%
Other business sector activities	1,090	0.67%	4.09%	3.42%
Telecommunications	848	0.52%	1.09%	0.57%
Education	601	0.37%	2.85%	2.48%
Construction	510	0.31%	0.95%	0.64%
Human health & social work	440	0.27%	1.54%	1.27%
Publishing, broadcast., audiovisual	229	0.14%	0.20%	0.06%
Public admin., defense, soc. security	178	0.11%	1.19%	1.08%
IT & other information services	48	0.03%	0.58%	0.55%

Table 1 Gap analysis for services between the average annual gross export value shares and VA shares (2005-2015)

It should also be noted that between 2005 and 2015 real estate services has had a substantially higher average share of Turkish VA in foreign demand than finance and insurance at 3.9% to 2.4% as shown in Table 1. However, there has been a

more rapid growth in finance and insurance, and finance and insurance have taken more than twice the share of the growth in Turkish VA in foreign demand at 3.4% to 1.4%.

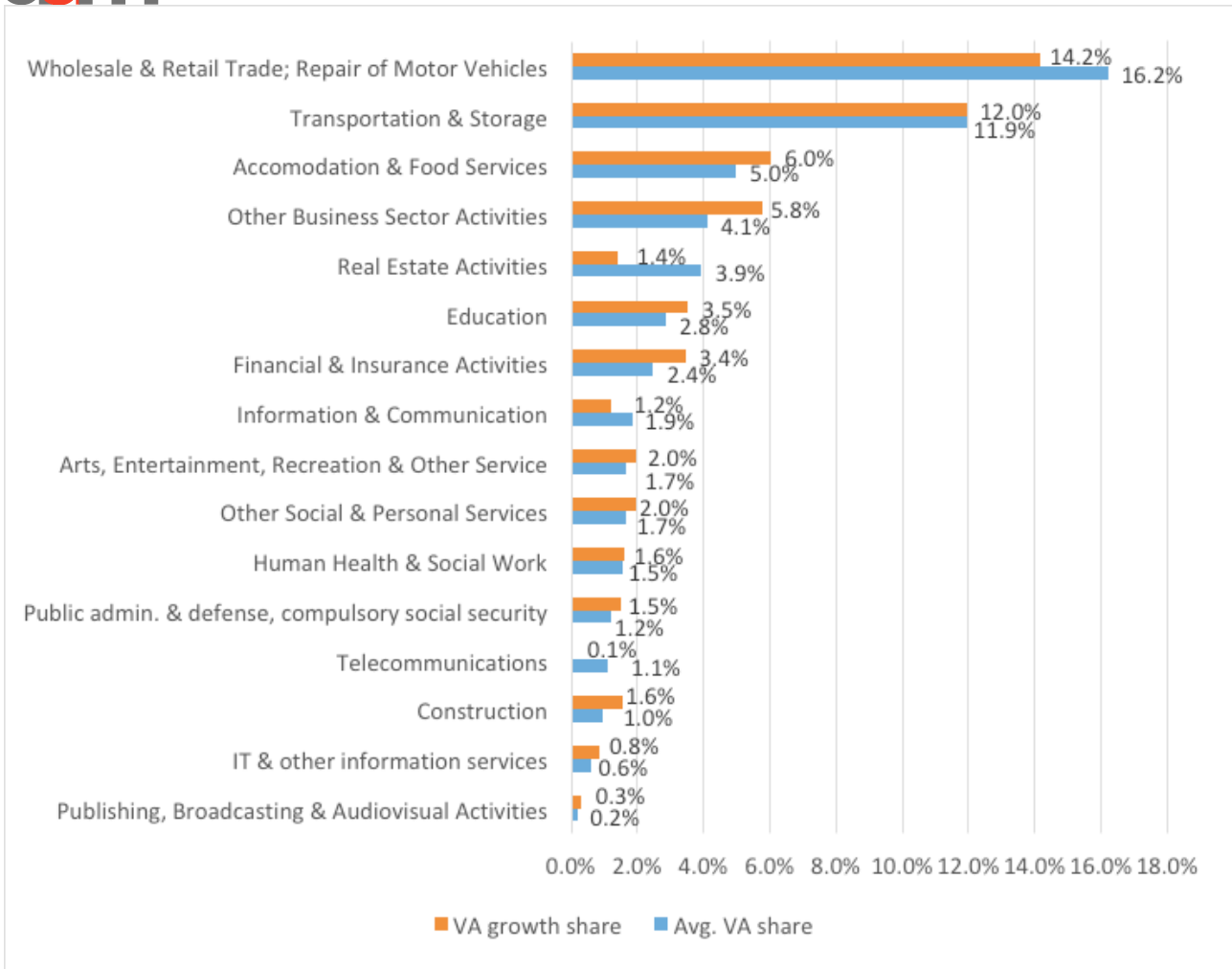


Figure 3 Shares of Turkish export VA: service subsectors

Shares of Turkish export VA for industrial sector is given in Figure 4.

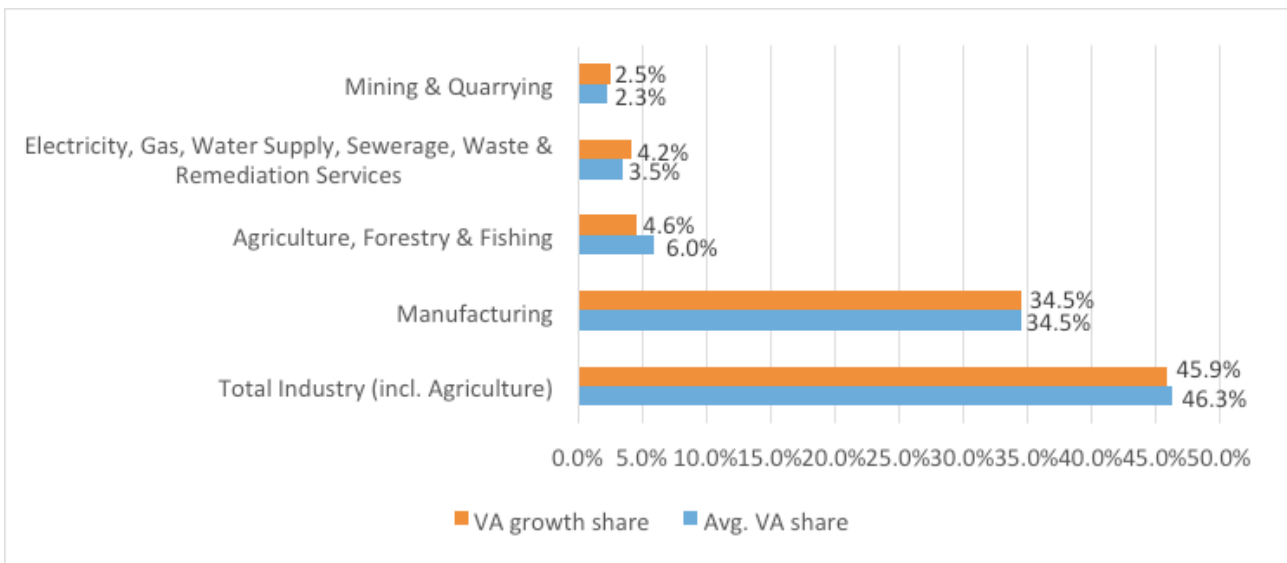


Figure 4 Shares of Turkish export VA: Industrial sector

Between 2005 and 2015, in Turkey's gross annual exports the share of manufacturing has been 62% on average. However, in VA terms the picture is quite different. Of approximately 46% of Turkish VA in foreign final demand, which does not

represent the service sector, the lion's share at 34.5% goes to manufacturing while the remaining 11.5% is a combination of agriculture, utilities and mining.

Sector	Avg. gross export value (Million USD)	Gross avg share	VA share	GAP between shares
Basic metals & fabricated met.prod.	21,002	12.97%	5.94%	-7.03%
Textiles, apparel, leather & rtd prod.	20,014	12.36%	7.72%	-4.64%
Transport equipment	16,398	10.13%	3.79%	-6.34%
Chemicals & non-metallic mineral prod.	15,593	9.63%	7.31%	-2.32%
Basic metals	15,486	9.56%	3.79%	-5.78%
Motor vehicles, trailers & semi-trailers	14,646	9.04%	2.93%	-6.12%
Computers, electronic & electric. equipm.	9,191	5.68%	2.28%	-3.40%
Food products, beverages & tobacco	7,839	4.84%	3.09%	-1.75%
Electrical equipment	7,146	4.41%	1.57%	-2.84%
Fabricated metal products	5,516	3.41%	2.16%	-1.25%
Machinery & equipment, nec.	4,854	3.00%	1.32%	-1.68%
Chemicals & pharmaceutical prod.	4,679	2.89%	2.93%	0.04%
Rubber & plastic prod.	4,517	2.79%	1.84%	-0.95%

Table 2 Gap analysis for manufacturing between the average annual gross export value shares and VA shares (2005-2015)

Within manufacturing the top manufacturing sub-sectors are given in Table 1 above with their gross annual average export values for 2005-2015 period. While top exporters in gross terms including basic metals, textiles and apparel and transport equipment hold more than 10% shares of total exports, in VA terms their share within Turkey's total VA is much lower. Conventional export industries such as textiles and apparel as well as chemicals, and minerals have also been the most important for Turkish manufacturing exports in VA terms, with the largest average shares of Turkish VA in foreign demand. However, as shown in Figure 5, like agriculture, transport equipment and electronics have substantially lower shares of total Turkish VA in foreign demand trend growth between 2005 and 2015 than their share of average VA in foreign demand. This is indicative of relatively low trend growth rates for exports in these sectors. Although the metals and machinery subsectors have smaller

average VA shares in foreign demand, their shares of VA trend growth are larger. Metals and machinery subsectors have been among Turkey's most rapidly growing producers of VA for export and as a result have made a substantial contribution to overall Turkish economic growth. In terms of export promotion, policymakers have a choice here: to focus on promotion of exports by the nation's largest sectors or focus on those that have offered the best prior export growth performance.

Overall, Turkish exported VA is relatively diversified and not dominated by any one subsector. However, the lower-than-average growth in exported VA among the top industrial subsectors (textiles, chemicals and agriculture) may have dampened overall Turkish exported VA growth over this period.

b. Trend growth in Turkish VA in foreign demand

Next, we evaluate the trend growth in Turkish VA in foreign demand expressed as a percentage (relative to the average between 2005 and 2015), as demonstrated in Figures 5-8. We evaluate trend growth over the time period rather than average growth over the time period in order to give a stable growth estimate that minimizes the impact on the estimate of noisy annual data and the choice of starting and ending points. Policymakers can assess the performance of specific partners and industries in producing VA for export over the time span using trend growth in much the same

way as an average growth rate. High growth sectors will be worthy of greater focus and promotion. Trend growth in exported VA for service and industry is quite similar at 6.4% and 6.3% respectively over this time span. As it is given in Appendix B, these rates are well above the overall world growth trend which is 4.6%, and world growth trend for services (4.3%) and for industry (5.0%). Turkey has clearly performed better than world average in terms of creating value for final demand in other countries.

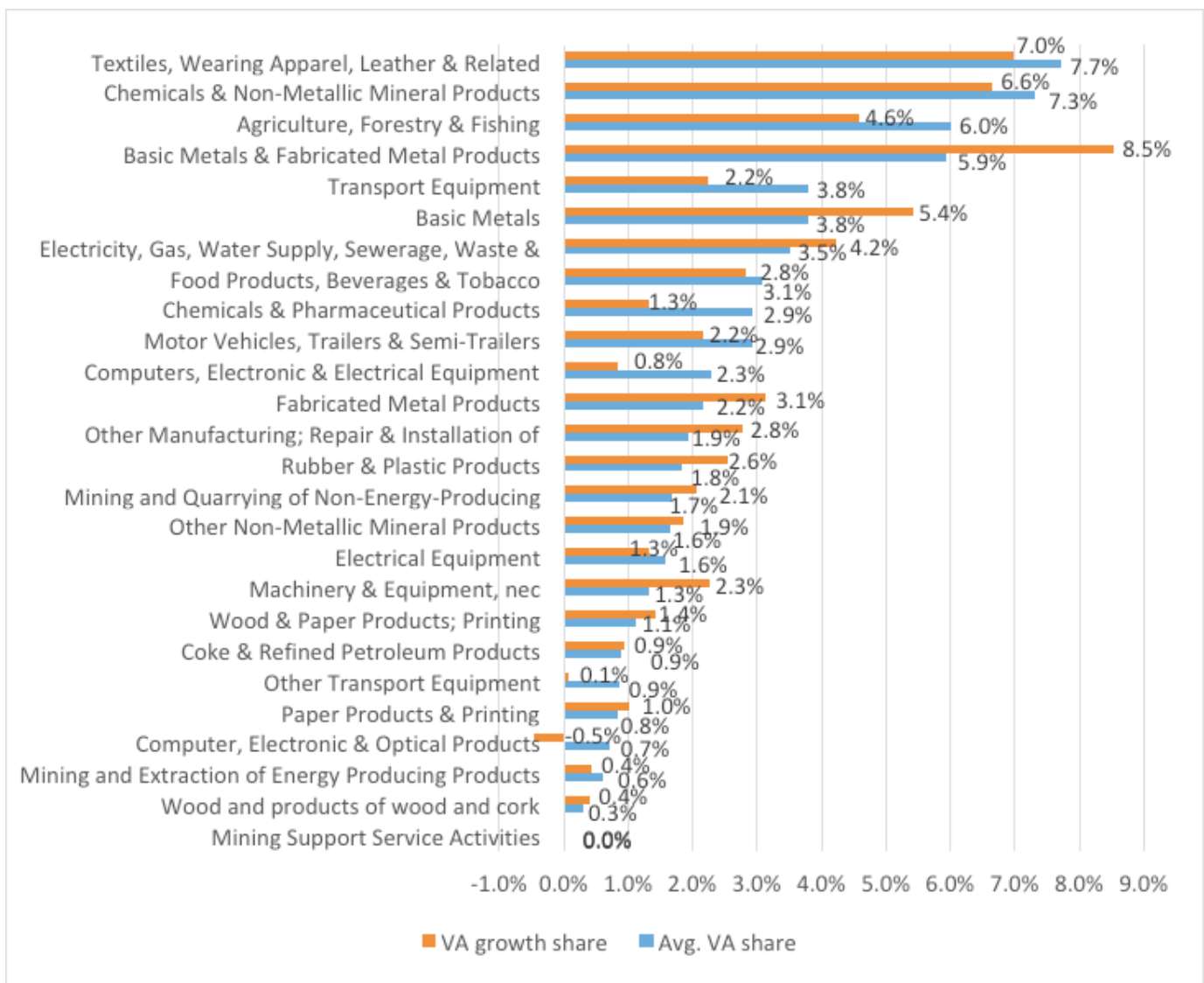


Figure 5 Shares of Turkish export VA: Industry subsectors

Among service subsectors, interestingly we observe that the most rapid rates of exported VA growth are for certain non-traditional subsectors with a low average share of Turkish exported VA – finance, insurance, IT services, and other business services- as well as construction. The lowest growth rates of Turkish exported VA are observed for real estate services, telecommunications and information and communication services. Although it does not have the lowest trend growth rate, wholesale and retail trade and repair of motor vehicles falls below the service sector average at 5.6%. It is possible that this is the result of global technological changes leading to sectoral shifts, or due to changes in patterns of global demand. The average VA share (16.2%) and VA growth share (14.2%) of wholesale

and retail trade for Turkey are well above the world averages (11.1% and 10.8% respectively) as is Turkey’s trend growth (5.6%) versus global trend growth (4.5%) in this industry. In such a case, then the relatively small size of the fastest growing service export sectors in Turkey (relative to slower growing sectors such as wholesale) may be slowing overall Turkish export VA growth. As an example, wholesale and retail trade VA from Turkey has grown slightly slower than the Turkish average (5.6% vs 6.4%) and wholesale and retail VA in the world has also growth slightly slower than the world average (4.5% vs 4.6%). Overall variation in growth rates across sectors has been lower for the world as a whole than for Turkey specifically.

