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The Export Performance of Turkey (1996-2013)

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Abstract.
The high import content of Turkish exports and the dominance of low- and medium-tech in Turkey's export basket pose a challenge to sustainable current account deficit and economic growth. In this study, we investigate the export performance of Turkey to understand the underlying causes of high current account deficit. First, we show that Turkey performs poorly compared to its competitors in terms of innovation and skills, business environment and access to finance, which are the main factors that stimulate exports. Next, we test whether improvements in these areas would contribute to the export performance of Turkish firms. We use a data set from the Productivity and the Investment Climate Survey (2005) and the Business Environment and Enterprise Performance Survey (2008, 2013), carried out by the European Bank for Reconstruction and Development and the World Bank. The results suggest that more-productive and larger firms are more likely to export. Also, innovation, inward foreign direct investment, foreign input use and better marketing boost the export probability. After a successful entry, export sales increase by productivity, size and foreign ownership. We also show that the export performance is associated with different factors for firms different in size and small- and medium-sized firms rely on trade intermediaries to export their products.
Keywords: *Export Performance, Turkey.*
JEL Classification: *F10, F14, O530.*

Özet. Türkiye'nin İhracat Performansı (1996-2013)
Türkiye ihracatının ithalata olan balımlılığı ve ihracat sepetinin düşük ve orta teknolojili ürünlerden oluşması, sürdürülebilir cari açık ve büyümenin sağlanmasının önünde engel teşkil etmektedir. Bu çalışmada, ülkenin yüksek seyreden cari açığının sebeplerini araştırmak için, Türk firmalarının ihracat performansı analiz edilmiştir. Öncelikle çeşitli veri setlerinden faydalanılarak, ihracatı teşvik eden inovasyon, işgücü becerileri, elverişli iş ortamı ve finansal hizmetlere kolay erişim gibi başlıca alanlarda, rakip ülkelere kıyasla, Türkiye'nin daha düşük bir performansa sahip olduğu gösterilmiştir. Daha sonra, yukarıda sayılan alanlarda yapılacak olan iyileştirmelerin Türk firmalarının ihracat performansını nasıl etkilediği analiz edilmiştir. Analizde, Dünya Bankası ve Avrupa İmar ve Kalkınma Bankası tarafından hazırlanan Üretkenlik ve Yatırım Ortamı Anketi (PICS (2005)) ile İş Ortamı ve Girişim Performansı Anketi (BEEPS (2008, 2013)) kullanılmıştır. Çalışmanın sonuçları büyük ölçekli, üretken, yeni ürünler geliştiren, yabancı sermaye ortaklığı olan, ithal ürün kullanan ve iyi pazarlama tekniğine sahip olan Türk firmalarının ihracat yapma olasılıklarının daha yüksek olduğunu göstermektedir. Ayrıca, büyük ölçekli, üretken ve yabancı yatırımın yüksek olduğu firmaların daha yüksek miktarlarda ihracat yaptığı ortaya konmuştur. İhracat performansını belirleyen bu faktörlerin farklı büyüklüklerdeki firmalar için farklılaştığı ve küçük ve orta ölçekli firmaların ihracat yapmak için aracı dış ticaret firmalarından yararlandığı tespit edilmiştir.
Anahtar Kelimeler: *İhracat performansı, Türkiye.*
JEL Sınıflaması: *F10, F14, O530.*

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1. Introduction

The Turkish economy has been hailed internally and externally for delivering strong outcomes since the beginning of 2000s. Synchronously, however, the Turkish economy has also been included in the "Fragile Five," with Brazil, Indonesia, India and South Africa. High inflation and slow growth rates in these countries have led to breakdown of competition and loss of foreign investors' confidence. Therefore, high current account deficits have been financed through fixed income inflows, which have left these countries' currencies vulnerable to exchange rate risk. In 2014, with an inflation rate of nine percent, a growth rate of 2.9 percent and increasing current account deficits financed mainly by the indebtedness of banks and the private sector to foreign countries, the Turkish economy maintains its risky-country status. This conundrum begets a detailed and multidimensional evaluation of the trade deficit of the Turkish economy, but by focusing solely on export performance, public authorities take a rather univariate perspective in declaring the success of the Turkish economy. A full picture requires a detailed evaluation of imports and the overall current account dynamics. As such, in this paper, we provide an investigation of not only exports but also imports and current account figures. Moreover, we take a deeper investigative step into understanding export performance.

Turkish exports have increased significantly since the change in Turkey's trade regime in the 1980s from import substitution to export-oriented growth. To a great extent, the Customs Union agreement with the European Union (EU) contributed to trade figures. From the beginning of the 2000s until the global financial crisis, the growth rate of exports remained high. As exports recover from the crisis, export growth rate is falling to pre-crisis levels. However, export recovery of has not come from structural changes that Turkey requires but from improvements in the economies of the country's trade partners. Berument et al. (2014) show that export recovery from the global financial crisis highly depends on an income upturn in countries that imports Turkish products. Saygılı and Saygılı (2011) compute not only the income elasticity but also the import and exchange rate elasticity of Turkish exports and show that both high-income elasticity and high import elasticity accompanied by decreasing exchange rate elasticity have raised the import content of Turkey's export basket. Therefore, as Turkish exports recover from the financial crisis, a rise in imports has occurred, which has also contributed to a rise in the trade deficit.

Moreover, exports as a percentage of GDP in Turkey have remained low relative to comparable countries, which suggests that exports have not been the driving force of GDP growth in Turkey. The vulnerability to trade partners' income and dependence on imports, combined with low levels of

export-to-GDP ratio, pose a high risk to the current account and deserve a deliberate discussion about the underlying reasons of poor trade performance. Therefore, this study aims to provide a comprehensive analysis of Turkey's trade performance over the recent decade and to contribute to the ongoing discussion of the country's export structure by exploiting a new data set.

The reasons behind the underperformance of exports have been investigated by several studies in the literature. Firms' engagement in export activity is found to be negatively affected by (i) lack of appropriate innovation activities to produce and export technologically advanced and high value-added products, (ii) insufficient skills for more-efficient production and better management and marketing, (iii) lack of an efficient business environment and (iv) lower export participation of small- and medium-sized enterprises (SMEs). Next, we discuss the importance of these structural factors for an economy's export performance.

First and most importantly, all factors that lead firms to become competitive in foreign markets are also factors that make a firm more productive. Micro data from developing and developed countries often show that larger and more-productive firms export more. The direct implication of Melitz's (2003) model is that larger firms with higher productivity self-select into the export market and also export more after a successful entry. Among others, Bernard and Jensen (1999) and Bernard et al. (2000) for the US, Clerides et al. (1998) for Colombia, Mexico and Morocco and Aw et al. (2000) for Taiwan provide empirical support for this hypothesis. Next, we discuss factors that enhance firm productivity and competitiveness in global markets.

Innovative activities increase firm competitiveness and enable them to overcome trade barriers. Alvarez (2007) for Chile and Harris and Moffat (2011) for the UK show that innovating firms are more likely to export. Moreover, innovation increases the turnover of existing exporters and leads to higher export intensity. Lachenmaier and Wößmann (2006) suggest that innovation increases the export share of German manufacturing firms. Basile (2001) shows that both the export propensity and intensity of Italian firms are positively related to innovative activity.

Not only the existence of innovative activity but also the type of innovation matters for firms' exporting behavior. Caldera (2010) for Spain and Becker and Egger (2013) for Germany decompose innovation into two modes: product and process. These studies find that product innovation has a larger effect on exporting. Becker and Egger (2013) interpret this finding by emphasizing the importance of an extensive margin in product space. For Belgian firms, Beveren and Vandenbussche (2009) show that it is the combination of both product and process that matters. For Turkey, Lo Turco and Maggioni (2013) find that it is product rather than process innovation that

is important. We show that this last finding prevails when using a survey data from a more recent period.

