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and
Over Invoicing of Imports in Turkey

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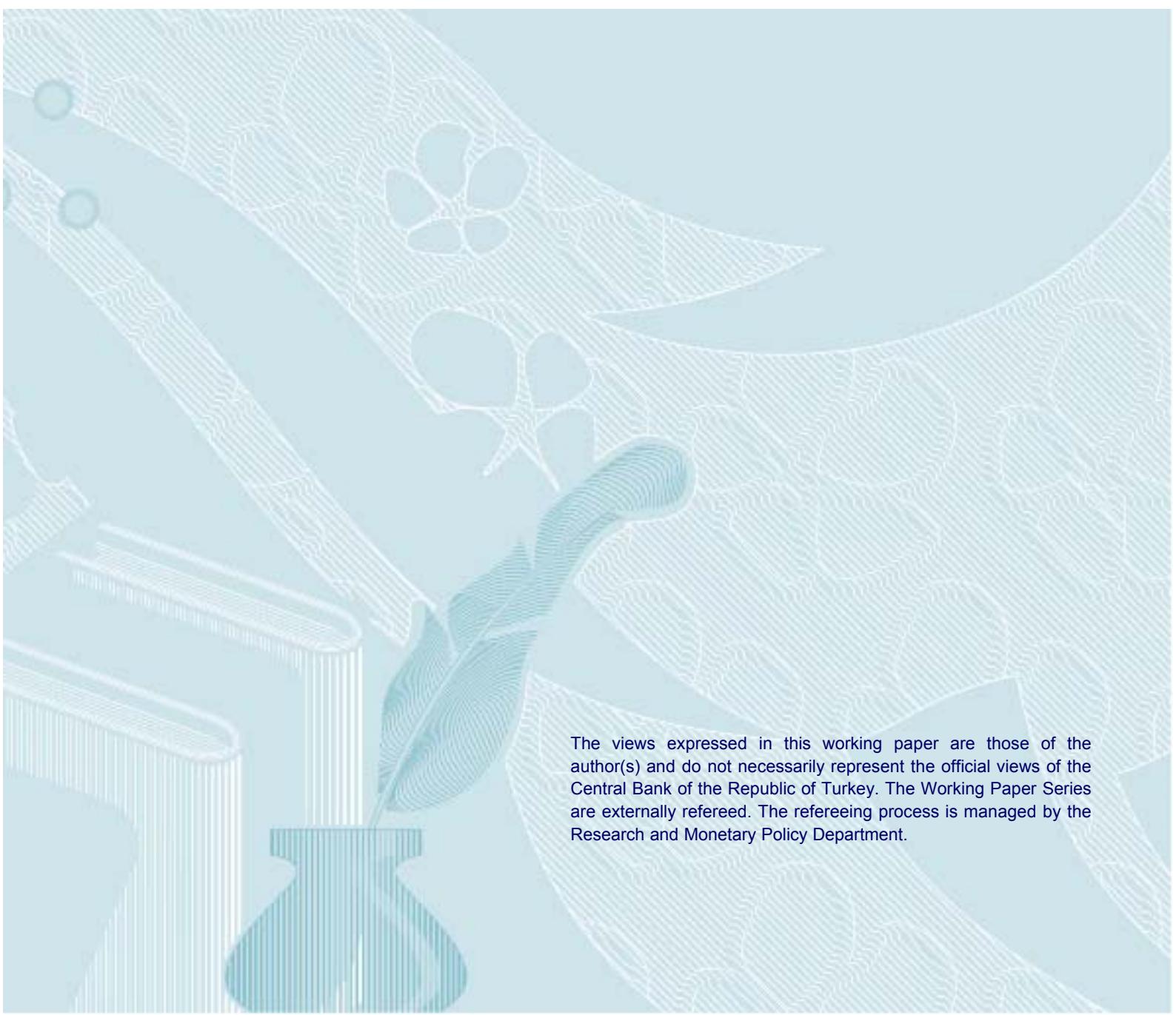
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IMPORT SURVEILLANCE AND OVER INVOICING OF IMPORTS IN TURKEY¹

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Abstract: Turkey has been implementing import surveillance measures in order to protect its industry from unfair price cuts. One possible impact of the import surveillance mechanism is over invoicing of imports in order to avoid surveillance procedures since the procedures are applied to goods with prices under a predefined reference price. In this paper, we investigate whether import surveillance mechanism causes rise in the import figures due to over invoicing. We extend the mirror statistics methodology with panel data techniques using a highly disaggregated data set. Our results suggest that, import surveillance mechanism causes over invoicing and that import figures of Turkey are inflated by around 2 to 3 billion dollars as of 2011.