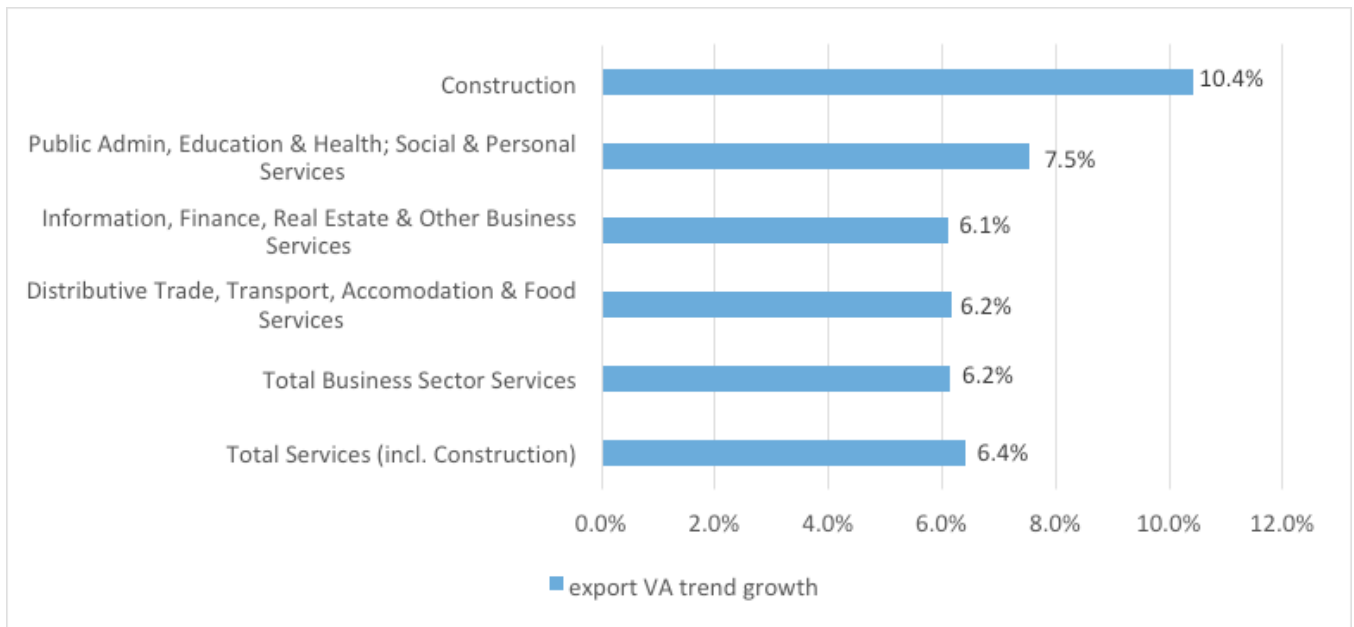


Figure 6 Export VA trend growth : Service sector

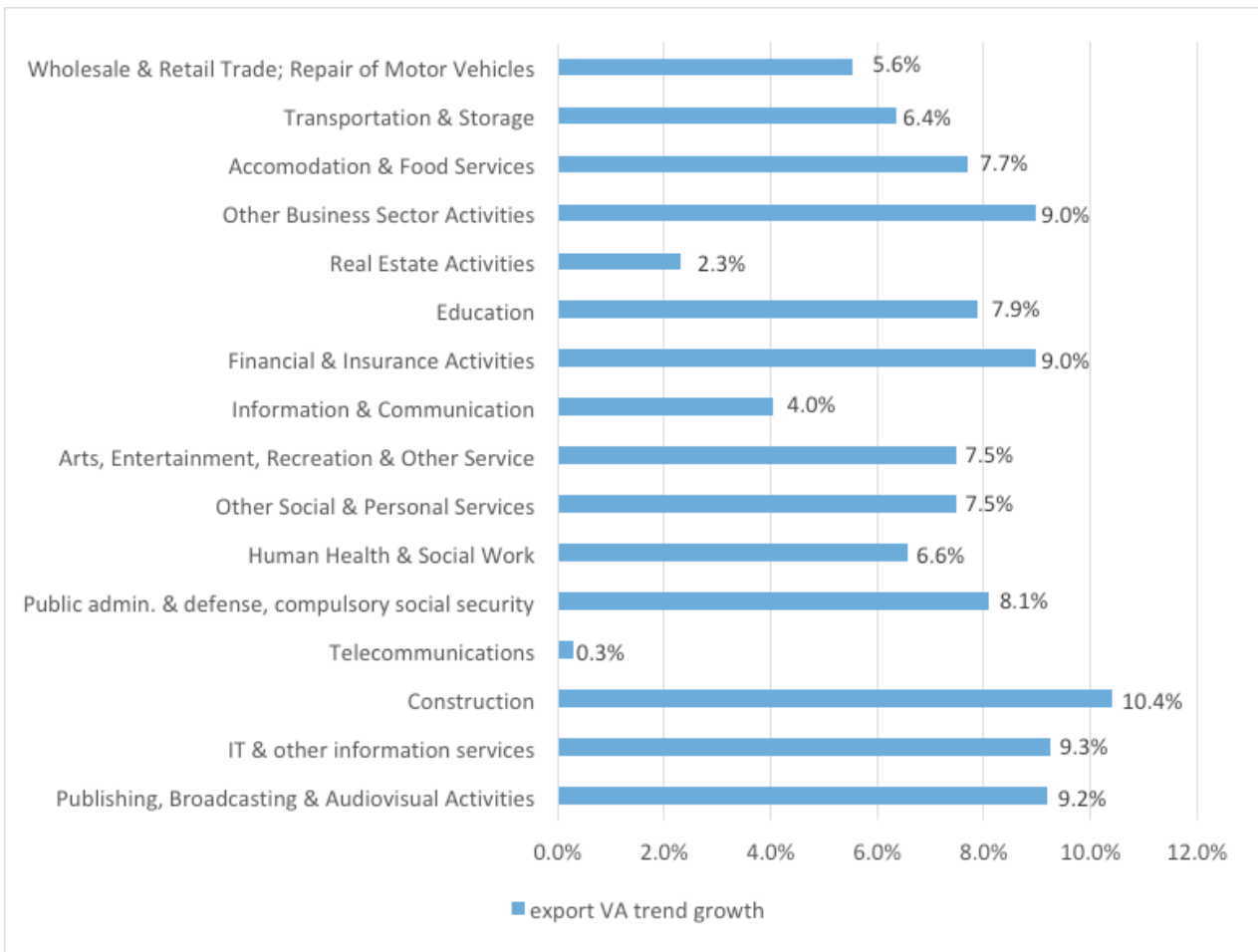


Figure 7 Export VA trend growth : Service subsectors

A similar picture can be observed by looking at Turkish export VA trend growth for industry subsectors.

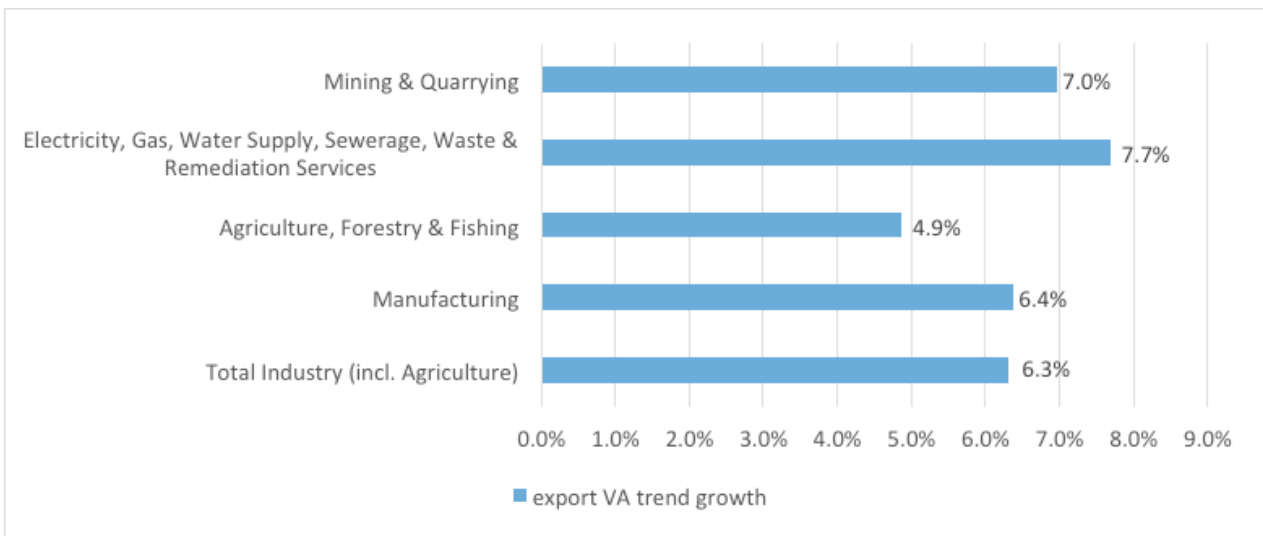


Figure 8 Export VA trend growth : Industrial sector

Manufacturing, in the aggregate had trend growth of 6.4% over the period – the same as did the service sector and Turkish export VA overall. This is well above the world average trend growth for manufacturing which is recorded

as 4.8%. Mining and utilities, which made the smallest contributions to industry overall, also had the highest trend growth rates at 7% and 7.7% respectively (at 5.9% and 4.6% for the world average). Meanwhile, agriculture, which made

a greater contribution to average export VA had a slower trend growth rate at only 4.9%. Turkish performance in this sector is lower than the world average growth which is 7.6%. Manufacturing subsectors, with those most rapidly growing such as wood products and machinery represent also much smaller shares of average Turkish export VA than slower growing subsectors such as textiles and chemicals.

Computers and electronics are among the slowest growing subsectors (negative, in the case of computer, electronic and optical products) during this time period so the case could be made that a relative lack of exposure to global downturn in these sectors may have benefited Turkey overall.⁴ This might run contrary to what would be commonly assumed: that a focus on high-tech products rather than older industries such as textiles, apparel, chemicals, minerals and agriculture would be good for a country's export VA growth. While it has been the case that the older industries mentioned have had lower than average trend growth, there have been significant headwinds to any country attempting to focus

export VA growth on high-tech products – chiefly competition from East Asia and falling real prices due to commoditization and technological advancement. Two key insights stand out for policymakers regarding a potential focus on high-tech vs low-tech exports: first, as young industries evolve innovation and competition can push prices ever lower and adversely impact an exporter's revenue growth. Second, the portions of the global value chain in an industry such as computers and electronics that produce the most value added – in research, design, marketing and administration – may be concentrated in a handful of global clusters such as Silicon Valley, making the commodity manufacturing of electronics in a country such as Turkey a relatively low growth and low value added activity. In this respect, while targeting higher technology manufacturing we would advise policy makers not to neglect stable industries, in which Turkey has some competitive advantage and is able to take a larger share of the overall value chain as these may provide greater economic benefits for Turkey.

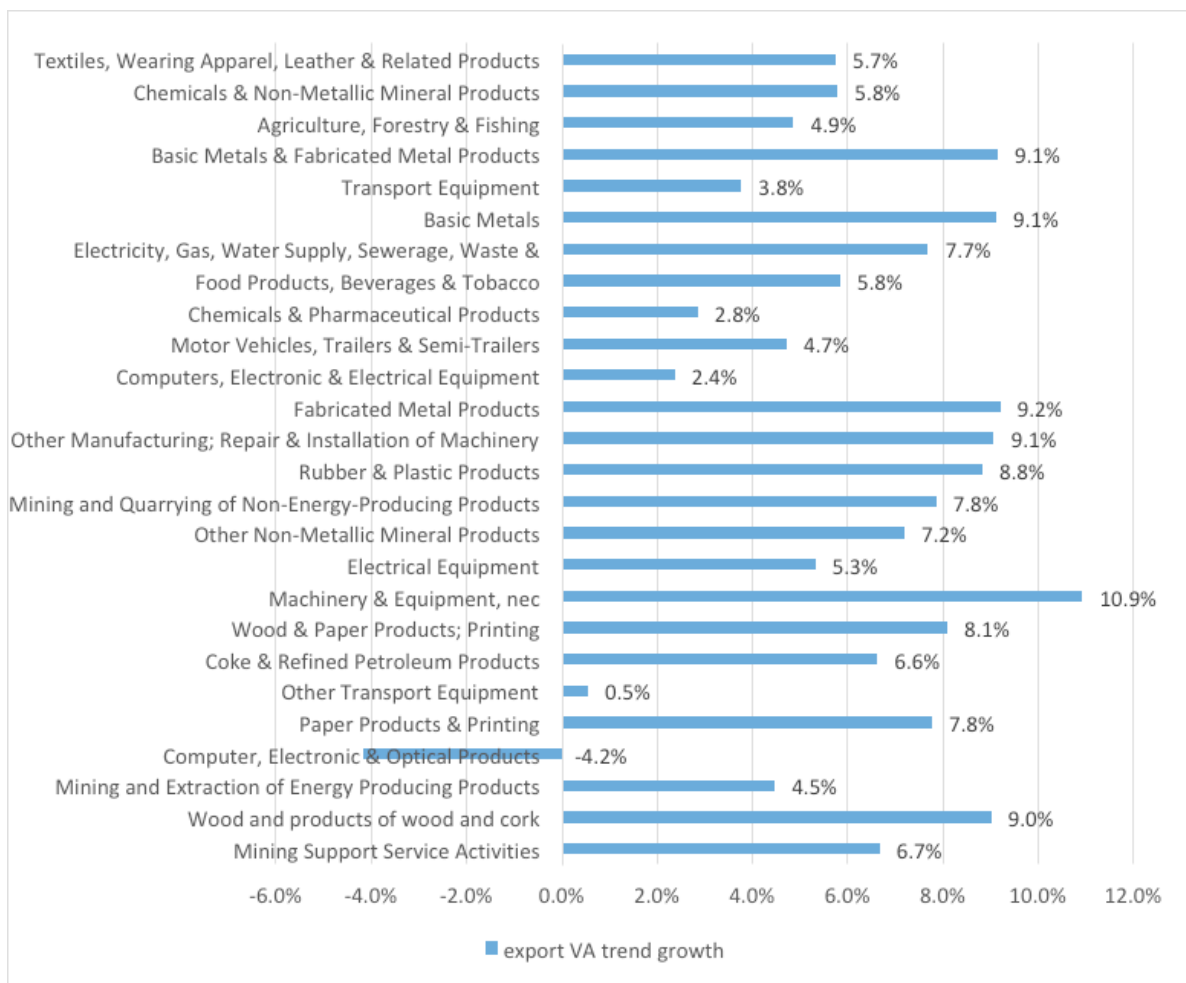


Figure 9 Export VA trend growth : Industry subsectors

⁴ Here we refer to the sector specific downturn in IT during this period. Regions that are relatively more "exposed" to that shock are badly hurt by it because that sector is important there. Like California from the dotcom bust or Florida from the US subprime crisis.