Innovation is not the only mechanism to raise the technological composition of export products; by using high-tech intermediate inputs, a firm may also increase its products' technological intensity. For developing economies like Turkey, where advanced intermediate inputs are more likely to be imported rather than produced, foreign inputs may proxy the technological content of its exported goods. Goldberg et al. (2010) report substantial gains from imported inputs on domestic output growth. They show that input tariff liberalization in India reduced the technological constraints of domestic firms. A recent study by Feng et al. (2012) shows that technology embedded in intermediate inputs helps Chinese firms improve their export performance. Correa et al. (2011) also provide empirical support for the positive relationship between export propensity and intensity with imported inputs in Ecuador.

Firms with higher human capital and/or higher investment in training become more competitive and are more likely to overcome trade barriers. Alvarez (2007) suggests that higher human capital is associated with a higher probability of exporting in the Chilean manufacturing industry. Harris and Moffat (2011) take a different point of view and show that higher human capital increases the probability of exporting via its complementarity with innovative activities.

Easier access to credit is essential for a trade-friendly business environment. Caggese and Cuñat (2013) show that eliminating financial constraints significantly improves firms' export performance in Spain. Access to credit is particularly important for SMEs' export behavior. The literature shows that smaller firms that cannot overcome trade costs are more likely to export indirectly through trade intermediaries. The relationship between direct exports and size is modeled by Ahn et al. (2011). Abel and Koch (2013) test this theoretical finding using the 2005 "Productivity and the Investment Climate Private Enterprise Survey" for Turkey and find that larger firms have a lower indirect export intensity. We expand their analysis by using data from the same survey for 2005, 2008 and 2013 to evaluate different aspects of credit access for SMEs.[1]

Improvements in the business environment not only enhance exports but also play a major role in attracting foreign direct investment (FDI) inflows. It is well known that multinationals have better foreign market knowledge and more advanced technology and they are more likely to become exporters and to realize higher export sales. Therefore, inward FDI promotes exports of the host country. Girma (2005) shows that this is the case for the UK

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1 Our methodology differs from Abel and Koch (2013) as well. We discuss this issue when we present the results of the analysis.

manufacturing industry, and many other studies show similar results for other countries.

In this study, first we show that Turkey lags behind its competitors in these areas by exploiting macro-level data. Then, by using firm-level survey data, we investigate how improvements in these fields would enhance the export performance of Turkish firms. The main findings of the survey analysis are as follows: More productive and larger firms are more likely to export. Also, product innovation, inward FDI, foreign input use, better access to finance, having an internationally recognized certification and having a website boost the probability of Turkish firms exporting. After a successful entry, being more productive and larger in size and undertaking innovation activity increase export sales. These results prevail for firms of different sizes. Moreover, we investigate the role of trade intermediaries for Turkish exporting firms and the results show that smaller and less-productive firms require these intermediary firms in order for them to start exporting.

In Section 2 we provide descriptive statistics for Turkey's trade performance and current account deficit and compare Turkey's trade figures and infrastructure of with its global counterparts. Hence, the aim of the section is to discuss the shortcomings of Turkey's infrastructural capacity that limit the country's trade performance. In Section 3, we explain the data and methodology used for the firm-level analysis. In Section 4, we discuss how eliminating these limitations improve the export performance of Turkish firms. We conclude with policy suggestions in Section 5.

2. Turkey's Trade Performance

The period of Turkish economy after 2000 cannot be evaluated as monolithic, neither in the evaluation of economic performance nor in the extent of the economic reforms undertaken. As detailed in Gürkaynak and Sayek (2013), 2002 through 2006 was a period of strong economic reforms and outcomes mostly due to an internalized IMF program. While the IMF program ended on paper in 2008, the reform checklist actually ended in 2006, and more important, was never replaced with a new set of internally consistent economic reform programs. This fact motivates the need to analyze the 2000s in two episodes: 2002 through 2006 and 2007 onwards.

Any analysis of the Turkish economy's trade performance necessitates taking into account the relationship with the EU. The 1996 Turkey-EU customs union has been a significant factor influencing the trade performance of the Turkish economy.[2] The same period was also marked by significant global events that played a prominent role in the evolution of trade patterns in

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2 Another landmark date is 2004, when Turkey started EU membership negotiations. However, this date has been more influential on capital flows rather than on trade patterns per se.

Turkey. A break in the willingness of local authorities to undertake economic reforms in 2007 also coincided with the changing global conditions. While the average world GDP growth rate of above three percent and the average world import growth rate of almost 7.5 percent experienced in the early 2000s contributed positively to the trade figures of many countries, including Turkey, the slowdown following the 2008 global financial crisis brought about a new challenge for Turkish exporters.

As such, any trade performance of the Turkish economy should be evaluated across these four periods: 1990-1996, 1997-2001, 2002-2006 and 2007-2013. Several trade indicators over these episodes are summarized in Table 1. The share of exports in GDP has risen steadily throughout the 1990s and 2000s. From a level of 10.8 percent on average in the early 1990s, the share increased to 12.2 in the second half of the 1990s, to 15.8 percent in the early 2000s and up to 17.4 percent since 2007. While the share in GDP shows a steady increase, export growth performance is reflective of the change in intensity of economic reforms undertaken by the public authorities. Up until the customs union, exports grew at an annual rate of 8.7 percent, which then dropped to 3.6 percent during the latter half of the 1990s – a period marked by several consecutive domestically grown economic crises. The period of stellar export growth coincides, not surprisingly, with the period of domestic reforms and steady global growth. The annual export growth rate rose to 18.9 percent during the first half of the 2000s. The abrupt break in economic reforms, accompanied by a slowdown in world markets led to a halting drop in the export growth rate, down to five percent per annum. This slowdown has led to public authorities recently revising their 2023 targets from 500 billion USD worth of exports to a mere 200 billion USD.

Table-1: Trade Balance 1990-2013

	1990-2013	1990-1996	1997-2001	2002-2006	2007-2013
Trade Balance (billion $)	-36.38	-11.24	-18.42	-33.86	-76.15
Exports/GDP	14.04	10.76	12.20	15.77	17.39
Imports/GDP	22.43	17.61	20.14	24.17	27.64
Exports/Imports	62.74	61.54	60.97	65.41	63.30
X-M/GDP	-8.39	-6.85	-7.94	-8.41	-10.25
X+M/GDP	36.46	28.37	32.34	39.94	45.03
Exports (CAGR)	10.80	8.69	3.60	18.86	5.09
Imports (CAGR)	10.62	10.06	-3.14	22.04	5.76
Nominal GDP growth (CAGR)	7.37	2.81	0.83	17.96	3.41

Source: TurkStat database and authors' own calculations.

Imports have had slightly higher growth rates than exports but have followed a similar trend, which is consistent with the argument that Turkish exports have a high import content. Imports as a share of GDP increased by four percent in the 2002-2006 period and by 7.5 percent in the 2007-2013

period, a change from 20 percent between 1990 and 2001. The compounded annual growth rate of the change in imports was below 10 percent between 1990 and 2001. This growth rate increased to almost 19 percent in the 2002-2006 period, and came back to five percent after 2007. Since there have been no structural reforms undertaken to decrease the import dependency of production, this slowdown in imports is reflective of a slow recovery from the global financial crisis.

As a result of growing exports and imports, openness to trade in Turkey increased steadily from 1996 to 2013. However, import coverage of exports remained below 65 percent throughout this period, which has led to an accumulation of a trade deficit over the years. The average trade deficit was around 36 billion USD between 1990 and 2013. Between 2007 and 2013, Turkey realized the highest average trade deficit (76 billion dollars). The trade-deficit-to-GDP ratio remained below 10 percent before 2007, however, on average, it increased to 10.25 percent between 2007 and 2013.

