IMPORTANCE OF FIRM HETEROGENEITY FOR EXPORTS POLICY DESIGN IN TURKEY

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Abstract

The main objective of this paper is to present how firm heterogeneity influenced Turkey's exports during 2003-2012 and why Turkey's exports would be better off if Turkey's exports policies took into account the differences in structure of its exporters. Using firm-product-country level data, this study suggests a new approach to decompose exports, which can be considered as an extension of Amurgo-Pacheco and Pierola (2008), focusing on the "decomposition of exports in each year", rather than the common approach that focuses on the "decomposition of growth of exports" as suggested by Eaton et al (2007). In addition, a number of definitions such as "Exporters Portfolio of a Country", "Product and Market Portfolios of a Firm", "N-Year Survivors" and "Last-Time Exporters" are introduced. Using these definitions, this study offers its own perspective for product and market diversification, survival rate of exporters, firm entries and exits, as well as extensive and intensive margins of exports; while providing results that take into account the heterogeneous structure of the exporters. According to the results, between 2003 and 2012, 140,678 different firms exported from Turkey. Each year, on average, 97% of the exporters were SMEs, while micro-sized exporters constituted 53% of total exporters. Although an average Turkish exporter exported 10.9 products to 4.4 markets in 2012, an average micro-sized exporter exported 9 products to 2.9 markets, while an average large-sized exporter exported 28.5 products to 15.8 markets. Almost all of the new exporters and last-time exporters were small-sized or micro-sized firms, while contribution of new firms to Turkey's exports was only around 3.8% each year. 81% of Turkey's exports in each year were a result of exports in intensive margin, while 12.5% were a result of market diversification and 8% were thanks to product diversification. 80% of market diversification and 88% of product diversification in each year were realized by SMEs, while average market and product portfolios of an average SME were significantly smaller than an average large-sized exporter. In addition, there were 8789 10-year survivors that constituted almost 67% of Turkey's exports in each year, while having significantly larger market and product portfolios compared to an average exporter, performing better with respect to all of the metrics. Despite the heterogeneous structure of Turkey's exporters, Turkey's exports policies have a uniform structure. Therefore, there is a significant opportunity for increasing efficiency of Turkey's exports policies taking into account this phenomenon.

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Keywords: Turkey, Exports, Firm Heterogeneity, Exports Policy, Decomposition of Exports.

All views expressed in this paper are solely those of the author and not necessarily those of the Ministry of Economy, Turkey.

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I. INTRODUCTION

Turkey's exports have been experiencing remarkable developments in recent years, increasing from 47,2 billion dollars in 2003 to 151,8 billion dollars in 2013, which implies more than a two-fold increase in 10 years. During the same period, sectoral and regional breakdowns of Turkey's exports have changed significantly. The sectoral structure of exports, which was heavily dependent on labor-intensive products in 2003, has become significantly capital intensive in 2013. Similarly, the share of the EU in Turkey's exports decreased from 58% in 2003 to 41.5% in 2013, while that of Asia increased from 16.5% in 2003 to 31.4% in 2013. In addition, some basic indicators such as *"use of currency"* and *"method of transportation"* also provide supportive evidence[1]. For example, although use of Euro had an annual average share of 48% in Turkey's exports, use of US Dollar becomes increasingly more common with 47.4% share in 2013, which previously had 45% share on average. Similarly, exports value of goods that transported by sea and air portrays an increasing trend (with 54,6% and 8.5% share in 2013 respectively), while those transported by road manifested a decreasing trend from 43% in 2003 down to 35% in 2013, with 40% average share during the same period.

While there are limited number of changes in Turkey's Export Regime, which regulates general rules and principles of merchandise exports determined by Turkey's rights and obligations stemming from its membership to the WTO and its Customs Union with the EU[2], Turkey has been implementing new policies to increase its exports. In line with "Turkish Exports Strategy for 2023", which has an ambitious goal to reach 500 billion USD of exports in 2023, main pillars of Turkey's exports policy now include *"increasing the number of Commercial Counsellors around the world"*, *"identifying target markets and increasing the number of national participations in international fairs, general and sectoral trade delegations and buyers missions in these markets"*, *"establishing sectoral clusters to reach increased competitiveness in international markets"*, *"increasing the number of global Turkish brands in the world"*, *"transformation of Istanbul into an international fashion, fair and trade center"*, *"providing crucial inputs for exports"* and *"improving logistic facilities of Turkey"*. Consequently, Turkey tries to be more active in its exports markets and tries to enhance its existing relations.

[1] For detailed information, please see Appendix Tables.
[2] Inward and outward processing activities, export supports mechanism, market access and promotion activities, as well as issues related to transit trade are covered by the Regime.

Although these policies have a comprehensive agenda, they do not take into account one crucial perspective: *firm heterogeneity*. To examine the prospective effects, this study categorizes Turkey's exporters in terms of *"size, area of activities (being a producer or not), cities that they are operating in and survival years"* to analyze if *firm heterogeneity* matters significantly for Turkey's exports or not. In this context, the structure of exports and contributions to exports growth become important issues to be studied, which incidentally are being covered in the context of this study.

Thanks to Melitz (2003) that introduced firm-heterogeneity into international trade analysis, the studies that focus on *firm-level impacts on exports* and *contribution to exports growth* have become increasingly popular. The common approach to decompose exports growth and bring out contributions of product diversification, market diversification, firm entries and exits to exports growth using firm-product-country level disaggregation was offered by Eaton et al (2007), followed by Bernard et. al (2009), Lederman et al (2011) and Cebeci & Fernandes (2013). This type of decomposition takes into account only two consecutive years while defining a continuing exporter, new exporter and exiting exporter; whereas it uses one year before and after the current year while defining a survivor. One implication of this approach is, if "Firm A" exports in 2004 and does not export for the following two years, this approach considers Firm A's exports in 2007 as *"exports of a new firm"*. Besides, if Firm A exports to a different country or a different product in 2007, it will not be considered as a *"market or product diversification"* for Firm A compared to its exports in 2004[3]. At the same time, this approach may lead to an underestimated share for intensive margin, since Firm A may have exported the same products to the same markets in 2007. In other words, if the analysis period is more than 3 years, the decomposition method offered by Eaton et al (2007) may lead to miscalculation of *"firm entry"* and *"firm exit"* values, which would influence all the calculations regarding "*incumbent exporters"* and "*intensive and extensive margins of exports"*, as well as any empirical analysis based on these outcomes.

To deal with these potential problems, this study suggests a new approach to decompose exports, which can be considered as an extension of the method used by Amurgo-Pacheco and Pierola (2008) to firm-level detail. Firstly, focus will be on *"decomposition of exports in each year"*, rather than *"decomposition of growth of exports".* Secondly, a number of definitions such as *"A Country's Exporters Portfolio"*, *"Product and Market Portfolios of a Firm"*, *"N-Year Survivors" and "Last-Time Exporters"* are introduced. Using these

[3] Because of the same reason that it will be regarded as "exports of a new firm".

definitions, this study offers its own definitions for product and market diversification, firm entries and exits, as well as extensive and intensive margins of exports.

The main objective of this paper is to present how firm heterogeneity influenced Turkey's exports during 2003-2012 and why Turkey's exports would be better off if Turkey's exports policies took into account the differences in structure of its exporters. In addition, this study suggests a new approach to decompose exports into intensive and extensive margins, suggesting a decomposition of annual values rather than annual changes, using annual firm-product-country level data. In this context, this study examines a number of issues such as *"entry, exit and survival rates for Turkish exporters", "whether there are any certain group of firms that dominate the developments in Turkey's exports or not", "shares of intensive and extensive margins in Turkey's annual exports"*, "*sizes of market portfolio and product portfolio in an average exporter in Turkey*", "*whether size and/or continuous exports activities of a firm influence its exports metrics or not* ", "*whether Turkish exporters are intensified in a limited number of cities or not*" and "*lessons that can be derived from the most affluent ten years of Turkey's exports".*

Results of this study clearly reveal the heterogeneous structure of Turkey's exporters. According to the results, 140,678 different firms exported from Turkey between 2003 and 2012. Annual averages indicate that 97% of the exporters were SMEs, while micro-sized exporters constituted 53% of total exporters. SMEs constituted almost 60% of Turkey's annual exports each year, while producer-exporters had 59% share. On average, more than 50% of Turkey's exporters and exports were from Istanbul, while the top 10 cities in Turkey's exports constituted 80% of the exporters and 85% of the exports each year. An average Turkish exporter exported 10.9 products to 4.4 markets in 2012, where an average micro-sized exporter exported 9 products to 2.9 markets, while an average large-sized exporter exported 28.5 products to 15.8 markets. Almost all of the new exporters and last-time exporters were small-sized or micro-sized firms, while contribution of new firms to Turkey's exports was only around 3.8% each year. Concerning decomposition of exports, annually on average, 81% of Turkey's exports were a result of exports in intensive margin, while 12.5% were a result of market diversification and 8% were a result of product diversification. 80% of market diversification and 88% of product diversification in each year were realized by SMEs, while average market and product portfolios of an average SME were significantly smaller than an average large-sized exporter. In addition, there were 8789 10-year survivors that constituted almost 67% of Turkey's exports in each year, while having significantly

larger market and product portfolios compared to an average exporter, performing better with respect to all of the metrics. Thus, this study suggests that Turkey's exports policies can become more efficient if they are restructured to be more responsive to the heterogeneous structure of its exporters.

The flow of the paper will be as follows: After this introduction, related literature review will be summarized in Section 2. In section 3, the data and methodology used for firm-level analysis will be presented. Stylized facts from the firm-level analysis will take place in Section 4, which will be followed by some policy suggestions and conclusion remarks in section 5.

