

The Extent of Trade Mis-Invoicing in Turkey: Did Post-1990 Policies Matter?

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We analyze the extent and the direction of trade misinvoicing in the context of the new policy environment that has affected the Turkish economy in the post 1990 period. Utilizing bilateral partner country statistics between Turkey and its major trading partners, we observe persisting export overinvoicing and an oscillating pattern of import misinvoicing at the aggregate level. Country-specific data reveal different patterns. As opposed to the general trend in misinvoicing, exports to China are underinvoiced and imports are overinvoiced. We also analyze how the liberalization policies and the customs union agreement with the European Union countries affect trade misinvoicing. We find that, with trade liberalization policies, import misinvoicing has decreased at the aggregate level. However, contrary to the expectations, customs union agreement did not help decrease the extent of trade misinvoicing in Turkey.

1. Introduction

Intuitively, when two countries trade with each other, the data reported by exporter country should mirror the data reported by the importer country after cif/fob adjustment. However, this is often not the case for several reasons. One explanation for the discrepancies in bilateral trade data is trade misinvoicing. Exporters can engage in export underinvoicing to bring less foreign exchange into the country than they actually earn or overinvoice export earnings in order to take advantage of export subsidies. Importers, on the other hand, have a tendency to overinvoice to gain access to greater foreign exchange than required and they can underinvoice to avoid tariffs. This practice was particularly

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common during the 1970s and 1980s because of the protectionist trade policies of that time. This resulted in a number of studies examining the effects of these policies on the discrepancies in foreign trade data (Bhagwati, 1964; Naya and Morgan, 1969; Morgenstern, 1963; Pitt, 1984; McDonald, 1985).

The issue of inaccuracies in the trade data remains in the trade literature to the present day. By analyzing trade data based on product categories, Yeats (1990) argues that trade data between African countries and their partners indicate large-scale smuggling activities. Fisman and Wei (2004) consider the case of China and conclude that underreporting of import values and mislabeling of higher taxed products as lower taxed are widespread practices. Beja (2008) estimates the amount of trade misinvoicing for China between 2000 and 2005 as US \$1.4 trillion. Hsiah and Moretti (2006) show that the government of Iraq, under the “oil for food” program underinvoiced its oil exports. Berger and Nitsch (2008) examine the relation between the level of corruption and foreign trade data discrepancies for the world’s five largest importers between 2002-2006 and conclude that the discrepancies increase with the level of corruption. Farzanegan (2009) examines smuggling in Iran using a structural equation approach in order to investigate the causes of illegal trade. Buehn and Eicler (2009) analyze the determinants of trade misinvoicing and find that black market premium and high tariff rates are the main factors causing illegal reporting. Patnaik et al. (2009) examine the link between trade misinvoicing and capital account liberalization and argue that opening of the capital account leads to a decline in trade misinvoicing.

Misleading declarations of trade data have been noted as “very common” in trade activities in Turkey. Bhagwati (1964) provides an early assessment of such activities and argue that the discrepancies between the import data of Turkey and the export data of her partner countries were caused by import duties higher than the black market premium on foreign exchange. Celasun and Rodrik (1989) suggest that the reason of the increase in Turkish exports after 1980 was export overinvoicing to take advantage of export subsidies. Tokdemir and Gunluk-Senesen (1997) compare official records of Turkish export and import data with data of major OECD trade partners for the period 1970 and 1991 and conclude that trade misinvoicing has not disappeared with the liberalization of the trade regime.

In this study, our objective is to update and extend the earlier studies on this subject in view of the new policy environment that has affected the Turkish economy since the 1990s. One issue that needs to be addressed in particular is the relation between capital account openness and trade misinvoicing. Since trade misinvoicing is motivated by the desire to avoid capital controls, the incentive for trade misinvoicing is expected to decrease with an open capital account (Patnaik et al.,2009). Another important policy change since 1990 has been the Customs Union agreement with the European Union, which came into effect in 1996. This agreement strengthened the trade relations with the European Union countries and Turkey has begun to increase its trade volume rapidly. The trade literature emphasizes the role of high tariffs and custom duties for trade misinvoicing. Therefore, the reduction in custom duties after the adoption of Customs Union agreement is expected to decrease the motivation for trade misinvoicing. In addition to these changes in the policy framework, the changing composition of Turkey`s trading partners should also be taken into account. Some new countries such as Russia and China has emerged as new trade partners with increasing importance in the recent years and the pattern of discrepancies in trade data with these countries requires a thorough examination.

The estimates of the size of trade misinvoicing in Turkey vis-a-vis the world during the period between 1970 and 2007 reveal that 25,776 US\$ billion left Turkey through trade misinvoicing practices. We also examine the country specific patterns and identify China, Netherlands, Germany, Switzerland and Russia as the major misinvoicing partners of Turkey. Turkey`s exports to China is underinvoiced while its exports with the other partners are usually overinvoiced. The picture is somewhat different for imports. Turkey reports a higher import value than the exports reported by Switzerland and Russia. Imports are underinvoiced with Germany and Netherlands and the extent of underinvoicing has been increasing in recent years. This implies that the reductions in custom duties after the Custom Union agreement with EU countries did not help mitigate trade misinvoicing. Our findings also suggest that Turkish residents have been transferring capital to China, Switzerland and Russia through misinvoicing practices.

The remainder of the paper is structured as follows: In the next section, we explain the method for estimating trade misinvoicing. In the third section, we offer statistical evidence in support of trade misinvoicing in Turkey and discuss the main determinants of misinvoicing considering macroeconomic framework. This is followed by the identification of major misinvoicing partners of Turkey. Finally, we outline a number of policy implications and conclude.

2. The Method for Estimating Trade Misinvoicing

We estimate trade misinvoicing by comparing country's export and import data to those of its trading partners by using the method pioneered by Morgenstern (1963) and later developed by Bhagwati (1964)². However, direct comparison of data between the countries provides inaccurate results because exports are reported on a f.o.b. (free on board) basis, whereas imports are reported on a c.i.f. basis (cost, freight, insurance). Thus, in order to measure trade more precisely, c.i.f. value of exports must be converted into f.o.b. value using a c.i.f./f.o.b. ratio (C.I.F), which has been used widely in the literature as a measure of transportation costs. Although freight and insurance costs vary with the distance and the type of the product, it is common in the literature to assume that freight and insurance component of imports averages to about 10 per cent of export value (De Wulf, 1981, p.305). Therefore, following the general practice, the standard C.I.F. of 1.1 is used for data conversions in this study.