To suggest policies that would enhance exports and restrain growing the current account deficit, we need to conduct a deeper investigation of Turkish trade performance. We start with discovering the technological capacity of Turkish exports and imports. We group both export and import products according to the OECD's technological intensity classification, presented in Table 2. Figure-1 shows that the technological intensity of Turkish exports has gone through a structural transformation since 1996. While low-tech exports' share in total exports fell from 60 percent in 1997 to 30 percent in 2013, the share of medium-tech exports rose from 40 percent to almost 65 percent in the same period. Although Turkey has upgraded its export basket toward more technological products, high-tech exports still constitute a smaller fraction of total exports, with a share lower than 10 percent throughout the period. It is also worthwhile to note that this small fraction of high-tech exports dropped even below that share in 1997. This picture suggests that Turkey lacks structural reforms and the capacity to change the technological content of its exports toward high-tech products.

Table-2: OECD Technological Intensity Classification by ISIC Rev.3

ISIC, Rev.3	Technological Intensity	Industry name
15	Low-tech	Food products and beverages
16	Low-tech	Tobacco products
17	Low-tech	Textiles
18	Low-tech	Wearing apparel
19	Low-tech	Luggage, saddlery and footwear
20	Low-tech	Wood and cork products
21	Low-tech	Paper and paper products
22	Low-tech	Printing and publishing
36	Low-tech	Furniture
23	Medium-low–tech	Coke, petroleum products and nuclear fuel
25	Medium-low–tech	Rubber and plastic products
26	Medium-low–tech	Other non-metallic minerals
27	Medium-low–tech	Manufacture of basic metals
28	Medium-low–tech	Manufacture of fabricated metal products (excl. machinery)
351	Medium-low–tech	Ships, boats and floating structures
24 (except 2423)	Medium-high–tech	Chemicals and chemical products (except pharm.)
35 (except 351 and 353)	Medium-high–tech	Other transport (except ships, air and space)
29	Medium-high–tech	Manufacture of machinery and equipment
31	Medium-high–tech	Electrical machinery and apparatus
34	Medium-high–tech	Motor vehicles and trailers
2423	High-tech	Pharmaceutical products
353	High-tech	Aircraft and parts thereof
30	High-tech	Office, accounting and computing machinery
32	High-tech	Communication and apparatus
33	High-tech	Medical, precision and optical instruments, watches

Source: OECD technological intensity classification according to ISIC Rev. 3.

Figure-1: Exports by Technological Intensity
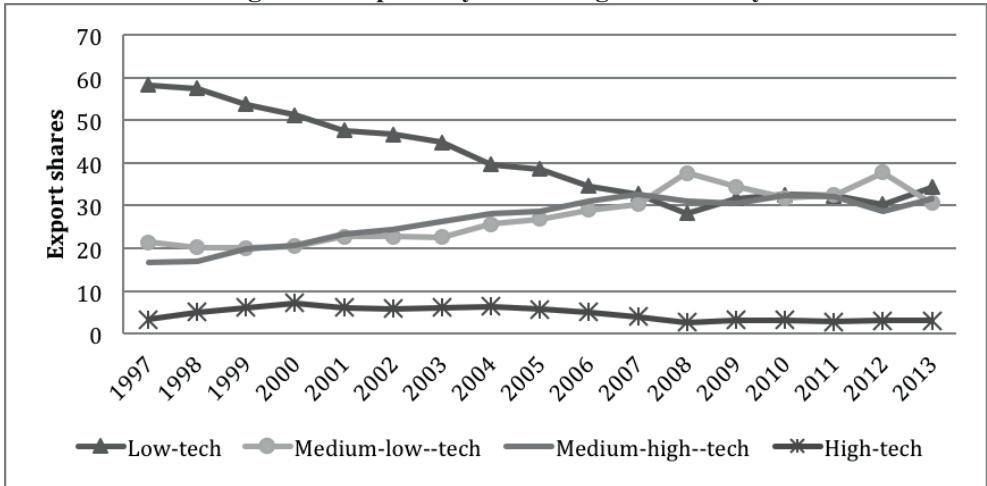
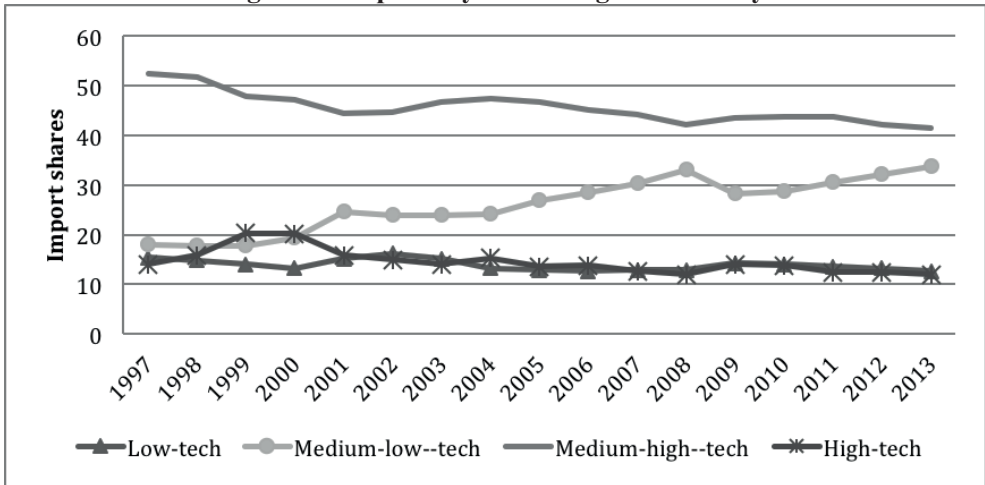Source: TurkStat database and authors' own calculations.

In Figure-2, we repeated the same analysis to understand the technological structure of Turkish imports. While medium-tech products dominated the import basket, both high- and low-technology exports constituted between 10 and 20 percent of total imports. In 1997, medium-high–tech imports constituted almost half of total imports. While the share of medium-high–tech

imports decreased to 40 percent in 2013, it was replaced by medium-low–tech imports. This picture suggests that the technological intensity of Turkish imports has deteriorated since 1997. Since intermediate imports constituted on average 70 percent of total imports between 1997 and 2013, this finding may reflect the technological intensity of intermediate imports. A potential explanation for the dominance of medium-tech inputs and the increasing share of medium-low–tech inputs would be that the sophistication of production and exports determine the demand for inputs at various levels of technology. Since Turkish economy do not rely on production of sophisticated and technologically advanced production and exports, the demand for medium-high–tech and high-tech imports are lower compared to other types of imports.

Figure-2: Imports by Technological Intensity

Source: TurkStat database and authors' own calculations.

Next, we analyze the growth of exports and average trade-balance-to-GDP ratio for different technology groups in different sub-periods. The first column of Table-3 shows that total exports expanded by 11.2 percent throughout the 1997-2013 period and that medium-tech exports were the engine of this growth. On the other hand, as medium-high–tech products accounted for a large proportion of imports, this technological category forms the major component of the trade deficit. The primary sources of the trade deficit in medium-low–tech are imports of basic metals and petroleum products, whereas it is mainly chemicals and chemical products that cause a trade deficit in the medium-high–tech category. These results suggest that imported products are used in manufacturing goods that are in demand in the domestic market. Hence, Turkey needs reforms to increase its competitiveness and become eligible for providing these goods to foreign markets as well.

In Table-3, a time decomposition of export growth suggests that almost all technology categories had the highest export growth rates between the years 2002 and 2006, and realized a sharp decrease between 2007 and 2013. This deterioration in technological capacity reveals itself in Table-3 as well. The growth of high-tech exports was over 15 percent before 2006, whereas high-tech products realized a dramatic fall in export growth rate since then, increasing by only 1.1 percent. In addition, low-tech export growth was below one percent between 1997 and 2001, but there was a sharp increase in this category's exports in the 2002-2006 period. In the aftermath of 2007, low-tech products realized the largest growth rate compared to other technology sub-groups.

Again, the reforms undertaken between 2002 and 2006 manifested themselves in a lower trade-deficit-to-GDP ratio. It is also important to note that low-tech is the only technology category that realizes a surplus, which primarily comes from textiles and wearing apparel products. Therefore, the Turkish economy mainly specializes in low value-added and low-tech products, and all the other technological categories contribute to the current account deficit.