III. Share of final demand countries in Turkish exports measured in VA terms

a. Overview

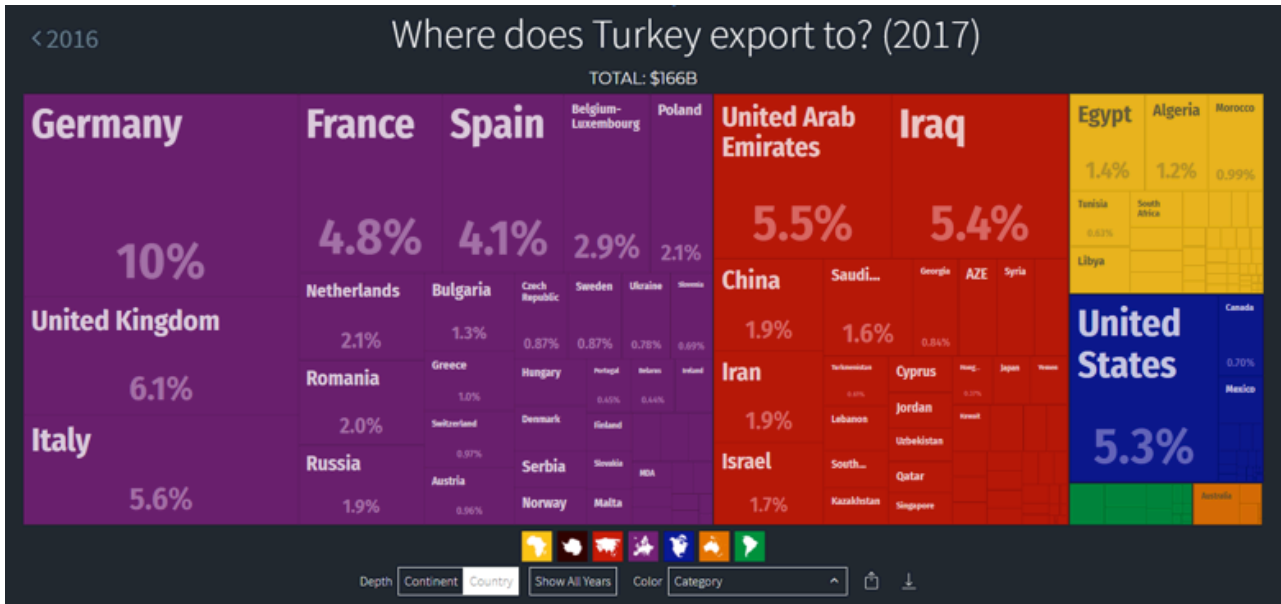


Figure 10 Turkey's exports per destination

In gross terms, in 2015 Germany (11.4%), the United Kingdom (7.3%) and the United States (6.8%) were Turkey's top three export markets, whereas Turkey's top import partners were China (14.7%), Germany (10%), and the Italy (5.9%) (OECD TIVA note for Turkey). Again when we look at the average of the past ten years (2005-2015), the top export markets of Turkey in gross value terms have been Germany, Russia and the United Kingdom followed by the USA, Italy and France. Yet the ranking of final demand destinations of Turkish VA looking at the average of the past ten years (2005-2015) differs slightly. As seen in Table 3, in VA terms the USA surpasses the UK, Italy is behind France and Belgium falls behind Poland etc. The change in the rankings through a VA perspective is because of positive or negative differences between the VA share of trade partners of Turkey and their gross exports average shares in percentage terms. Put differently, for Turkey some of its target markets are more important in VA terms than in gross value terms. For instance, while Russia takes 7,66% of Turkey's gross exports in VA terms its share is higher (7.93%). Such a positive difference is more extreme in the case of the United States (1.59%) and there are visible positive differences also in the UK, France, China,

Saudi Arabia and in some other countries. In other words, as compared to gross value figures and rankings, Turkey is able to export more VA to those destinations via its trade to other partners. Turkish intermediate goods and services are re-exported and constitute the part of the value of the demand in final destinations. Policymakers should consider these revised figures in assessing how to handle the trade barriers that Turkish exporters face when exporting their goods and services since those products may ultimately reach targeted markets via other countries and as part of new final products which do not face such barriers.

On the other hand, there is negative difference between VA share of trade partners of Turkey and their gross exports average shares for several key European trading partners including Germany, Italy, Spain, and Belgium. In aggregate terms, a large difference has been recorded for the EU market. This difference is the proof of Turkey's strong incorporation with European value chains in that in many product categories these EU countries are not final destinations for Turkish VA and they sometimes serve as a transit bridge to other final destinations such as Russia and other countries in Asia and Americas.

Final Destination	Avg. gross export value (Million USD)	Gross exports avg share	VA share	GAP between shares	Final Destination	Avg. gross export value (Million USD)	Gross exports avg share	VA share	GAP between shares
EU28	75,944	46.90%	44.73%	-2.16%	ASEAN	2,334	1.44%	1.47%	0.03%
NONOECD	71,300	44.03%	43.29%	-0.74%	Greece	2,206	1.36%	1.31%	-0.06%
EU15	65,121	40.21%	39.20%	-1.01%	Bulgaria	2,002	1.24%	0.93%	-0.31%
Germany	18,202	11.24%	11.06%	-0.18%	Netherland	1,894	1.17%	1.30%	0.13%
Russia	12,397	7.66%	7.93%	0.27%	Indonesia	1,771	1.09%	1.23%	0.14%
UK	11,308	6.98%	7.13%	0.15%	Switzerland	1,734	1.07%	1.04%	-0.03%
USA	9,642	5.95%	7.55%	1.59%	Austria	1,686	1.04%	1.03%	-0.01%
Italy	9,049	5.59%	4.97%	-0.62%	Canada	1,362	0.84%	0.93%	0.09%
France	8,365	5.17%	5.27%	0.10%	Sweden	1,318	0.81%	0.77%	-0.04%
Spain	5,513	3.40%	3.21%	-0.19%	Morocco	1,231	0.76%	0.62%	-0.14%
China	3,434	2.12%	2.66%	0.54%	Norway	1,159	0.72%	0.81%	0.09%
Saudi Arabia	3,144	1.94%	2.00%	0.06%	Czech Rep.	1,066	0.66%	0.50%	-0.15%
Belgium	2,687	1.66%	1.41%	-0.25%	Brazil	943	0.58%	0.74%	0.16%
Poland	2,624	1.62%	1.46%	-0.16%	Kazakhstan	912	0.56%	0.55%	-0.01%
Israel	2,562	1.58%	1.27%	-0.31%	Korea	882	0.54%	0.61%	0.06%
Romania	2,481	1.53%	1.28%	-0.25%	Denmark	843	0.52%	0.54%	0.02%

Table 3 Gap analysis for final destinations between the average annual gross export value shares and VA shares (2005-2015)

Now let us look at the VA growth share, average VA share and VA trend growth in final destinations in a comparative manner. Over the period 2005-2015 on average 54.5% all Turkish export VA went to European countries, with almost 44.7% going to EU member states and 9.8% going to non-EU European countries such as Russia. It is, however, important to point out that using the TiVA database's regional definitions Rest-of-World makes up a full 22.1% of Turkish export VA on average and this includes countries from all continents or regions for which data was not individually reported by the OECD. While all 28 EU member states are represented in the database, and the 44.7% for the EU is therefore accurate, some non-EU European countries such as Ukraine or Serbia are part of Rest-of-World and not the 54.5% for the European region. As a result, this 54.5% certainly understates the true importance of Europe as a market for Turkish exports. As shown in Figure 11, the North American, Central & South American and East & Southeast Asian regions each account

for less than 10% of total Turkish export VA.

On the other hand, as seen in Figure 12, among European Union member states, average Turkish export VA in final demand increases roughly proportionally with the size of the economy. This overall picture supports the validity of our panel regression analysis explained in Box 2. Overall regression results suggest that average Turkish VA in final demand has a positive relationship with the economic size, population, per capita income as well as the ratio of services in GDP of partner economy. On the other hand, there seems to be a negative association between the average Turkish VA in final demand and distance and manufacturing value added within gross GDP of a given country. Budget balance does not seem to have a significant relationship with average Turkish VA. Finally, membership to the EU-28 seems to have a negative relationship when it is regressed together with EU-15 membership which has a positive relationship.⁵

⁵ When EU-28 membership is regressed alone the results do not suggest a statistically meaningful relationship negative or positive.

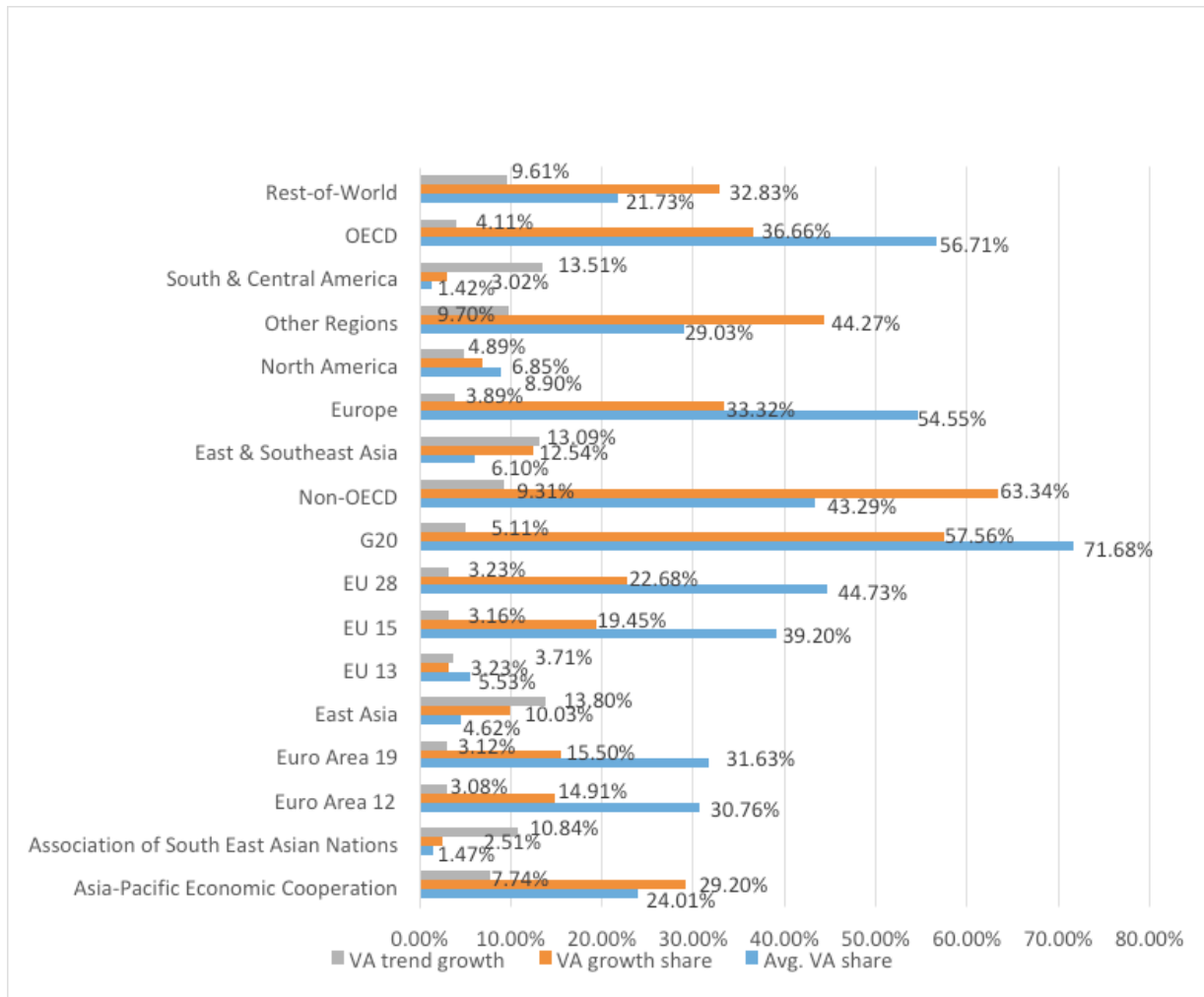


Figure 11 Shares of Turkish exports VA by final demand market : Regions

Even though average Turkish export VA in final demand is determined roughly proportionally with the size of the economy one minor caveat would be the cases of the UK and France. The British market has been substantially more important than the French one for Turkish VA exports in spite of their equivalent size, perhaps due to British trade deficits. It should also be reiterated that Turkey is relatively well integrated into pan-European value chains as well as being a customs union member, and as a result is not particularly dependent on relationships with individual countries but

rather the region as a whole. While Germany has been the most important market for Turkish VA exports, relative to other EU member states, this is more due to the size of its economy than a special relationship of a preference for Turkish goods. Considering the transit role of the EU for Turkey in reaching out the farther final destinations and Turkey's deep integration with the European value chains it would be appropriate to develop more sophisticated strategies for export promotion to the EU as a whole rather than its individual members.