To calculate trade misinvoicing, the first step is to compute export discrepancies with the trading partners as follows:

$$XD_t = PX_t - (X_t * CIF_t) \quad (1)$$

Here, PX is the value of imports reported by partner countries, X is exports to other countries reported by Turkey, and CIF is the c.i.f./f.o.b. factor, which represents the cost of freight and insurance. While a negative sign on XD represents export overinvoicing, a positive sign on XD indicates the existence of export underinvoicing.

² In order to calculate trade misinvoicing vis-a-vis the world, we used data obtained from IMF Direction of Trade Statistics. For country level analysis, we gathered data from UNCOMTRADE database.

Import discrepancies with the trading partners (DM) are subsequently computed using the following equation:

$$DM_t = IM_t - (PM_t * CIF_t) \quad (2)$$

where IM is the imports reported by Turkey and PM is the exports reported by partner countries. A positive sign on DM indicates a net overinvoicing of imports, while a negative sign indicates a net underinvoicing. If official figures on Turkey's imports are greater than the exports reported by the partner countries, then the agents engage in import overinvoicing.

The total trade misinvoicing TTM is obtained as the sum of export and import discrepancies.

$$TTM = XD_t + DM_t \quad (3)$$

Here, a positive value of TTM suggests a net underrecording in trade statistics and an outflow of capital, while a negative value means overreporting and an inflow of capital.

By adding absolute values, the absolute trade misinvoicing can be calculated as follows:

$$|TTM| = |XD_t| + |DM_t| \quad (4)$$

It should be noted that the discrepancy in trade data is not always attributable to trade misinvoicing. Incorrect identification of source or destination country, time lags between the arrival and departure of shipment, valuation of goods at different prices at the source and the destination country, and the differences in commodity classification can also lead to discrepancies (Berger and Nitsch, 2008). The differences in trade data can also be because of the mistakes in recordkeeping. Although the export data reported by Turkey and import data reported by partner countries are expected to be different because of the above mentioned reasons, we follow the standard rule in the literature and only

consider the discrepancies above 10% as an evidence of significant trade misinvoicing.

It should also be pointed out that combinations of incentives may actually be selfdisguising in the sense that, if the partners recognize their mutual interests in such false reporting and collude in it, the data may look quite consistent (Yeats, 1990, p.2). This can be seen in terms of abusive transfer pricing by multinational corporations, who vary invoices to move profits and capital abroad (Kar and Cartwright-Smith, 2008).

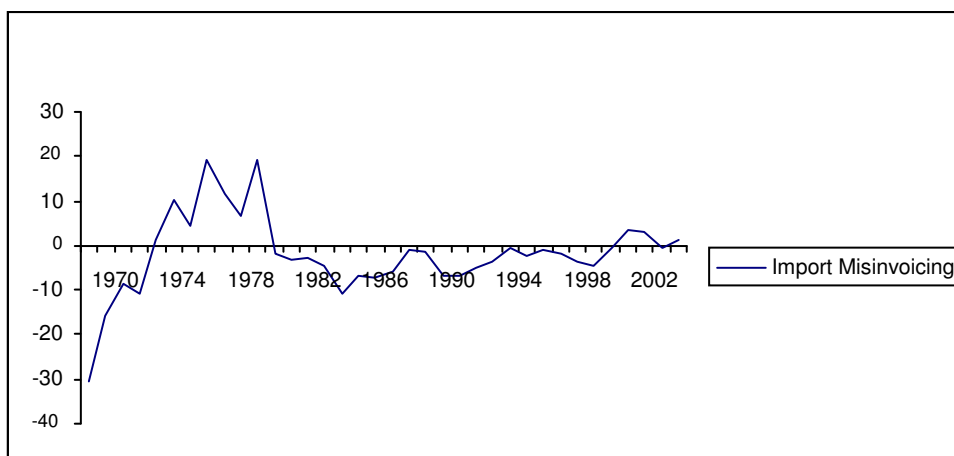
3. Trade Misinvoicing vis-à-vis The World

By focusing on the salient features of Turkey's trade regime between the years 1970 and 2005, we attempt to explain the changes in the direction of trade misinvoicing. However, before explaining the trends in trade misinvoicing, we will briefly review the determinants of trade misinvoicing in the literature to identify the driving factors of misinvoicing practices.

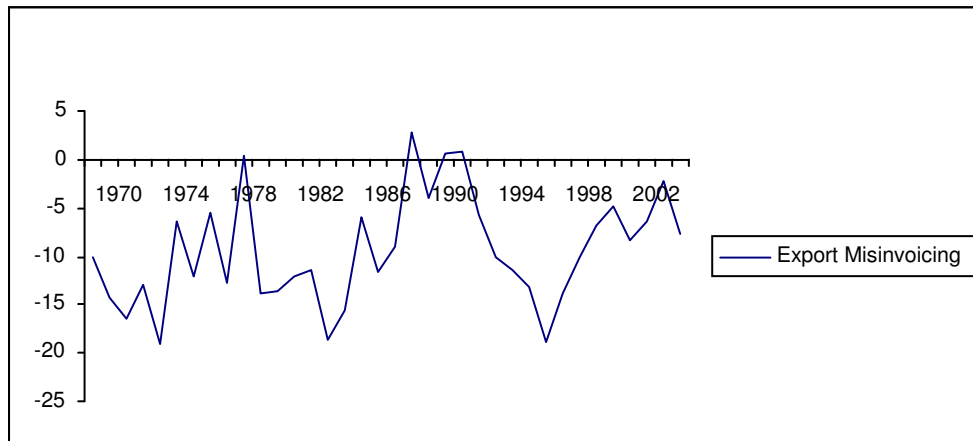
One of the most important causes of trade misinvoicing is high tariffs and custom duties, which cause agents to underinvoice imports (Bhagwati, 1964; Lessard and Williamson, 1987; Boyce and Ndikumana, 2001). Outright export embargo on some goods as well as export taxes and export quotas can also lead to misreporting of trade data (Fisman and Wei, 2007). Some authors argue that black market premium for foreign exchange is an important determinant of trade misinvoicing as well (Pitt, 1984; Biswas and Marjit, 2007; Buehn and Eichler, 2009). A higher black market premium is also expected to increase export underinvoicing as the entrepreneur can sell the illegal export revenues at a higher price in domestic currency. Further, it is argued by Berger and Nitsch (2008) that, since the authorities can use information on firm's export activities to infer on their production, some firms can choose to hide exports for hiding output in order to evade domestic taxes. In addition, Buehn and Eichler (2009) claim that a real depreciation increases the optimal amount of export underinvoicing. People can also involve in trade misinvoicing in order to prevent loss of wealth due to nationalization or confiscation of wealth, therefore de jure capital controls can also be a factor leading to an increase in trade misinvoicing (Patnaik et al., 2009).

