



Iran's WTO Accession and the Auto Industry

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Though many industries in Iran might be adversely affected by joining WTO in the short run, the auto industry stands on the front line because it has enjoyed a high level of protectionism during the past three decades. Now that WTO has opened up its doors to Iran's membership, it is imperative for the authorities to carry out regulatory trade reforms in order to reduce the high level of protectionism on the industry in compliance with GATT articles.

Iran Khodro, the second biggest industry after oil and gas, which accounts for 10% of Iran's GDP and 4% of its workforce, is the biggest automobile manufacturer in the Middle East. However, as a result of international sanctions, its rank has dramatically dropped from the 17th car producer at the global level in 2008 to the 21st in 2013.

Iran's auto industry faces severe challenges that are caused by high level of protectionism and non-competitive products. These challenges besides the international sanctions have paralyzed the industry, leading to huge losses for the industry and low-quality products for the customers. Since WTO's accession requires a sharp reduction in tariff rates, this paper investigates how joining WTO would affect imports, domestic production and productivity growth in the industry using econometric models.

The rest of the paper is organized as follows. Section 2 reviews the background of the auto industry in Iran. Section 3 is allocated to the literature review on the impact of joining WTO on the auto industry in different countries. Section 4 portrays empirical specification. Section 5 presents research methodology and data collection. Section 6 analyzes the estimated results. And, finally, Section 7 wraps up and concludes.

Background of the Auto Industry in Iran

The protectionism policy, which has been in place since the establishment of the industry in 1952, is reflected in high level of tariff rates, which has exceeded 100% in the past few years. The escalation of tariff rates during the past four decades has not only created huge costs to the government budget but has led to the lack of competitiveness in the international markets. Despite the high level of protectionism, adverse economic conditions such as international sanctions, world financial crisis, and the unrest in the Middle East have countervailed the government protectionism

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policy, weakening the fundamentals of the industry and creating huge dead weight loss to the society. Since the tariff rate has been voluntarily reduced by many developing countries to 12.5%, which is much below the WTO's threshold of 40%, Iran's presence in the international markets has been further decreased.

The imports were under the control of the government in the 1960s and its share did not exceed 6% of domestic production for more than a decade. However, with the oil price shock in 1974, Iran experienced a huge boom in oil revenues and a substantial increase in the number of imported cars. During 1982–1985, the share of imported cars rose to 20%; however, this trend didn't last long due to the war with Iraq. From 1990 to 1994, with the reoccurrence of the oil price shock, the share of imported cars rose further to a record of 57% and the government protectionism policy failed to rescue the industry in the international scene as the share of imported cars was increasing substantially.

In order to increase the level of protectionism, the government raised the tariff rates to 170% in 2003 but later lowered it to 100% in 2005 and then to 90% in 2007. Indeed, the tariff rates on imported cars in 2003 were amid the highest tariff rates in the country, emphasizing the high level of protectionism for the only car producer, which enjoys a monopoly power in Iran. Despite the high tariff rates, the number of imported cars tripled between March and August 2006 compared with the previous year, highlighting the failure of government policy due to lack of competitiveness and lower productivity growth compared to other developing countries.

Iran's auto industry has been unable to compete in the international markets due to the emission of non-standard gas, high fuel consumption, high prices, and low quality products. Indeed, the high tariff rate has been unable to rescue the industry and gain momentum in the international markets because it has led to the laziness of the industry and lack of competitiveness. However, joining WTO could reverse this trend by improving competitiveness, access to foreign technology, and improving the productivity when structural regulatory trade reforms take place.

Literature Review

There is a groundbreaking literature on the potential effects of tariff reduction on the auto industry after joining WTO in different countries. Rahimi (2013) investigated the factors that contribute to Iran Khodro Company (IKC) competitiveness for Iran's accession to WTO. He hypothesized whether environmental capabilities are effective on the competitiveness of the industry and whether Iran's WTO accession influences the environmental capabilities of IKC. He found that Iran's accession to WTO has a positive influence on all capabilities; however, the effects are more significant on environmental capabilities.

Brandt et al. (2012) exploited sectoral variations to identify the impact of tariff reduction on Chinese firms' performance and productivity growth over 1995–2007. They found strong evidence of downward pressures on prices but limited evidence that

imports can take away the share of domestic firms. They also found that productivity growth in China during 1995–2007 was strongly and significantly related to the tariff reduction due to China's entry to WTO.