Table-3: Technological Structure of Trade in Turkey

	1997-2013	1997-2001	2002-2006	2007-2013
Exports				
Low-tech (CAGR)	7.79	0.22	12.02	5.70
Medium-low–tech (CAGR)	13.57	5.62	24.84	5.07
Medium-high–tech (CAGR)	15.41	11.39	24.74	4.37
High-tech (CAGR)	10.69	17.60	15.89	1.12
Total (CAGR)	11.18	5.82	18.95	6.94
Trade Balance				
Low-tech/GDP	2.96	3.48	3.33	2.33
Medium-low tech/GDP	-1.09	-0.91	-1.23	-1.13
Medium-high tech/GDP	-4.80	-5.86	-4.85	-4.01
High-tech/GDP	-2.09	-2.18	-1.92	-2.17
Total/GDP	-5.03	-5.46	-4.68	-4.98

Source: TurkStat database and authors' own calculations.

For a better view of trade figures, we compare Turkey's performance with its competitors. In Table-4, exports as a percentage of GDP, current account deficit to GDP and high-tech exports in manufacturing exports of BRICS, MIST, Czech Republic, Poland and Hungary are presented for the latest year available.[3] Turkey's export-to-GDP ratio is higher than or close to Brazil's, South Africa's, India's and Indonesia's, which are the other four economies of the Fragile Five. Especially compared to South Korea, Czech Republic, Hungary and Poland, Turkey's export performance is quite poor. Moreover, Turkey has the highest current account deficit-to-GDP ratio among

Table-4: Comparison of Trade Performance with Selected Economies (2012)

3 BRICS countries are Brazil, Russia, India, China and South Africa and MIST countries are Mexico, Indonesia, South Korea and Turkey.

			Current account	High-tech exports
BRICS	Brazil	12.59	-2.41	10.49
	Russia	29.59	3.57	8.38
	India	24.00	-4.92	6.63
	China	27.32	2.35	26.27
	South Africa	29.92	-5.24	5.53

Total (CAGR)	11.18	5.82	18.95	6.94
Trade Balance				
Low-tech/GDP	2.96	3.48	3.33	2.33
Medium-low tech/GDP	-1.09	-0.91	-1.23	-1.13
Medium-high tech/GDP	-4.80	-5.86	-4.85	-4.01
High-tech/GDP	-2.09	-2.18	-1.92	-2.17
Total/GDP			-4.68	-4.98

all selected countries. These findings suggest that economic growth in Turkey is not driven mainly by exports. On top of that, a dependency on imports for production together with a low import coverage of exports contribute negatively to growth figures. We have presented above that Turkey performs poorly in exporting high-tech manufacturing goods. The failures of high-tech production and exporting emerge once again in a comparison with the selected economies. Turkey has the lowest share of high-tech exports in manufactured exports.

Table-4: Comparison of Trade Performance with Selected Economies (2012)

	Country Name	Exports (% of GDP) (2013)	Current account balance (% of GDP)	High-tech exports (% of manufactured exports)
BRICS	Brazil	12.59	-2.41	10.49
	Russia	29.59	3.57	8.38
	India	24.00	-4.92	6.63
	China	27.32	2.35	26.27
	South Africa	29.92	-5.24	5.53
MIST	Mexico	32.64	-1.23	16.33
	Indonesia	24.29	-2.75	7.30
	Korea, Rep.	56.34	3.54	26.17
	Turkey	26.30	-6.15	1.83
OTHER	Hungary	94.00	0.90	18.09
	Poland	46.65	-3.73	6.95
	Czech Rep.	78.03	-2.41	16.08

Source: World Bank database.

Among these economies, South Korea, Hungary, Poland and Czech Republic have the highest export-to-GDP ratio. Therefore, to understand the shortcomings of Turkey's trade performance, we provide a detailed comparison of these countries' infrastructural capacities and trade figures. In Figure-3 we report the countries' current account-balance-to-GDP ratio between 2007 and 2012. The Korean Republic ran a current account surplus throughout the period. While Turkey had a similar current-account-deficit-to-GDP ratio as other countries before 2010, it now seems like the only economy that has not recovered from the crisis in terms of current account deficit.

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Figure-3: CA/GDP
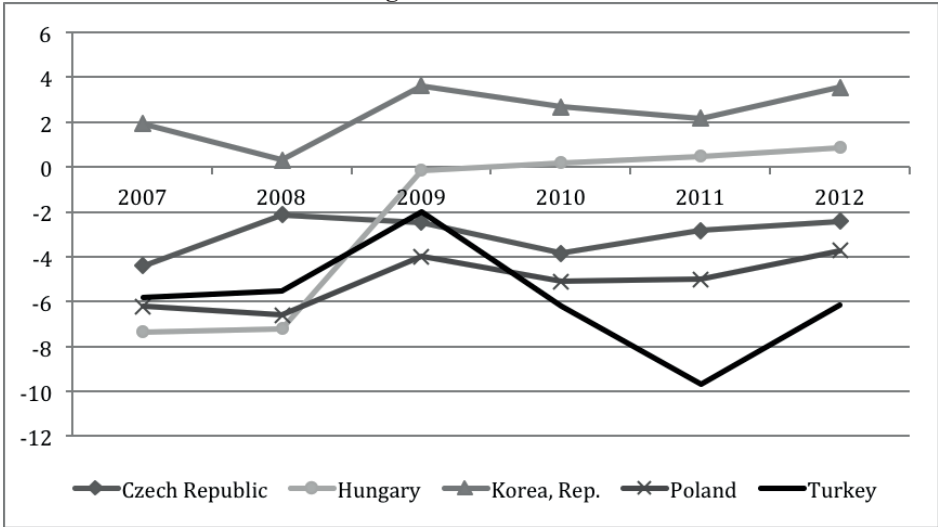
Source: World Bank database.

Moreover, Turkey had the lowest high-tech manufacturing export share among the listed economies throughout that period (see Figure-4). Although South Korea had slightly transformed its export basket from high-tech to low-tech products during this period, that economy still had the highest share for high-tech exports. Although Poland and Turkey had similar shares in 2007, Poland increased its share of high-tech exports above five percent, whereas Turkey remained at 2007 levels.

Figure-4: High-tech export in manufacturing exports (%)
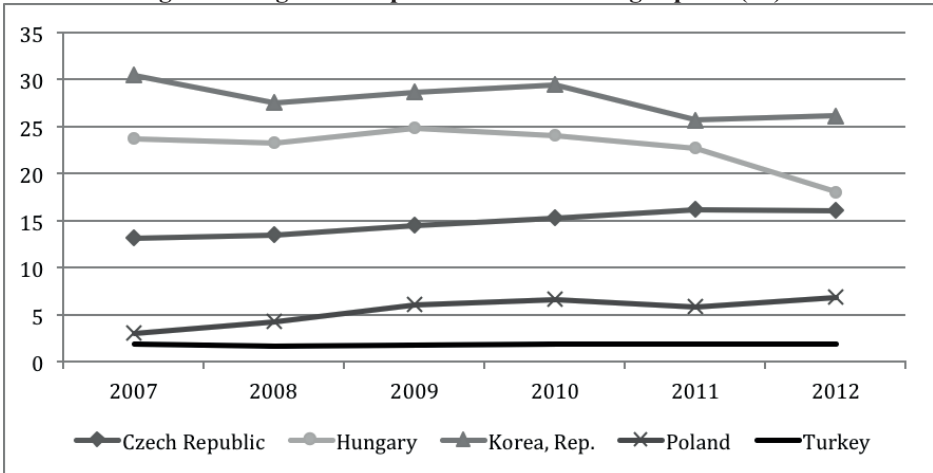
Source: World Bank database.