Figure 1 traces the path of Turkey's import misinvoicing vis-à-vis the world calculated using the method outlined in the previous section. Turkey followed an import-substitution industrialization (ISI) strategy until 1980. The main features of the trade regime during this period were high tariff rates, quantitative restrictions, overvalued exchange rates, and rationing on foreign exchange, which resulted in a tremendous incentive for import underinvoicing to evade high tariff rates. In 1970, Turkey was experiencing import misinvoicing worth of 40 per cent of total imports. The extent of underinvoicing decreased steadily between 1970 and 1973 as crisis conditions in the economy countered tariff evasion motive. After this period, there was a reversal in the trend of import misinvoicing and imports were overinvoiced until 1980 since the residents were trying to move capital abroad under deteriorating conditions in the domestic economy with the expectation of depreciation of domestic currency.

Figure 1: Import Misinvoicing as a Percentage of Imports (1969-2005)



Source: Authors' calculations based on IMF Direction of Trade Statistics, various years.

Figure 2 : Export Misinvoicing as a Percentage of Exports (1969-2005)

Source: Authors' calculations based on IMF Direction of Trade Statistics, various years.

In the late 1970s, after experiencing a severe balance of payments crisis, Turkey implemented a new stabilization program, which comprised the liberalization of foreign trade regime, the removal of exchange controls, expansion of export incentives and subsidies, reduction in custom duties, tariff rates, and quantitative restrictions. Therefore, Turkey began to witness import underinvoicing after 1980. The rate of underinvoicing increased after 1981 reaching its peak in 1985. In 1985, 11% of total imports were underinvoiced. After the announcement of the new import regime in 1984, import liberalization gained impetus. The import regime was based on the classification of commodities into three groups: “prohibited list”, “imports subject to permission list”, and “liberalized list”. With the changes announced in 1984, around 60% of 1983 imports were no longer subject to restrictions. The number of commodities in the prohibited list, which was around 500 in 1984, was reduced to almost zero by 1985 and the commodities in the subject to permission list were reduced to 22% in 1986 and 6% in 1988 (Özler and Yılmaz, 2009). Moreover, the tariff rates were reduced on imports of intermediate and capital goods (İzmen and Yılmaz, 2009). The output weighted average nominal tariff rate for the manufacturing industry declined to 40% in 1990 from 76.9% in 1984 (İzmen and Yılmaz, 2009). As a result of trade liberalization, import underinvoicing started to decrease with the changes in tariff structure.

The most important change in the trade regime of Turkey was Customs Union agreement with the European Union countries, which came into effect in 1996. With this agreement, Turkey eliminated the tariffs on imports originating from the European Union countries, and based on the “Common External Tariff Rule”, reduced the tariffs against imports from the third countries. The reduction in tariff rates is expected to cause a decline in import underinvoicing. However, in order to compensate the loss in tariff revenue from implementing the customs union, the VAT rates were increased and VAT evasion became the main motive of underinvoicing (Harrison et al., 1997). Therefore, there was a slight decline in the magnitude of import underinvoicing after 1996. However, the trend has reversed after 2001 and imports were overinvoiced again since the residents were trying to take capital out of the country because of the worsening conditions in the domestic economy caused by 2001 financial crisis.

In sum, we show that import misinvoicing has followed an oscillating pattern. During the import substitution phase, imports were heavily underinvoiced because of the protectionist trade policies. Trade liberalization policies were useful in reducing the extent of misinvoicing during the 1980s at the aggregate level. Interestingly, however, import overinvoicing has been increasing in recent years since the residents have been moving capital abroad through misinvoicing practices. Thus, contrary to the expectations, import overinvoicing did not disappear with capital account liberalization policies.

Figure 2 shows that, due to high subsidies and export promotion schemes, Turkey has consistently experienced export overinvoicing between 1970 and 2005 with few exceptions. In late 1970s, exports were overinvoiced due to the high black market premium. However, export overinvoicing was greater between 1981 and 1988, which was characterized by export-led growth strategies. In order to encourage exports, corporate tax allowances, tax exemptions on imported goods and preferential and subsidized export credits were provided. Moreover, direct payments were made to the exporters through tax rebates and cash premia from extra budgetary funds. During this period, the total subsidy rate received by the exporters of manufactured goods reached 23% of export value (Milanovic, 1986). These generous export subsidies given during this period encouraged overinvoicing of exports and even

resulted in the so-called “phantom export” transactions that are designed to illegally take advantage of the generous export subsidies. Export overinvoicing reached its peak in 1984 but started to decrease after that year as reductions in tax rebates took place in the following years because the European Parliament accused Turkey of unfair competition because of its export promotion incentives (Müftüler, 1995). In 1989, all monetary incentives to exports had been lifted but the government adopted new measures to encourage exports such as performance and pre-shipment credits, fund refunds, corporate income tax exclusion and premium payments. After the reductions in monetary export subsidies, exporters overinvoiced the value of exports in 1991 and 1992. During these years, currency was perceived as overvalued and the exporters tended to overinvoice to realize a greater amount of domestic currency for a given amount of foreign exchange receipts in case of a depreciation. After 1993, the extent of overinvoicing in Turkey has steadily increased reaching its peak in 1997. However, it has shown a decline over the five years that followed.

Some of the earlier studies on trade misinvoicing mention export promotion instruments and the availability of low interest credits as the main factor of export overinvoicing (Celasun and Rodrik, 1989; Gunluk-Senesen, 1997). However, in recent years we see also the emergence of other elements affecting the direction of trade misinvoicing. One such factor is the establishment and rising importance of free trade zones. A free trade zone (FTZ) is an area of a country where some trade barriers such as tariffs and quantity restrictions are eliminated in order to attract foreign investments. In Turkey, the idea of establishing free trade zones go back to as early as 1927, but the most important developments took place in 1985, when “Free Trade Zones Law” was issued “to increase exports, reduce unemployment, accelerate the inflow of foreign capital, and to increase the utilization of external finance” (Kibritcioglu, 1996). Free trade zones provide many opportunities for exporters such as less bureaucracy, lower tax burden, and better job environment. Production companies in an FZT are exempt from corporate and income taxes. Goods imported from abroad are exempt from customs duty and goods purchased in Turkey by companies located in an FTZ are exempt from VAT as well. Because of these advantages of FTZs, the number of FTZs has been increasing rapidly since 1987. It is estimated that in 2007, the volume of trade in FTZs was 24 billion US\$, which constituted 8% of total trade volume (Kocaman, 2007). While free trade zones provide