Guangzhu & Liu (2012) examined the impact of tariff reduction following China's WTO entry on the productivity of Chinese manufacturing firms. Using panel data for the period of 2000–2006, they found that China's productivity following WTO entry has increased by an average of 0.94% per year for the five following years of joining WTO.

Will et al. (2009) investigated the effects of WTO on Asia-Pacific trade performance. They used a gravity model to measure the effects of WTO membership on trade. Using data from 1950 to 2000, and variables such as distance among countries and a dummy variable for WTO membership, they found that WTO membership had increased the trade among Asia-Pacific countries by a factor of four.

Brandt et al. (2009) investigated the impact of trade liberalization and joining WTO on auto industry in China. They used variables such as productivity, tariffs, and non-tariff barriers with panel data from 1998 to 2005 and found that a reduction in input tariff has a positive impact on output.

Nasirpoursooei (2007) investigated the strengths and weaknesses of the Iran Khodro Company (IKC) in joining WTO. He argued that since the sale of the industry has increased by 30% each year since 2000, it is very important for the industry to become a global player. He conjectured that in order to achieve the global standards, it is imperative to raise the quality of the products by opening up the market and increasing the competitiveness of the industry.

Barua and Chakraborty (2006) used an econometric model to investigate the impact of joining WTO on the auto industry performance in India. They used variables such as fixed capital, advertising, R&D, export to sale ratio and a dummy variable for joining WTO. Their results indicate that the WTO dummy is negatively related to Herfindhal Index, suggesting a decline in concentration ratio after joining WTO. However, they found that trade as a percentage of GDP has increased significantly after joining WTO.

Subramanian & Wei (2006) investigated the impact of trade liberalization on trade among developed and developing countries. They concluded that the impact of trade liberalization on developing countries' imports is negative and significant. They also investigated whether WTO membership has a different impact on import volumes of protected compared to unprotected sectors. They found that the dummy for protected manufacturer sectors is positive and significant.

Empirical Specification

In light of the literature review, the most important variables that are expected to be affected by the tariff reduction as a result of joining WTO are imports, domestic

production and productivity growth. Following many studies in the literature, the following equation is used to estimate the imports:

$$IMP = a_0 + a_1GDP + a_2EXC + a_3T + a_4P \quad (1)$$

Where imports (IMP) is a function of Gross Domestic Production (GDP), exchange rate volatility (EXC), tariff rate (T), and index of relative price (P), measured by the price of domestic car (PIK) relative to the price of imported car, here price of Toyota as a substitute for domestic production (PTOY). The key independent variable is the tariff rate, which will be sharply affected by joining WTO.

To investigate the impact of tariff reduction on domestic production, equation (2) will be estimated; where PROD represents domestic production and Fin represents the banking system loans to the industry. The rest of the variables are the same as equation (1).

$$PROD = a_0 + a_1GDP + a_2EXC + a_3T + a_4P + a_5Fin \quad (2)$$

Finally, following Brand et al. (2012), the impact of joining WTO on productivity growth is estimated through equation (3):

$$TFP = a_0 + a_1Y + a_2Wage + a_3K + a_4T \quad (3)$$

Where TFP represents total factor productivity and is a function of domestic production growth minus input growth (Y), the average labor wage in the industry (Wage), the amount of capital (K), and the average tariff rate (T).

Research Methodology and Data

To analyze the effects of joining WTO on domestic production, imports, and productivity growth, a quantitative research methodology has been used. An ordinary least squared (OLS) model is implemented to estimate the above equations with monthly data for the period of 2005–3 through 2012–3.

The data on imports and tariff rates are from Iran's Custom. The data for GDP, exchange rate volatility, and banking system loans to the industry have been retrieved from Central Bank of Iran. The data on domestic production, and total factor productivity are retrieved from Iran Khodro Company (IKC) reports. Finally, the data on relative price, which is the price of domestic production (PIK) to price of Toyota (PTOY) as a substitute for domestic production, is retrieved from the Association of Auto Dealers.