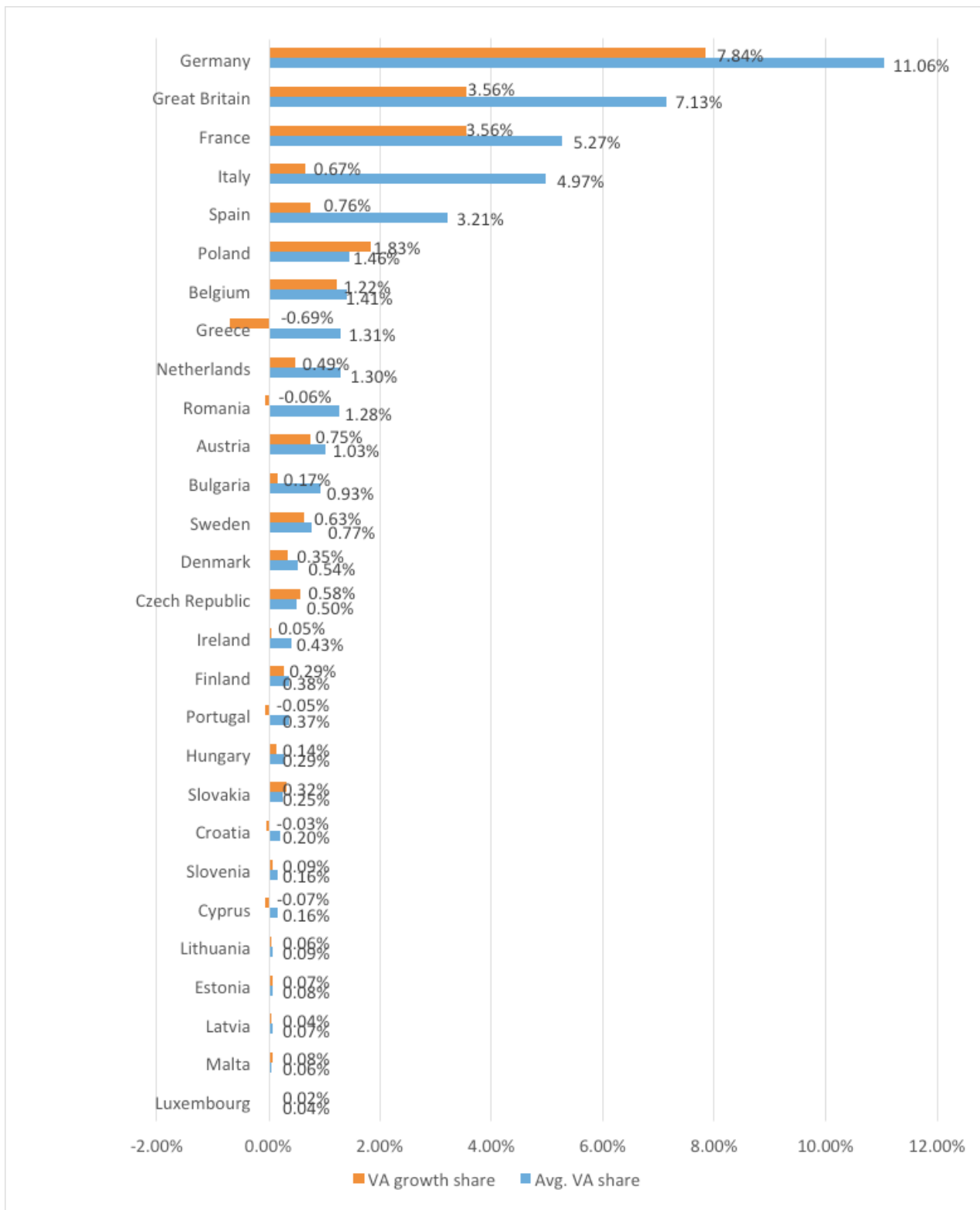


Figure 12 Shares of Turkish export VA by final demand market : EU Member States

Methodology Box 2. Country characteristics defining exports in VA

In order to identify the destination country determinants of sectoral export value added share we applied a panel regression approach. The dependent variable for the regressions was the the logarithm of the value of total export value added of all sectors (logTotal). Independent variables included:

- Distance of the country to Turkey (based on the distances in kilometers of the most populous cities/agglomerations using their latitudes and longitudes),
- Size of the economy (GDP in current USD prices),
- Per Capita GDP in current USD prices,
- Value added of service sectors to GDP of a given country,
- Value added of manufacturing sector to GDP of a given country,
- Budget balance for a given country (Net lending/borrowing, also referred as overall balance)
- Population of the country
- Membership to the EU (EU-28)
- Western EU member (EU-15)

We used results for random-effects GLS. The results were similar for random-effects GLS regression and fixed-effect within regression while the latter omitted variables fixed over the years, i.e., distance and EU membership. Aside from the budget balance other variables gave statistically meaningful results. Robust standard errors were calculated in order to control for serial correlation.

Secondly, we employed K-means clustering methodology in order to identify groups of destination countries that exhibit similar patterns in the level and trend of Turkish export value added share. K-means clustering is a method of vector quantization widely used in data mining that originated from signal processing. It works through the partition of n observations into k clusters in which each observation belongs to the cluster with the closest mean which serves as a prototype of the cluster.

Even though average Turkish export VA in final demand is determined roughly proportionally with the size of the economy one minor caveat would be the cases of the UK and France. The British market has been substantially more important than the French one for Turkish VA exports in spite of their equivalent size, perhaps due to British trade deficits. It should also be reiterated that Turkey is relatively well integrated into pan-European value chains as well as being a customs union member, and as a result is not particularly dependent on relationships with individual countries but

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For Non-European Union Countries

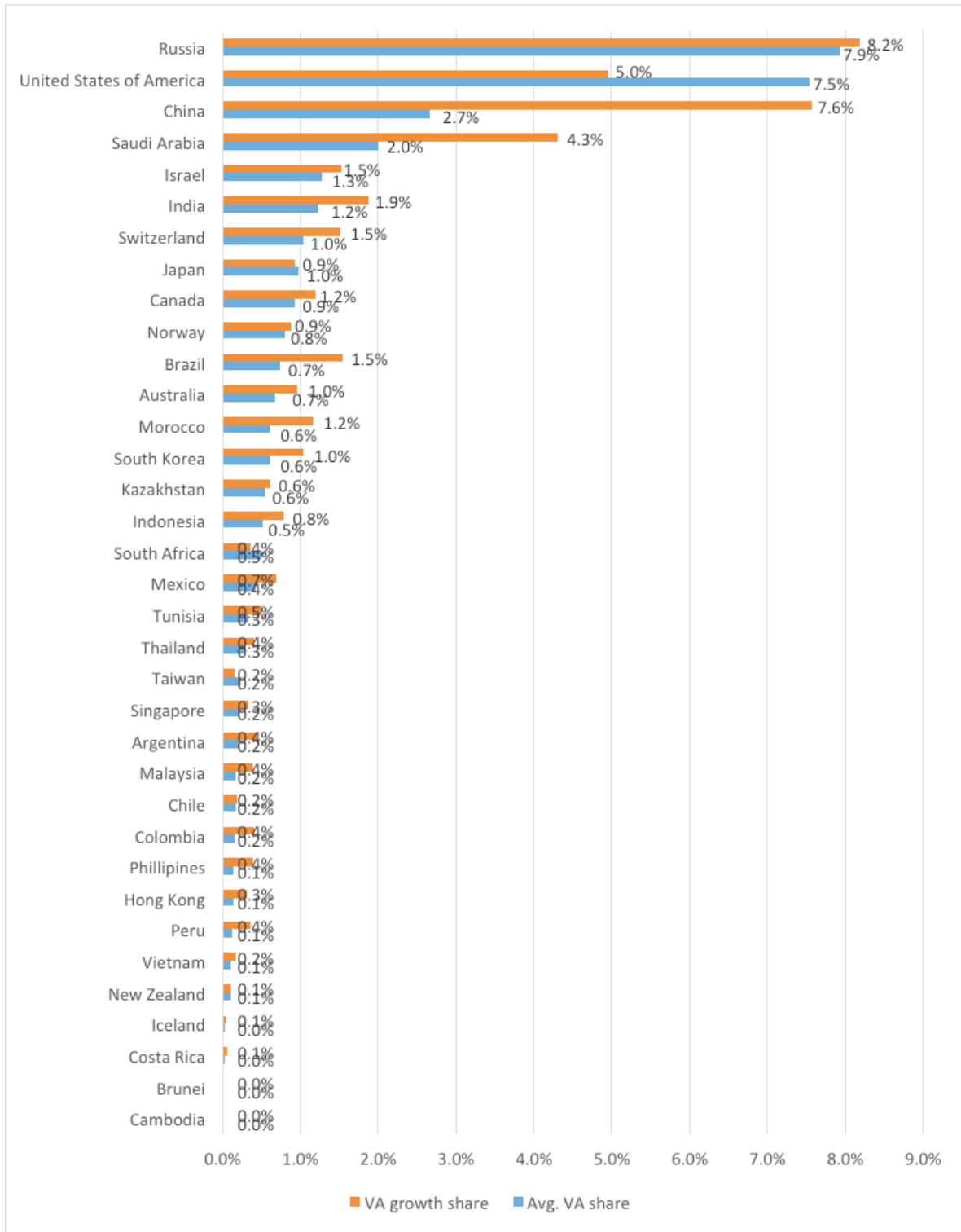


Figure 13 Shares of Turkish export VA by final demand market :Non EU countries

In contrast with EU member states, average Turkish export VA in final demand does not progress as predictably with the size of non-EU countries' economies. The most important final demand market for Turkey among non-EU countries over the period 2005-2015 has been Russia in spite of the much larger economies of the United States, Japan or China. Despite existing barriers to Turkish exports to Russia and the lack of a bilateral preferential trade agreement Turkey is

able to transfer a proportionally higher ratio of VA to Russia than its gross export figures suggest. In terms of average Turkish export VA Asian and South and Central American countries tend to demand much less Turkish VA than their size would suggest. This fact, combined with relatively strong demand for Turkish VA in countries such as Morocco and Israel suggest that it is distance that is playing a more important role.

VA trend growth, for EU countries

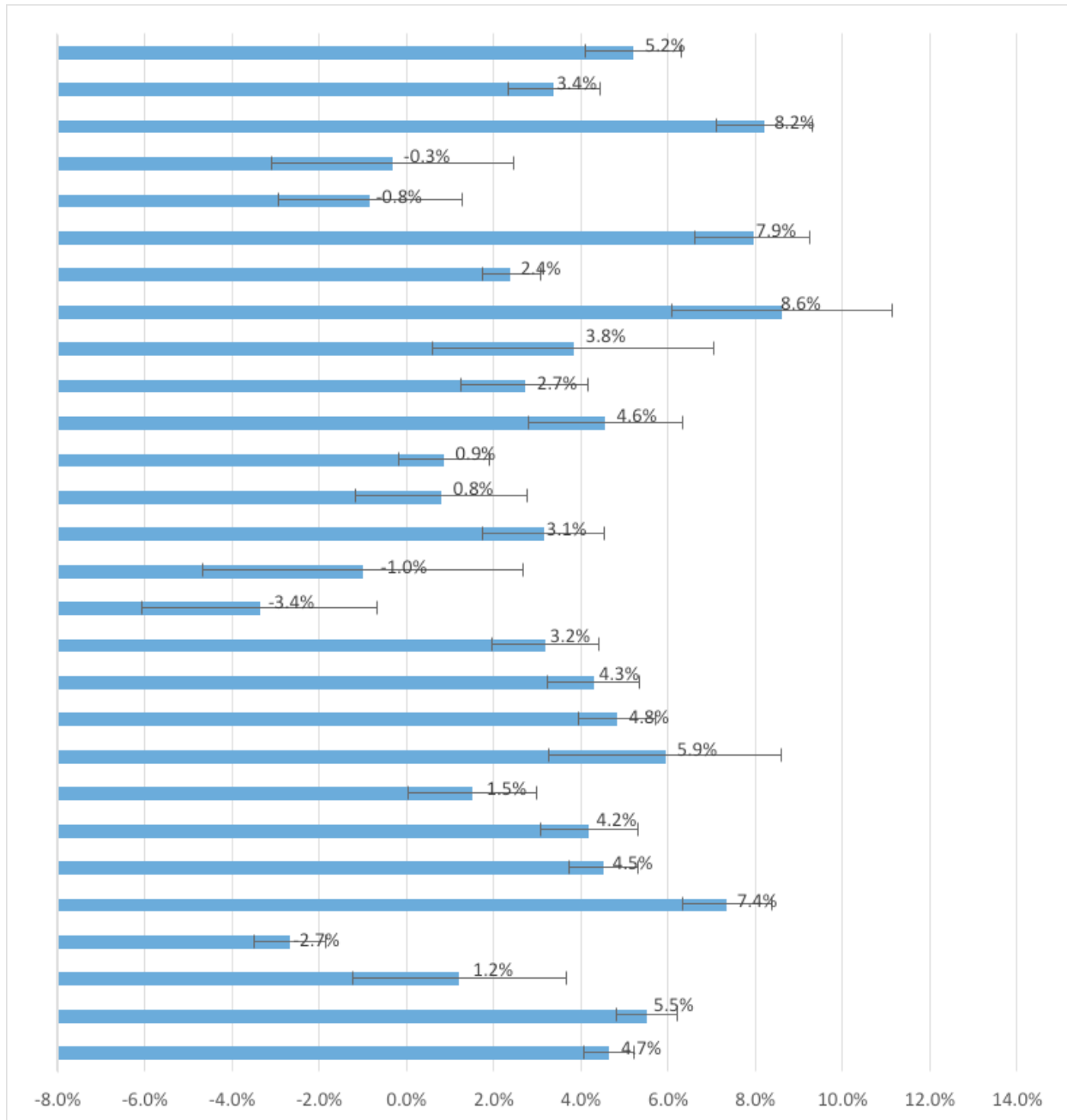


Figure 14 Turkish export VA growth by final demand market : EU Member States with standard deviation estimate

For the trend growth in Turkish export VA by final demand market we have also plotted a measure of the standard deviation of the trend growth estimate. Growth in Turkish export VA can be volatile, particularly for small countries and those with major economic shocks during the period. Among EU member states, the standard deviation of the estimate is largest for Croatia and also quite large for Romania, Bulgaria, Greece, Malta and the Baltic states. The same is true for non-EU countries, with the largest standard deviations in the trend growth estimate coming from the

smallest countries such as Brunei and Iceland. It is also noteworthy that standard deviations of the trend growth estimate for many South and Central American as well as Southeast Asian countries are quite high.