many benefits to the host country and the exporters, they also encourage export overinvoicing and fictitious exports. Although an FTZ is within the boundaries of the Republic of Turkey, it is treated as if it were a territory abroad, thus the products sent to free trade zones are considered as exports. Furthermore, the units in FTZs may divert duty-free raw materials in the domestic area and overinvoice exports to fulfill export obligations. Indeed, there is a growing literature on the relation between free trade zones and increasing corruption in foreign trade transactions. Free trade zones which are associated with trade liberalization policies may increase false reporting of trade values. Pitt (1981) argues that the greater the legal trade, the easier it is to hide smuggling from enforcement activities, and one way the import underinvoicing can be realized is through free trade zones. Another criticism against FTZs is that, while free trade zones is a way of attracting multinational companies increasing job opportunities and investment, they also lead to an increase in transfer pricing practices. Transfer pricing refers to misinvoicing engaged in by related parties in different countries such as different branches of a multinational corporation (Wang, 2007). With this practice, these companies can shift profits out of the host country to low tax countries and avoid higher tariffs. Overall, we suggest that one reason for the growing export overinvoicing in Turkey in recent years is the illegal activities in free trade zones and transfer pricing practices of multinational companies.

4. Major Trade Misinvoicing Partners of Turkey

Estimating trade misinvoicing at the aggregate level gives us some idea about the direction of misinvoicing but it does not tell about the whole picture. Distinguishing major misinvoicing partners of Turkey and examining country-specific patterns can help us analyze the changes in the direction of trade misinvoicing in detail. The previous studies on trade misinvoicing in Turkey focused on the bilateral data discrepancies with the European Union countries since these countries have always been the major trading partners of Turkey. However, there have been some changes in the composition of trade partners in recent years and this fact should also be taken into consideration when examining trade misinvoicing³. Today, with the Customs Union agreement, Turkey

³ The changing composition of Turkey's trade partners is shown on Table 1 on the Appendix.

strengthened the trade relations with the EU countries. While trade with the EU-27 accounted for 55 per cent of Turkey's exports in 1996, this share steadily increased to 58 % in 2004. In recent years, however, the share of the EU countries in total trade has declined as the trade with some other countries increased. Among the countries as newly emerging trade partners, China attracts the most attention. China's accession to the WTO in 2001 led to an important change in the structure of Turkey's imports. The share of imports from China continuously increased after 2001. While the share of imports from China was around 2% in 1996, this share jumped to 7.5 % in 2007. China is now one of the most important trade partners. The share of Pan-European partners in Turkish trade has also increased from 4% in 1985 to 9 % in 2003 and 11% in 2008. The expansion in exports to Romania and Bulgaria are especially notable (Kaminsky and Ng, 2007). Turkey has also increased its trade with Russia in recent years with Turkey's increased exporting of construction services and importing of natural gas in return. As a result, the Russian Federation has emerged as the fifth major market for Turkish exports in the second half of the 1990s, and the share of exports from Russia reached its peak in 1997.

In order to identify major trade misinvoicing partners, we calculate net and absolute trade misinvoicing for the 10 countries⁴ with which Turkey's trade volume is the largest. The bulk of the total trade takes place with these 10 countries, comprising about 60 percent of total trade volume⁵. The results are presented in Table 1. Between 1990 and 2007, Turkey's net unrecorded trade amounts to US\$ 25,776 billion, while the amount of absolute unrecorded trade is US\$ 145,735 billion between 1990 and 2007. Based on the results in Table 1, Turkey's major trade misinvoicing partners are identified as Germany, China, Russia, Netherlands and Switzerland. The other trade partners have relatively little trade misinvoicing. Turkey has usually understated its bilateral trade with Switzerland, China and Russia, while it has overstated its trade with Netherlands.

⁴ These countries are France, Germany, Italy, UK, Russia, Spain, China, USA, Switzerland and Netherlands.

⁵ Details of the calculations are available in the Appendix. Although United Arab Emirates and Iraq have also become important trade partners of Turkey in recent years, we did not include these countries because of data limitations.

Table 1 : Trade Misinvoicing with Partners, US\$ Billion, 1990-2007

Turkey's trade partner	Net	Absolute
China	9,40	9,69
France	1,23	4,52
Germany	-24,45	32,85
Italy	-8,61	10,24
Neth.	-14,43	15,36
Russia	4,22	26,24
Spain	0,30	4,41
Switz.	9,80	14,23
UK	-0,01	9,63
USA	0,92	11,99

Source: Authors' calculations based on UNCOMTRADE database.

Note: Figures are sums for 1990-2007. A positive sign indicates a capital outflow and a negative sign indicates a capital inflow.

Next, we turn to examine the direction of export and import misinvoicing between Turkey and the countries identified above in order to find out if certain trade partners indicate exceptional patterns in trade misinvoicing contrary to the usual trend at the aggregate level, which is export overinvoicing and import underinvoicing in most of the cases. Table 2 presents the percentage of export misinvoicing in total exports for major trade partners. It can be seen from the table that the export-import data discrepancy between Turkey and USA, UK, France, Germany and Italy is lower than 10 % in most of the years except a few exceptions. The country specific patterns indicate the existence of export overinvoicing as was the case in aggregate data except for the case of China. Following the 10% rule, we can conclude that export misinvoicing is greatest with Russia, Netherlands and Switzerland. Turkey overstated its exports with these countries throughout the whole period. While the percentage of overinvoiced exports with Russia has decreased over time, it has shown an increasing trend for the case of Switzerland and Netherlands although there have been some oscillations. The pattern for Switzerland and Netherlands imply that the expectation of a decrease in discrepancies in the liberal period did not take place. This result is similar to the one obtained by Tokdemir and Gunluk-Senesen (1997). The existence of discrepancies can be

explained by the commodity type. Export overinvoicing with Switzerland was especially high for the commodities classified under BEC 2 (industrial supplies) and BEC 7 (goods not classified elsewhere)⁶. Re-exports of goods from Switzerland, such as processed inputs for textiles, can be another contributing factor to overinvoicing (Tokdemir, 1987).

An interesting pattern can be observed in trade with China where, as opposed to the general trend, exports were usually underinvoiced. One explanation for this is the treatment of China's entrepot trade through Hong Kong differently by two countries. Indeed, China's entrepot trade has been cited as one of the most important reasons of the large trade data discrepancies between China and its partner countries. China's trading partner countries including Turkey consider the value of goods to Hong Kong as exports to China without making any adjustments to the data. Moreover, Turkish statistics do not make any reconciliations for the mark-ups charged by unrelated party Hong Kong middleman for their re-export activities. As a result, exports to China are usually understated. However, due to the accession of China to World Trade Organization, the discrepancies seem to normalize after 2001.