JEL classification: F10, F13, F40.

Keywords: Mirror statistics; International trade statistics; import surveillance; net errors and omissions; Turkey; China

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1- Introduction:

Import surveillance is a measure that is used to protect a particular local industry from unfair price cuts in imported goods. It is considered to be a strategic trade policy and has been implemented by the European Community (EU) for more than 25 years and since 1995 by Turkey.² The main purpose of this mechanism is to monitor the import prices and see whether imports bring unfair competition in the domestic market. However, a possible result of the surveillance mechanism is that it might lead to over invoicing of the import bill so as to avoid import surveillance procedures. In this paper, we make use of mirror statistics in merchandise trade in order to test whether import surveillance brings over invoicing and to give estimates on the effect of total import figures.

Although trade data are one of the oldest and most complete economic series, their accuracy is still questioned (Federico and Tena, 1991). Mirror statistics is the most common methodology used to check the quality of trade statistics. Mirror statistics are described as pairs of statistics which, for a given period, compare the value of a given product which country A declares that it exports directly to country B with the corresponding value which country B declares that it imports directly from country A. Differences between the two are considered as a measure of the quality of the trade data. Mirror statistics are used to compare quality of trade data within time or between countries. For example, Makhoul and Otterstrom (1998) investigate the mirror statistics for OECD and non-OECD countries between 1948 and 1994 and find that quality of trade statistics is better in OECD countries. They also find that, data quality is increasing over time and that improvement is faster in non-OECD countries. Guo (2009) focus on bilateral trade data of China with its major partners and conclude that quality of data might differ between partners and industries. Mirror statistics are also used to check misreporting of trade data. It is well known that, imports or exports might be over or under invoiced in the case of high taxes or incentives. For example, Simola (2012) argues that, there is deliberate misreporting of exports in Russia due to under invoicing or misreporting of imports since tariff rates are still high.

Our study contributes to the literature, which investigates the quality of the Turkish merchandise trade data using mirror statistics. Bhagwati (1964) finds strong indication of import under invoicing in the beginning of 1960s due to high tariff rates. Celasun and Rodrik (1989) find that, Turkish exports were under invoiced before 1981 due to the premium in black foreign exchange market whereas they were over invoiced in the period of 1981-1985 because of export subsidies. Tokdemir and Şenesen (1997) compare the quality of trade data before and after trade liberalization in 1980 and find that quality of Turkish data did not improve much. Yalta and Demir (2010) check whether capital account liberalization after 1989 and Customs Union Agreement in 1996 had an effect on the accuracy of trade data and find that there is still misreporting.

In this study, we use mirror statistics to investigate the impact of import surveillance practice since 2004. We use highly disaggregated data and estimate the surveillance effect by applying econometric techniques. We do not have an intention to analyze and compare the quality of trade statistics of Turkey through time or with other countries but we only focus on

² Decree no.6814/95 on import surveillance and protection is issued in 1995, in accordance with the law no.3577/89 which was enacted to protect domestic industry from unfair competition against dumping and subsidized imports. According to the decree, authority is empowered to take limited and temporary measures on the importation of a commodity if the commodity in question is the same or directly competitive with the domestically produced counterpart in such a way that the quantity and conditions of importation can cause a serious damage or a risk of a serious damage to domestic producers.

the effect of import surveillance on mirror statistics. Since China is the main source of cheap products, we focus on China as well as the world aggregate. Our results suggest that, import surveillance significantly increases import prices and we estimate that the effect of over invoicing in imports might cause a rise in Turkish import figures up to 2 to 3 billion dollars as of 2011.

The paper is constructed as follows: In the next section, we explain the mirror statistics briefly and give the possible reasons of discrepancies in international trade statistics. Section 3 discusses the surveillance regime in Turkey and the mechanism of over invoicing. We explain the data, estimation methodology and results in section 4 and finally, section 5 concludes.