Estimated Results

Using OLS technique, the above equations have been estimated and the results are presented in Table 1. Since the variables are in the logarithm forms, the estimated coefficients are elasticities. The estimated results suggest that a one percent reduction

in the tariff rate leads to an increase of 0.25% in imported cars. The elasticity of domestic production to tariff rates is 0.03%, indicating that a one percent reduction in the tariff rate will lead to 0.03% reduction in domestic production. In other words, domestic production is relatively inelastic to changes in tariff rates and is more elastic with respect to factors such as GDP and banking system loans. Exchange rate volatility has a negative statistically significant impact on domestic production and imports. The index of relative price (P) has a statistically significant positive relationship with imports. As the relative price of domestic to imported car increases by one percent, imports increases by 0.35%. Expectedly, banking loan has a positive statistically significant impact on domestic production and plays a more important role than tariffs for domestic production. Indeed, one percent increase in the banking system loan to the industry increases the domestic production by almost one percent.

Though the tariff rate has a relatively small positive impact on domestic production, it is not statistically significant, emphasizing that protectionism policy does not have a significant role in supporting domestic production. Indeed, the industry performance is more affected by business cycles (measured by GDP) and banking loans rather than protectionism and high tariff rates. As a result, the money injected into the industry is a dead weight loss to the society because it is unable to raise the domestic production.

According to the estimated results presented in Table 1, Iran's WTO accession, which requires a 30% reduction in tariff rates, will raise imports by almost 7.5%, while the domestic production will fall trivially by almost 1%. Therefore, opening up the markets and joining WTO doesn't seem to have an adverse effect on domestic production because it increases the competitiveness of the industry through higher imports. Moreover, the results on productivity growth suggest that a reduction of 30% in tariff rates will raise the total factor productivity by almost 10%; however, the impact of wage and capital on productivity growth are relatively small.

Indeed, our results support many previous studies including Brandt et al. (2012) and Guangzhu and Liu (2012) who found that trade liberalization will improve the productivity growth of the industry. Iran can substantially benefit from joining WTO through increasing its trade, improving its productivity, and transfer of technology, which has been deprived from due to international sanctions.

One of the shortcomings of this study that has not been addressed here and merits more attention is the endogeneity of trade policy. Facing the prospect of reduced profits, the incumbent industry and its stakeholders have every incentive to lobby against tariff reductions and joining the WTO. Since, the link between the lobbyists and the government is very strong in a developing country like Iran; tariff reduction may not be considered as an independent variable. Therefore, any future research should consider the endogeneity of trade policy, which can be addressed by adopting an instrument such as tariff reduction in another developing country as proposed by

Guangzhu and Liu (2012) or using a dummy variable for joining WTO in a developing country.

Table 1. Estimated results for domestic production, imports, and total factor productivity

Variables	PROD	IMP	TFP
Cons	124.5 (1.25)	141.56 (1.89)	26.48 (2.3)
EXC	-0.34 (-3.24)**	-0.67 (-2.98)**	-
GDP	0.98 (3.15)**	1.42 (2.78)**	-
P	0.25 (1.98)*	0.35 (1.98)*	-
T	0.03 (1.28)	-0.25 (-3.38)**	-0.33 (-3.67)**
FIN	0.98 (3.17)**	-	-
Wage	-	-	0.14 (2.25)**
K	-	-	0.05 (2.27)**
Y			0.12 (3.65)**
R-Squared	0.81	0.86	0.78
F-Statistics	198.12	167.14	245.12
D.W.	2.14	2.23	1.89

* Numbers in parentheses are t statistics and significant at 95% level of confidence and with ** significant at 99% level of confidence.

Conclusion

Though many industries in Iran may be adversely affected by joining WTO, the auto industry stands on the front line because it has enjoyed an extreme level of protectionism for half a century now. Since GATT articles require specific treatments to imports including the abolition of non-tariff barriers, diminishing tariff rates, non-discriminatory policies to taxation, and deletion of subsidies, Iran needs to carry out structural trade regulatory reform to comply with GATT articles. Any delay in

carrying out such reforms will inflate the dead weight loss caused by the protectionism policy.

To cast light on the quantitative effects of joining WTO on the auto industry, this paper estimated the elasticity of domestic production, imports, and productivity growth to tariff rates through econometric models. The estimated results suggest that a 30% reduction in tariff rates as required by WTO will lead to 7.5% increase in imports and a trivial reduction of 1% in domestic production. Moreover, the results indicate that trade liberalization will significantly improve the productivity growth and lead to 10% annual increase in this variable. Our results support the findings of Brandt et al. (2012) and Guangzhu and Liu (2012) who found that trade liberalization has a positive significant impact on productivity growth.

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