II. LITERATURE REVIEW

The literature related to the sources of exports growth is enormous and has many different standpoints. Theoretical foundation of importance of firm heterogeneity in international trade was initially introduced by Melitz (2003). In Melitz's model, only high productive firms engage in exportation, while forcing the least productive firms to exit, where the least productive firms cannot stand up to the costs of entering exports market. And this resource reallocation from less productive firms to higher productive firms contributes to a higher industrial productivity. Melitz's model led to a number of theoretical contributions to international trade analysis[4], which now takes into account the number of goods firms export, the number of countries to which they export, and the frequency with which transactions are scheduled (Bernard, et al. (2009)).

On the other hand, the literature that is related to the relative importance of intensive and extensive margins of trade does not point out to a consensus. While some studies suggest that the extensive margin plays a more important role for export growth (e.g. Evenett and Venables (2002), Hummels and Klenow (2005), Berthou and Fontagne (2008), Bernard et al. (2009), Dutt et al. (2011)), a vast amount of others suggest that yearly changes in exports are mostly driven by the intensive margin (e.g. Felbermayr and Kohler (2006), Eaton et al (2007), Helpman et al (2008), Bernard et al (2009), Amiti and Freund (2010)). In addition, Besedes and Prusa (2010) suggests that developing countries would experience significantly higher export growth if they were able to improve their performance with respect to *survival and*

[4] (such as Bernard, Eaton, Jensen and Kortum (2003), Helpman et al., (2004, 2010), Bernard, Redding and Schott (2006a,b), Melitz and Ottaviano, (2008), Chaney (2008), Eaton, Kortum and Kramarz (2008), Feenstra and Kee(2008))

deepening, while there are other studies that focus on implications of export concentration (Jansen (2004), Cadot et al.(2011,2012)) and gains via extensive margin (Markusen (2013)).

The meaning of extensive and intensive margins may vary significantly from one study to another due to the way they defined with respect to the unit of analysis. While some studies define extensive margin on country level (e.g. Felbermayr and Kohler (2006), Helpman et al. (2008)), others define the extensive margin on product level (e.g. Hummels and Klenow (2005), Kehoe and Ruhl (2013)); whereas Evenett and Venables (2002), Amurgo-Pacheco and Pierola (2008), Besedes and Prusa (2011) and Turkcan (2014) use product-country level export lines as the unit of analysis. In addition, some studies such as Eaton et al (2007), Bernard et. al (2009), Lederman et al (2011) and Cebeci and Fernandes (2013) used firm-product-country level data to analyze the contribution of intensive and extensive margins to exports growth.

Although there are only a few studies on the margins of Turkey's exports, related literature has been growing recently. Üngör (2011) analyzed the evolution of the share of the least traded goods in Turkish exports, while Aldan and Çulha (2012) apply the same methodology and extend it to product-country space and for Turkish exports to EU and MENA regions, as well as to the world. In addition, Aldan and Çulha (2013) suggested that Turkey was quite successful in extending its export products and markets compared to other developing countries, while the success of Turkey in extensive margin mostly comes from entering new markets. Türkcan (2014) confirmed the importance of extensive margin at geographical diversification and further suggested that the growth in Turkey's total goods exports is mainly explained by quantity growth rather than price growth. Using firm-product-country level Turkey's exports data for 2002-2011, Cebeci and Fernandes (2013) tried to bring out the micro dynamics of Turkey's exports and claimed that in the short-run, aggregate export growth is dominated by growth in continuous exporters, and for these, growth is dominated by exports to their continued destinations and of their continued products.

Since there are only a limited number of studies that focus on the origins of Turkey's exports growth, this study makes a number of contributions to the related literature. Firstly, this study treats Turkish exporters with respect to their scale, the cities they are operating in and the sectors they are operating at and it provides a number of indexes for firm entry, firm exit, survival, product and market diversification, contributions to extensive and intensive margins between 2003 and 2012. Secondly, using the indexes above, this study brings out the importance of firm-heterogeneity for exports policy design in Turkey. Thirdly, using firm-

product-country level data, this study offers a new approach to analyze the sources of exports growth, which deals with potential miscalculation problems of the method offered by Eaton et al (2007), which is also followed by Cebeci and Fernandes (2013). Fourthly, using its own definition for survivors, this study brings out the importance of increasing survival years of Turkish exporters for increasing Turkey's exports, which seems to be an outcome of better performance at product and market diversification. Furthermore, this study shows that Turkey's exports growth is dominated by survivors not only in the short run, but also in the long run. Finally, analyzing the ten-year-survivor firms with respect to the metrics mentioned above, this study shows that taking into account their scale and the sectors they are operating at, a number of success stories can be highlighted and their business models can be analyzed to improve those which could not survive in the exports markets.

III. DATA AND METHODOLOGY

Due to the absence, low quality or confidentiality of firm-level data for many countries, most of the studies related to foreign trade analysis mainly deals with country-level data disaggregated at sectoral level as much as possible. Thanks to the TUİK data, this study uses annual firm-product-country level data for 2003-2012, where products are defined at HS 6-digit breakdown[5]. Due to the availability of TUİK data, structural data such as the number of employees, the cities that exporters are operating in and the information on whether an exporter is also a producer can be captured for the period between 2005 and 2012.

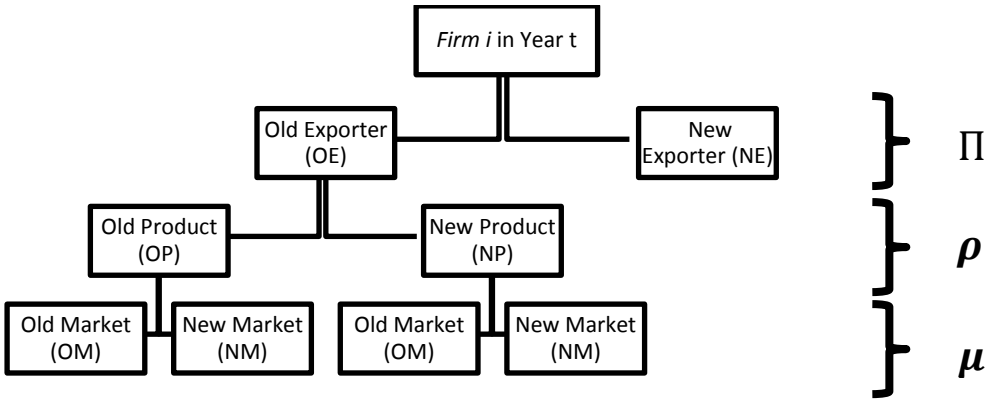
The size of the firms are determined by the number of employees they have, where there are 4 main categories namely micro-sized (1-9 employees), small-sized (10-49 employees), medium-sized (50-249 employees) and large-sized (more than 249 employees) firms. In addition, the firms that have less than 250 employees will be referred as SMEs (Small and Medium-Sized Enterprises).

To determine whether an exporter is also a producer or not, two different classifications are taken into account due to the availability of TUIK data. For 2005-2008, exporters that declared their main activity between the chapters 1-41 of 2 digit NACE Rev 1.1 activity codes are regarded as producer-exporters, while for 2009-2012, exporters that declared their main activity between the chapters 1-39 of 2 digit NACE Rev 2 activity codes are regarded as producer-exporters.

[5] To deal with the compatibility issue between HS2002, HS2007 and HS2012 6-digit codes, all the exports goods are defined in terms of HS2002 products using the correlation tables obtained from the UN.

An extended version of the approach to decompose exports that suggested by Amurgo-Pacheco and Pierola (2008) was used to assess the contribution of "intensive and extensive margins of exports"[6]. Let X_t denotes Turkey's total exports value in year t ∈ T: {2003, 2004…., 2012} and $X_{i,t}$ denotes total exports value of a Turkish exporter *firm i* in year t, where $X_t = \sum_i X_{i,t}$. To analyze characteristics of $X_{i,t}$, we can use the notation $X_{i,t}^{\{\Pi\},\{\rho\},\{\mu\}}$ where, Π defines whether *firm i* is a *"New Exporter"* or *not (Old Exporter)*, ρ refers to an *"HS-6 digit product"* and μ refers to an *"exports destination country"*. Thus, possible characteristics of *firm i* and its exports in year t can be summarized as in Chart 1 and explained in detail using the definitions below.

Chart 1. Possible Characteristics of an Exporter *and Its Exports* in Year t



<u>Definition 1:</u> ***Portfolios***

There are 3 types of ***portfolio*** definitions used in this study:

a) **"*Turkey's Exporters Portfolio in year t* (EP_t)"** is defined as,

EP_t: {***firms that exported at least once between* 2003 *and year t***}, t ∈ T.

b) ***"Firm i's P*roduct Portfolio in year t ($PP_{i,t}$)"** is defined as,

$PP_{i,t}$: {***Different products exported by firm i from* 2003 *to year t***}, t ∈ T.

c) ***"Firm i's Mar*ket Portfolio in year t ($MP_{i,t}$)"** is defined as,

$MP_{i,t}$: {***Different destination countries of firm i from* 2003 *to year t***}, t ∈ T.

EP_t denotes the set of all of the firms that exported between 2003 and year t, where the firms that exported in 2003 constitute the base of the portfolio; while the portfolio extends with entry of new exporters after 2003. $PP_{i,t}$ denotes the set of different products that *firm i*

[6] STATA 10 and MS Excel 2010 were used for data manipulation.

has exported between 2003 and year t, whereas $\boldsymbol{MP_{i,t}}$ denotes the set of different countries that *firm i* has exported to between 2003 and year t. Similar to the case of $\boldsymbol{EP_t}$, both $\boldsymbol{PP_{i,t}}$ and $\boldsymbol{MP_{i,t}}$ enhance with new entries throughout the years.