Table 3 presents the trends in import misinvoicing. The general tendency has been import underinvoicing for most of the countries, although there are some exceptional destinations as well and China is one of these countries. Imports from China were overinvoiced throughout the whole period, which suggests the possibility of overinvoicing of Turkish imports from China or under-invoicing of Chinese exports to Turkey. It can be argued that there is not much incentive for Turkish importers to overinvoice imports to China since this will increase the custom duties they need to pay. On the other hand, Chinese exporters may have the motivation to underinvoice exports to avoid Chinese taxation and the restrictions on capital outflows. This practice is called "roundtripping," which is a trade-tax investment

⁶ Trade misinvoicing is calculated for Broad Economic Categories as well in order to give information about the foreign trade regime specific to each commodity. Trade Misinvoicing estimates calculated according to BECs are given in the Appendix. The BEC categories are BEC-1 food and beverages, BEC-2 industrial supplies, BEC 3 fuels and lubricants, BEC 4 capital goods, parts and accessories except for transport equipment, BEC 5 transport equipment, parts and accessories, BEC 6 consumption goods not elsewhere classified, and BEC 7 goods not elsewhere classified.

strategy to move capital out of China through misinvoicing. This domestic capital abroad then returns to the country in the form of foreign direct investment. The roundtripping activities in China have been one of the main causes of the trade data discrepancies in the recent years.

Table 2 : Percentage of Export Misinvoicing in Total Exports, 1990-2007

	China	France	Germany	Italy	Neth.	Russia	Spain	Switz.	UK	USA
1990	30	10	3	7	-21	-	14	-52	21	9
1991	130	14	4	-3	-23	-	25	-46	-4	8
1992	-36	6	10	-7	-9	-23	30	-38	-9	27
1993	-13	-4	0	-4	-14	21	17	-43	-18	20
1994	21	0	4	-1	-13	-61	7	-32	-3	1
1995	105	1	0	-4	-10	-66	1	-20	-1	17
1996	35	4	-1	-1	-7	-71	13	-29	5	6
1997	35	2	-2	-1	-5	-71	16	-41	3	1
1998	2	13	1	-1	2	-71	6	-16	1	10
1999	19	12	-1	4	0	-57	3	-17	2	3
2000	29	11	0	6	-1	-55	13	-8	0	-5
2001	6	7	-1	6	-3	-54	-1	-3	6	-6
2002	6	10	2	7	-5	-48	10	-7	5	4
2003	-4	2	-1	8	-13	-42	3	-18	59	-2
2004	41	1	3	-4	-28	-44	7	-14	-1	0
2005	3	5	0	-24	-26	-38	9	-21	-3	4
2006	1	5	9	-9	-24	-28	10	-51	-2	4
2007	14	0	0	-12	-32	-22	16	-34	-4	7

Source: Authors' calculations based on UNCOMTRADE database.

Note: Positive numbers mean export underinvoicing, while negative numbers mean overinvoicing.

Another exceptional trade partner is Switzerland. The reported import data by Turkey is in general higher than the reported export data by Switzerland. This can be attributed to capital flight from Turkey, as residents report higher import values in order to move capital to Switzerland, which has always been a destination for transfer of capital thanks to its special banking conditions. We would expect that overinvoicing of imports, which is a vehicle for the transfer of capital abroad, decrease with the liberalization of capital account. However, far from decreasing, import overinvoicing has been increasing in recent

years suggesting that capital account liberalization did not help mitigate import overinvoicing.

Imports with Germany, Netherlands and the United States in some years are underinvoiced. The pattern for Netherlands is rather interesting. Imports have been consistently underinvoiced and the percentage of underinvoiced imports has been increasing over time reaching %115 in 2007. This increase of the percentage of underinvoiced imports is mainly based on the commodities classified as BEC-5 (transport equipment, parts and accessories) and BEC-6 (consumption goods not elsewhere classified categories)⁷. These large figures of import underinvoicing indicate that the expectation of a decrease in trade misinvoicing after the adoption of customs union agreement did not realize in Turkey.

Table 3: Percentage of Import Misinvoicing in Total Imports, 1990-2007

	China	France	Germany	Italy	Neth.	Russia	Spain	Switz.	UK	USA
1990	78	-5	-27	-8	-15	-	2	-20	-18	-9
1991	65	-3	-46	-5	-14	-	11	-8	-23	-20
1992	56	-11	-24	-15	12	31	-12	26	-12	-15
1993	29	-7	-23	-14	-3	23	-20	1	7	-13
1994	21	-4	58	-5	4	0	-11	5	-3	-25
1995	12	-1	-26	-11	-1	14	-14	-8	4	19
1996	19	-5	-10	-11	12	2	-3	10	-89	3
1997	22	-6	-5	-8	-11	0	-7	0	-15	10
1998	14	-3	-10	-6	9	1	-8	0	0	3
1999	22	-7	-8	-2	2	24	-16	-4	5	-14
2000	10	-4	-17	-6	-26	12	-29	-5	-10	-6
2001	20	6	-7	-8	-32	-4	-3	36	7	-5
2002	12	4	-9	0	-29	4	-9	44	13	-11
2003	13	5	-17	-5	-48	3	-9	53	18	9
2004	31	8	-29	-11	-75	9	-9	48	-6	22
2005	32	-7	-28	-9	-94	8	-4	55	5	13
2006	17	2	-28	-6	-112	12	3	49	2	-30
2007	13	0	-27	-7	-115	37	-2	54	5	11

Source: Authors' calculations based on UNCOMTRADE database.

Note: Positive numbers mean import overinvoicing, while negative numbers mean import underinvoicing.

⁷ See Appendix for calculations of trade misinvoicing for Broad Economic Categories (BEC).

5. Conclusion and Policy Implications

Utilizing bilateral partner country statistics, we estimate the size of trade misinvoicing in Turkey between 1970 and 2007. We find that overinvoicing is the main export misinvoicing trend. Import misinvoicing, however, exhibit an oscillating pattern. The reversals in the direction of import misinvoicing are mainly related to the changing conditions in the macroeconomic environment and capital flight motives as well as the liberalization of current and capital account.

We also estimate trade misinvoicing between Turkey and its major trade partners and find that Turkey's net unrecorded trade amounts to US\$ 8.91 billion, while the amount of absolute unrecorded trade is US\$ 145,735 billion between 1990 and 2007, meaning that US\$ 8,91 billion left the country through trade misinvoicing. We examine country specific trends in the direction of trade misinvoicing as well and identify China, Germany, Russia, Switzerland, and Netherlands as the main misinvoicing partners. At the country-level analysis, export overinvoicing is still the main tendency except the case of China. On the import side, China and Switzerland emerge as the exceptional trade partners. Trade misinvoicing with the EU countries has been increasing in recent years meaning that the Customs Union agreement did not help trade misinvoicing diminish.

