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Analysis of the impact of bilateral and transit quotas on Turkey's international trade by road transport: An integrated maximum flow and gravity model approach

B. Çekyay [a, *], P. Toktaş Palut [a], Ö. Kabak [b], F. Ülengin [c], Ö. Özaydın [a], B. Ülengin [b]

[a] Doğuş University, Acıbadem, İstanbul, 34722, Turkey
[b] İstanbul Technical University, Maçka, İstanbul, Turkey
[c] Sabancı University, Tuzla, İstanbul, Turkey

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ABSTRACT

We explore whether bilateral and transit quotas applied by EU countries on Turkey have a negative impact on Turkey's international trade by road transport. Therefore, Turkey's exports by road transport to selected European countries are analyzed in a panel-data framework for the period 2005–2014. We estimate the aggregate effect of different quota types on trade between Turkey and European countries by using an approach that integrates the max-flow and gravity models. In the gravity model, for each country, a single value representing the aggregate restricting effect of different quota types is needed. The single values are obtained by solving multiple max-flow problems, where constraining effects of different quota types are modeled as arc capacities. The results of the gravity model suggest a loss in Turkish exports by road transport because of the quotas imposed by other countries. Most of the negative impact results from bilateral quotas rather than from transit quotas, whose effect is rather marginal.

1. Introduction

There is a conventional wisdom that has traditionally accepted that a close relationship exists between world trade and gross domestic product (GDP). In fact, trade volumes have grown twice as fast as global economic output (Liu & Xin, 2011). However, in the last quarter of 2008, according to the World Trade Organization (WTO), there has been a sudden collapse in world trade flows with a decline by approximately 12% in 2009. This figure is much greater than the decline of 5.4% in GDP for the same period. Since 2012, this trend is even more accentuated in such a way that the rate of increase in world trade volumes is less than the global GDP growth rate. Additionally, the growth in the value of trade has significantly underperformed compared to global growth. Although CPB World Trade Monitor underlines that in the third quarter of 2015, the increase in trade volumes is 2% higher than that in the previous quarter, this does not necessarily indicate an improvement in the world economy.

When the situation of Turkey is analyzed in this respect, it can be observed that since 2000, Turkey's business sector has shown a strong and dynamic growth. A robust public finance and a sustainable banking sector were the major support of the economic performance. However, Turkey's growth is highly dependent on domestic demand and foreign finance, its domestic savings are very low, and its external competitiveness is volatile. To rebalance demand, important measures should be taken to improve external competitiveness. In this respect, the decrease in inflation level, and thus a restrictive monetary policy, is indispensable. However,

* Corresponding author.
E-mail address: bcekyay@dogus.edu.tr (B. Çekyay).

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according to the 2015–2016 Global Competitiveness Report (Sala-i Martin 2015), Turkey fell six places to 51st, with a general decline in almost all factors that drive competitiveness.

The EU has been the largest economic partner of Turkey for many years. In fact, the EU's exports to and imports from the country have increased rapidly since 1995. Although there has been a decline in trade volumes after the 2007 economic crisis, they have recovered with a particularly strong rebound in exports since then. In 2016, 48% of Turkish export was to EU countries and 39% of Turkish import was from EU countries. Directorate-General of Trade of the European Commission identified Turkey as the EU's 7th largest source of imports and 5th largest export market. Germany, Italy, France, Spain, and the UK are the most important exporters to Turkey and provide the largest EU markets for Turkish goods on a value basis. Eurostat data highlight the importance of chemicals, food, wood products, basic metals, and machinery in the EU's exports to Turkey and food, textiles, and machinery from Turkey to the EU (Pastori et al., 2014).

However, during the last 5 years in particular, Turkey's trade with other regions has grown much faster than its trade with the EU.

Along with Andorra, Monaco, and San Marino, Turkey is the one of the four countries in a Customs Union (CU) with the EU that are not members of the EU. Therefore, according to the CU regulations, EU countries cannot apply any trade quotas to Turkish products. However, the EU countries can apply road transport quotas to Turkish trucks because Turkey is not in the EU. In other words, Turkey is the only country subject to a “road transport quota” but not to a “trade quota.”

Road transport services that operate between the EU Member States and Turkey are regulated by bilateral intergovernmental agreements signed by individual EU Member States. These agreements set the conditions under which transport services can be operated and, in particular, establish the number and nature of the permits that are required to perform a transport operation between the signatory Member State and Turkey.