<u>Definition 2:</u> New Exporter / Old Exporter

Let us pick any exporter firm (*firm i*) in any t ∈ T. Then *firm i* is a **New Exporter (NE) in year t** if *firm i* $\notin EP_{t-1}$ and *firm i* $\in EP_t$. Therefore, $\mathbf{NE_t}$**:** {All of the NEs in year t} is the set of firms that reflects the difference between $\boldsymbol{EP_t}$ and $\boldsymbol{EP_{t-1}}$. If *firm i* $\in EP_{t-1}$ and *firm i* $\in EP_t$, then *firm i* is an **Old Exporter (OE) in year t**. Hence, *firm i* must be either a ***NE*** or an ***OE*** in year t (NE_t, $OE_t \in EP_t$) as shown in Chart 1. In addition, these definitions imply that once a NE enters the portfolio in year t, then it will be regarded as an OE in year t', where t'>t, t'∈ T.

Hence, we can decompose X_t as,

$$X_t = X_t^{NE} + X_t^{OE}, \tag{3.1}$$

$$\text{where } X_t^{NE} = \sum_i X_{i,t}^{NE} \; ; \; X_t^{OE} = \sum_i X_{i,t}^{OE}.$$

It should be noted that once a NE's exports value is recorded in $X_{i,t}^{NE}$ in year t, then its exports value in t' will always be recorded as exports value of an OE, where t'>t; t, t' ∈ T.

<u>Definition 3:</u> ***New Product / Old Product***

Let *firm i* $\in EP_{t-1}$ and $X_{i,t}>0$. Then *firm i* should be exporting either a *product G* $\in PP_{i,t-1}$ or *product G* $\notin PP_{i,t-1}$ in year t. If *product G* $\in PP_{i,t-1}$, then it is called an ***Old Product (OP) in year t*** for *firm i*. If *product G* $\notin PP_{i,t-1}$, then *product G* is a ***New Product (NP) in year t*** for *firm i*. Using these definitions, we can decompose X_t^{OE} into

$$X_t^{OE} = X_t^{OE,OP} + X_t^{OE,NP}, \tag{3.2}$$

$$\text{where } X_t^{OE,OP} = \sum_i X_{i,t}^{OE,OP} \; ; \; X_t^{OE,NP} = \sum_i X_{i,t}^{OE,NP}.$$

If *firm i* exports a new product (product G) in year t and exports it again in year t', then exports value of *product G* in year t' is regarded as *exports value of an old product for firm i*. It should be noted that, if *firm i* was a NE and exported *product G* in year t, then *firm i's* exports value of *product G* in year t' is also regarded as *exports value of an OE that exported an OP*.

Definition 4: ***New Market / Old Market***

In year t, *firm i* should be exporting a product (new or old) to either *country M* $\in \mathrm{MP}_{\mathrm{i,t-1}}$ or *country M* $\notin \mathrm{MP}_{\mathrm{i,t-1}}$. If *country M* $\in \mathrm{MP}_{\mathrm{i,t-1}}$, then it is called an ***Old Market (OM) in year t*** for *firm i*. If *country M* $\notin \mathrm{MP}_{\mathrm{i,t-1}}$, then it is called a ***New Market (NM) in year t*** for *firm i*. Hence, we can decompose $X_t^{OE,OP}$ and $X_t^{OE,NP}$ into

$$X_t^{OE,OP} = X_t^{OE,OP,OM} + X_t^{OE,OP,NM} \tag{3.3}$$

$$X_t^{OE,NP} = X_t^{OE,NP,OM} + X_t^{OE,NP,NM} \tag{3.4}$$

where

$$X_t^{OE,OP,OM} = \sum_i X_{i,t}^{OE,OP,OM};\ X_t^{OE,OP,NM} = \sum_i X_{i,t}^{OE,OP,NM}$$

$$X_t^{OE,NP,OM} = \sum_i X_{i,t}^{OE,NP,OM};\ X_t^{OE,NP,NM} = \sum_i X_{i,t}^{OE,NP,NM}$$

If *firm i* exports to a new market (country M) in year t and exports there again in year t', then *firm i's* exports value to *country M* in year t' is regarded as *exports value to an old market for firm i*. In addition, it should be noted that if *firm i* was a NE and exported to *country M* in year t, then value of *firm i's* exports to *country M* in year t' is also regarded as *exports value of an OE to an OM*.

Equations (3.2), (3.3) and (3.4) imply that

$$X_t^{OE} = X_t^{OE,OP,OM} + X_t^{OE,OP,NM} + X_t^{OE,NP,OM} + X_t^{OE,NP,NM} \tag{3.5}$$

and if we plug equation (3.5) into equation (3.1), we get,

$$X_t = X_t^{NE} + X_t^{OE,OP,OM} + X_t^{OE,OP,NM} + X_t^{OE,NP,OM} + X_t^{OE,NP,NM} \tag{3.6}$$

Therefore, we can decompose Turkey's total exports in year t (X_t) into 5 different parts, all of which are composed of firm-product-market level information and enable us to clearly identify firm-level market and product diversification, market intensification and contribution of new exporters to total exports in each year.

Definition 5: ***Product Diversification / Market Diversification***

Given equations (3.3) and (3.4), the value of ***Product Diversification in year t*** $(\boldsymbol{PD_t})$ is

$$\boldsymbol{PD_t} = X_t^{OE,\boldsymbol{NP},OM} + X_t^{OE,\boldsymbol{NP},NM} \tag{3.7}$$

and the value of ***Market Diversification in year t*** $(\boldsymbol{MD_t})$ is

$$\boldsymbol{MD_t} = X_t^{OE,OP,\boldsymbol{NM}} + X_t^{OE,NP,\boldsymbol{NM}} \tag{3.8}$$

In other words, *the value of product diversification for Turkey in year t* is equal to *summation of firm-level product diversification values in year t*, whereas *the value of market diversification for Turkey in year t* is equal to *summation of firm-level market diversification values in year t.*

Definition 6: ***Intensive Margin of Exports / Extensive Margin of Exports***

Using Definitions 1-5, for year t, exports value for ***Intensive Margin of Exports*** (IM_t) and ***Extensive Margin of Exports*** (EM_t) can be described as,

$$IM_t = X_t^{OE,OP,OM} \tag{3.9}$$

$$EM_t = PD_t + MD_t + X_t^{NE} - X_t^{OE,NP,NM} \tag{3.10}$$

$$X_t = IM_t + EM_t \tag{3.11}$$

Equation (3.9) implies that *if an old exporter exports an old product to an old market in year t, then the related exports value is recorded in intensive margin of exports in year t.* On the other hand, (3.10) implies that *an old exporter's exports values related to a product diversification or market diversification in year t, as well as exports of a new firm in year t are recorded in extensive margin of exports in year t* [7]. Using (3.9) and (3.10), we reach (3.11) which confirms that total exports value in year t can be decomposed into extensive and intensive margins.

Definition 7: ***N-Year-Survivors***

Let $\exists\ X_{i,t}>0$, $t \in T$. If $\exists\ X_{i,t+1}>0$ where $t+1 \in T$, then *firm i* is called a ***2-year-survivor***. Similarly, if $\exists\ X_{i,t+1}>0$ and $\exists\ X_{i,t+2}>0$ where $t+1, t+2 \in T$, then *firm i* is called a ***3-year-survivor***. Therefore, if $\exists\ X_{i,t+1}>0$, $\exists\ X_{i,t+2}>0$,…, $\exists\ X_{i,t+9}$, where $t+1, t+2,..., t+9 \in T$, then *firm i* is called a ***10-year-survivor.*** These definitions of survivors will help us examine if there exists any role for *"longer-term survival of firms"* in explaining X_t.

Definition 8: ***Last-Time Exporters***

If $\exists\ X_{i,t}>0$ for any $t \in T$ and $\nexists\ X_{i,t'}>0\ \forall$ t' where t'>t and t, t' $\in$ T, then *firm i* is called a ***last-time exporter in year t*** (LTE_t)**.** More specifically, if *firm i* $\in NE_t$ and *firm i* $\in LTE_t$, then *firm i* is a **one-time exporter** (OTE_t) that exported in year t.

[7] Note that to define EM_t in terms of PD_t and MD_t, we need to subtract $X_t^{OE,NP,NM}$ on the right-hand side of (3.10), since it exists in definitions of both PD_t and MD_t.

A number of questions may arise due to the structure of these definitions and it is important to realize the rationale behind them. To begin with, let us examine the analysis period, which has direct influence on all of the definitions. The analysis period begins with the year 2003 for a number of reasons. Firstly, economic turmoil that Turkey experienced due to the financial crises in 2001 disappeared in 2003, thanks to a number economic measures supported with structural reforms that were rigorously implemented by the majority government, which came into office in 2002, after a long period of coalition governments. In addition, 2003 is the year that Turkey's exports boom began with the support of strong global demand, especially from the EU. Hence, 2003 can be regarded as the year that both internal and external factors were beginning to be appropriate for Turkey's exports to improve significantly. On the other hand, the only reason that the year 2012 is the upper bound of the analysis period is the availability of TUIK data when this study was conducted.

The rules that regulate Turkey's exports environment and assumptions regarding the behavior of the exporters also play a significant role in the design of these definitions. For example, since there has been no major regulatory change since March 2000 on how to export a good from Turkey, it is assumed that if *firm i* exports *good G* in year t, then it never forgets how to export it. Similarly, if *firm i* exports to *country M*, then it never forgets how to export there. Given the steady situation in regulations regarding how to export from Turkey, this study assumes that once an exporter successfully completes an exports procedure, then it can repeat the same procedure in the future.