Therefore, Turkey is trapped in medium- and low-tech exports. Relative to its global counterparts, the technological composition of Turkey's export basket has put a downward pressure on export growth. To understand the lack of comparative advantage in high-tech exports, we present the structural differences between Turkey and the selected economies in Table-5. We use development indicators from the International Institute for Management Development's (IMD) World Competitiveness Data and the World Bank's Doing Business Rankings. Table-5 reveals Turkey's weaknesses relative to its comparator countries in terms of human capital. In terms of the illiteracy ratio, pupil-to-teacher ratio in primary education, the Human Development Index and life expectancy at birth, Turkey performs similar to the BRICs average and worse than other selected countries. Although Turkish firms give importance to employee training more than their peers, the ratio of people with higher education as a percentage of the 25-to-34-aged population is the lowest in Turkey. The picture is similar on the innovation side of the story. Business R&D as a percentage of GDP in Turkey lags behind South Korea, Hungary, Czech Republic and Poland. Both the number of computers and Internet users are lower in Turkey as well.

An appropriate business environment stimulates exports. Moreover, multinational companies prefer destinations where the business environment is more favorable. This issue is important if we consider how the current account deficit is financed. İzmen and Yılmaz (2009) investigate Turkey's trade and FDI performance up to 2008, and suggest that high current account deficits are accompanied by low FDI inflows in Turkey, which puts the country in a risky position. According to the Doing Business Rankings, Turkey ranks lower than South Korea, Hungary and Poland. Therefore, Turkey is not a favorable destination for multinationals relative to its competitors. Also, in terms of intellectual property rights enforcement, Turkey also performs poorly, which explains the lack of innovation in private businesses. Overall, the less-preferable business environment in Turkey leads multinationals to invest in other countries rather than in Turkey. On the other hand, Turkey has an advantage over its competitors in terms of access to credit.

Table-5: Comparison of infrastructural capacity with selected economies

Variable/Country	BRICS	South Korea	Turkey	Hungary	Poland	Czech Rep.
Human Capital						
Illiteracy ratio (2011)	9.7	1.7	5.9	1.0	1.0	1.0
Pupil/teacher (primary, 2011)	24.9	19.6	21.3	10.5	11.0	18.8
Higher education (% of 25-34 age pop., 2011)	26.5	64.0	19.0	28.0	39.0	25.0
Employee training (2013)	5.5	6.1	5.7	4.6	3.8	5.5
HDI (2012)	0.7	0.9	0.7	0.8	0.8	0.9
Life expectancy at birth (2012)	67.2	80.7	74.2	74.6	76.3	77.8
Technology and Innovation						
Computer (per 1000 people, 2013)	242.4	915.5	157.2	620.9	483.8	643.8
Internet user (per 1000 people, 2013)	352.6	857.5	420.2	735.5	692.0	817.7
Business R&D to GDP (2010)	0.7	2.9	0.4	0.8	0.2	0.9
Business Environment						
IPR enforcement (2013)	4.9	5.2	4.6	6.2	6.8	6.7
Doing Business Ranking (2013)	95.8	7	69	54	45	75
Access to credit (2013)	4.8	5.0	6.7	3.5	6.2	6.4

Source: IMD World Competitiveness Database and World Bank Doing Business Rankings.

Herewith, Turkey requires structural reforms to enhance firms' competitiveness and lead them to participate in global markets more efficiently. In Section 4, we discuss how reforms that target higher technological capacity and quality, better skills, easier access to finance and higher FDI inflows would transform Turkey's countenance of global competitiveness. Next, we explain the data set and methodology used for this analysis.

3. Data and Methodology
3.1 Data

We conduct an analysis of the 2005 "Productivity and the Investment Climate Private Enterprise Survey" carried by the World Bank in Turkey and of the 2008 and 2013 "Business Environment and Enterprise Performance Survey" provided by the European Bank for Reconstruction and Development and the World Bank. The data and questionnaires are freely available to users.[4] The data set includes a stratified random sample of firms at three levels: industry, establishment size and region. There are 3819 observations for 3263 firms, from which only 48 firms had information for all three years; 377 firms had information for 2005 and 2008 whereas 83 firms had information for 2005 and 2013. Given that the panel analysis would suffer from observation issues, we conducted a cross-section analysis for the three years.

To ensure that the results were not driven by outliers, we excluded the largest and smallest firms (the top and bottom five percent) from the sample. The sectors with only a few observations were also excluded (wood, publishing, printing and recorded media, precision instruments, information technology, hotels and restaurants and transportation services). Finally, firms that did not

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4 http://www.enterprisesurveys.org

answer questions truthfully or reported unreliable numbers according to the interviewer's perception were not included in the analysis. The final data set of interest includes 2093 observations.

Measurement of variables
Dependent variables:
Export propensity, export sales and indirect export intensity
Export propensity is measured by a dummy variable that takes the value '1' if the firm is exporting and '0' otherwise. Export sales are measured by the natural logarithm of the firm's total export sales. Indirect export intensity is the ratio of indirect exports to total exports.

Independent variables:
Firm size and productivity:
Firm size is measured by the number of permanent employees, whereas *firm productivity* is the ratio of sales to employees. While we expect these two variables to have positive impacts on export performance, we also expect them to contribute negatively to indirect export intensity. Since direct exporting is more costly, it is expected that less-productive and smaller firms are less likely to export directly and have a higher indirect export intensity.

Human capital:
Training is a dummy variable that takes the value '1' if the firm states that they have a formal training program for permanent employees and '0' otherwise. The training indicator captures firms' on-the-job training activities as well as a flow indicator for human capital; in other words, it is a measure of human capital investment. *University share* is the ratio of employees with a university degree to total employees. University share is a stock measure; it captures the existing qualifications of the firm's employees.

Innovation:
Product innovation is a dummy variable that takes the value '1' if the firm has introduced a new or significantly improved product(s) during the last three years. *Process innovation* is also a dummy variable, and takes the value '1' if the firm has introduced a new or significantly improved method(s) for production in the last three years.

Foreign technology transfer:
Foreign ownership is a measure of foreign affiliation and is reported directly by firms. Since multinationals are superior to their domestic counterparts in terms of productivity, investment in innovation and human capital, it is expected that higher foreign ownership is positively associated with the firm's export performance. *Foreign input* is the share of inputs of foreign origin in total inputs. Foreign input use may capture the relaxation of technological constraints through using technologically advanced intermediate inputs.

Access to credit:

Loan is a dummy variable that takes the value '1' if the firm has a line of credit or a loan from financial institution. *Loan share* is the ratio of the value of the loan to total sales of the firm. With this measure we aim to capture a firm's access to financing.

Other variables:

Quality certification is a dummy variable that takes the value '1' if the firm has an internationally recognized quality certification and '0' otherwise. This measure is another indicator of a firm's competitiveness in global markets. *Website* is a dummy variable that takes the value '1' if the firm has a website and '0' otherwise. It is a variable that captures a firm's ability to promote its products through online marketing.

Table-6 reports descriptive statistics for flow variables and Table-7 provides information on dummy variables. Out of 2093 firms, 1217 firms report exporting activity. Exporters are more productive and larger in size. Moreover, exporting firms report higher foreign ownership and use more foreign inputs. They also borrow more money relative to their revenues. Thirty-four percent of firms are involved in product innovation, whereas almost half of firms are working on improving an existing product line. Almost 50 percent of firms provide training for their employees and have a quality certification. Most firms report that they have websites and more than 50 percent of them have access to credit.