2- The possible reasons for the mismatch in international trade statistics

Definition of mirror statistics suggest that country A's exports to country B should conceptually be equal both in value and content to country B's imports from country A. Yet, the pairwise comparison of the data shows considerable discrepancies between the trade statistics of partner countries regarding the same commodity. The reasons of these differences are gathered in Blades and Ivanov (1985) under three main groups: i) inevitable differences, ii) differences stemming from structural differences in compilation criteria and iii) errors.

i) *Inevitable differences*: International standards on trade statistics suggest that exports are recorded on a free on board (FOB) basis, whereas imports are recorded including cost, insurance and freight (CIF). This is one of the major sources of inevitable differences. In addition, the duration of transportation of a product may vary to a great extent depending on the geographical location of trading partners. This alters the recording time of exports and imports, and consequently causes discrepancy in corresponding trade figures. However, the impact of inevitable discrepancies is contained and usually less than 10 percent (Veronese and Tyrman, 2009).

ii) *Differences stemming from structural differences in compilation criteria*: The discrepancies in mirror statistics that are included under this heading consist of the methodological differences adopted by the country in consideration. One important factor of discrepancy is the usage of different trade systems, i.e. general versus special trade systems.³ Another factor is the recording of transactions on different trade partner criteria. While some countries report on the basis of trade partners where they receive or send the product directly, others report on the basis of the origin of the product.⁴ In addition, when the timing of the physical movement of a product does not coincide with the timing of the corresponding payment, discrepancies in matching trade figures occur (Makhoul and Otterstrom, 1998). Federico and Tena (1991) summarizes the underlying reasons of structural differences as trade coverage, classification of goods by items, recording values and indication of trading partners. They claim that these can be overcome by standardization

³ The general trade system is a broader concept. It includes all the goods entering and leaving the economic territory of a country, except the goods in transit. The special trade system is a narrower concept. This system is used when statistical territory corresponds to only a part of the economic territory. In other words, this system includes the goods only when they are cleared through customs and are ready to be used within the importing country. (Fabris, 2010)

⁴ Re-exports consist of foreign goods exported in the same country as previously imported, from the free circulation area, premises for inward processing or industrial free zones, directly to the rest of the world and from premises for customs warehousing or commercial free zones, to the rest of the world. When dealing with trade data, it is essential to subtract re-exports from normal exports to arrive at the final value of exports. This is necessary because re-exports do not undergo any value-added processes, so cannot be counted towards a nation's exports.

of recording systems. Different exchange rates also lead to differences in the final results as Kirchbach (1991) argues, i.e. when exports and imports are recorded in their own currency and then transferred to a uniform currency, then the resulting export and import figures would be different.

iii) *Errors*: These discrepancies comprise the deliberate error between recorded data and the real flow. Tokdemir and Şenesen (1997) argue that the protectionist policies and controlled exchange rate regimes as well as quotas, tariffs on imports and subsidies on exports lead to negligence or fraud in export and import records. Other important errors causing the mismatch are done by the statistical offices, e.g. unsystematic data updating, not converting the trade value at exchange rate prevailing on the payment date. Smuggling also has an undervaluation impact on imported commodities with high custom duties.

3- Import surveillance as a possible reason for the mismatch in international trade figures: Turkish case after 2003

In this section, Turkish experience of import surveillance as a possible reason for the mismatch in international trade figures is addressed. Regarding the Blades and Ivanov (1985) grouping listed above, surveillance on imports can be grouped under the heading “errors” due to the fact that the surveillance practice results in higher than real CIF values.

WTO groups the measures against subsidies, all anti-dumping provisions to protect local producers, as well as all protection and surveillance measures under the heading of “trade policy defense tools”.⁵ In this respect, Turkey started surveillance on imports starting from 2004.⁶ The import surveillance in Turkey is being implemented to a vast variety of goods, generally regardless of country of origin. However, considering the fact that domestic producers are faced with heightened competitive pressure from imports originating especially from China, the majority of the imported products subject to surveillance can be thought of China origin.

China's role as an engine of the global economy has become firmly established in recent decades. Over the last three decades, the rapid economic growth in China transferred its economy from a negligible player in the world trade to the world's second largest exporter. The value of exports of China rose from roughly 85 billion USD in 1992 to 2 trillion USD in 2011. Especially, after China joined World Trade Organization (WTO) in 2001, its exports gained additional momentum and increased exponentially as seen in Table 1. In doing so, Feenstra and Wei (2009) define China's exports as a “formidable competitor” in many markets, overlapping in its export composition with other countries. This should be no surprise as subdued value of imports from South East Asian countries and especially from China constitutes a threat in comparative advantage aspect to economies all over the world. This in return, necessitated taking serious precautions in international trade transactions and in this respect; Turkey would be no exception. Table 1 shows that Turkey's imports from China was around 0.1 billion USD in 1992, reaching to almost 22 billion USD by 2011.

⁵ The definition of “trade policy defence rules” depending on the related treaties of WTO and Decree on Import Regime clause 4 can be found at <http://www.tpsa.gov.tr/index.cfm?sayfa=A15EC9FD-D8D3-8566-4520FBC1E3ED2D43>

⁶ Surveillance and protection measures were combined in a single decree before May 2004. Council of ministers separated the two measures as individual decrees on 29 May, 2004. Hence, the analysis in the study starts from 2004.