The definitions on NEs and LTEs also have some limitations. By definition, all of the firms in 2003 are regarded as "old exporters". This implies that this study can bring out new exporters from 2004 to 2012 and further assumes that *"the firms that this study regarded as new exporters did not exported before 2003",* a matter which cannot be controlled due to limited data. Similarly, by definition, this study cannot bring out LTEs in 2012 due to the lack of data, mainly because it is not clear whether the exporters in 2012 kept on exporting in the following years or not.

All in all, this study suggests a handful of useful definitions to assess the structure of exporters and exports of a country in detail and those of Turkey are examined using these definitions in the next section.

IV. STYLIZED FACTS ON TURKEY'S EXPORTERS AND EXPORTS

Based on the definitions above, a number of stylized facts will be presented in this section, while main characteristics of Turkish exporters are summarized in Table 1 and main characteristics of Turkey's exports are summarized in Table 2 at the end of this section.

IV – A) Structure of Exporters Portfolio

- The size of Turkey's Exporters Portfolio was 140678 firms between 2003 and 2012.
- Each year, on average, 97% of the exporters were SMEs, where 53% were micro-sized, 33% were small-sized and 10% were medium-sized SMEs. In addition, around 42% of the exporters each year were producer-exporters. Among producer-exporters, 30% were micro-sized, 46% were small-sized and 19% were medium-sized SMEs.
- On average, SMEs had 60% share of Turkey's exports in each year (which was 63% in 2012), while that of producer-exporters is around 59% each year.
- Exports of an average exporter increased from 1.32 million USD in 2003 to 2.71 million USD in 2012. In 2005, exports value of an average micro-sized exporter was 0.48 million USD, while that of a small-sized exporter was 1.31 million USD, a medium-sized exporter was 3.34 million USD and a large-scale exporter was 22.4 million USD. In 2012, exports value of an average micro-sized exporter increased to 1.16 million USD, while that of a small-sized exporter became 1.82 million USD, a medium-sized exporter rose to 4.24 million USD and a large-scale exporter increased to 33.6 million USD. These figures imply that while exports of an average exporter doubled during 2003-2012 period, exports of an average exporter of any size increased significantly.
- 42212 firms employed 2.09 million people in 2005, while the number of employees that 56300 exporters employed in 2012 was approximately 2.8 million. Although the increase in the number of exporters was due to increasing number of SMEs, the main reason behind the increase in the number of people employed by the exporters was due to the increase in the number of people employed by large-sized firms.
- With respect to the size of an average exporter, a micro-sized exporter had 3 employees, a small-sized exporter had 24 employees, a medium-sized exporter had 107 employees and a large-sized exporter had 880 employees on average each year.

IV – B) Exports Frequency, Firm Entry, Firm Exit and Survival Rates of the Exporters

- Each year, on average, 73% of the exporters exported again in the following year. However, only 58% of the firms in each year exported for the following two years. Furthermore, firms that constitute 66% of the portfolio during 2003-2012 exported in only *3 years or less out of 10 years*, where 38062[8] (29.4%) of them exported only once during 2003-2011. Only 8789 (6.2%) of the firms in the exporters portfolio exported in each year between 2003 and 2012, and thus called 10-year-survivors. On average, an average Turkish exporter exported for 3.3 years and stopped exporting thereafter. These results clearly indicate that most of the Turkish exporters are occasional exporters.

- Annual averages indicate that, total exports value of occasional exporters are around 4.5% for each "*exports frequency group"*[9]. In other words, *contribution of firms that exported in 9 out of 10 years to total exports value in each year* is very close to those *exported in 4 out of 10 years*. Therefore, occasional exporters do not have a significant share in Turkey's exports, while the survivors – especially long-term survivors – play a key role in shaping Turkey's exports.

- Between 2003 and 2012, annually approximately 11500 firms on average exported for the first time while 9000 firms exported for the last time. In other words, on average, approximately 1 out of 4 exporters was a new exporter while 1 out of 5 exporters exported for the last time in each year. In addition, between 2003 and 2011, on average, 4230 (47%) of the last-time exporters in each year were new firms, which makes them one-time exporters. Almost all of the new exporters and last-time exporters are SMEs, most of which are micro-sized or small-sized exporters as expected. Hence, the share of new exporters and last-time exporters in Turkey's total exports is very limited.

IV – C) Breakdown of Turkey's Exports with respect to Margins of Exports

- Each year, on average, 81% of Turkey's total exports were a result of exports of the firms in the portfolio that exported the same good to the same country, which reflects intensive margin in this study. The annual changes in intensive margin clearly show

[8] It should be noted that 11431 new exporters in 2012 are not included in this value. Therefore, there were 49493one-time exporters in Turkey's exporter portfolio between 2003 and 2012.
[9] The groups are based on the number of years the firms exported in the last ten years.

that the sharp fall in exports value of Turkey in 2009, as well as the rapid increase in the following years was driven by the changes in intensive margin.

- Annually, exports owing to market diversification of Turkish exporters constituted 12.5% of Turkey's total exports on average. The total amount of exports owing to market diversification added up to 121.9 billion USD between 2004 and 2012. The regional breakdown of market diversification shows that the main source of market diversification for Turkish firms was the European countries with 54.8 billion USD and the Asian countries with 39.2 billion USD, specifically those in the Near and Middle East. Market diversification within EU-27 added up to 40.6 billion USD between 2004 and 2012, the period in which Germany (5,8 billion USD), United Kingdom (4.7 billion USD) and Italy (3.8 billion USD) were the main destinations of market diversification within EU countries. On the Asian side, exports from market diversification to Iran (6.6 billion USD)[10], Iraq (6.2 billion USD) and the UAE (2.9 billion USD) contributed the most.
- Exports owing to product diversification of Turkish exporters constituted 8% of Turkey's total exports on average in each year. The total amount of exports thanks to product diversification added up to 79.3 billion USD between 2004 and 2012. The breakdown of product diversification with respect to technological content shows that the main source of product diversification for Turkish firms was Low-Tech Products (28.2 billion USD), followed by Medium-Low-Tech Products (26 billion USD) and Medium-High-Tech Products (16.9 billion USD). High tech products incremented product diversification by only 2.1 billion USD between 2004 and 2012[11] in total.
- Exports owing to new exporters constituted 3.7%[12] of Turkey's total exports on average in each year. Average exports value for a new exporter increased from 0.175 million USD in 2004 to 0.34 million USD in 2012, which is significantly below the average exports value of an average Turkish exporter.

[10] 3.9 billion USD of this amount is realized in 2012 thanks to exports of gold to Iran. However, this was a special case whereTurkey's exports of gold to Iran amounted to 6.5 billion USD in 2012, which was lower than 55 million USD before 2012.

[11] OECD technology classification was used to determine technological content. The remaining 6.1 billion USD of exports from product diversification belongs to the products that are not classified with respect to technology content.

[12] Due to exports of a new firm that exported 3.4 billion USD of gold to Iran in 2012, the share of new exporters in Turkey's total exports increased from 2.7% in 2011 to 6.5% in 2012. The average share during 2004-2011 is 3.3%.

IV – D) Developments in Market and Product Portfolios

- Average market portfolio of a Turkish exporter increased from 3.54 countries to 4.43 countries from 2003 to 2012, while average product portfolio of a Turkish exporter increased from 8.77 to 10.92 from 2003 to 2012.
- In 2003, 75% of the exporters had a market portfolio less than or equal to 3 countries; while in 2012, 70% of the exporters had a market portfolio less than or equal to 3 countries. On the other hand, in 2003, 66% of the exporters had a product portfolio less than or equal to 5 products, while 62% of the exporters had a product portfolio less than or equal to 5 products in 2012. In other words, although there is some improvement in the last decade, most of the Turkish exporters export at most 5 products to at most 3 countries.
- In 2003, 8% of the exporters had a market portfolio greater than or equal to 10 countries; while in 2012, 11% of the total exporters had a market portfolio greater than or equal to 10 countries. Similarly, in 2003, 9% of the exporters had a product portfolio greater than 20; while in 2012, 12% of the exporters had a product portfolio greater than 20.
- In 2003, 50% of the exporters had only one exports market; while in 2012, 45% of the exporters had a single country in their market portfolios. Similarly, in 2003, 30% of the exporters had a single good in their product portfolio, while in 2012, 26% of the exporters had only one product in their product portfolios. In addition, in 2003, 25% of the exporters exported a single product to a single country, while in 2012, 20% of the exporters exported a single product to a single country. Therefore, it can be claimed that the share of exporters that had product and/or market dependency decreased slightly during 2003-2012.
- Average market portfolio of a Turkish producer-exporter increased from 4.5 to 5.4 from 2005 to 2012, while average product portfolio of a Turkish producer-exporter increased from 7 to 8 from 2005 to 2012. Therefore, compared to an average exporter, an average producer-exporter exported less number of goods to higher number of countries.
- In 2012, an average micro-sized exporter had a market portfolio of 2.9 countries, while a small-sized exporter's market portfolio had 4.4 countries, a medium-sized exporter had 8.5 countries and a large-sized exporter had 16.1 countries in its market

portfolio. Similarly, in 2012, an average micro-sized or small-sized exporter had a product portfolio of 10 products, while a medium-sized exporter had 14.7 products and a large-sized exporter had 28 products in its product portfolio. Therefore, it is obvious that exporters of different sizes have significantly different export capabilities.