The large and persistent discrepancies in foreign trade data have important policy implications. First of all, trade misinvoicing may facilitate capital flight because the agents can move capital abroad by misreporting their trade transactions.⁸ In this sense, trade misinvoicing represents "lost resources" since these resources leave the country without the control of the domestic authorities leading to a decrease in the funds necessary for growth and development. Trade misinvoicing has also adverse effects on the wealth distribution of the society as some citizens evade higher taxation by transferring funds abroad. This eventually erodes the domestic tax base and reduces government revenue (Farzanegan, 2009). Thus, an important policy challenge for

⁸ For further discussion of trade misinvoicing as a channel of capital flight, the reader is referred to Claessens and Naude (1993), Boyce and Ndikumana (2001) and Patnaik (2008).

Turkey is to prevent capital from fleeing abroad through trade misinvoicing and implement policies to facilitate capital repatriation so that these resources can be utilized to increase domestic investment. When considering the mechanisms to prevent capital flight, we should question the role of capital account liberalization. After capital account liberalization, we expect to experience a fall in trade misinvoicing since the agents can transfer capital in legal ways (Patnaik et al., 2009). However, this expectation did not realize for Turkey.

Misreported trade data can cause policy prescriptions based on these statistics to be misleading. Baldwin (2006) for example, stated that the effect of VAT fraud was so large that the United Kingdom had to restate its national accounts. Biswas and Marjit (2005) consider the consequences of the devaluations in India on exports and imports and conclude that the impact of a devaluation on exports and imports will be overestimated in the existence of large amounts of trade misinvoicing. Furthermore, errors in developing country trade data could affect government policies relating to investment, balance of payments, initiatives for the liberalization of trade barriers and exchange rate policy (Yeats, 1990). In order to decrease trade misinvoicing, one measure is to eliminate all the incentives that lead agents to misinvoice. The implementation of regulatory mechanisms can also prevent misreporting of trade data. Finally, sound trade management policies and tough penalties can be used (Beja, 2008). In this respect, a close collaboration between Turkey and its trading partners is required.

References

Richard Baldwin, (2006), The Euro`s Trade Effects, European Central Bank, Working paper series, No. 594, March.

Beja, Edsel, (2008), Estimating Trade Misinvoicing from China: 2000-2005. *China and World Economy* 16(2): 82-92.

Berger, Helge, and Volker Nitsch, (2008), Gotcha! A profile of Smuggling in International Trade. Paper presented at the CESifo Venice Summer Institute, Venice, Italy, July 14-15.

Biswas, Amit and Sugata Marjit, (2005), Mis-Invoicing and Trade Policy. *The Journal of Policy Reform* 8(3): 189-205.

Buehn, Andreas, and Stefan Eichler, (2009), Trade Misinvoicing: The Dark Side of World Trade. Paper presented at the Annual Meeting of European Economic Association, Barcelona, August 23-27.

Bhagwati, Jagdish, (1964), On under-invoicing of Imports. *Bulletin of Oxford University Institute of Economics and Statistics* 26(4): 389-97.

Boyce, J. and Ndikumana L. (2001), Is Africa Net Creditor?: New Estimates of Capital Flight from Severely Indebted Sub-Saharan Countries, 1970-96. *The Journal of Development Studies* 38(2): 27-56.

Celasun, M., and Dani Rodrik, (1989), Debt, Adjustment and Growth: Turkey, in J. Sachs (ed.), *Developing Countries` Debt*, Chicago, University of Chicago Press and NBER.

De Wulf, L., (1981), Statistical Analysis of Under-and-Overinvoicing of Imports. *Journal of Development Economics* 8: 303-323.

Farzanegan, Mohammad R., (2009), Illegal Trade in the Iranian Economy: Evidence from a Structural Model. *European Journal of Political Economy* 25: 489-507.

Fisman, Raymond, Wei, Shang-Jin, (2004), Tax Rates and Tax Evasion: Evidence from Missing Imports in China. *Journal of Political Economy* 112 (2): 471-500.

Fisman, Raymond, Wei, Shang-Jin, (2004), The Smuggling of Art, and the Art of Smuggling: Uncovering the Illicit Trade in Cultural Property and Antiques. *American Economic Journal: Applied Economics* 1: 82-96.

Harrison, G., T. Rutherford and D. Tarr, (1997), Economic Implications for Turkey of a Customs Union with the European Union. *European Economic Review* 41, Issue 3-5: 861-870.

Hsiah, C.T., Moretti, E., (2006), Did Iraq cheat the United Nations? Underpricing, Bribes, and the Oil for Food program. *The Quarterly Journal of Economics* 121: 1211-1248.

Izmen, Umit and Kamil Yilmaz, (2009), Turkey's Recent Trade and Foreign Direct Investment Performance. *Turkey and the Global Economy*, Routledge.

Kaminsky, B. and F. Ng, (2007), Turkey's Evolving Trade Integration Into Pan-European Markets. *The Journal of International Trade and Diplomacy* 1(21): 35-103.

Kar, Dev and Devon Cartwright-Smith, (2008), Illicit Financial Flows From Developing Countries: 2002-2006. *Global Financial Integrity*, Washington, DC.

Kibritcioglu, A., (1995), Concept and Instrument of the Economic Development in Turkey: A Model for Palestine. Conference Paper, October 26-30, Antalya, Turkey.

Kocaman, Ç.B., (2007), Serbest Bölgelerin Makroekonomik Etkilerinin Değerlendirilmesi: Türkiye Örneği. *Ankara Üniversitesi Hukuk Fakültesi Dergisi* 56(3): 99-135.

Lessard, D. and J. Williamson (1987), Capital Flight and Third World Debt, Institute for International Economics, Washington, DC.

McDonald, D.C., (1985), Trade Data Discrepancies and the Incentive to Smuggle. *IMF Staff Papers* 32: 668-692.

Milanoviç, B., (1986), Export Incentives and Turkish Manufactured Exports: 1980-1984. *World Bank Staff Working Paper* 602.

Morgenstern, O., (1963), "On the Accuracy of Economic Observations: Foreign Trade Statistics, Chapter IX, The Accuracy of Economic

Observations, reprinted in Bhagwati 1974, 87-122. Princeton, NJ:Princeton University Press.

Müftüler, Meltem, (1995), Turkish Economic Liberalization and European Integration. *Middle Eastern Studies* 31(1): 85-98.