Table 1: Exports of China (billion USD)

	World	Turkey
1992-1999 average	144,9	0,1
2000	249,2	1,3
2001	266,1	0,9
2002	325,6	1,4
2003	438,2	2,6
2004	593,3	4,5
2005	762,0	6,9
2006	968,9	9,7
2007	1220,1	13,2
2008	1430,7	15,7
2009	1201,6	12,7
2010	1577,8	17,2
2011	1898,4	21,7

Source: UNcomtrade at <http://comtrade.un.org/>

Council of Ministers issued a decree on 29th May 2004 on import surveillance⁷ that comprises the methods and principles of closely monitoring the developments in the imports of products in consideration.⁸ The said decree and following “surveillance implementation regulation” on 8th June, 2004⁹ aim at protecting domestic producers, ensuring the continuity of local production, repressing unfair competition and avoiding tax losses. The commodities to be monitored are chosen ex officio or upon application by individual firms. Ministry of Economy executes a full investigation of the application. They examine the trend of imports, the possible threats on local producers resulting from the said imports, e.g. whether there is a significant price cutting relative to local producers. After surveillance is imposed to a particular product, a documentation system is put into practice. The surveillance form includes the number, place and date of importation, the nature, origin and commercial definition of the product, the name of the exporting/importing firm, quantity, value and price of the transaction. In order to fulfill the requirements to get this form, importers should provide some standard documents before the Ministry of Economy.¹⁰ Furthermore, Ministry of Economy reserves the right to ask additional documents in order to fulfill the procedure. The form is authorized free of charge by the Ministry of Economy within 10 days following the fulfillment of all the requested documents and application. Importation must wait until the authorization is complete. In most of the cases, surveillance is implemented under a reference price announced by the Ministry of Economy.

This practice is considered to be a non-tariff barrier that does not impose quantitative limits on the importation. It is, to use Winters’ (1994) words, “*clearly the more threatening form of the policy*”. This is mainly due to the fact that importation is subject to a system of

⁷ Import surveillance Decree 29.05.2004, number 25476.

⁸ Council of ministers separated the surveillance and protection measures as individual decrees on 29 May, 2004 (decree on surveillance no.2004/7304 and decree on protection no.2004/7305).

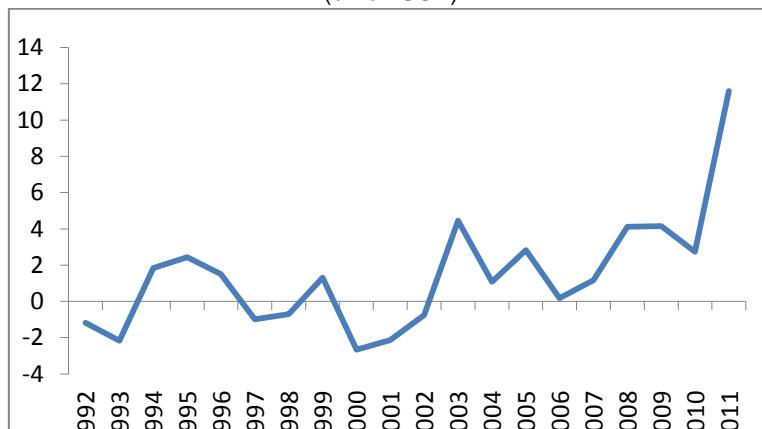
⁹ Import surveillance regulation is on 8 June 2004 and amendment on the regulation in question is on 31 January 2009.

¹⁰ Standard documents to be provided are as follows: Importer's notarized circular of signature and if the declarant is not the importer, then the notarized procuration; 3 copies of proforma invoice or the commercial invoice belonging to the commodity of importation (commodities with different unit prices must be written separately). The invoice must include the unambiguous definition of the commodity, unit FOB price, quantity in terms of statistical unit, weight (in gross kilograms), insurance-freight charges (in the case of CIF invoices) and a copy of the tax registration certificate.

documentation and an authorization procedure. Importer must fill in the relevant documents thoroughly and wait for 10 days until the authorization is complete. Unless they qualify for the surveillance document, they do not carry out importation. It is argued that, some firms importing cheap products choose to declare their import bill at the reference price which is much higher than the actual price and they are ready to pay higher import taxes than the actual price would reveal; just to avoid documentation work and time lag in importation.