IV – E) 10-Year-Survivors

- As it was mentioned earlier, there are 8789 firms that have continuously been exporting since 2003, accounting for 67% of Turkey's total exports on average in each year. These firms employed 1.231 million people in 2012, as opposed to 0.95 million in 2005.
- Since 2005, the numbers of micro-sized and small-sized 10-year-survivors have decreased over the time, while the numbers of medium-sized and large-sized exporters have increased. In other words, continuous exporters have expanded their size over time, where 450 medium-sized and 204 large-sized exporters emerged out of 225 micro-sized and 429 small-sized exporters.
- Although only around 10% of 10-year-survivors are large-sized firms in each year, their share in total exports of 10-year-survivors increased from 51% in 2005 to 55.4% in 2012. In addition, while exports of 10-year survivors increased from 50.6 billion USD in 2005 to 90.2 billion USD in 2012, 25 billion USD out of 40 billion USD increase in exports of 10-year-survivors was thanks to large-sized 10-year-survivors.
- Market portfolio of an average 10-year-survivor had 10.5 countries in 2012, as opposed to 6.7 countries in 2003. In other words, an average 10-year-survivor's market portfolio was twice of an average exporter's market portfolio. Similarly, Product portfolio of an average 10-year-survivor was significantly higher than that of an average exporters, where the former increased from 13.8 in 2003 to 18.9 in 2012.
- In 2012, a micro-sized 10-year-survivor had 5.9 countries in its market portfolio, while a small-sized had 8.5 countries, medium-sized had 13.1 countries and large-sized had 23 countries in its market portfolio. In other words, an average 10-year-survivor firm had a significantly larger market portfolio compared to an average exporter in the same size in 2012, where the structure was similar in any year between 2005 and 2012.
- In 2012, a micro-sized 10-year-survivor had 19 products in its product portfolio, while a small-sized had 15.6 products, medium-sized had 18.1 products and large-sized had

35.6 products in its product portfolio. In other words, an average 10-year-survivor firm had a significantly larger product portfolio compared to an average exporter in the same size in 2012, where the structure was similar in any year between 2005 and 2012.

- Results clearly suggest that exporting continuously brings better performance while dealing with market or product dependency, as well as intensification in existing markets.

IV – F) City-Level Dynamics of Turkey's Exports

- Taking into account the cities that Turkish exporters are operating in as shown in Appendix Table 10, exporters in İstanbul constitute more than half of Turkey's exporters portfolio (51% as of 2012) and Turkey's total exports (52.7% as of 2012). Therefore, Turkey's exports are highly dependent on exports from İstanbul.
- Out of 81 cities, more than 80% of the exporters are concentrated in the top 10 cities[13], where exports from the top 10 cities constitute more than 85% of Turkey's total exports each year. Therefore, it can be claimed that Turkey's exports are concentrated in a limited number of cities.
- In 2012,
    - 46 cities had less than 100 exporters, while 68 cities had less than 500 exporters.
    - 30 cities had an exports value below 100 million USD, while 59 cities had less than 500 million USD of exports.
    - 61 cities had less than 10 LSEs.
    - In 52 cities, average size of an exporter's market portfolio was below the country average; while in 63 cities, average size of an exporter's product portfolio was below the average.
    - More than half of the 10-year-survivors (4739 firms) were located in Istanbul, while there were 30 cities that have less than 10 10-year-survivors.

[13] As of 2012, the top 10 cities in Turkey's exports are İstanbul, İzmir, Kocaeli, Bursa, Ankara, Gaziantep, Denizli, Hatay, Sakarya and Adana. Although there are some changes in the rankings, the top 10 cities list in 2012 is the same as the list for 2005, except for Hatay, which was not in the list in 2005.

Table 1. Main Characteristics of Turkish Exporters Between 2003-2012

Year t	# of Exporters	EP_t	# of NE_t	# of LTE_t	# of PE_t	# of SMEs	# of LSEs	# of Survivors Since Year t	# of Employees of	Average $MP_{i,t}$	# of Exporters with $MP_{i,t}=1$	# of Exporters with $MP_{i,t} \leq 3$	Average $PP_{i,t}$	# of Exporters with $PP_{i,t}=1$	# of Exporters with $PP_{i,t} \leq 5$
2003	35691	35691	-	6302	-	-	-	8,789	-	3.54	17697	26879	8.77	10701	23643
2004	39494	49384	13693	7220	-	-	-	10,533	-	3.63	19442	29488	9.00	11631	25887
2005	42212	61394	12010	7887	19548	40931	1281	12,394	2.09	3.75	20378	31238	9.22	12182	27373
2006	44234	72524	11130	9275	20130	42836	1398	14,526	2.11	3.85	21213	32451	9.79	12594	28486
2007	48393	86382	13858	10690	19892	47003	1390	17,803	2.15	3.87	23395	35523	10.16	13797	31070
2008	48241	97405	11023	10179	19726	46866	1375	21,130	2.15	4.05	22426	34924	10.38	13327	30424
2009	48669	108067	10662	9623	19280	47188	1481	25,462	2.24	4.10	22478	35027	10.55	13263	30460
2010	50321	118394	10327	10188	18729	48996	1325	31,229	2.20	4.25	22978	35905	10.77	13562	31353
2011	53140	129247	10853	13014	20210	51664	1476	40,126	2.45	4.35	24141	37771	10.87	14031	32983
2012	56300	140678	11431	-	24443	54617	1683	56,300	2.80	4.43	25407	39630	10.92	14823	34733

Source: Author's Calculations Using TUIK Data.

EP_t *: Turkey's Exporters Portfolio in year t*
NE_t *: New Exporters in year t*
LTE_t *: Last-Time Exporter in year t*
PE_t *: Producer-Exporters in year t*
SME *: Small and Medium Sized Enterprises*
LSE *: Large Sized Enterprises*
IM_t *: The value of Intensive Margin of Exports*
MD_t *: The value of Market Diversification in year t*
$MP_{i,t}$ *: Firm i's Market Portfolio in year t*
$PP_{i,t}$ *: Firm i's Product Portfolio in year t*
PD_t *: The value of Product Diversification in year t*
X_t^{NE} *: Total exports value of New Exporters in year t*

Table 2. Main Characteristics of Turkish Exports Between 2003-2012 (billion USD)

Year t	X_t	$X_t^{OE,OP,OM}$	$X_t^{OE,OP,NM}$	$X_t^{OE,NP,NM}$	$X_t^{OE,NP,OM}$	X_t^{NE}	IM_t	MD_t	PD_t	Exports of SMEs	Exports of LSEs	Exports of PEs
2004	63.2	51.4	5.6	1.4	2.3	2.4	51.4	7.0	3.7	-	-	-
2005	73.5	59.6	4.8	4.7	2.0	2.4	59.6	9.5	6.7	44.8	28.7	41.9
2006	85.5	69.9	5.9	4.7	2.0	3.0	69.9	10.6	6.7	49.5	36.1	50.9
2007	107.3	84.7	7.7	6.3	4.0	4.6	84.7	14.0	10.3	62.1	45.2	64.7
2008	132.0	106.4	10.0	8.9	3.0	3.8	106.4	18.9	11.9	76.5	55.5	82.1
2009	102.1	82.3	8.2	5.5	2.6	3.5	82.3	13.7	8.1	62.0	40.2	60.4
2010	113.9	93.6	7.1	6.7	2.8	3.7	93.6	13.7	9.4	69.6	44.3	67.0
2011	134.9	113.3	7.7	7.3	2.9	3.7	113.3	15.0	10.2	80.9	53.9	79.3
2012	152.6	119.8	10.7	8.7	3.4	9.9	119.8	19.4	12.1	95.9	56.6	86.5

Source: Author's Calculations Using TUIK Data.

X_t *: Exports Value in Year t*
OE *: Old Exporter*
OP *: Old Product*
OM *: Old Market*
IM_t *: Value of Exports in Intensive Margin in Year t*
MD_t *: Value of Exports Due to Market Diversification in Year t*
PD_t *: Value of Exports Due to Product Diversification in Year t*
SME *: Small and Medium Sized Enterprises*
LSE *: Large Sized Enterprises*
PE *: Producer-Exporters in year t*

V. CONCLUSION AND RECOMMENDATIONS

The most affluent 10 years of Turkey's exports were driven by 8789 out of 140678 firms that exported continuously during 2003-2012, constituting 2/3 of total exports value in each year. These firms outperformed the others in all metrics used in this study, which is a clear indication of importance of continuous exports activities and how continuity helps an exporter to enhance its product and market portfolio.

Since nearly all of these firms are SME's, it is possible to come up with "success stories", which would enlighten those that were not able to export continuously. In addition, since all of the one-time exporters and other firm exits are identified, the reasons behind their quits can be investigated in detail by implementing surveys. Once the problems are detected, the next step is to generate solution-oriented policy options.

This study obvious reveals that different policy options should be generated for different type of firms with respect to their size. Currently, none of the support mechanisms take into account the different structures that Turkish exporters have. These support mechanisms need to be fixed in order to address problems and guide them more efficiently.

Exports values for intensive margin imply that the firms that export the same products to the same markets are the main reason behind the sharp fall in exports values in 2009, as well as the quick rise in 2010 and onwards. The market portfolios of these firms mainly consist of the Euro Zone countries and MENA countries. In this sense, taking into account the global forecasts for these countries over the next ten years combined with the decreasing global demand, Turkey will most likely face hard times in increasing its exports values unless a structural change occurs on the production side, such as shifting to production of high-value added products. Therefore, new policies that focus on production and exports of high value-added products should be implemented in order to sustain the increase in exports.

In conclusion, given the firm-level structure of Turkey's exports and the forecasts on decreasing global demand in the upcoming years, reaching 500 billion USD of exports in 2023 does not seem not to be rational for Turkey.