Table-6: Descriptive statistics on flow variables

All firms			
Variable	N	Mean	Std.
Ln (Labor)	2093	3.772458	1.151169
Ln (Sales/Labor)	2093	11.2971	1.18337
Ln (Export)	1217	14.31676	1.861821
University Share	2043	0.1237716	0.1535358
Foreign Ownership	2083	0.0139558	0.0979629
Foreign Input (% of Total Inputs)	1742	0.1986592	0.2799712
Loan/Sales	1916	0.3019302	5.395103
Indirect Exports (% of Total Exports)	1217	0.3104453	0.4045497
Exporters			
Variable	N	Mean	Std.
Ln (Labor)	1219	4.149495	1.068554
Ln (Sales/Labor)	1219	11.32277	1.159176
University Share	1191	0.1245973	0.14268
Foreign Ownership	1209	0.020397	0.1176185
Foreign Input (% of Total Inputs)	1117	0.249413	0.2925209
Loan/Sales	1123	0.4303278	7.024402
Non-Exporters			
Variable	N	Mean	Std.
Ln (Labor)	876	3.24779	1.052777
Ln (Sales/Labor)	876	11.26137	1.216002
University Share	852	0.1226174	0.1676164
Foreign Ownership	874	0.0050458	0.0600615
Foreign Input (% of Total Inputs)	625	0.107952	0.2297999
Loan/Sales	793	0.1201009	0.6488867

Table-7: Descriptive statistics for dummy variables

	Yes	No
Exporting	58.19	41.81
Training	46.56	53.44
Product Innovation	34.04	65.96
Process Innovation	48.48	51.52
Access to credit	57.73	42.27
Certification	45.89	54.11
Has a website	77.91	22.09

3.2 Methodology

We prefer to use Heckman's sample selection model (two-step) since not only it allows us to distinguish firm characteristics relevant for export propensity and export intensity but also deals with possible selection bias that may arise in the second stage. In the first stage of the procedure, firm characteristics important for export status are analyzed by using Probit:

$$Export\ dummy = 1\ if\ \alpha_0 + \alpha_1\ Firm\ size + \alpha_2\ Firm\ productivity + \alpha_3\ Training$$
$$+ \alpha_4\ University\ share + \alpha_5\ Product\ innovation + \alpha_6\ Process\ innovation + \alpha_7\ Foreign\ ownership$$
$$+ \alpha_8\ Loan + \alpha_9\ Loan\ share + \alpha_{10}\ Quality\ certification + \alpha_{11}\ Website + \varepsilon_{it} + \delta_r + \zeta_{irt} \geq 0$$

where ε_{it} is sector-year fixed effect, δ_r is region fixed effect and ζ_{irt} is the error term. The inverse Mill's ratio is calculated from the errors of the first stage and this ratio is included as an independent variable in the second stage:

$$Log(Export\ sales) = \gamma_0 + \gamma_1\ Firm\ size + \gamma_2\ Firm\ productivity + \gamma_3\ Training$$
$$+ \gamma_4\ University\ share + \gamma_5\ Product\ innovation + \gamma_6\ Process\ innovation + \gamma_7\ Foreign\ ownership$$
$$+ \gamma_8\ Loan + \gamma_9\ Loan\ share + \gamma_{10}\ Quality\ certification + \gamma_{11}\ Website$$
$$+ \varepsilon_{it} + \delta_r + \zeta_{irt}\ if\ export\ propensity = 1$$

If the errors from both stages are correlated then we conclude that there is a selection bias in the second stage and hence Heckman's selection model is more appropriate for deriving unbiased results. To account for nonlinearities driven by firm size, we repeat the same analysis for small and large firms.

Finally, to capture the importance of intermediary use in exporting, we conduct an investigation on firm-level characteristics that are related to indirect export intensity and estimate the following regression using ordinary least squares (OLS) with fixed effects:

$$Indirect\ exports / Total\ exports = \beta_0 + \beta_1\ Firm\ size + \beta_2\ Firm\ productivity + \beta_3\ Training$$
$$+ \beta_4\ University\ share + \beta_5\ Product\ innovation + \beta_6\ Process\ innovation + \beta_7\ Foreign\ ownership$$
$$+ \beta_8\ Loan + \beta_9\ Loan\ share + \beta_{10}\ Quality\ certification + \beta_{11}\ Website + \varepsilon_{it} + \delta_r + \zeta_{irt}$$

4. Empirical Results

In Section 4.1, by using the Heckman selection method, we analyze firm characteristics that are important for export propensity and those that lead firms to export more after a successful entry. Moreover, we present additional results for different size groups. In Section 4.2, we investigate the role of intermediaries in firms' export performance.

4.1 Results of export sales and export propensity

The Heckman's two-step procedure results are available in Table-8. The first panel presents the first-stage results on the probability of exporting, whereas the second panel shows the results of export sales. Column (1) is the benchmark model, where the most important firm characteristics found to be correlated with export behavior in the literature are included in the analysis: firm size and firm productivity. We show that larger and more-productive firms are more likely to export.

Table 8: Heckman selection estimation results for all firms

	First stage - Dependent variable: exporter dummy								
	1	2	3	4	5	6	7	8	9
Ln (firm size)	0.465***	0.422***	0.423***	0.427***	0.397***	0.406***	0.332***	0.360***	0.356***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln (productivity)	0.156***							0.167***	0.166***
	(0.000)							(0.000)	(0.000)
Training		0.161**	0.120*	0.125*	0.074	0.057	0.012	0.0005	0.010
		(0.025)	(0.099)	(0.086)	(0.333)	(0.480)	(0.883)	(0.995)	(0.903)
University share		0.411	0.315	0.359	0.179	0.00521	-0.150	-0.295	-0.281
		(0.120)	(0.241)	(0.176)	(0.526)	(0.986)	(0.629)	(0.348)	(0.368)
Product Innovation			0.357***		0.289***	0.330***	0.280***	0.276***	
			(0.000)		(0.000)	(0.000)	(0.001)	(0.002)	
Process Innovation				0.243***					0.131
				(0.002)					(0.144)
Foreign ownership					0.415	1.130**	1.115**	1.212**	1.205**
					(0.321)	(0.041)	(0.043)	(0.034)	(0.034)
Foreign input					0.955***	0.962***	0.905***	0.876***	0.901***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Loan						0.089	0.104	0.059	0.063
						(0.232)	(0.182)	(0.463)	(0.430)
Loan/sales						0.015	0.015	0.036	0.037
						(0.486)	(0.544)	(0.550)	(0.552)
Quality certification							0.368***	0.341***	0.355***
							(0.000)	(0.000)	(0.000)
Website							0.292***	0.262***	0.273***
							(0.002)	(0.007)	(0.005)
Constant	-3.726***	-1.935***	-2.018***	-2.062***	-1.914***	-2.004***	-2.050***	-3.966***	-3.957***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	2093	1855	1851	1848	1681	1566	1497	1497	1495
Wald chi2(39)	1380.6	295.9	303.2	353.8	376.1	377.0	379.8	1428.2	1392.7
Prob>chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industry*year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The numbers in parenthesis denote standard errors. ***, ** and * indicates the statistical significance at the 1%, 5% and 10%, respectively.

Column (1) implicitly assumes that other firm characteristics such as human capital indicators, innovation and foreign technology transfer indicators all have indirect effects on exports through their direct effects on firm productivity. However, all of these factors can also have a direct effect on exports beyond their indirect effect of productivity enhancement. With the results in columns (2) to (6), we argue that these firm characteristics do not play a role through firm productivity, but rather have actual direct influences on export behavior.

We first add human capital in column (2). The university share of employees does not have a robust significant relationship with the probability of exporting. On the other hand, if a firm that trains its workers, its probability of exporting increases. However, this result is not robust to the inclusion of more control variables.

The innovative activities of a firm that targets product and process innovations are found to be positively associated with export propensity (columns (3) and (4)). A firm that develops a new product is 10.5 percent more likely to export. The marginal effect of new product on exporting probability ranges between 7.7-9.4 percent across specifications. A firm that upgrades a product line is 7.2 percent more likely to export. However, process innovation becomes insignificant once we control for labor productivity in column (9). We thus conclude that it is product rather than process innovation that matters in the probability of exporting[5]. This finding is consistent with Caldera (2010) and Lo Turco & Maggioni (2013).

In column (5) we add the foreign technology transfer indicators: foreign ownership and foreign input. Although the coefficient of the foreign ownership is insignificant in Column (5), it becomes significant as we control for more variables. A 10 percent increase in foreign affiliation, increases the probability of exporting by 0.03. This finding is in line with our expectations, following Girma (2005). Also, the use of foreign inputs increases the probability of exporting by 0.27. These results together emphasize the importance of participating in global value chains (GVCs) to compete in foreign markets.