Among EU member states, only a few show trend growth rates in Turkish export VA above the Turkish overall average of 6.4% during the period. Among non-EU countries, the opposite is true: aside from the unreliable 1.5% estimate for tiny Brunei only the United States, South Africa and Taiwan

fall significantly below the average. A 6.1% trend growth rate from Japan falls barely below the average in spite of very weak overall demand growth in Japan during this period. Surprisingly, this holds true for non-EU European nations in the TiVA sample as well: Switzerland, Norway and Iceland all have trend growth rates of Turkish export VA in final demand of greater than 7%. However, the highest growth rates are found in East and Southeast Asia and South and Central

America as well as certain key Middle Eastern markets such as Saudi Arabia. This is likely attributable both to higher overall economic growth rates in these countries during this period than Turkey's European trading partners and also to a conscious outreach to untapped markets by Turkish exporters during this period. In other words, Turkey's export market diversification strategies seem to have yielded significant fruits when measuring trade in VA terms.

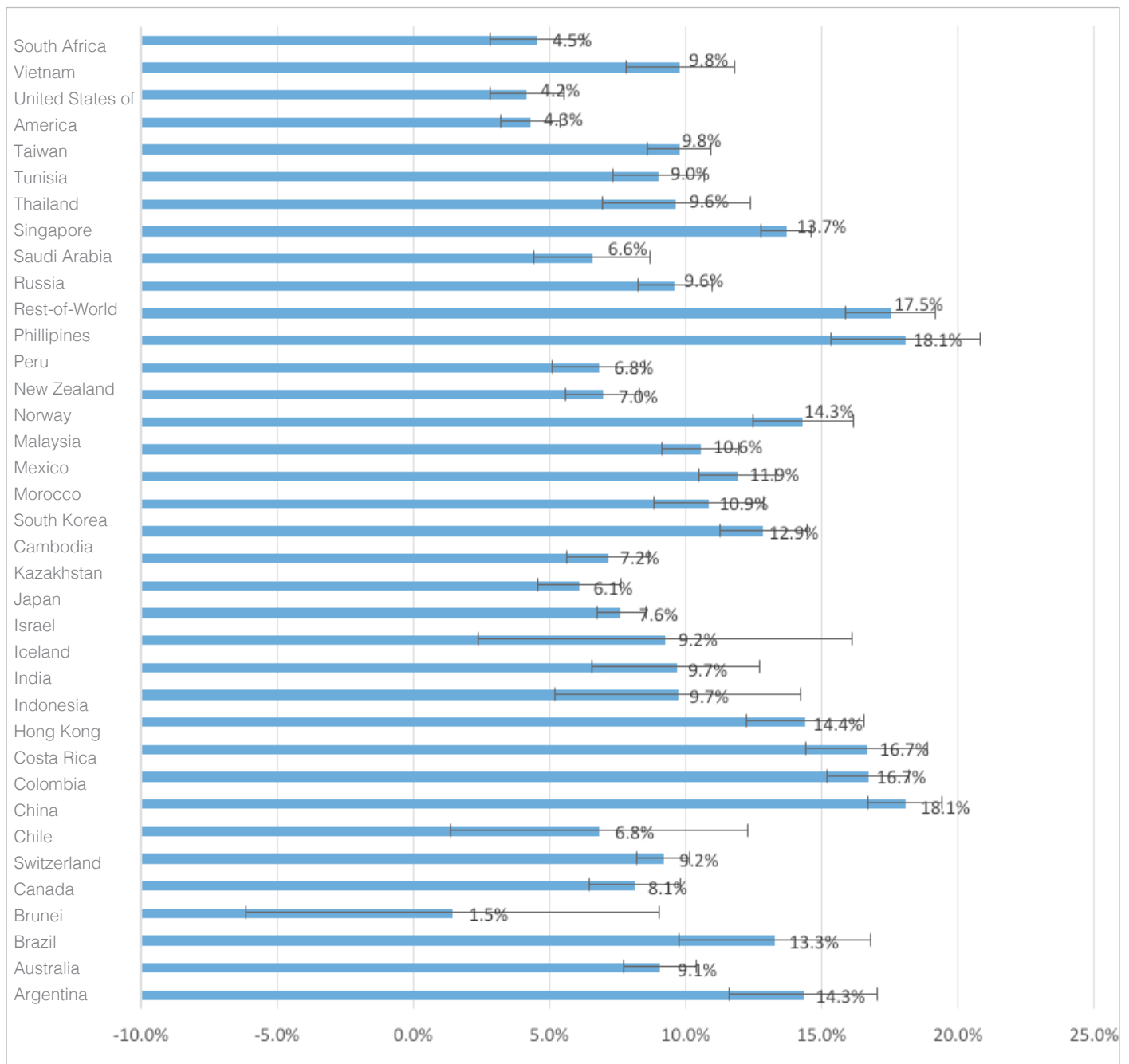


Figure 15 Turkish export VA growth by final demand market : non EU countries with standard deviation estimate

b. Russia: most important non-EU trade partner of Turkey

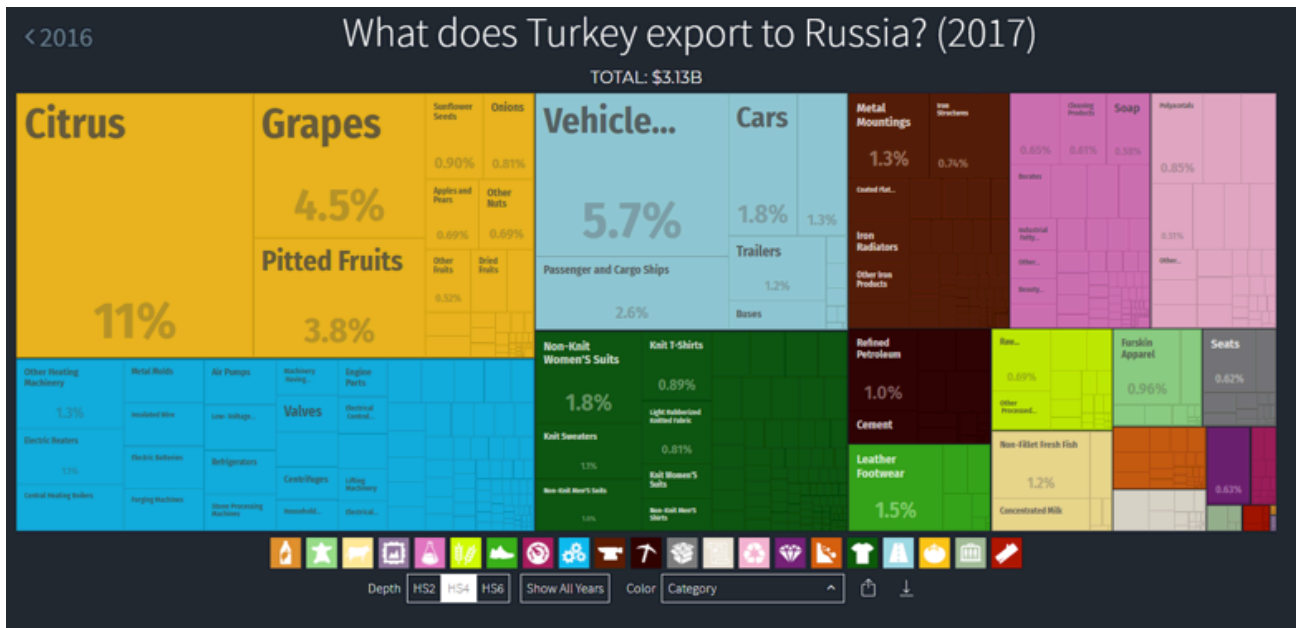


Figure 16 Turkey's exports to Russia

Among others, Russia has been an important trading partner for Turkey during the period, with average Turkish export VA greater than in the much larger United States (7.5%). At 7.9% the total Turkish VA in Russian final demand is in fact larger than for any trading partner other than Germany (11.1%), on average between 2005-2015. It should be

noted that the impact of the deterioration of the value of the Russian Ruble or the diplomatic crisis surrounding the downing of the Russian jet by Turkey in late 2014 have little impact on average Turkish export VA or the 10-year trend growth in Turkish export VA in this period.

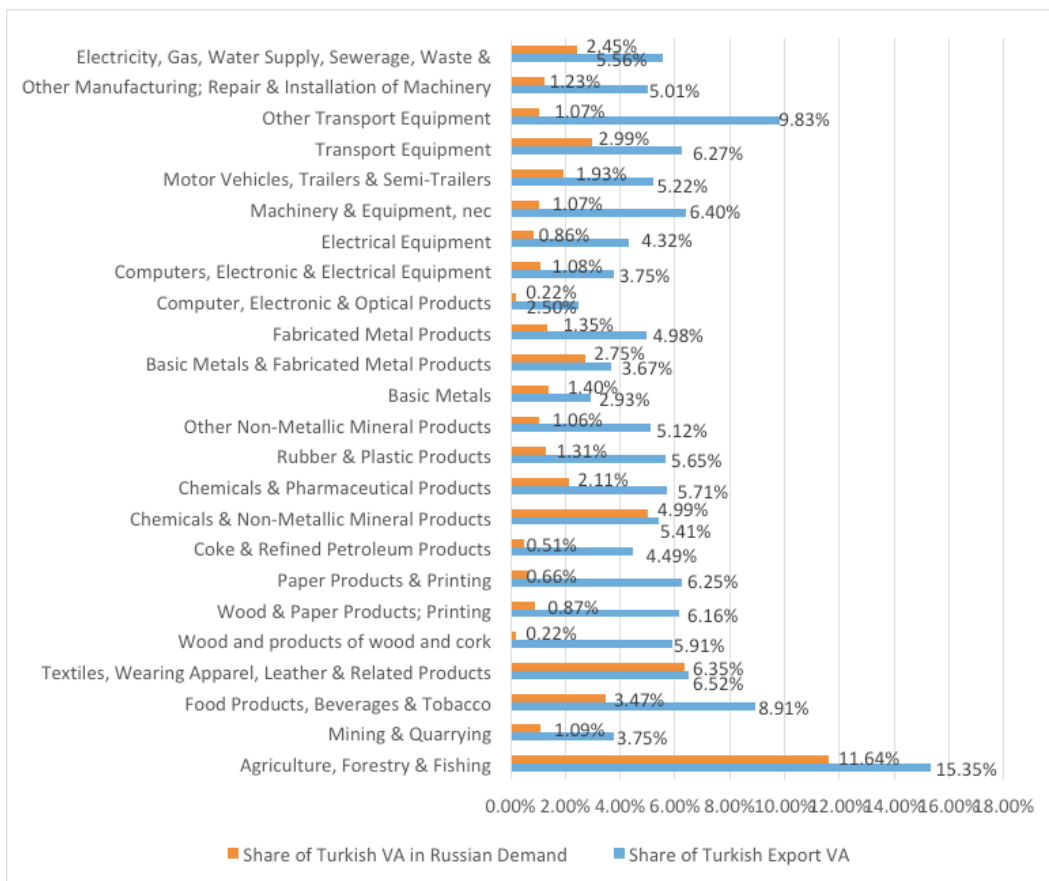


Figure 17 Russia : Shares of Turkish export VA : Industry subsectors

Turkish sectoral VA exports to Russia are quite diversified, with agricultural and food products making up significantly larger share than in Turkish export VA to other countries. Turkish exports of agricultural value added to Russia specifically accounts for 11.6% of all Turkish export VA in Russian final demand and 15.4% of all Turkish agricultural VA exports. However, it is in a number of service subsectors that the Russian market is particularly important for Turkish exporters. A full 18.7% of Turkish exports of value added in accommodation and food service are ultimately purchased

by Russians. In the subsectors of arts, entertainment & recreation, real estate activities and telecommunications the Russian market also accounts for more than 10% of Turkish VA exports. The Russian market is relatively less important for Turkish exporters as concerns VA from the largest service subsectors: wholesale, retail, transportation and storage. However, along with accommodation and food service these subsectors do represent the largest amount of exported Turkish VA.