APPENDIX TABLES

Appendix Table 1. Change in the Sectoral Breakdown of Turkey's Exports

2003				2012			
HS Code	Definition	Exports (Bl. $)	% Share	HS Code	Definition	Exports (Bl. $)	% Share
61	Articles of apparel, accessories, knit or	5.73	12.1	87	Vehicles other than railway, tramway	17.00	11.2
87	Vehicles other than railway, tramway	5.27	11.2	84	Machinery, nuclear reactors, boilers, e	12.99	8.6
62	Articles of apparel, accessories, not kni	3.81	8.1	72	Iron and steel	9.92	6.5
85	Electrical, electronic equipment	3.47	7.4	85	Electrical, electronic equipment	9.55	6.3
84	Machinery, nuclear reactors, boilers, e	2.99	6.3	61	Articles of apparel, accessories, knit or	9.25	6.1
72	Iron and steel	2.97	6.3	71	Pearls, precious stones, metals, coins,	6.98	4.6
63	Other made textile articles, sets, worn	1.63	3.5	27	Mineral fuels, oils, distillation product	6.72	4.4
08	Edible fruit, nuts, peel of citrus fruit, m	1.39	2.9	73	Articles of iron or steel	6.15	4.1
73	Articles of iron or steel	1.39	2.9	62	Articles of apparel, accessories, not kn	5.71	3.8
52	Cotton	1.00	2.1	39	Plastics and articles thereof	5.61	3.7
Sub-Total		29.67	62.8	Sub-Total		89.89	59.2
TOTAL		47.25	100	TOTAL		151.81	100

Source: Author's Calculations Using TUIK Data.

Appendix Table 2. Change in the Regional Breakdown of Turkey's Exports

	2003	2013	2003-2013
EUROPE	65.1%	50.9%	
EU (28)	58.2%	41.5%	
Rest of Europe	6.9%	9.4%	
AFRICA	4.5%	9.3%	
North Africa	3.3%	6.6%	
Rest of Africa	1.2%	2.7%	
AMERICAS	9.0%	6.4%	
North America	8.4%	4.3%	
Central America and Cari	0.4%	0.7%	
South America	0.3%	1.4%	
ASIA	16.5%	31.4%	
Near and Middle East	11.6%	23.4%	
Rest of Asia	5.0%	7.9%	
AUSTRALIA and NEW ZELAN	0.3%	0.4%	
TURKEY'S FREE ZONES	4.1%	1.6%	
OTHER REGIONS	0.4%	0.1%	

Source: Author's Calculations Using TUIK Data.

Appendix Table 3. Decomposition of Turkey's Exports by Use of Currency

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
USD	42.6%	43.0%	43.6%	44.1%	42.5%	47.7%	45.9%	45.4%	46.0%	46.0%	47.4%
Euro	49.3%	49.3%	48.3%	48.5%	50.3%	46.6%	48.0%	48.2%	47.7%	47.6%	45.6%
TL	1.1%	1.0%	1.5%	1.5%	1.7%	1.7%	2.1%	2.3%	2.5%	2.9%	3.5%
Other	7.0%	6.7%	6.5%	6.0%	5.6%	4.1%	4.0%	4.2%	3.7%	3.4%	3.5%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Author's Calculations Using TUIK Data.

Appendix Table 4. Decomposition of Turkey's Exports by Transportation Method

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sea	49.2%	49.5%	48.2%	49.9%	48.6%	50.3%	46.2%	50.7%	54.5%	51.1%	54.6%
Road	43.0%	42.9%	43.0%	41.1%	41.5%	38.6%	41.5%	40.3%	37.3%	33.1%	35.4%
Air	6.8%	6.2%	5.4%	5.7%	6.5%	7.9%	9.6%	6.7%	6.4%	14.3%	8.5%
Other	1.0%	1.4%	3.4%	3.3%	3.3%	3.2%	2.8%	2.2%	1.8%	1.5%	1.5%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Author's Calculations Using TUIK Data.

Appendix Table 5. Average Exports Value of an Exporter with Respect to Its Size (million USD)

	Micro	Small	Medium	Large	Average
2005	0.48	1.31	3.34	22.41	1.74
2006	0.54	1.45	3.35	25.82	1.93
2007	0.64	1.61	4.16	32.49	2.22
2008	0.87	1.96	4.63	40.35	2.74
2009	0.71	1.67	3.45	27.11	2.10
2010	0.78	1.67	4.02	33.44	2.26
2011	0.80	1.88	4.43	36.55	2.54
2012	1.16	1.82	4.24	33.64	2.71

Source: Author's Calculations Using TUIK Data.

Appendix Table 6. Characteristics of Turkey's Exporters by Size of the Exporter

	# of Exporters					Exports (Billion $)					Market Portfolio (Average)					Product Portfolio (Average)					Employment (1000 Person)				
Year	**Micro**	**Small**	**Medium**	**Large**	**Total**	**Micro**	**Small**	**Medium**	**Large**	**Total**	**Micro**	**Small**	**Medium**	**Large**	**Average**	**Micro**	**Small**	**Medium**	**Large**	**Average**	**Micro**	**Small**	**Medium**	**Large**	**Total**
2005	21672	14788	4471	1281	42212	10.4	19.4	14.9	28.7	73.5	2.36	3.88	7.29	13.34	3.75	8.22	8.57	12.02	24.55	9.22	74.0	357.6	480.6	1179.5	2091.7
2006	23845	14261	4730	1398	44234	13.0	20.6	15.8	36.1	85.5	2.47	4.07	7.21	13.89	3.85	9.08	8.82	12.33	25.13	9.79	74.7	353.9	509.3	1168.3	2106.2
2007	26421	15857	4725	1390	48393	17.0	25.5	19.6	45.2	107.3	2.64	4.11	7.48	14.40	3.87	9.61	9.34	13.70	25.61	10.16	70.2	372.8	510.3	1192.4	2145.6
2008	25489	16738	4639	1375	48241	22.2	32.9	21.5	55.5	132.0	2.81	4.25	7.84	14.91	4.05	9.81	9.79	13.47	27.64	10.38	76.1	384.4	502.2	1191.4	2154.1
2009	26958	15147	5083	1481	48669	19.2	25.2	17.5	40.2	102.1	2.90	4.27	7.86	14.96	4.10	10.08	9.83	13.98	25.72	10.55	80.9	344.5	551.3	1266.5	2243.2
2010	27673	16121	5202	1325	50321	21.7	27.0	20.9	44.3	113.9	2.98	4.49	8.25	16.30	4.25	10.33	10.21	14.80	28.31	10.77	75.3	395.5	552.4	1181.4	2204.6
2011	28095	17986	5583	1476	53140	22.4	33.8	24.7	53.9	134.9	3.02	4.47	8.60	16.28	4.35	10.38	10.29	14.53	28.80	10.87	80.5	439.5	599.2	1328.8	2448.1
2012	28255	20083	6279	1683	56300	32.7	36.6	26.6	56.6	152.6	2.88	4.40	8.54	16.11	4.43	9.97	9.98	14.68	27.98	10.92	102.3	487.9	674.5	1535.0	2799.8

Source: Author's Calculations Using TUIK Data.

Appendix Table 7. Characteristics of Turkey's Producer-Exporters by Size of the Exporter

	# of Producer-Exporters					Exports of Producer-Exporters (Billion $)					Market Portfolio of Producer-Exporters (Average)					Product Portfolio of Producer-Exporters (Average)					Employment of Producer-Exporters (1000 Person)				
Year	**Micro**	**Small**	**Medium**	**Large**	**Total**	**Micro**	**Small**	**Medium**	**Large**	**Total**	**Micro**	**Small**	**Medium**	**Large**	**Average**	**Micro**	**Small**	**Medium**	**Large**	**Average**	**Micro**	**Small**	**Medium**	**Large**	**Total**
2005	6298	8767	3508	975	19548	2.1	4.8	8.0	27.0	41.9	2.12	3.75	7.76	15.83	4.55	5.1	5.7	9.4	22.4	7.0	25.3	227.8	383.8	714.5	1351.5
2006	6623	8658	3758	1091	20130	2.6	5.2	9.2	33.9	50.9	2.21	3.84	7.68	16.12	4.69	5.4	6.1	9.7	22.9	7.5	25.8	232.1	412.7	790.9	1461.5
2007	5964	9226	3649	1053	19892	3.3	7.1	12.0	42.2	64.7	2.42	3.90	8.01	16.92	4.90	6.0	6.4	10.0	23.7	7.9	23.5	238.0	401.4	770.9	1433.7
2008	5604	9449	3634	1039	19726	5.6	10.0	14.7	51.9	82.1	2.65	4.15	8.50	17.60	5.23	6.1	6.6	10.3	25.2	8.1	24.7	241.5	400.4	766.4	1432.9
2009	5942	8339	3886	1113	19280	3.4	9.1	11.0	36.9	60.4	2.70	4.09	8.50	17.55	5.32	6.1	6.3	10.2	21.9	7.9	26.4	212.1	429.4	810.1	1478.0
2010	5225	8639	3863	1002	18729	3.6	8.2	13.2	42.0	67.0	2.60	4.31	9.06	19.20	5.61	6.2	6.7	11.0	24.7	8.4	23.7	229.3	419.1	730.3	1402.4
2011	5311	9650	4153	1096	20210	3.6	9.1	15.7	50.8	79.3	2.64	4.28	9.41	19.32	5.72	6.4	6.6	11.1	24.8	8.4	24.2	257.3	454.8	789.3	1525.5
2012	7307	11135	4743	1258	24443	4.7	11.9	16.7	53.2	86.5	2.47	4.20	9.19	19.13	5.42	5.6	6.4	10.9	24.2	8.0	32.4	293.0	521.8	895.9	1743.1

Source: Author's Calculations Using TUIK Data.