Naya, Seiji and Theodore Morgan, (1969), The Accuracy of International Trade Data: The Case of Southeast Asian Countries. *Journal of American Statistical Association* 64(326): 452-467.

Ozler, S., K. Yilmaz, (2009), Productivity Response to Reduction in Trade Barriers: Evidence from Turkish Manufacturing Plants. *Review of World Economics* 145(2): 339-360.

Patnaik, Ila, Abhijit Sen Gupta, Ajay Shah, (2009), Trade Misinvoicing: A Channel for de Facto Capital Account Openness. NIPFP-DEA Program on Capital Flows.

Pitt, M.M., (1981), Smuggling and Price Disparity. *Journal of International Economics* 11: 447-458.

Pitt, M.M., (1984), *Smuggling and the black market for foreign exchange*. *Journal of International Economics* 16: 243-257.

Tokdemir, E. , Türkiye'nin İsviçre ile Ticaretinde Bazı Eğilimler. *METU Studies in Development* 14: 49-63.

Tokdemir, Ertugrul, and Gulay Gunluk-Senesen (1997), Does Liberalization Reduce Foreign Trade Data Discrepancies? Counterevidence From Turkey, 1970-91. *International Review of Applied Economics* 11(2).

Yeats, Alexander J., (1990), On the Accuracy of Economic Observations: Do Sub-Saharan Trade Statistics Mean Anything? *World Bank Economic Review* 4(2): 135-156

DATA APPENDIX**Table 1 : Export Shares of Major Trade Partners of Turkey (1990-2007)**

	China	France	Germany	Italy	Neth.	Russia	Spain	Switz.	UK	USA	Total
1990	0,29	5,69	23,81	8,54	3,36	-	1,54	2,26	5,75	7,47	58,68
1991	0,15	5,07	25,11	7,15	3,49	-	1,75	1,81	4,97	6,72	56,22
1992	1	5,5	24,88	6,41	3,4	3	2,03	1,51	5,41	5,88	59,01
1993	3,34	5,02	23,81	4,89	4,05	3,29	1,3	1,41	5,44	6,43	58,96
1994	1,96	4,7	21,73	5,71	3,43	4,53	1,29	1,32	4,91	8,4	57,98
1995	0,31	4,78	23,3	6,74	3,41	5,7	1,67	1,1	5,25	7	59,27
1996	0,28	4,52	22,35	6,24	3,32	6,48	1,59	1,19	5,41	7,01	58,4
1997	0,17	4,43	20,02	5,29	2,97	7,84	1,67	1,21	5,76	7,72	57,08
1998	0,14	4,84	20,27	5,79	3,29	5,01	1,92	0,91	6,36	8,29	56,83
1999	0,14	5,92	20,59	6,33	3,51	2,21	2,87	1,01	6,88	9,17	58,62
2000	0,33	6,01	18,81	6,39	3,17	2,33	2,56	0,87	7,36	11,18	59,01
2001	0,64	6,05	17,13	7,47	2,85	2,95	3,03	0,77	6,94	9,98	57,81
2002	0,7	5,94	16,32	6,6	2,92	3,27	3,12	0,81	8,41	9,26	57,33
2003	1,07	5,98	15,84	6,76	3,23	2,89	3,79	0,76	7,77	7,94	56,03
2004	0,62	5,81	13,85	7,35	3,39	2,95	4,15	0,7	8,78	7,68	55,29
2005	0,75	5,18	12,87	8,58	3,36	3,24	4,1	0,76	8,05	6,68	53,56
2006	0,81	5,38	11,32	7,89	2,97	3,79	4,35	1,06	7,97	5,92	51,46
2007	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97	0,97

Source: Undersecretariat of the Prime Ministry for Foreign Trade of Turkey, 2008

Table 2 : Import Shares of Major Trade Partners of Turkey (1990-2007)

	China	France	Germany	Italy	Neth.	Russia	Spain	Switz.	UK	USA	Total
1990	1,1	6,01	15,81	7,74	2,57	-	1,55	2,41	4,55	10,23	52,0
1991	0,82	5,83	15,36	8,77	3,05	-	1,53	2,32	5,54	10,72	53,9
1992	0,75	5,91	16,42	8,39	3,05	4,55	1,4	3,01	5,19	11,37	60,0
1993	0,87	6,64	15,4	8,69	2,96	5,24	1,46	2,21	5,25	11,39	60,1
1994	1,11	6,27	15,67	8,63	3,18	4,49	1,63	2,03	5,03	10,44	58,5
1995	1,51	5,59	15,54	8,94	3,04	5,83	1,66	2,29	5,12	10,43	60,0
1996	1,28	6,24	17,66	9,89	3,3	4,43	2,3	2,62	0,57	7,66	56,0
1997	1,62	6,1	16,51	9,19	3,06	4,48	2,63	2,27	5,68	8,91	60,4
1998	1,84	6,61	15,92	9,22	3,15	4,69	2,78	2,21	5,84	8,81	61,1
1999	2,2	7,69	14,45	7,85	3,23	5,84	3,1	1,84	5,38	7,57	59,1
2000	2,44	6,49	13,23	7,98	2,91	7,18	3,08	1,64	4,99	7,18	57,1
2001	2,24	5,52	12,89	8,42	2,52	8,3	2,58	2,96	4,62	7,88	57,9
2002	2,66	5,94	13,68	8,06	2,55	7,53	2,71	4,17	4,74	5,98	58,0
2003	3,76	6,01	13,63	7,89	2,39	7,86	2,89	4,28	5,05	5,04	58,8
2004	4,59	6,36	12,83	7,04	1,96	9,26	3,34	3,49	4,43	4,86	58,2
2005	5,9	5,04	11,68	6,48	1,84	11,05	3,04	3,47	4,02	4,6	57,1
2006	6,93	5,19	10,58	6,21	1,55	12,76	2,75	2,88	3,68	4,49	57,0
2007	7,78	4,62	10,31	5,86	1,56	13,82	2,55	3,1	3,22	4,8	57,6