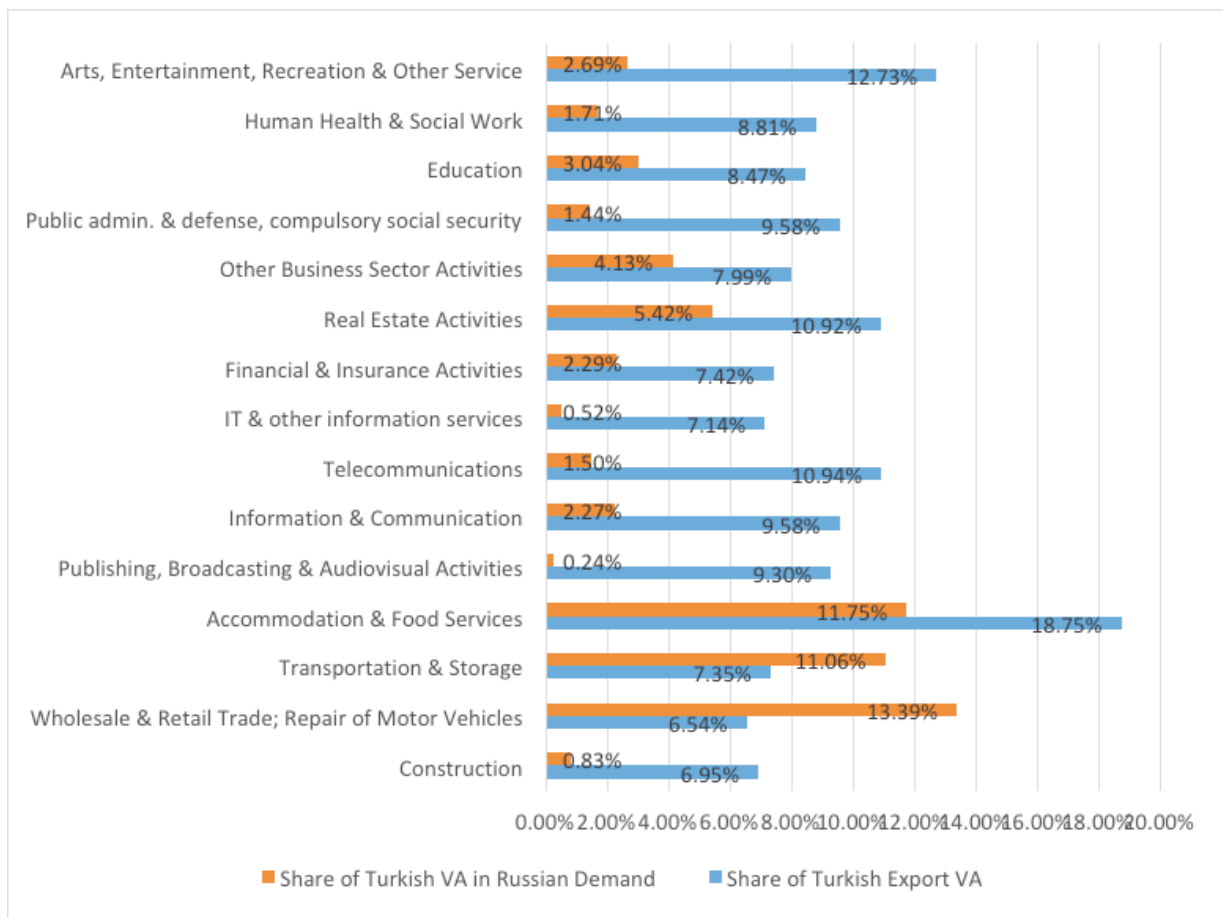


Figure 18 Shares of Turkish export VA : service industries

Interestingly, during the period of 2005-2015, among industry subsectors the most rapid growth in Turkish export VA for Russian final demand was found in exports of machinery VA. Turkish VA exports of transport equipment and mining products have shown a negative trend growth rate while exports of motor vehicles have been surprisingly flat. Exports of Turkish VA to Russia from old industries such as textiles and apparel, metals and metal products, wood products and have shown a trend growth rate substantially faster than Turkish VA overall, though the trend

growth in Turkish industrial VA exports to Russia is slightly diminished by the importance of slow-growing agricultural exports. Among service subsectors, Turkish VA exports of telecommunications and real estate services to Russia have grown slowly as with other markets, in spite of the relative importance of the Russian market to these Turkish sectors. However, most service subsectors have seen robust trend growth in Turkish VA exports to Russia during the period 2005-2015 including the critically important accommodation and food service subsector.

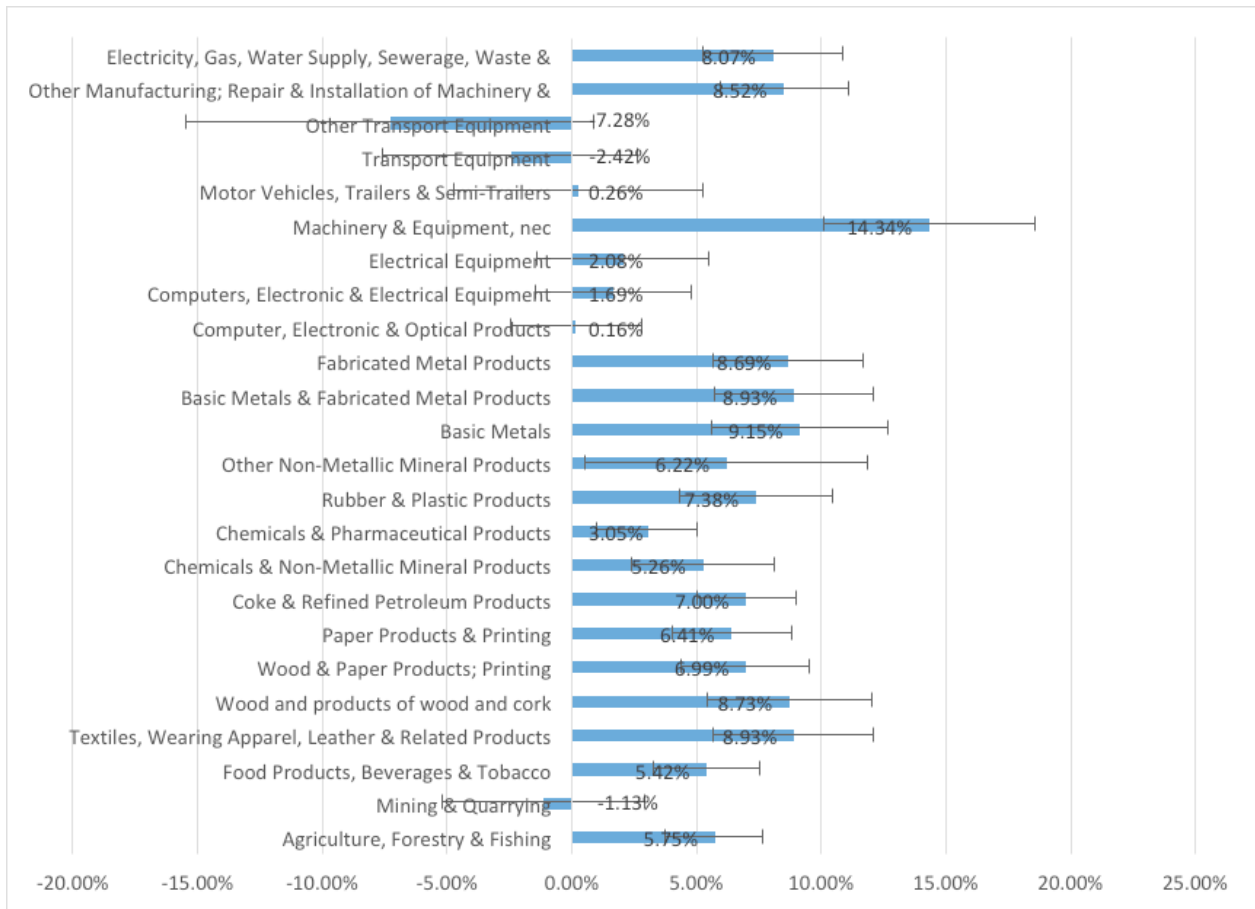


Figure 19 Russia : Shares of Turkish export VA : Industry subsectors with standard deviation estimates

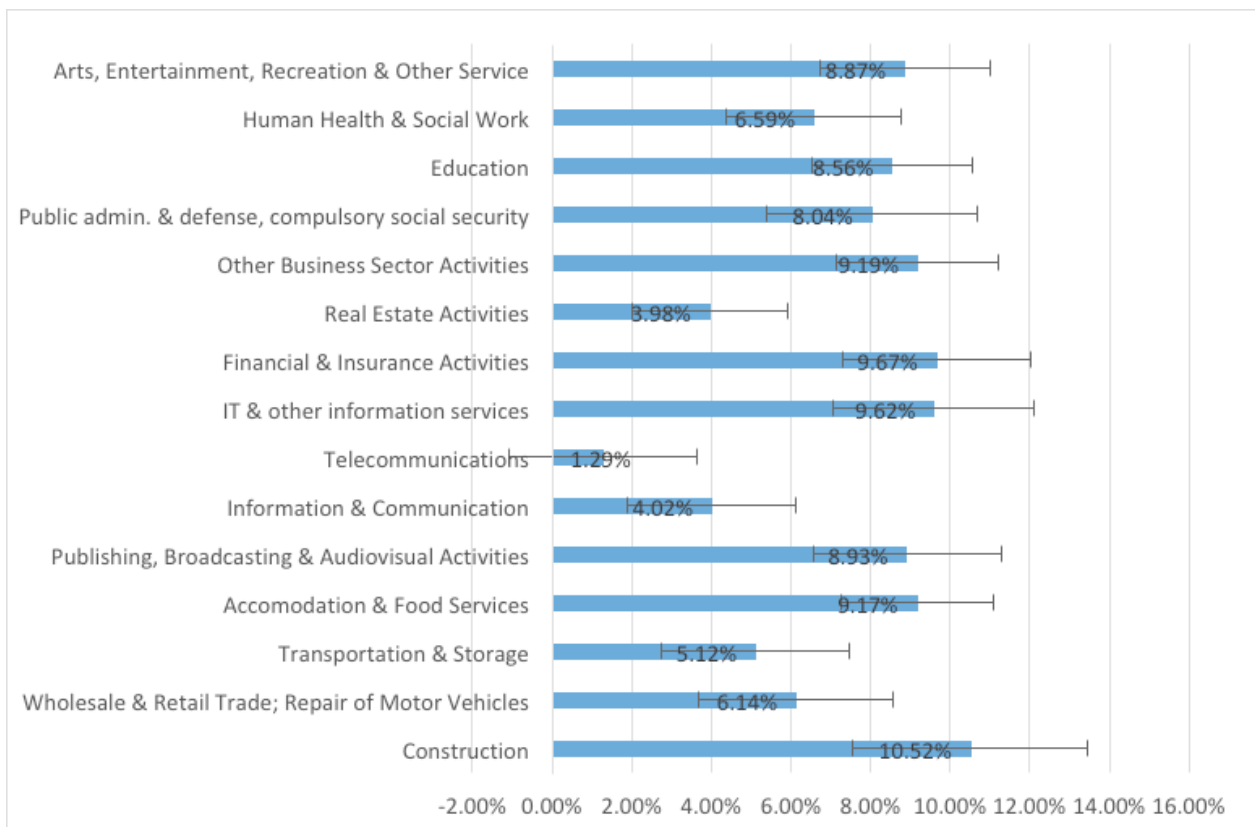


Figure 20 Shares of Turkish export VA : Service industries with standard deviation estimates

c. Clustering final destinations for Turkish exports in VA

Finally, we employed a K-means clustering methodology in order to identify groups of destination countries that exhibit similar patterns in the level and trend of Turkish export value added share across sectors. Such a clustering can be used in developing more sophisticated VA-based export strategies in the future. K-means clustering works through the partition of n observations into k clusters in which each observation belongs to the cluster with the closest mean which serves as a prototype of the cluster. The variables used in the clustering are (1) trend growth rates and (2) average VA for all country-industry pairs. Four clusters came out of the analysis which can easily be labelled as low-growth, moderate-growth and high-growth country groupings and also the group of “Most Important Trading Partners” of Turkey. Interestingly, only for Turkey’s largest trading partners are the average VAs important enough to

drive the clustering. Turkey should continue giving special status to relations with France, Germany, Great Britain, Russia, and the United States of America, and consider developing a more sophisticated and well-tailored VA-based export promotion strategy for this group of countries.

For all other countries, where average VA is relatively small overall, clustering is driven by variation in trend growth rates. As seen in Figure 18 there is very little overlap on the plot (which is only the totals) because growth rates between subsectors are correlated. In other words, if Turkish VA exports in one subsector to Argentina are growing other subsectors are probably also growing. For policymakers, this suggests a focus on overall bilateral trading relationships, particularly with fast-growing economies, as opposed to a focus on trade treatment and promotion of narrow sectors.

Cluster	Members
Low-growth	Brunei, Bulgaria, Croatia, Cyprus, Denmark, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Portugal, Romania, Slovenia, Spain
Moderate-growth	Australia, Austria, Belgium, Canada, Chile, Czech Republic, Estonia, Finland, Iceland, India, Indonesia, Israel, Japan, Kazakhstan, Malta, Mexico, New Zealand, Norway, Poland, Singapore, Slovakia, South Korea, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Vietnam
High-growth	Argentina, Brazil, Cambodia, China, Colombia, Costa Rica, Hong Kong, Malaysia, Morocco, Peru, Philippines, Saudi Arabia
Most Important Trading Partners	France, Germany, Great Britain, Rest-of-World, Russia, United States of America

Table 4 Country clustering by members

Country Clustering by subsector Average VA and VA Growth

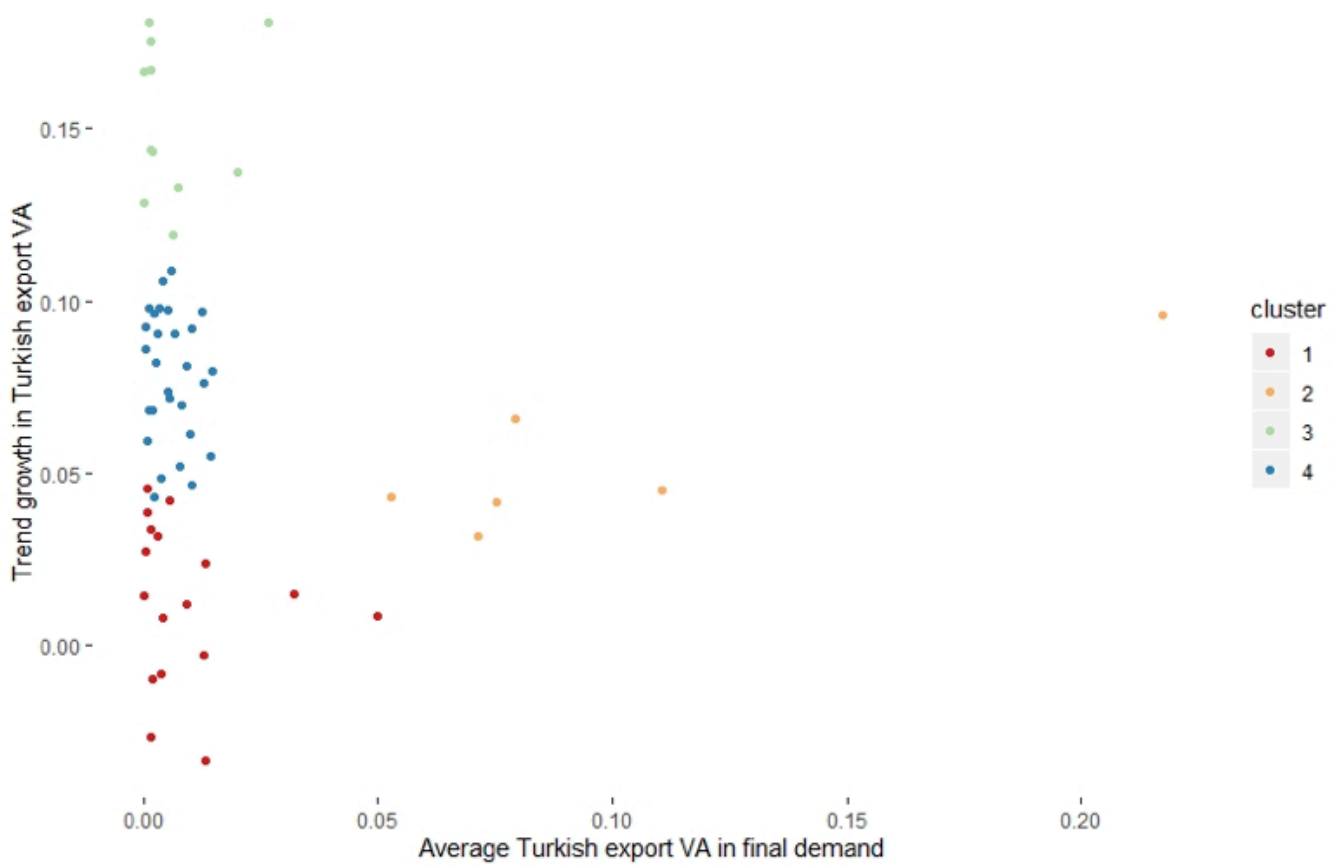


Figure 21 Country clustering by subsector Average VA and VA Growth

IV. Conclusion, highlights and policy recommendations

The 2023 Turkey Export Strategy and Action Plan, which set the target of reaching a value of 500 billion USD in exports by the year 2023, has clearly failed to boost Turkey's exports which had reached only a level of 168 billion USD by the end of 2018. Turkey's export promotion strategy and action plans have been prepared upon a conventional reading of the country's sectoral competitiveness and trade relations with its partners. Although market diversification through promoting trade with neighboring and surrounding countries has been partially fruitful, a mechanical approach to sector-based export promotion and a binary understanding of target destinations as high and low priority countries do not produce meaningful outcomes. It is our understanding that the new world of GVCs has arisen with a complex set of production, distribution, and consumption dynamics which would require a more nuanced approach to understanding trade relations between countries than looking at gross trade figures of countries. The new world of GVCs also calls for more sophisticated strategies for enhancing export competitiveness which is possible only through increasing and upgrading the countries' GVC participation in world markets. In this context, this study can be considered one of the earliest contributions to understanding Turkey's export dynamics from a different, value-added angle, rather than conventional statistics based on gross cross-border trade figures.