Although import surveillance raises import tax revenues due to higher than real CIF value, it has worsening impact on total import bill due to the fact that cheap imports are recorded at considerably higher prices than their actual worth. In addition, in order to avoid the documentation work, importers make out invoices at reference price written on the surveillance document but do not necessarily pay that amount. In other words, the actual amount going abroad would be less than the invoiced value. This in turn would add a positive amount to net errors and omissions. Indeed, net errors and omissions, which fluctuated around zero in the period of 1992-2002, are positive straight since 2004, indicating a systematic disturbance of which import surveillance practice might be one of the potential causes (Figure 1).

Figure 1: Net Errors and Omission of Turkey
(billion USD)



Source: Central Bank of the Republic of Turkey.

4- Methodology and Estimation Results

i) Data:

We took data in this study from United Nations Commodity Trade Statistics Database (UNcomtrade). We used annual export and import figures for the bilateral relationship between Turkey and China as well as Turkey and the world, starting from 2004, when surveillance started to be used extensively, to 2011. We used nominal import and export figures in Harmonized System (HS) classification at 6-digit code.¹¹

We first composed our surveillance variable. In order to form the surveillance variable, we had to go through official gazette for each communiqué issued by the Turkish authority.¹² Turkish Ministry of Economy has issued 105 communiqués since 31 December, 2003 until

¹¹ HS is an internationally accepted numerical 6-digit code, developed by World Trade Organization so as to compare international merchandise foreign trade figures.

¹² The list of communiqués can be found at: <http://www.ekonomi.gov.tr/index.cfm?sayfa=mevzuat&bolum=73107CFD-19DB-2C7D-3D21F68467A3EC96>

May 2011 when our sample ends.¹³ These communiqués comprise of 706 items for surveillance implementations under certain reference prices, which are either for the inclusion of new products or alteration in the surveillance conditions (change in reference price), or a total removal of the product from surveillance. We constituted a matrix, 6-digit HS codes on the vertical column and date of communiqués on the horizontal column. We then imprinted 706 surveillance items into the matrix, concurrently identified whether the instruction is new, an alteration or a removal.

After composing the matrix, we transferred it to a time series in order to build up the surveillance variable. In doing so, we introduced a system to differentiate the effect of communiqué's release date. If the communiqué is released in the first quarter of a year, the surveillance variable takes a "1" for the corresponding year, i.e. the effect of the communiqué on that year would be full. If the communiqué is released on the second quarter, the surveillance variable for the corresponding year is "0.75", i.e. the effect of the communiqué on that year would be three fourths. In a similar fashion, if the communiqué is released on the third and fourth quarters, the surveillance variable for the corresponding year is "0.5" and "0.25", respectively. Starting from the following year communiqué has a full impact and surveillance variable becomes "1" henceforth. When a communiqué alters the prevailing surveillance, the effect on the surveillance variable follows a similar pattern as a new release, but this time the new effect is added on the existing surveillance variable in accordance with the release date.¹⁴ For example, if an existing surveillance is altered (in this case a reference prices increase) in the second quarter of a year, then the surveillance variable becomes "1.75" for that year and "2" for the following years. Lastly, when a communiqué abandons the prevailing surveillance, its effect on the surveillance variable is similar to the new release of a communiqué but in the opposite direction. For example if a communiqué abandons a surveillance on the third quarter of a year, then the surveillance variable takes a value "1-0.5=0.5" for the corresponding year and becomes "0" on the following years.

Table 2: Descriptive Statistics

	China			World		
	Number of Goods	Total Value (Million \$)	Percent of Imports	Number of Goods	Total Value (Million \$)	Percent of Imports
2004	97	502	11.2	105	1240	1.3
2005	127	1080	15.7	163	5270	4.5
2006	160	1710	17.7	177	4390	3.1
2007	190	2560	19.3	211	7910	4.7
2008	205	2840	18.1	222	8960	4.4
2009	218	2320	18.3	238	8200	5.8
2010	230	3420	19.9	250	11000	5.9
2011	244	4400	20.3	281	14400	6.0

Source: UN comtrade, HS-96 6-digit codes.

Table 2 presents descriptive statistics regarding surveillance, i.e. number of goods and the corresponding total imports (in million dollars) under surveillance and percent of those imports from China and the world, respectively. Regarding China, surveillance started with 97 goods, which accounted for 502 million US dollars of imports or 11.2 percent of total

¹³ 5 communiqués issued from 31 December, 2003 to 29 May 2004 are issued as "surveillance and protection measures".