Source: Undersecretariat of the Prime Ministry for Foreign Trade of Turkey, 2008

Table 3 : Export Misinvoicing with Selected Countries, US\$ Millions

Turkey with...	China	France	Germany	Italy	Neth.	Russia	Spain	Switz.	UK	USA
1990	11,1	72,54	81,5	81,12	-89,87	-	27,51	-151,62	159,76	90,65
1991	26,53	93,49	132,32	-24,72	-111,33	-	59,68	-113,69	-29,63	70,34
1992	-52,84	49,25	360,13	-66,97	-46,8	-103,02	88,47	-85,27	-72,92	231,91
1993	-65,57	-30,39	5,88	-31,34	-84,45	105,19	33,74	-91,99	-151,46	194,89
1994	73,51	-0,21	150,98	-14,55	-81,61	-502,21	15,2	-76,17	-29,52	20,19
1995	70,23	11,82	21,45	-61,99	-70,46	-813,25	2,91	-47,55	-15,1	261,81
1996	22,52	41,21	-49,18	-8,22	-52,67	-1055,4	46,01	-79,88	62,5	104,57
1997	15,71	22,25	-93,42	-17,75	-41,12	-1467,6	72,02	-129,68	46,95	14,92
1998	0,93	166,29	72,95	-16,45	15,95	-963	33,08	-38,56	21,59	225,96
1999	7	184,98	-34,92	62,26	-2,6	-334,91	22,83	-46,62	37,25	80,82
2000	26,28	182,27	-1,61	102,44	-5,93	-353,59	90,67	-19,9	5,03	-143,3
2001	11,63	133,69	-80,08	132,01	-24,32	-495,57	-12,99	-6,62	131,48	-183,6
2002	13,91	214,87	99,26	174,47	-50,71	-556,58	107,22	-18,86	157,74	118,65
2003	-22,42	67,42	-89,58	252,93	-205,87	-578,19	57,99	-63,92	2176,08	-67,16
2004	160,64	33,85	251,62	-172,13	-588,35	-817,42	175,38	-60,83	-69,69	-11,69
2005	17	208,39	34,02	-1502,7	-637,48	-893,58	272,75	-118,38	-173,99	182,6
2006	3,61	227,67	847,42	-636,77	-602,28	-906,78	362,29	-458,02	-142,36	206,89
2007	148,8	-2,11	21,84	-902,81	-962,97	-1027,6	743,63	-318,85	-352,85	301,7

Source: Authors' calculations based on UNCOMTRADE database.

Table 4 : Import Misinvoicing with Selected Countries, US\$ Millions

Turkey with...	China	France	Germany	Italy	Neth.	Russia	Spain	Switz.	UK	USA
1990	192,41	-70,2	-954,2	-129,74	-87,09	-	6,62	-107,96	-179,5	-196,73
1991	111,31	-35,05	-1475,7	-99,45	-92,08	-	36,02	-39,28	-268,4	-458,93
1992	96,55	-146,99	-898,67	-281,46	87,25	326,91	-37,39	179,15	-145,1	-402,29
1993	72,95	-130,43	-1061,8	-353,43	-29,94	356,52	-84,93	8,17	112,97	-426,31
1994	54,86	-63,64	2123,9	-94,24	31,19	1	-40,49	25,43	-37,45	-599,53
1995	65,25	-22,09	-1447,5	-362,89	-5,58	287,17	-85,43	-67,43	65,44	724,01
1996	104,02	-129,22	-748,3	-467,5	175,59	45,65	-28,91	107,03	-2192,1	112,86
1997	174,98	-183,38	-401,52	-369,59	-169,89	-7,41	-94,3	-2,46	-425,86	436,26
1998	121,09	-101,65	-766,89	-267,13	128,25	24,56	-108,28	3,55	-5,1	130,88
1999	194,55	-216,61	-478,76	-50,38	22,7	580,22	-199,17	-28,71	105,04	-436,68
2000	135,94	-125,22	-1239,2	-273,03	-409,17	478,85	-490,41	-42,33	-268,7	-217,13
2001	184,21	148,16	-363,47	-279,87	-329,41	-135,26	-28,54	442,35	124,66	-156,06
2002	167,99	111	-617,6	12	-382,41	168,97	-121,84	951,28	313,98	-349,4
2003	338,64	207,84	-1591,7	-274,48	-803,24	163,11	-185,01	1585,7	631,71	302,38
2004	1372,66	525,03	-3645,1	-749,61	-1439,3	848,88	-302,39	1637,99	-260,59	1048,06
2005	2206,3	-389,27	-3842,7	-680,66	-2028,6	980,03	-132,35	2242,09	249,19	674,18
2006	1635,5	163,94	-4093,2	-497,19	-2414,9	2087,24	102,95	1982,91	115,22	-1885,5
2007	1710,9	11,2	-4676,7	-739,91	-3044	8776,59	-102,79	2850,39	292,76	922,57

Source: Authors' calculations based on UNCOMTRADE database.

Table 5: Trade Misinvoicing, According to Broad Economic Categories, 1998-2007, US\$

$XD=PX-(X*CIF)$	BEC1	BEC2	BEC3	BEC4	BEC5	BEC6	BEC7	Total
Germany	-0,025	-1,507	-0,033	-8,068	-6,383	-1,761	-3,537	-21,315
Russia	0,318	5,045	18,868	-0,543	-0,310	-0,067	22,600	45,910
China	-0,078	1,849	-0,126	5,941	-0,214	0,799	-0,103	8,068
Switzerland	0,006	13,597	-0,027	-0,032	-0,171	-1,753	0,005	11,625
Netherland	-0,145	-0,833	0,101	-5,209	-1,864	5,897	-0,251	-2,304
Total	0,077	18,151	18,783	-7,911	-8,943	3,115	18,713	41,984
$DM=IM-(PM*CIF)$	BEC1	BEC2	BEC3	BEC4	BEC5	BEC6	BEC7	Total
Germany	1,210	0,080	-0,074	1,178	-1,876	0,432	0,170	1,121
Russia	-0,927	-2,809	-0,071	-0,598	-0,014	-2,497	-0,011	-6,927
China	-0,035	0,943	0,016	0,045	-0,087	0,074	-0,589	0,367
Switzerland	-0,001	-1,129	-0,105	0,005	0,072	0,010	-0,003	-1,151
Netherland	-0,903	-1,500	-0,419	0,179	-9,030	-11,341	0,051	-22,962
Total	-0,655	-4,414	-0,652	0,809	-10,935	-13,321	-0,382	-29,551
$TTM=XD+DM$	BEC1	BEC2	BEC3	BEC4	BEC5	BEC6	BEC7	Total
Germany	1,185	-1,427	-0,107	-6,890	-8,259	-1,329	-3,368	-20,194
Russia	-0,609	2,236	18,797	-1,142	-0,324	-2,565	22,589	38,983
China	-0,112	2,792	-0,111	5,985	-0,301	0,873	-0,692	8,435
Switzerland	0,005	12,468	-0,132	-0,026	-0,099	-1,743	0,002	10,475
Netherland	-1,047	-2,333	-0,318	-5,030	-10,895	-5,443	-0,201	-25,266
Total	-0,578	13,736	18,130	-7,102	-19,878	-10,207	18,331	12,433

Source: Authors' calculations based on UNCOMTRADE database.

Note: Figures are sums for 1998-2007.