We believe that within GVCs Turkey will see strong export value added growth when focusing on promoting and developing sectors in which Turkey can take higher value-added stages of production and in which Turkish intermediate goods exports allow greater access to global markets for Turkish value added through foreign channels. Our analysis is based on estimates of national value added embedded in exports, rather than sectoral value added per se. In our analysis, a sector which makes use of inputs produced in Turkey has been considered high value added while those which make use of imported inputs will not. In this regard, instead of Turkey's cross-border trade figures based upon final goods and their primary trade destinations we looked into trends in the value added (VA) content of Turkish exports and their final destinations between 2005-2015 with a focus on and beyond the forward participation of Turkey. We have analyzed (1) "average VA share" for trading partners and for individual sectors, (2) "VA growth share", which is the contribution made to total Turkish export VA growth both for individual sectors and trading

partners and (3) the time "trend growth" in Turkish VA exports, expressed relative to average Turkish export VA over that period as a growth rate. We evaluate trend growth over the time period rather than average growth over the time period in order to give a stable growth estimate that would minimize the impact on the estimate of noisy annual data and the choice of starting and ending points. Policymakers can assess the performance of specific partners and industries in producing VA for export over the time span using trend growth in much the same way as an average growth rate. We suggest that high growth sectors are worthy of greater focus and promotion.

In creating value Turkey performs well above the world average

Our primary finding is the fact that Turkey has clearly performed better than world average in terms of creating value for final demand in other countries. Turkey's trend growth in exported VA for service and industry were quite similar at 6.4% and 6.3% respectively. These rates were well above the overall world growth trend which was 4.6%, and world growth trend for services (4.3%) and for industry (5.0%). On the other hand, Turkish exported VA is relatively diversified and not dominated by any one subsector. With an average VA share of 54% Turkey's service sector takes a major part of the total VA in foreign countries' final demand, while the lion's share of the remaining 46% is represented by manufacturing at 34.5%. The remaining 11.5% is a combination of agriculture, utilities and mining. This finding supports earlier research suggesting that services are essential to the competitiveness of Turkey's goods exports.

Services are critical to Turkey's export competitiveness

It is abundantly clear that service sectors contribute substantially more to Turkish export VA, and hence the Turkish economy, than gross trade figures would suggest. Since this difference comes from service sector inputs used in production of export goods by other sectors, this suggests that policymakers should focus on the trade treatment of gross final and intermediate goods exports but also on the competitiveness of domestic business services sectors. The Turkish trade policy community should begin to consider preparation of serious strategies to measure and improve the competitiveness of Turkish service industries in foreign trade terms. Services were

not even mentioned in the 2023 Turkey Export Strategy and Action Plan and currently Turkey does not have any strategy or action plans to enhance competitiveness of its services. Services have not been considered from the angle of export competitiveness in the 5-year national development plans. While there were committees and working groups looking into the problems of individual service sectors such as tourism or energy, no committee or working group has examined in depth the importance of services for Turkey's industrial policy strategies and for the competitiveness of Turkish exports in global markets. Besides, little is known about the comparative advantage of Turkey in specific exportable service sub-sectors. The absence of any strategy and the lack of sound analyses are surprising given that Turkey is on the verge of negotiating an expansion of its customs union with the EU to services and agriculture sectors.

Our study has produced a number of interesting findings regarding Turkish VA in foreign demand in service sectors. Within services, most Turkish VA in foreign demand is made up of business services rather than consumer services or construction. Nevertheless, construction and consumer services contribute relatively more to the trend growth of Turkish VA in foreign demand. Among service subsectors, the top categories of Turkish VA in foreign demand have been wholesale, retail trade, transportation and storage as well as other business services and accommodation and food service, which can be considered to be an engine of Turkish exports. In some service industries Turkey has performed better in VA terms than in gross trade terms. These include:

- wholesale, retail trade and repair of motor vehicles (16.23% vs. 11.35%),
 - other business services (4.09% vs. 0.67%),
 - real estate activities (3.93% vs 1%), and
 - transportation and storage (11.94% vs 9.21%),
- whereas the VA share of accommodation and food services has been below its contribution to gross exports (4.97% vs 6,77%).

Surprisingly, the most rapid rates of exported VA trend growth are for certain non-traditional subsectors with a low average share of Turkish exported VA – finance, insurance, IT services, and other business services- as well as construction. The lowest growth rates are observed for real estate services, telecommunications and information and communication services. On the other hand, between

2005 and 2015 real estate services has had a substantially higher average share of Turkish VA in foreign demand than finance and insurance at 3.9% to 2.4%. However, there has been a more rapid growth in finance and insurance, and finance and insurance have taken more than twice the share of the growth in Turkish VA in foreign demand at 3.4% to 1.4%.

In VA terms, manufacturing occupies a lesser share than it does in gross trade statistics

In Turkey's gross annual exports, the share of manufacturing has been 62% on average whereas in VA terms it takes 34.5% of Turkish VA in foreign final demand. Among non-service sectors, mining and utilities have had the highest trend growth rates while agriculture had a slower trend growth rate at only 4.9%, much lower than the world average growth, which was 7.6% over the period. Manufacturing had trend growth of 6.4% over the period – roughly the same as the service sector and Turkish export VA overall. This is well above the world average trend growth for manufacturing, which was recorded as 4.8%.

Turkish exported VA in manufacturing is relatively diversified

Conventional export industries in gross exports terms such as textiles and apparel, basic metals and metal products, and transport equipment have also been among the most important for Turkish manufacturing exports in VA terms, with the largest average shares of Turkish VA in foreign demand yet with comparatively lower contribution to Turkey's exports performance than in gross terms. While chemicals and non-metallic mineral production is the second-ranking industry in VA terms, transport equipment, motor vehicles and basic metals contribute proportionately less to Turkey's overall export performance in VA terms than in gross terms. In foreign demand trend growth transport equipment and electronics have substantially lower shares of total Turkish VA than their share of average VA in foreign demand as in the case of agriculture. In contrast, even though the metals and machinery subsectors have smaller average VA shares in foreign demand, their shares of VA trend growth are larger. Metals and machinery subsectors have been among Turkey's most rapidly growing producers of VA for export and as a result have made a substantial contribution to overall Turkish economic growth.

Within manufacturing subsectors, those that are most

rapidly growing such as wood products and machinery represent much smaller shares of average Turkish export VA than slower growing subsectors such as textiles and chemicals. Also computers and electronics have been among the slowest growing subsectors (negative, in the case of computer, electronic and optical products) during this time period.

Sectoral findings might have several policy repercussions

First of all, policymakers have a choice in exports promotion based upon VA figures: to focus on promotion of exports by Turkey's largest sectors, or to focus on those that have offered the best prior export growth performance. The first might run contrary to what would be assumed: that a focus on high-tech products rather than older industries such as textiles, apparel, chemicals, minerals and agriculture would be good for a country's export VA growth. Secondly, two key insights stand out for policymakers regarding a potential focus on high-tech vs low-tech exports: first, as young industries evolve, innovation and competition can push prices ever lower and adversely impact an exporter's revenue growth. Second, the portions of the global value chain in an industry such as computers and electronics that produce the most value added – in research, design, marketing and administration – may be concentrated in a handful of global clusters such as Silicon Valley, making the commodity manufacturing of electronics in a country such as Turkey a relatively low growth and low value added activity. In this regard, while targeting higher technology manufacturing, we would advise policy makers not to neglect stable industries, in which Turkey has some competitive advantage and is able to take a larger share of the overall value chain as these may provide greater economic benefits for Turkey.

Targeting export markets require differentiated strategies for a cluster of countries

When we look at the average of the past ten years (2005-2015), the top export markets of Turkey in gross value terms and in VA terms differ slightly. In VA terms the USA surpasses the UK, Italy is behind France and Belgium falls behind Poland etc. The change in the rankings through a VA perspective is because of positive or negative differences between the VA share of trade partners of Turkey and their gross exports average shares in percentage terms. Clearly, for Turkey some of its target markets are more important

in VA terms than in gross value terms. For instance, while Russia takes 7.66% of Turkey's gross exports, in VA terms its share is slightly higher (7.93%). Such a positive difference is more extreme in the case of the United States (1.59%) and there are visible positive differences also for the UK, France, China, Saudi Arabia and some other countries. On the other hand, there is negative difference between VA share of the EU and its gross exports average share. This difference is the proof of Turkey's strong incorporation with European value chains in that in many product categories these EU countries are not final destinations for Turkish VA and they sometimes serve as a transit bridge to other final destinations such as Russia and other countries in Asia and Americas. Since Turkish intermediate goods and services are re-exported and constitute the part of the value of the demand in final destinations that is invisible in gross statistics, policymakers should consider these revised figures in assessing how to handle relations with partners and the trade barriers that Turkish exporters face when exporting their goods and services.

The EU should be approached as a whole with a nuanced strategy

Policymakers should continue putting utmost importance to the EU in trade relations yet with a nuanced approach considering the additional fact that the EU constitutes a bridge for Turkey to indirectly access more difficult markets such as Russia and China. It should also be reiterated that Turkey is relatively well integrated into pan-European value chains as well as being a customs union member, and as a result is not particularly dependent on relationships with individual countries but rather the region as a whole. Considering the transit role of the EU for Turkey in reaching out to farther final destinations and Turkey's deep integration with the European value chains it would be appropriate to develop more sophisticated strategies for export promotion to and through the EU as a whole rather than its individual members.

We found that over the period 2005-2015 on average (at least) 54.5% of Turkish export VA went to European countries, with almost 44.7% going to EU member states and 9.8% going to non-EU European countries such as Russia. The North American, Central & South American and East & Southeast Asian regions each account for less than 10% of total Turkish export VA. However, the EU overall contributed only 22.7% of the trend growth in Turkish export VA over the period of 2005-2015 versus 44.7% of

average Turkish export VA. This is because during the time period a series of crises around the Greek financial downturn weighed heavily on the economies of the EU.

Turkish export VA in final demand in Greece has decreased over the time period, and also in Portugal, Cyprus, Romania and Croatia while growth has been very slow in Italy, Spain, Ireland, Bulgaria and the Netherlands. Among the only EU member states to contribute more to trend growth in Turkish VA than to average Turkish export VA are 3 of the 4 Visegrad countries; Poland, Slovakia and the Czech Republic.

Economic size matters in closer geographies

Our overall regression results suggested that average Turkish VA in final demand has a positive relationship with the economic size, population, per capita income as well as the ratio of services to GDP of the partner economy. There seems to be a negative association between the average Turkish VA in final demand and distance and manufacturing value added within gross GDP of a given country. The partner country's budget balance does not seem to have a significant relationship with average Turkish VA. Finally, membership to the EU-28 seems to have a negative relationship when it is regressed together with EU-15 membership which has a positive relationship.

The UK may deserve special attention in export strategies

Even though average Turkish export VA in final demand is determined roughly proportionally with the size of the economy one minor caveat would be the cases of the UK and France. The British market has been substantially more important than the French one for Turkish VA exports in spite of their equivalent size, perhaps due to British trade deficits. Turkish policymakers might consider specific strategies for the UK, especially for the post-Brexit era, considering its importance in VA terms.

Distance matters more for non-EU trade partners

Growth in Turkish export VA can be volatile, particularly for small and distant countries and those with major economic shocks during the period. In contrast with EU member states, average Turkish export VA in final demand does not progress as predictably with the size of non-EU countries' economies but rather with distance. In terms of average

Turkish export VA, Asian and South and Central American countries tend to demand much less Turkish VA than their size would suggest. The highest growth rates are found in East and Southeast Asia and South and Central America as well as certain key Middle Eastern markets such as Saudi Arabia. This is likely attributable both to higher overall economic growth rates in these countries during this period compared to Turkey's European trading partners and also to a conscious outreach to untapped markets by Turkish exporters during this period. In other words, Turkey's export market diversification strategies seem to have yielded significant fruits when measuring trade in VA terms.

Russia is most important non-EU trade partner

The most important final demand market for Turkey among non-EU countries over the period 2005-2015 has been Russia in spite of the much larger economies of the United States, Japan or China. Despite existing barriers to Turkish exports to Russia and the lack of a bilateral preferential trade agreement Turkey is able to transfer a proportionally higher ratio of VA to Russia than its gross export figures suggest. It is highly probable that Turkey exports VA to Russia via intermediate goods and services exports to the EU and other transit countries.

Export country targeting can use clustering rather than a binary approach

Clustering can be used in developing more sophisticated VA-based export strategies in the future. We employed a K-means clustering methodology in order to identify groups of destination countries that exhibit similar patterns in the level and trend of Turkish export value added share across sectors. Four clusters came out of the analysis which can easily be labelled as low-growth, moderate-growth and high-growth country groupings and also the group of "Most Important Trading Partners" of Turkey. Interestingly, only for Turkey's largest trading partners are the average VAs important enough to drive the clustering. Therefore it is our recommendation that Turkey should continue giving special status to relations in particular with France, Germany, Great Britain, Russia, and the United States of America aside from the EU as a whole. Policymakers should consider developing a more sophisticated and well-tailored VA-based export promotion strategy for this group of countries.