Appendix Table 8. Number of Turkey's Exporters by Size of Their Market Portfolio

Year t	$MP_t = 1$	$2 \leq MP \leq 3$	$4 \leq MP_t \leq 6$	$7 \leq MP_t \leq 9$	$10 \leq MP_t \leq 20$	$MP_t > 20$	TOTAL
2003	17697	9182	4184	1784	2068	776	35691
2004	19442	10046	4799	1896	2399	912	39494
2005	20378	10860	5101	2210	2574	1089	42212
2006	21213	11238	5312	2383	2870	1218	44234
2007	23395	12128	5901	2493	3119	1357	48393
2008	22426	12498	5929	2625	3270	1493	48241
2009	22478	12549	6087	2682	3310	1563	48669
2010	22978	12927	6304	2832	3493	1787	50321
2011	24141	13630	6642	2909	3794	2024	53140
2012	25407	14223	7272	3138	4058	2202	56300

Source: Author's Calculations Using TUIK Data.

Appendix Table 9. Number of Turkey's Exporters by Size of Their Product Portfolio

Year t	$PP_t = 1$	$2 \leq PP_t \leq 5$	$6 \leq PP_t \leq 10$	$11 \leq PP_t \leq 20$	$21 \leq PP_t \leq 50$	$51 \leq PP_t \leq 100$	$PP_t > 100$	TOTAL
2003	10701	12942	5062	3749	2339	600	298	35691
2004	11631	14256	5766	4112	2682	678	369	39494
2005	12182	15191	6182	4534	2914	820	389	42212
2006	12594	15892	6400	4729	3218	905	496	44234
2007	13797	17273	6873	5251	3560	1050	589	48393
2008	13327	17097	7157	5354	3646	1019	641	48241
2009	13263	17197	7244	5436	3835	1079	615	48669
2010	13562	17791	7387	5665	4065	1193	658	50321
2011	14031	18952	7796	6059	4353	1231	718	53140
2012	14823	19910	8398	6446	4601	1361	761	56300

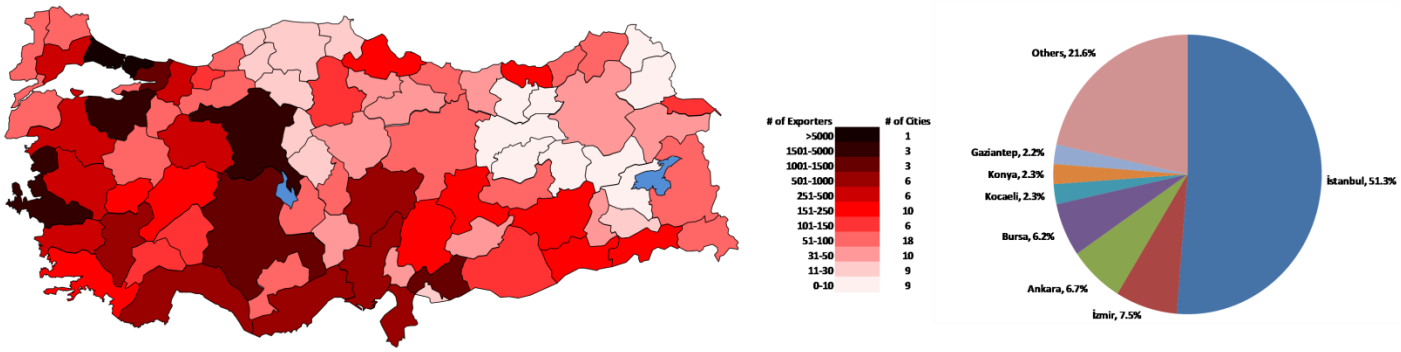
Source: Author's Calculations Using TUIK Data.

Appendix Table 10. Changes in Turkey's Exports Indicators by Top 10 Cities

2005							2012						
City		Exports (Billion $)	# of Exporters	Market Portfolio (Average)	Product Portfolio (Average)	Employment (1000 Person)	City		Exports (Billion $)	# of Exporters	Market Portfolio (Average)	Product Portfolio (Average)	Employment (1000 Person)
Code	Description						Code	Description					
34	İstanbul	38.64	22672	3.90	10.4	1007.0	34	İstanbul	80.55	28871	4.50	12.7	1310.2
16	Bursa	5.10	2373	4.45	7.6	124.8	35	İzmir	11.62	4196	4.55	7.4	167.2
35	İzmir	4.49	3714	3.60	6.5	127.3	41	Kocaeli	10.36	1306	6.96	9.3	99.0
41	Kocaeli	4.10	697	5.94	8.4	54.9	16	Bursa	8.41	3471	5.09	7.6	163.3
54	Sakarya	2.72	244	3.88	8.2	14.4	6	Ankara	5.94	3755	3.47	12.2	358.3
45	Manisa	2.68	255	5.93	7.5	25.8	27	Gaziantep	5.66	1266	4.99	9.0	59.7
6	Ankara	2.36	2583	2.75	9.6	315.9	20	Denizli	2.45	817	5.54	8.9	35.3
27	Gaziantep	1.63	825	4.17	8.1	38.9	31	Hatay	2.07	707	3.49	8.2	21.6
20	Denizli	1.57	681	4.74	8.8	41.0	54	Sakarya	1.87	305	4.87	7.9	23.2
1	Adana	1.15	659	3.20	9.9	26.5	1	Adana	1.75	927	3.38	9.6	37.7
Sub-total		64.45	34703	3.89	9.58	1776.6	Sub-total		130.68	45621	4.53	11.38	2275.6
TOTAL		73.48	42212	3.75	9.22	2091.7	TOTAL		152.55	56300	4.43	10.92	2799.8

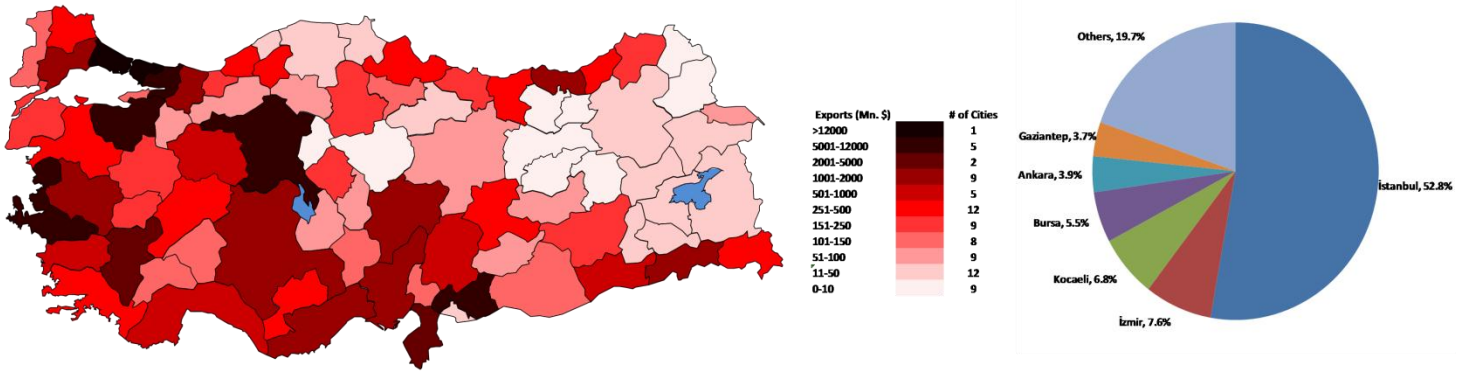
Source: Author's Calculations Using TUIK Data.

Appendix Graph 1. Decomposition of Turkey's Exporters by Cities (2012)



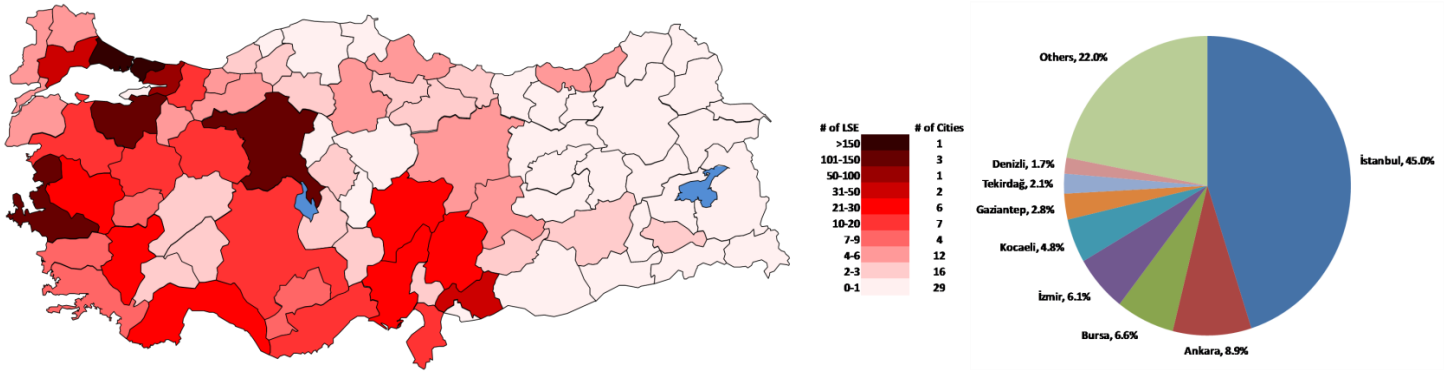
Source: Author's Calculations Using TUIK Data.