¹⁴ If the new communiqué introduces a decline, then the effect is subtracted correspondingly.

imports from China in 2004. The number of goods reached 244 in 2011 with a total import value of 4.4 billion US dollars (or 20.3 percent of total imports from China). Regarding imports from all over the world, surveillance started with 105 goods with import value of 1.2 billion US dollars (1.3 percent of total imports) in 2004 and rose to 282 goods with import value of 14.4 billion US dollars (6 percent of total imports).

ii) Model:

We apply pooled OLS regression to answer the question of whether surveillance policy causes a rise in import figures. Let M_{it}^K denote the imports of Turkey of commodity i from partner country or region K and X_{it}^K denote the exports of partner or region K of commodity i to Turkey. Then, we form a fixed effect model,

$$y_{it}^K = \emptyset D_{it}^K + \delta_t^K + \alpha_i^K + \varepsilon_{it}^K \quad (1)$$

where y_{it}^K is the logarithm of the ratio of the import of Turkey of commodity i from partner K to the export of partner K of commodity i to Turkey (i.e. $y_{it}^K = \log(M_{it}^K) - \log(X_{it}^K)$), D_{it}^K is the surveillance variable described in the previous section, δ_t^K is a time-specific fixed effect and α_i^K is a commodity-specific fixed effect.

\emptyset can be interpreted as the causal impact of surveillance on the imports of Turkey given partner K's exports to Turkey for commodity group i. We believe that, the underlying mechanism behind the effect of surveillance scheme is misreporting of importers in Turkey. However, we do not exclude the possibility that surveillance process might induce other mechanisms to change the import to export ratio. Hence, \emptyset should be considered as the gross causal impact of surveillance on import to export ratio. If the estimate of \emptyset in equation (1) is significantly positive, then we conclude that surveillance process increases import to export ratio, inflating import figures of Turkey given export of partner K.

\emptyset can be consistently estimated by first differencing equation (1) and eliminating the group-specific fixed effects α_i^K (Cameron and Trivedi, 2005);

$$\Delta y_{it}^K = \emptyset \Delta D_{it}^K + (\delta_t^K - \delta_{t-1}^K) + \Delta \varepsilon_{it}^K \quad (2)$$

Equation (2) is estimated using pooled OLS by regressing Δy_{it}^K on ΔD_{it}^K and a full set of time dummies.

iii) Estimation Results

We estimate \emptyset for three country groups, China, world and world excluding China with two specifications. In the first one, we only add year dummies to the first difference equation (equation 2) whereas in the second one, we augment the model with sector dummies which vary with two digit chapters in HS classification, in order to account for any difference in data collection through time between sectors.¹⁵ Table 3 presents the estimation results.

¹⁵ Results for fixed effect specification (equation 1) are available upon request.

Table 3: Estimates of ϕ

Partner	China	China	World	World	World (exc. China)	World (exc. China)
\emptyset	0.376 (0.049)*	0.379 (0.051)*	0.186 (0.037)*	0.185 (0.038)*	0.161 (0.043)*	0.160 (0.043)*
Sectoral Dummies?	No	Yes	No	Yes	No	Yes

Cluster Robust Standard Errors in Parenthesis.
*Significant at 5%.

The estimation results reveal that, surveillance significantly effects import to export ratio. For China, if surveillance starts for group i in the beginning of the year t , import to export ratio increases by 37.6 percent according to model with no sectoral dummies and 37.9 percent in the model with sectoral dummies, compared to year $t-1$. When we turn to import to export ratio with the world as the partner, the rise in the import to export ratio declines to around 18 percent but it is still significant. It is not surprising to find a smaller ϕ for the world compared to China, since China can be considered as the main supplier of products that have prices less than the reference price. Finally, even excluding China, we get significant effect of surveillance on import to export figures.

Having found that surveillance increases import to export ratios, we now turn to estimates of how much total import figures have been inflated. We estimate the rise in imports based on two alternative scenarios. In the first one, we assume that export prices are constant. In this case, reference price is increased due to rise in cost of Turkish producers or in order to curb the importation of these goods. In the second scenario, export prices are not constant. Reference prices are adjusted solely on the basis of export prices and all changes in export prices are totally reflected in reference prices. As an example, suppose that, surveillance process has been introduced in 2005 for good i and then process has been modified in 2006 by increasing the reference price. In the first scenario, we calculate inflation in nominal exports once in 2005 and then again in 2006 and upcoming years. In the second scenario, we calculate inflation in nominal exports once in 2005 and then keep the same inflation for upcoming years.