For all other countries, where average VA is relatively small overall, clustering is driven by variation in trend growth rates. In other words, if Turkish VA exports in one subsector to Argentina are growing other subsectors are probably also growing. For policymakers, this suggests a focus on overall bilateral trading relationships, particularly with fast-growing economies, as opposed to a focus on trade treatment and promotion of narrow sectors.

A more holistic approach to export and FDI promotion is needed

As an epilogue, it should be reiterated that our study

focused on Turkey's forward participation in GVCs. Policymakers should consider backward participation as well in developing a more sophisticated set of trade strategies. Since GVC participation is through imports as well as exports and through inward and outward foreign direct investment (FDI) a more holistic approach to export and FDI promotion is needed. Such a holistic approach will call for enhanced coordination between government bodies responsible of trade, industry, and foreign direct investment.

Appendix

A. Comparative Table for Trend Growth, Average Value-Added Share and Value-Added Growth Shares of the World and Turkey and final demand markets

Final demand market	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
Asia-Pacific Economic Cooperation	5.3%	56.3%	64.2%	7.7%	24.0%	29.2%
Argentina	11.2%	0.6%	1.5%	14.3%	0.2%	0.4%
Association of South East Asian Nations	9.1%	2.7%	5.3%	10.8%	1.5%	2.5%
Australia	6.5%	1.8%	2.6%	9.1%	0.7%	1.0%
Austria	2.0%	0.6%	0.2%	4.7%	1.0%	0.8%
Belgium	2.1%	0.7%	0.3%	5.5%	1.4%	1.2%
Bulgaria	2.5%	0.1%	0.0%	1.2%	0.9%	0.2%
Brazil	8.0%	2.7%	4.8%	13.3%	0.7%	1.5%
Brunei	4.8%	0.0%	0.0%	1.5%	0.0%	0.0%
Canada	4.0%	2.4%	2.1%	8.1%	0.9%	1.2%
Switzerland	5.2%	0.8%	0.9%	9.2%	1.0%	1.5%
Chile	8.2%	0.3%	0.5%	6.8%	0.2%	0.2%
China	14.9%	9.4%	30.2%	18.1%	2.7%	7.6%
Colombia	8.5%	0.4%	0.8%	16.7%	0.2%	0.4%
Costa Rica	9.5%	0.1%	0.1%	16.7%	0.0%	0.1%
Cyprus	-0.1%	0.0%	0.0%	-2.7%	0.2%	-0.1%
Czech Republic	1.8%	0.3%	0.1%	7.4%	0.5%	0.6%
Germany	1.7%	4.8%	1.8%	4.5%	11.1%	7.8%
Denmark	1.3%	0.4%	0.1%	4.2%	0.5%	0.4%
Euro Area 12	0.7%	17.9%	2.7%	3.1%	30.8%	14.9%
Euro Area 19	0.7%	18.3%	2.9%	3.1%	31.6%	15.5%
East Asia	7.9%	20.2%	34.4%	13.8%	4.6%	10.0%
Spain	-1.1%	2.1%	-0.5%	1.5%	3.2%	0.8%

Final demand market	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
Estonia	2.6%	0.0%	0.0%	5.9%	0.1%	0.1%
EU 13	2.1%	2.0%	0.9%	3.7%	5.5%	3.2%
EU 15	0.8%	23.2%	3.8%	3.2%	39.2%	19.5%
EU 28	0.9%	25.2%	4.7%	3.2%	44.7%	22.7%
Finland	2.1%	0.4%	0.2%	4.8%	0.4%	0.3%
France	1.4%	4.0%	1.2%	4.3%	5.3%	3.6%
G20	4.2%	86.3%	77.7%	*	*	*
Great Britain	0.5%	4.2%	0.5%	3.2%	7.1%	3.6%
Greece	-3.9%	0.4%	-0.4%	-3.4%	1.3%	-0.7%
Hong Kong	6.5%	0.4%	0.5%	14.4%	0.1%	0.3%
Croatia	-0.8%	0.1%	0.0%	-1.0%	0.2%	0.0%
Hungary	-0.5%	0.2%	0.0%	3.1%	0.3%	0.1%
Indonesia	9.9%	1.0%	2.2%	9.7%	0.5%	0.8%
India	8.4%	2.5%	4.4%	9.7%	1.2%	1.9%
Ireland	-0.6%	0.3%	0.0%	0.8%	0.4%	0.1%
Iceland	-3.5%	0.0%	0.0%	9.2%	0.0%	0.1%
Israel	7.1%	0.4%	0.5%	7.6%	1.3%	1.5%
Italy	-0.4%	3.1%	-0.2%	0.9%	5.0%	0.7%
Japan	1.1%	8.1%	1.9%	6.1%	1.0%	0.9%
Kazakhstan	10.9%	0.2%	0.5%	7.2%	0.6%	0.6%
Cambodia	9.6%	0.0%	0.0%	12.9%	0.0%	0.0%
South Korea	3.7%	1.7%	1.3%	10.9%	0.6%	1.0%
Lithuania	2.5%	0.1%	0.0%	4.6%	0.1%	0.1%
Luxembourg	3.6%	0.1%	0.0%	2.7%	0.0%	0.0%
Latvia	0.8%	0.0%	0.0%	3.8%	0.1%	0.0%
Morocco	5.3%	0.2%	0.2%	11.9%	0.6%	1.2%
Mexico	3.2%	1.7%	1.2%	10.6%	0.4%	0.7%

Final demand market	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
Malta	3.3%	0.0%	0.0%	8.6%	0.1%	0.1%
Malaysia	8.9%	0.3%	0.7%	14.3%	0.2%	0.4%
Netherlands	1.0%	1.2%	0.2%	2.4%	1.3%	0.5%
Non-OECD	10.0%	31.6%	68.0%	9.3%	43.3%	63.3%
Norway	4.3%	0.6%	0.5%	7.0%	0.8%	0.9%
New Zealand	5.5%	0.2%	0.3%	6.8%	0.1%	0.1%
OECD	2.2%	68.4%	32.0%	*	*	*
Peru	10.4%	0.2%	0.5%	18.1%	0.1%	0.4%
Phillipines	10.0%	0.3%	0.7%	17.5%	0.1%	0.4%
Poland	3.2%	0.7%	0.5%	7.9%	1.5%	1.8%
Portugal	-1.2%	0.4%	-0.1%	-0.8%	0.4%	0.0%
Romania	2.3%	0.3%	0.1%	-0.3%	1.3%	-0.1%
Rest-of-World	8.2%	7.6%	13.5%	9.6%	21.7%	32.8%
Russia	6.6%	2.3%	3.2%	6.6%	7.9%	8.2%
Saudi Arabia	10.4%	0.7%	1.6%	13.7%	2.0%	4.3%
Singapore	8.7%	0.3%	0.5%	9.6%	0.2%	0.3%
Slovakia	4.0%	0.1%	0.1%	8.2%	0.2%	0.3%
Slovenia	0.1%	0.1%	0.0%	3.4%	0.2%	0.1%
Sweden	3.5%	0.7%	0.5%	5.2%	0.8%	0.6%
Thailand	6.9%	0.5%	0.7%	9.0%	0.3%	0.4%
Tunisia	3.9%	0.1%	0.1%	9.8%	0.3%	0.5%
Turkey	5.5%	1.2%	1.4%	*	*	*
Taiwan	3.0%	0.6%	0.4%	4.3%	0.2%	0.2%
United States of America	2.7%	24.6%	14.3%	4.2%	7.5%	5.0%
Vietnam	10.2%	0.2%	0.4%	9.8%	0.1%	0.2%
World	4.6%	100.0%	100.0%	*	*	*
South Africa	3.2%	0.5%	0.3%	4.5%	0.5%	0.4%

Final demand market	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
East & Southeast Asia	8.0%	22.8%	39.7%	13.1%	6.1%	12.5%
Europe	1.5%	28.8%	9.3%	3.9%	54.6%	33.3%
North America	2.8%	28.7%	17.5%	4.9%	8.9%	6.8%
Other Regions	7.7%	15.3%	25.3%	*	*	*
South & Central America	8.7%	4.4%	8.2%	13.5%	1.4%	3.0%

B. Trend Growth, Average Value-Added Share and Value-Added Growth Share per Production Industries for the World and Turkey

production industry	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
Agriculture, Forestry & Fishing	7.6%	4.1%	6.7%	4.9%	6.0%	4.6%
Mining and Extraction of Energy Producing Products	5.6%	3.4%	4.1%	4.5%	0.6%	0.4%
Mining & Quarrying	5.9%	4.5%	5.8%	7.0%	2.3%	2.5%
Industry (Mining, Manufactures & Utilities)	5.0%	24.9%	26.6%	6.5%	40.3%	41.3%
Mining and Quarrying of Non-Energy-Producing Products	6.8%	0.8%	1.2%	7.8%	1.7%	2.1%
Mining Support Service Activities	6.8%	0.3%	0.5%	6.7%	0.0%	0.0%
Food Products, Beverages & Tobacco	5.8%	2.4%	3.0%	5.8%	3.1%	2.8%
Manufacturing	4.8%	17.8%	18.4%	6.4%	34.5%	34.5%
Textiles, Wearing Apparel, Leather & Related Products	6.6%	1.0%	1.4%	5.7%	7.7%	7.0%
Wood and products of wood and cork	3.1%	0.3%	0.2%	9.0%	0.3%	0.4%
Wood & Paper Products; Printing	2.3%	1.0%	0.5%	8.1%	1.1%	1.4%
Paper Products & Printing	2.0%	0.7%	0.3%	7.8%	0.8%	1.0%
Coke & Refined Petroleum Products	4.9%	1.1%	1.1%	6.6%	0.9%	0.9%
Chemicals & Non-Metallic Mineral Products	5.2%	4.6%	5.2%	5.8%	7.3%	6.6%
Chemicals & Pharmaceutical Products	5.6%	2.2%	2.6%	2.8%	2.9%	1.3%
Rubber & Plastic Products	4.8%	0.7%	0.7%	8.8%	1.8%	2.6%
Other Non-Metallic Mineral Products	5.0%	0.7%	0.8%	7.2%	1.6%	1.9%
Basic Metals	4.8%	1.1%	1.2%	9.1%	3.8%	5.4%
Basic Metals & Fabricated Metal Products	4.1%	2.2%	1.9%	9.1%	5.9%	8.5%
Fabricated Metal Products	3.3%	1.1%	0.7%	9.2%	2.2%	3.1%
Computer, Electronic & Optical Products	3.6%	1.6%	1.2%	-4.2%	0.7%	-0.5%
Computers, Electronic & Electrical Equipment	4.1%	2.3%	2.0%	2.4%	2.3%	0.8%
Electrical Equipment	5.0%	0.7%	0.8%	5.3%	1.6%	1.3%

production industry	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
Machinery & Equipment, nec	4.8%	1.5%	1.5%	10.9%	1.3%	2.3%
Motor Vehicles, Trailers & Semi-Trailers	4.7%	1.3%	1.3%	4.7%	2.9%	2.2%
Transport Equipment	4.7%	1.9%	1.9%	3.8%	3.8%	2.2%
Other Transport Equipment	4.8%	0.6%	0.6%	0.5%	0.9%	0.1%
Other Manufacturing; Repair & Installation of Machinery & Equipment	4.1%	0.9%	0.8%	9.1%	1.9%	2.8%
Electricity, Gas, Water Supply, Sewerage, Waste & Remediation Services	4.6%	2.5%	2.5%	7.7%	3.5%	4.2%
Construction	4.3%	5.7%	5.3%	10.4%	1.0%	1.6%
Total Services (incl. Construction)	4.3%	71.1%	66.7%	6.4%	53.7%	54.1%
Wholesale & Retail Trade; Repair of Motor Vehicles	4.5%	11.1%	10.8%	5.6%	16.2%	14.2%
Distributive Trade, Transport, Accommodation & Food Services	4.5%	18.3%	17.6%	6.2%	33.1%	32.1%
Total Business Sector Services	4.4%	46.0%	43.3%	6.2%	45.5%	44.0%
Total Services	4.3%	65.4%	61.4%	6.3%	52.7%	52.6%
Transportation & Storage	4.4%	4.7%	4.5%	6.4%	11.9%	12.0%
Accommodation & Food Services	4.5%	2.5%	2.4%	7.7%	5.0%	6.0%
Publishing, Broadcasting & Audiovisual Activities	3.1%	1.2%	0.8%	9.2%	0.2%	0.3%
Information & Communication	3.8%	4.4%	3.6%	4.0%	1.9%	1.2%
Information, Finance, Real Estate & Other Business Services	4.3%	27.7%	25.6%	6.1%	12.3%	11.8%
Telecommunications	2.6%	1.7%	1.0%	0.3%	1.1%	0.1%
IT & other information services	5.5%	1.6%	1.8%	9.3%	0.6%	0.8%
Financial & Insurance Activities	4.8%	5.7%	6.0%	9.0%	2.4%	3.4%
Real Estate Activities	4.2%	9.6%	8.7%	2.3%	3.9%	1.4%
Other Business Sector Activities	4.2%	8.0%	7.3%	9.0%	4.1%	5.8%
Public admin. & defense, compulsory social security	4.2%	6.7%	6.0%	8.1%	1.2%	1.5%
Public Admin, Defense; Education & Health	4.4%	16.5%	15.7%	7.6%	5.6%	6.6%

production industry	World			Turkey		
	Trend growth	Avg VA share	VA growth share	Trend growth	Avg VA share	VA growth share
Public Admin, Education & Health; Social & Personal Services	4.3%	19.4%	18.1%	7.5%	7.2%	8.6%
Education	4.5%	4.5%	4.4%	7.9%	2.8%	3.5%
Human Health & Social Work	4.6%	5.3%	5.2%	6.6%	1.5%	1.6%
Arts, Entertainment, Recreation & Other Service Activities	3.8%	2.6%	2.1%	7.5%	1.7%	2.0%
Other Social & Personal Services	3.9%	2.9%	2.4%	7.5%	1.7%	2.0%
Private Households with Employed Persons	4.6%	0.3%	0.3%	0.0%	0.0%	0.0%
Information Industries	3.7%	6.0%	4.8%	1.8%	2.6%	0.7%
Total	4.6%	100.0%	100.0%	6.4%	100.0%	100.0%

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