Appendix Graph 2. Decomposition of Turkey's Exports by Cities (2012)



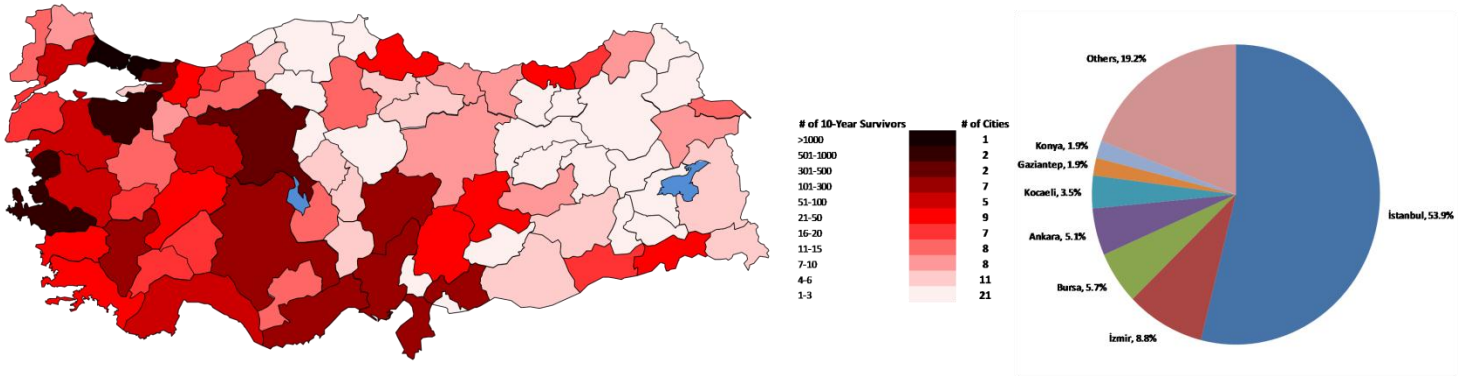
Source: Author's Calculations Using TUIK Data.

Appendix Graph 3. Decomposition of Turkey's Large-Sized Exporters by Cities (2012)



Source: Author's Calculations Using TUIK Data.

Appendix Graph 4. Decomposition of Turkey's 10-Year Survivors by Cities (2012)



Source: Author's Calculations Using TUIK Data.

Appendix Table 11.Share of "N-Year Survivors" in Turkey's Exporters in Year t (%)

Year t	2-Year Survivor	3-Year Survivor	4-Year Survivor	5-Year Survivor	6-Year Survivor	7-Year Survivor	8-Year Survivor	9-Year Survivor	10-Year Survivor
2003	72.3	58.2	49.3	42.1	36.0	31.9	28.8	26.4	24.6
2004	72.1	58.0	48.1	40.3	35.2	31.5	28.7	26.7	-
2005	72.3	56.9	46.3	39.6	35.2	31.8	29.4	-	-
2006	71.1	54.9	45.7	40.0	35.9	32.8	-	-	-
2007	70.2	55.0	46.6	40.9	36.8	-	-	-	-
2008	71.0	57.5	49.5	43.8	-	-	-	-	-
2009	73.7	60.6	52.3	-	-	-	-	-	-
2010	75.2	62.1	-	-	-	-	-	-	-
2011	75.5	-	-	-	-	-	-	-	-

Source: Author's Calculations Using TUIK Data.

Appendix Table 12. Share of "N-Year Survivors" in Turkey's Exports in Year t (%)

Year	2-Year Survivor	3-Year Survivor	4-Year Survivor	5-Year Survivor	6-Year Survivor	7-Year Survivor	8-Year Survivor	9-Year Survivor	10-Year Survivor
2003	97.2	93.7	90.2	86.7	82.5	76.6	70.4	67.5	66.2
2004	97.3	94.0	90.5	86.1	80.6	75.1	72.2	70.7	-
2005	97.4	93.5	88.5	82.8	76.9	73.9	72.3	-	-
2006	97.0	92.2	87.1	81.2	78.1	76.2	-	-	-
2007	96.7	92.3	86.2	82.4	80.1	-	-	-	-
2008	97.2	90.4	86.3	83.5	-	-	-	-	-
2009	94.7	90.6	87.0	-	-	-	-	-	-
2010	97.4	93.7	-	-	-	-	-	-	-
2011	97.5	-	-	-	-	-	-	-	-

Source: Author's Calculations Using TUIK Data.

Appendix Table 13. Turkey's Market Diversification by Main Geographical Regions (Million USD)

REGIONS	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
EUROPE	**3352.4**	**4799.8**	**5517.9**	**7970.8**	**8869.8**	**5312.0**	**6450.5**	**6146.7**	**6375.3**	**54795.1**
EU(27)	2810.2	3874.4	4151.1	5995.9	6363.7	4207.5	4502.9	4494.5	4189.8	**40590.0**
Other Europe (Excl. EU)	542.1	925.4	1366.8	1974.9	2506.2	1104.4	1947.6	1652.2	2185.5	**14205.0**
ASIA	**1806.5**	**2602.5**	**2805.0**	**3408.2**	**5427.9**	**4047.1**	**4612.3**	**5577.8**	**8943.1**	**39230.5**
Near and Middle East	1280.9	1926.5	2026.4	2261.1	3916.1	2675.1	2938.7	3861.7	7321.5	**28207.8**
Rest of Asia	525.6	676.1	778.6	1147.1	1511.8	1372.0	1673.7	1716.2	1621.6	**11022.6**
AFRICA	**633.1**	**860.3**	**926.7**	**1218.7**	**2627.5**	**2709.9**	**1584.1**	**1940.7**	**2376.7**	**14877.9**
North Africa	410.7	494.4	652.9	692.0	1288.1	2003.8	997.1	1031.5	1387.4	**8957.8**
Rest of Africa	222.4	365.9	273.8	526.8	1339.4	706.1	587.0	909.3	989.3	**5920.1**
AMERICAS	**719.4**	**678.4**	**826.2**	**791.0**	**1405.1**	**1155.0**	**664.0**	**857.1**	**1005.8**	**8102.1**
North America	499.4	422.7	461.3	430.3	682.6	658.0	252.4	372.4	529.3	**4308.5**
South America	58.3	90.2	76.6	169.9	311.7	190.8	262.0	334.4	313.4	**1807.3**
Central America and Caribbeans	161.7	165.5	288.3	190.9	410.8	306.2	149.5	150.4	163.2	**1986.4**
TURKISH FREE ZONES	**392.2**	**410.5**	**354.1**	**415.9**	**411.0**	**339.2**	**373.2**	**393.8**	**592.7**	**3682.7**
OTHER REGIONS/COUNTRIES	**27.6**	**129.8**	**65.8**	**200.4**	**77.8**	**49.3**	**21.8**	**69.3**	**64.0**	**705.6**
AUSTRALIA and NEW ZELAND	**72.5**	**34.7**	**90.1**	**38.0**	**65.1**	**72.7**	**31.5**	**48.4**	**42.1**	**495.2**
TOTAL	**7003.7**	**9516.1**	**10585.7**	**14043.0**	**18884.2**	**13685.3**	**13737.4**	**15034.0**	**19399.7**	**121889.1**

Source: Author's Calculations Using TUIK Data.

Appendix Table 14. Turkey's Market Diversification by Top 10 Countries (Million USD)

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
Iran	179.3	170.9	192.3	314.8	413.2	307.1	576.6	567.0	3882.7	**6603.9**
Iraq	271.3	723.4	514.5	408.1	537.0	640.3	790.1	1260.4	1038.2	**6183.3**
Germany	273.2	615.6	519.7	853.0	1002.3	571.9	670.3	693.0	616.5	**5815.6**
Russian Federation	164.8	340.1	448.5	623.3	1139.3	312.8	563.5	685.5	620.3	**4897.9**
Great Britain	326.8	443.5	498.5	717.4	544.4	431.9	390.2	661.6	680.7	**4694.9**
Italy	296.2	401.5	443.5	478.1	697.1	386.3	413.0	363.1	311.7	**3790.4**
USA	410.4	372.7	391.8	366.2	566.9	575.0	169.2	284.4	223.0	**3359.5**
France	244.4	245.9	270.2	641.3	402.1	343.9	349.9	397.9	285.1	**3180.6**
UAE	201.6	186.7	252.1	228.5	723.0	188.7	387.8	241.7	514.9	**2924.9**
Romania	110.1	263.9	329.9	430.6	578.6	272.4	228.6	313.4	196.2	**2723.7**
Sub-Total	**2478.2**	**3764.1**	**3860.9**	**5061.2**	**6603.8**	**4030.3**	**4539.0**	**5467.9**	**8369.2**	**44174.7**
TOTAL	**7003.7**	**9516.1**	**10585.7**	**14043.0**	**18884.2**	**13685.3**	**13737.4**	**15034.0**	**19399.7**	**121889.1**

Source: Author's Calculations Using TUIK Data.

Appendix Table 15. Turkey's Product Diversification by Technology Classification (Million USD)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL
Low-Tech Products	1341.0	2702.6	2689.2	3343.9	4003.2	3065.9	3233.4	4096.8	3769.8	**28245.8**
Middle-Low-Tech Products	1091.9	2164.1	1825.4	3872.9	4209.8	2433.2	2993.4	3056.4	4369.1	**26016.1**
Middle-High-Tech Products	772.5	1252.8	1581.3	2014.9	2771.1	1890.3	1986.7	2180.5	2439.6	**16889.6**
High-Tech Products	284.9	200.9	205.1	438.4	174.7	146.8	188.6	190.6	273.1	**2103.0**
Out of Classificaiton	252.1	411.3	423.4	713.7	797.8	676.7	1215.2	995.1	1490.6	**6975.9**
TOTAL	**3742.5**	**6731.8**	**6724.4**	**10383.7**	**11956.5**	**8212.8**	**9617.2**	**10519.4**	**12342.1**	**80230.5**

Source: Author's Calculations Using TUIK Data.

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