In column (6) we add financial market access indicators. Although the signs of access to credit variables are consistent with the expectations, the results suggest an insignificant relation between easier access to credit and export propensity. Finally, having an internationally recognized quality certification and a website are positively associated with firm's export probability, as can be seen from columns (7)-(9).

In the second panel, second stage results of Heckman selection are presented. The usual suspects contribute both to export propensity and export sales: larger and more-productive firms are more likely to export, and once they export they are more likely to have higher export sales. An increase in university graduates within a firm is negatively related to export sales once we control for productivity. This result may suggest that it is skills rather than a university degree that matters. In developing countries like Turkey, where skill mismatch is highly present, university share is not a good proxy for human capital. Köymen and Sayek (2014) show that skilled job positions capture

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5 Therefore, in the rest of the analysis we present results with product innovation.

human capital better than employee education level.[6] Therefore, paying a higher wage to university graduates who may not fulfill job requirements may bring lower export sales. Moreover we show that production innovation only matters for export market participation. The second stage results imply that innovation does not have a relation with export sales. This finding is consistent with Ganotakis (2010) who also suggests product innovators are more likely to export, but conditional on entry, innovation does not increase export intensity. Finally, foreign ownership is found to be positively related with both export propensity and export intensity.

Table 8 continued: Heckman selection estimation results for all firms

| | Second stage - Dependent variable: ln (total exports) | | | | | | | | |
	1	2	3	4	5	6	7	8	9
Ln (firm size)	1.288***	1.395***	1.388***	1.351***	1.295***	1.285***	1.176***	1.203***	1.197***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln (productivity)	1.014***							1.020***	1.020***
	(0.000)							(0.000)	(0.000)
Training		0.266*	0.236*	0.221*	0.186	0.195	0.068	-0.032	-0.023
		(0.066)	(0.086)	(0.078)	(0.122)	(0.109)	(0.578)	(0.690)	(0.773)
University share		0.797*	0.736	0.707*	0.458	0.281	0.108	-0.793***	-0.820***
		(0.097)	(0.117)	(0.099)	(0.272)	(0.508)	(0.804)	(0.005)	(0.004)
Product Innovation			0.209		0.141	0.177	0.0889	-0.102	
			(0.239)		(0.326)	(0.239)	(0.530)	(0.250)	
Process Innovation				0.167					-0.089
				(0.266)					(0.299)
Foreign ownership					0.776	1.201**	1.129**	0.634*	0.632*
					(0.112)	(0.022)	(0.034)	(0.054)	(0.054)
Foreign input					0.750**	0.694**	0.564**	0.160	0.149
					(0.014)	(0.046)	(0.361)	(0.361)	(0.402)
Loan						0.231**	0.292**	0.043	0.051
						(0.041)	(0.011)	(0.558)	(0.487)
Loan/sales						-0.009	-0.012	0.004	0.003
						(0.253)	(0.130)	(0.474)	(0.494)
Quality certification							0.524***	0.090	0.069
							(0.001)	(0.378)	(0.510)
Website							0.445**	0.180	0.172
							(0.014)	(0.122)	(0.146)
Constant	-2.981**	7.118***	7.107***	7.438***	7.782***	7.685***	7.711***	-2.616**	-2.523**
	(0.023)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)	(0.018)
N	1217	1129	1127	1123	1075	1007	969	969	960
Wald chi2(39)	1380.6	295.9	303.2	353.8	376.1	377.0	379.8	1428.2	1392.7
Prob>chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Industry*year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The numbers in parenthesis denote standard errors. ***, ** and * indicates the statistical significance at the 1%, 5% and 10%, respectively.

Therefore, several of the infrastructure reforms that will push domestic firms to become exporters are also those that will push them to export more, such as those that will contribute to making the firm productive and those that will increase foreign partnerships. The participation in GVCs through involvement in foreign partnerships is significantly important to elevate the technological capacity of domestic firms. In-house innovation that would

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6 However, we cannot test this hypothesis here since detailed job characteristics are not available in our data set.

lead developing new products is essential for better export performance. It is of utmost importance to note that all of these are the issues that have to be tackled through structural reforms.

We decompose the Heckman selection estimation results for SMEs and large firms in Table-9. In the first panel we present the results of the first-stage regression for both types of firms and present the second stage in the second panel. The probability of becoming an exporter is associated with different factors for small and large firms. Firm productivity and size are more important for small- and medium-sized firms. As firms grow, initially size and productivity matters for export performance, but after a certain threshold other firm characteristics become more important.

Table-9: Heckman selection estimation results by size

	First Stage - Dependent variable: export dummy				Second Stage: Dependent variable: ln(export sales)			
	Employment≤100		Employment>100		Employment≤100		Employment>100	
	1	2	3	4	5	6	7	8
Ln (firm size)	0.532***	0.440***	-0.0449	-0.287	1.364***	1.240***	0.924***	1.089***
	(0.000)	(0.000)	(0.777)	(0.164)	(0.000)	(0.000)	(0.000)	(0.000)
Ln (productivity)	0.149***	0.181***	0.165***	0.0955	0.983***	0.966***	1.124***	1.042***
	(0.000)	(0.000)	(0.009)	(0.243)	(0.000)	(0.000)	(0.000)	(0.000)
Training		-0.031		0.234		-0.081		0.055
		(0.746)		(0.266)		(0.411)		(0.676)
University share		-0.487		0.358		-0.680*		-0.695
		(0.183)		(0.644)		(0.063)		(0.109)
Product innovation		0.250**		0.377*		-0.179		-0.187
		(0.013)		(0.076)		(0.132)		(0.134)
Foreign ownership		1.378**		1.164		0.889*		0.220
		(0.049)		(0.257)		(0.059)		(0.606)
Foreign input		0.834***		1.457***		0.118		-0.073
		(0.000)		(0.001)		(0.629)		(0.761)
Loan		-0.008		0.055		0.053		-0.082
		(0.925)		(0.792)		(0.554)		(0.513)
Loan/sales		0.011		1.968**		0.001		0.005
		(0.591)		(0.019)		(0.876)		(0.409)
Quality certification		0.436***		-0.032		-0.042		0.190
		(0.000)		(0.882)		(0.782)		(0.169)
Website		0.282***		0.043		0.292**		-0.229
		(0.009)		(0.864)		(0.047)		(0.190)
Constant	-3.777***	-4.239***	-1.351	-0.092	-2.869	-1.911	-3.077	-1.485
	(0.000)	(0.000)	(0.258)	(0.952)	(0.202)	(0.231)	(0.392)	(0.158)
N	1560	1069	533	428	783	613	434	356
Wald chi2	910.5	871.4	118.5	551.3				
Prob>chi2	0.0000	0.0000	0.0000	0.0000				
Industry*year fixed effect	Yes	Yes	Yes	Yes				
Region fixed effects	Yes	Yes	Yes	Yes				

The numbers in parenthesis denote standard errors. ***, ** and * indicates the statistical significance at the 1%, 5% and 10%, respectively.

In-house innovation activities and foreign inputs continue to be important factors for all firms in becoming exporters. We also show that the higher the value of the loan, the higher the probability of exporting for large firms. This finding may suggest that to benefit from access to credit, a firm needs to become more productive and larger. Foreign partnership is more important for smaller firms' export propensity. Moreover, for smaller firms, forming partnerships (FDI) is important as much as becoming part of GVCs through only input purchases. However, for larger firms, partnerships are not necessary.

29

Quality certification and marketing are relevant factors for the probability of exporting for smaller firms rather than larger firms. Hence, better marketing is essential for small- and medium-size firms to start exporting.

The extent of exporting is also associated with different factors across different-sized firms. Firm size and productivity are positively correlated with export sales for all firms. Therefore, structural reforms that enhance productivity are much needed; if reforms had been developed and implemented, more firms would be exporting and those that already export would be doing more of it. There is a negative relation between the share of university graduates and export sales, which is consistent with our explanation above: since university graduates are more costly, hiring more university graduates may have a negative impact on the export sales of small- and medium-sized firms.