Table 4 presents the estimation results for China, the world and the world excluding China for both scenarios. We give two alternative results for the world. In the first one, we give the results of analysis based on aggregate world data. In the second one, we add up results of China and the world excluding China. We use 2003 as base year, in other words, the estimates in the table are based on the assumption that import figures in 2003 are perfectly true. We give results in million dollars and as the ratio of total imports from China, the world and world excluding China. Import figures from China are inflated gradually starting from 2004 and the rise in imports reach up to 1360 million dollars in scenario 1 and 869 million dollars in scenario 2 in 2011 due to increasing imports. The only exception of rising trend in over-imports is 2009, when imports in Turkey fell parallel to decline in GDP due to global crisis. On the other hand, the inflation of imports, as a fraction of total imports from China have grown up gradually and reached 6.3 percent in scenario 1 and 4 percent in scenario 2 in 2011. A similar story applies to total imports from the world excluding China. Inflation in imports from the world excluding China reaches 1.85 billion dollars in scenario 1 (0.8 % of imports) and 1.24 billion dollars in scenario 2 (0.6 % total imports) as of 2011.¹⁶ Looking at

¹⁶ Trade figures of some countries are still missing in the COMTRADE database for 2011. Hence, the results for the world and the world excluding China are subject to revision.

the imports from the world using aggregate data, we see that over invoicing of imports causes a rise of Turkey's import figures by 2.77 and 1.82 billion dollars in scenario 1 and in scenario 2, respectively. On the other hand, when we sum up the results of China and the world excluding China, we obtain higher estimates for the inflation of import figures; 3.2 and 2.1 billion dollars in scenario 1 and in scenario 2, respectively. Hence, there might be some downward aggregation bias in our results.

Table 4: Estimates of Inflation in Imports

			2004	2005	2006	2007	2008	2009	2010	2011
China	Scenario 1	(million \$)	62	206	342	546	688	599	966	1360
		(% of imports from China)	1.4	3.0	3.5	4.1	4.4	4.7	5.6	6.3
Scenario 2	(million \$)	62	149	228	387	461	411	629	869	
	(% of imports from China)	1.4	2.2	2.4	2.9	2.9	3.2	3.7	4.0	
World (exc. China)	Scenario 1	(million \$)	90	409	427	923	1190	1160	1670	1850
		(% of imports from world exc. China)	0.1	0.4	0.3	0.6	0.6	0.9	1.0	0.8
Scenario 2	(million \$)	89	368	321	708	852	826	1170	1240	
	(% of imports from world exc. China)	0.1	0.3	0.2	0.5	0.5	0.6	0.7	0.6	
World (1)	Scenario 1	(million \$)	131	561	647	1310	1690	1610	2370	2770
		(% of imports from world)	0.1	0.5	0.5	0.8	0.8	1.1	1.3	1.2
Scenario 2	(million \$)	130	472	487	985	1180	1130	1630	1820	
	(% of imports from world)	0.1	0.4	0.3	0.6	0.6	0.8	0.9	0.8	
World (2)	Scenario 1	(million \$)	152	615	769	1469	1878	1759	2636	3210
		(% of imports from world)	0.2	0.5	0.6	0.9	0.9	1.2	1.4	1.3
Scenario 2	(million \$)	150	517	549	1095	1313	1237	1799	2109	
	(% of imports from world)	0.2	0.4	0.4	0.6	0.7	0.9	1.0	0.9	
(1): Results using aggregate world data.										
(2): Results by summing inflation in imports from China and the world excluding China.										

Finally, we adjust current account balance and net errors and omissions using import inflation figures in Table 4. Current account deficit, which was recorded as 77.1 billion dollars and 10 percent of GDP in 2011 would be recorded as 74.4 billion dollars (9.6 percent of GDP) and 75.3 billion dollars (9.7 percent of GDP) under scenario 1 and scenario 2, respectively, using the results of aggregate world data (Table 5). If we add up results of China and the rest of the world, current account deficit is adjusted to 74 and 75 billion dollars in scenario 1 and scenario 2, respectively. Finally, net errors and omissions item, which was on average around 2.3 billion dollars in the period of 2004-2010 (excluding the extraordinary high figure in 2011) would decline considerably. Depending on the model and the scenario, average net errors and omissions item in 2004-2010 period would decline between 859 and 1325 million dollars. In other words, over invoicing of imports due to surveillance measures explains 37 to 57 percent of average positive net errors and omissions item in the period 2004-2010.