In 2013, the 25 EU Member States with which Turkey has bilateral road transport agreements (only Cyprus, Ireland, and Malta did not sign the agreements) issued 961,087 permits of all types to Turkish road transport companies. The majority were bilateral or transit permits (42% and 31%, respectively). Over the last 5 years (2009–2013), the allocation of all types of bilateral permits granted by the Member States remained broadly unchanged. The routes connecting Turkey to its most important trading partners in the EU (Germany, Italy, France, United Kingdom, and Spain) require road freight operators to pass through the territory of third countries (mostly other EU Member States). This transit traffic is not only mostly concentrated in Greece and Bulgaria but also extends to Slovenia, Austria, Hungary, Poland, Czech Republic, and other Member States. Despite these constraints, EU–Turkey trade has grown rapidly over the past decade (Pastori et al., 2014).

The CU regulations dictate that practices resulting in unnecessary costs for the import or export of a commodity are considered charges, which have the equivalent effect of a customs duty. Turkish industrialists must pay for the unnecessary fuel consumed by Turkish road carriers and any additional costs that arise due to the prolonged transport period. Therefore, Turkish industrialists face unfair competition and unfair trade. This is not only Turkey's problem but also negatively affects the foreign investors in Turkey. As more than 70% of foreign investors are from the EU, one can conclude that the quotas also negatively affect the international competitiveness of the EU economy.

As stated by Pastori et al. (2014), full liberalisation could boost total trade by more than €3 billion per year. In all scenarios, liberalization increases the EU's road-freighted exports to Turkey at a lower rate than imports from Turkey. The analysis suggested that full liberalization would increase the value of EU–Turkey trade by an estimated €3.5 billion, out of which €1.9 billion are additional imports from Turkey and €1.6 billion are exports to Turkey. The largest expected effect is an increase in imports from Turkey to Germany, France, and the Netherlands.

According to Turkish authorities, the country's annual export loss due to quotas is at least US$7 billion, and that the quota for goods shipped from Turkey are arguably one of the most important reasons for the decline of Turkey's exports to the EU. Therefore, the aim of this paper is to analyze the validity of the hypothesis that quotas negatively affect trade volume between Turkey and European countries. There are several types of quotas or road transport licenses, including a bilateral permit, transit permit, third-country permit, multiple permit, and return load permit. For example, to export goods from Country X to Country Y by road transport, the truck carrying the freight must have transit permits for all transit countries on the route from Country X to Country Y and a bilateral permit for Country Y. Moreover, bilateral and transit permits can be used only once by a truck; another permit is necessary for the next transport movement using the same truck. Conversely, multiple permits can be used as often as required during the specified year. Moreover, European countries issue multiple permits that can be used as either transit or bilateral permits.

In this study, we analyzed the quota effect on Turkey's export by road transport. The basic reason for concentrating solely on the export by road transport is that 35.3% of Turkey's export to European countries is transported by road. Additionally, Turkey will lose its competitive advantage if a switch from road to sea or airway will be done. The basic reason is that, as mentioned above, the main goods exported from Turkey to EU countries are food, textiles, etc., and a switch to maritime transport will increase the lead times, and thus, the food will be perished and the textile products will be out dated, while a switch to airways will substantially increase the costs. Therefore, the road transport is very important for Turkey's export to Europe.

We consider transit, bilateral, and multiple permits and exclude third-country and return load permits because they are not directly related to the trade between Turkey and European countries, and these permits are rarely used and generally issued in sufficient numbers. Therefore, Turkey's exports to selected European countries are analyzed in a panel-data framework for the period from 2005 to 2014. The analysis is conducted through an econometric study based on the gravity model.

The gravity model analyzes spatial interactions among different variables according to the theory of gravity in physics. Its first application in the econometric domain was concerned with international trade relations (Tinbergen, 1962). Since then, the gravity equations have been frequently used as a basic tool for international trade for many years (Brun, Carrere, Guillaumont, & de Melo, 2002; Liu & Xin, 2011; Novy, 2013; Redding and Venables, 2004). A detailed literature review about the application of gravity models in international trade was presented by Ülengin et al. (2015). In the past decade, most of the empirical studies in the gravity model literature were based on a cross-sectional methodology. However, rather than using data averages over a certain period, a panel framework may be used to capture the relationships among relevant variables over a longer period. By using panel data, it is also possible to understand country-specific effects and interpret the elasticity (Egger, 2000). However, when the gravity models are based on panel data, it is necessary to decide whether a random effect model (REM) or a fixed effect model (FEM) should be used. Because we analyze the trade relations between Turkey and specific European countries, REM assumptions cannot be used in our setting. Therefore, we use the FEM, similar to that used in related

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