4.2 Results of direct export intensity

In this section we investigate the determinants of indirect export intensity. The results from OLS with fixed effects model are presented in Table-10. Column (1) is again the benchmark model. The elasticity of indirect export share to firm productivity is estimated to be -0.027: a 10 percent increase in productivity decreases indirect exports' share by 0.27 percent. Similarly, a 10 percent increase in firm size via employment leads to 0.65 percent fall in indirect exports' share. These results are consistent with the findings of Abel and Koch (2013) which also suggest that smaller and less-productive firms export by using intermediaries.

Table-10: Export Mode - Dependent variable: indirect exports/total exports

	1	2	3	4	5	6	7	8	9
Ln (firm size)	-0.065*** (0.000)	-0.055*** (0.000)	-0.056*** (0.000)	-0.057*** (0.000)	-0.055*** (0.000)	-0.056*** (0.000)	-0.035** (0.012)	-0.040*** (0.005)	-0.041*** (0.003)
Ln (productivity)	-0.027** (0.012)							-0.025** (0.042)	-0.024* (0.051)
Training		-0.045* (0.088)	-0.049* (0.062)	-0.045* (0.084)	-0.061** (0.024)	-0.059** (0.035)	-0.042 (0.146)	-0.040 (0.169)	-0.034 (0.252)
University share		-0.278*** (0.001)	-0.289*** (0.001)	-0.276*** (0.002)	-0.273*** (0.002)	-0.297*** (0.001)	-0.244*** (0.008)	-0.220** (0.016)	-0.210** (0.020)
Product Innovation			0.048* (0.065)		0.044* (0.097)	0.039 (0.154)	0.044 (0.118)	0.045 (0.108)	
Process Innovation				-0.014 (0.619)					-0.032 (0.300)
Foreign ownership					0.037 (0.717)	0.062 (0.565)	0.076 (0.487)	0.080 (0.472)	0.077 (0.476)
Foreign input					-0.045 (0.301)	-0.058 (0.205)	-0.047 (0.310)	-0.047 (0.310)	-0.045 (0.326)
Loan					0.007 (0.792)	0.015 (0.561)	0.020 (0.439)	0.025 (0.344)	
Loan/sales					-0.001** (0.039)	-0.001** (0.017)	-0.002*** (0.000)	-0.002*** (0.000)	
Quality certification							-0.081*** (0.010)	-0.075** (0.018)	-0.074** (0.019)
Website							-0.132*** (0.001)	-0.130*** (0.001)	-0.132*** (0.001)
Constant	0.783*** (0.000)	0.482*** (0.000)	0.467*** (0.000)	0.496*** (0.000)	0.473*** (0.000)	0.485*** (0.000)	0.540*** (0.000)	0.845*** (0.000)	0.873*** (0.000)
N	1217	1129	1127	1123	1075	1007	969	969	966
R-sq	0.090	0.102	0.104	0.103	0.101	0.110	0.132	0.136	0.138
Industry*year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The numbers in parenthesis denote standard errors. ***, ** and * indicates the statistical significance at the 1%, 5% and 10%, respectively.

The share of university graduates and training activity provided by the firm measure the abilities of the firm's employees. The firms that provide training or firms with more university graduates have less indirect export intensity. This finding may result from the fact that firms able to employ more educated workers are more likely to be producing technologically advanced and competitive products (Abel and Koch (2013)). Hence, these firms are more likely to cover direct export costs and do not rely on trade intermediaries to export.

The sign of product innovation is consistent with the previous findings in the literature. Firms that develop a new product sell higher proportion of its products through trade intermediaries. The intuition behind this finding may be as follows: A firm that produces a new product should spend more time and resources to identify its new customers. Since trade intermediaries have better networks, they can introduce the new product at a lower cost than firm itself (Ahn et al. (2011)). However, firms that upgrade an existing product do not require any search for new customers. The negative coefficient of process innovation may reflect this fact, however, the coefficient of this variable is insignificant across all specification.

Foreign technology transfer measures do not seem to matter for the export mode. Firms with higher amounts of loan compared to its sales have higher

indirect export intensity. A potential explanation of this finding would be that indebtness of firms direct them to use trade intermediaries since they cannot cover the high costs of direct exporting.

Finally, firms that have their products quality certified and a website for marketing purposes have the flexibility of directly selling their own products. Therefore, firms have better marketing practices do not require trade intermediaries to export their products.

5. Conclusion

In this study, we aim to provide a comprehensive investigation of Turkey's trade performance between 1996-2013. First, we present trade figures from selected countries and discuss the structural factors that lead Turkey to lag behind its global competitors. Turkey's technological incompetency becomes prominent in a cross-country descriptive analysis. The Turkish economy specializes in mostly low- and medium-tech products and has been unable to add high-tech products to its export basket. Upgrading to a high value-added and technologically advanced export basket is key to increasing the country's global competitiveness. In our firm-level analysis, we show that productivity-enhancing micro-level policies pay off and increase the likelihood of Turkish firms becoming exporters. We show that innovative activity, particularly product innovation, participation in GVCs and better marketing are the key drivers of successful export performance.

From a policy point of view, given the crucial role of innovation in determining a firm's productivity and export behavior, it is important for government to take these interactions into account and implement productivity-enhancing policies.

Also other productivity-enhancing and export-friendly structural reforms should include those that attract FDI, ease access to technologically advanced inputs and improve marketing performance.

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COMMENTS BY KEREM COŞAR:

In this informative contribution, the authors provide an overview of Turkey's export outcomes over time and analyze the drivers of firm-level export performance in the cross-section. They first report the quantitative and qualitative evolution of the country's foreign trade over the past two decades. The overall message here is that while Turkey has become increasingly integrated with the world economy and raised the sophistication of its exports to a certain extent, it could not reduce its dependency on high-tech imported inputs and as a corollary, did not move up the value-added chain in the skill and technology content of exports as some of its peers did. These results inform the main analysis: what determines successful exporting at the firm level? What are the particular constraints that prevent product upgrading and market entry by incumbent or potential exporters such that the country as a whole

fails to make the leap? Employing an appropriate empirical methodology on an interesting survey data, the authors support the aggregate findings with micro-level evidence.

Against this backdrop, I would like to take the opportunity to comment on Turkey's export performance within the broader growth issue and the policy implications that follow from it. The unresolved academic debate about the trade-growth nexus offers two views: one is that economic progress occurs because countries upgrade what they export. In other words, countries become what they export. An alternative to this export-led growth hypothesis is to treat export sophistication as an outcome itself, a by-product of successful growth and development. In this view, countries export what they have to offer, as determined by their innovative capacity and comparative advantages, which are shaped by the institutional qualities that led to growth in the first place. While the causation plausibly played out differently for various countries in separate periods, it is worthwhile to consider where Turkey stands. First, Turkey has a much larger domestic market than the poster child success stories of export-led growth such as Taiwan or Korea did at the beginning of their take-off. Second, developed destination markets are slowing down and global competition is intensifying. Add to this the (overwhelmingly beneficial) institutional constraints from being an EU candidate country and a World Trade Organization member, the era of export-led growth may well be over for Turkey. What will then be the key to growth? The diagnostics from firm-level exports, convincingly analyzed by this article, may also provide us with clues on the growth constrains that Turkey is facing. The most robust and quantitatively important driver of export success turns out to be product innovation. Turkish firms seem to be constrained in offering new and differentiated goods to the global marketplace. To some extent, this must explain the chronic trade deficit as well: the problem does not lie in the high-tech inputs that Turkey imports. High-quality outputs require high-quality inputs. Rather, the country seems to fail to add enough value on top of these imports. Only through design, branding and marketing can firms differentiate themselves and increase the value-added content of their products. If this is the fundamental constraint, what role is there for policy? Note that all of these activities share two characteristics: they are skill intensive and require substantial sunk investments. On the first front, there is a large role for public investment in improving the quality of human capital formation. On the second front, individuals and firms will take risks only if the business environment and the rule of law assure them to recoup the proceeds of their toil. When the country makes significant progress in these two fronts, we may expect to see not only an upgrading of its exports but also sustainable growth.