Table 5: Adjusted Current Account Balance and Net Errors and Omissions (Million Dollars)

		2004	2005	2006	2007	2008	2009	2010	2011
Results Using Aggregate World Data	Current Account Balance	-14431	-22309	-32249	-38434	-41959	-13991	-46643	-77143
	% GDP	-3.7	-4.6	-6.1	-5.8	-5.7	-2.3	-6.4	-10.0
	Adjusted Current Account Balance (Scenario 1)	-14300	-21748	-31602	-37124	-40269	-12381	-44273	-74373
	% GDP	-3.7	-4.5	-6.0	-5.6	-5.4	-2.0	-6.1	-9.6
	Adjusted Current Account Balance (Scenario 2)	-14301	-21837	-31762	-37449	-40779	-12861	-45013	-75323
	% GDP	-3.7	-4.5	-6.0	-5.7	-5.5	-2.1	-6.2	-9.7
	Net Errors and Omissions	1071	2824	185	1170	4120	4147	2733	11594
	% GDP	0.3	0.6	0.0	0.2	0.6	0.7	0.4	1.5
	Adjusted Net Errors and Omissions (Scenario 1)	940	2263	-462	-140	2430	2537	363	8824
	% GDP	0.2	0.5	-0.1	0.0	0.3	0.4	0.0	1.1
Result By Summing China and Rest of the World	Adjusted Net Errors and Omissions (Scenario 2)	941	2352	-302	185	2940	3017	1103	9774
	% GDP	0.2	0.5	-0.1	0.0	0.4	0.5	0.2	1.3
		2004	2005	2006	2007	2008	2009	2010	2011
	Current Account Balance	-14431	-22309	-32249	-38434	-41959	-13991	-46643	-77143
	% GDP	-3.7	-4.6	-6.1	-5.8	-5.7	-2.3	-6.4	-10.0
	Adjusted Current Account Balance (Scenario 1)	-14279	-21694	-31480	-36965	-40081	-12232	-44007	-73933
	% GDP	-3.7	-4.5	-6.0	-5.6	-5.4	-2.0	-6.0	-9.5
	Adjusted Current Account Balance (Scenario 2)	-14280	-21792	-31700	-37339	-40646	-12754	-44844	-75034
	% GDP	-3.7	-4.5	-6.0	-5.7	-5.5	-2.1	-6.1	-9.7
	Net Errors and Omissions	1071	2824	185	1170	4120	4147	2733	11594
	% GDP	0.3	0.6	0.0	0.2	0.6	0.7	0.4	1.5
	Adjusted Net Errors and Omissions (Scenario 1)	919	2209	-584	-299	2242	2388	97	8384
	% GDP	0.2	0.5	-0.1	0.0	0.3	0.4	0.0	1.1
	Adjusted Net Errors and Omissions (Scenario 2)	921	2307	-364	75	2807	2910	934	9485
	% GDP	0.2	0.5	-0.1	0.0	0.4	0.5	0.1	1.2

5- Conclusion:

International trade data are one of the oldest and most detailed economic series. However, accuracy of the trade is questioned in the literature in several ways. Mirror statistics technique, that is, comparing the reciprocal trade data of countries with their partners, is the most common way to check the accuracy of trade statistics. One of the sources of inaccuracy of trade data is export or import under/over invoicing in order to avoid high tariff rates or regulations.

In this paper, we contributed to the literature on accuracy of Turkish international trade data by identifying the effect of one specific regulation, namely import surveillance. Furthermore, our study reveals a source of disturbance systematically affecting net errors and omissions. Hence, results of our study help explain positive net errors and omissions since 2004 which has been an ongoing debate about Turkish economy.

Import surveillance measures are implemented to protect local industry from unfair price cuts in imported goods. Turkey has been implementing import surveillance measures extensively since 2004. In general, surveillance procedures are applied to goods imported under a reference price declared by the Ministry of Economy. It is claimed that, import surveillance measures might create over invoicing of imports due to the fact that importers may try to avoid the surveillance and therefore invoice their imports on the reference prices. In this paper, we tested this claim by extending mirror statistics methodology with panel data techniques with a detailed data set in HS-96 classification in 6 digits. We investigated all communiqués issued in the period of 2004-2011 and created a surveillance variable. Using variation of the surveillance variable, we checked whether import surveillance regulation results in over invoicing of imports. We used rest of the world and China, as a natural candidate for origin of goods to be effected by surveillance, as partners.

We find significant effect of import surveillance on import prices, that is, over invoicing of imports. The effect is more prominent in the trade data with China. We also give estimates of the effect of import surveillance on total import figures. Results suggest that, Turkish import figures could be inflated about 2 to 3 billion dollars as of 2011 and rising since total imports are increasing due to economic growth and the number of commodities under surveillance is on the rise. This might be one of the reasons for Turkey having positive net errors and omissions item in the balance of payments statistics since 2004.

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