The tariff reduction on Agricultural sector in Iran

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Abstract

This study explains the results of trade reforms for a scenario where reduced tariffs for all imported commodities under the Uruguay Round (UR) since 1995. The Computable General Equilibrium (CGE) analysis and input-output data for Iran using a base year, 1991, were applied simulating the short and long-run effects under the UR. It was proposed that 24 per cent and 27 per cent decreases in *ad valorem* tariffs on imported agricultural and non-agricultural commodities, respectively, could occur in the short run from 1995. The same scenario was simulated in the long run to examine the impact of trade reforms on Iran for the past decade. Three crops results of this scenario were analysed by considering the projections.

The results confirm a positive impact on the economy of Iran if tariffs were reduced under the UR. The domestic prices and production costs would fall and primary factors such as labour and capital would move to industries which have a greater comparative advantage. Rice was estimated to grow by 2.98 per cent but sugar beet and sugar cane decreased by 1.02 per cent in the short run.

Keywords: Tariff reduction, CGE Model, Uruguay Round (UR), Iranian economy, Agricultural products

Introduction

Under the Uruguay Round, members of WTO agreed in 1994 that developed countries would reduce tariff rates on agricultural products by an average of 36 per cent and on manufacturing goods by an average of 15 per cent over 6 years. Developing countries would cut the tariffs on agricultural products by an average rate of 24 per cent and on manufacturing by an average rate of 27 per cent over 10 years (World Trade Organisation, 2006). Trade negotiation in the Dillon, Kennedy and Tokyo rounds caused substantial trade reform in industrial products in the early half of last century, while the members of WTO signed the Uruguay Round Agreement on Agriculture (URAA) to reduce agricultural support and protection in 1994 (Athukorala, 2004).

There were high tariff rates on manufacturing and agricultural imported goods in developing countries. The average level of applied tariff in these countries was more than three times higher in comparison with developed countries. Moreover, there is a negative relationship between the degree of development and the level of tariff protection. For instance, a low-income country applied higher level of tariffs on imports compared to a high- income country. In contrast, developed countries such as the USA, the EU and Japan apply tariff-rate quotas (TRQs) to protect their domestic agricultural producers (Athukorala, 2004).

Iran has also experienced other extreme shocks since 1979, such as the eight years of war with Iraq between 1980 and 1988 and the trade embargo imposed by the USA in 1979. Prior to 1979, the USA was Iran's biggest trading partner and source of most technologies, equipment, and imported goods, so the economy of Iran depended tremendously on that country. After the trade embargo, Iran had to find new trading partners. After ending war Iranian government found that needs to have a big reforms on the economy of Iran. Therefore three development plans have been implemented by the government since 1989 to increase the rate of economic growth in Iran. The first five-year development plan covered the period from 1989 to 1994, and targeted a reduction in the size of the

government through a privatization program, the removal of subsidies on food and medicine, and deregulation of investment and prices. Most prices were deregulated, a majority of subsidies were removed and non-oil exports volumes rose considerably.

Many kinds of agricultural products are produced throughout Iran. Rice is produced in the north of Iran and tropical products are planted in the south. Potato and sweet beet are produced in cold areas and a variety of vegetables and sugarcane are grown in the warm plains in the west and south west. Different fruits are found in all seasons because they are harvested in the different climatic zones in Iran. Wheat, sugar beet and sugarcane are produced in the plains of Iran but in different areas and different climates; therefore, they are produced throughout the year. Sugar beet is planted near the mountain area, especially in the north of Khorasan state (northeast Iran), sugarcane is produced in the south-west of Iran and wheat is grown in all regions. Rice, tea and cotton are found along the Caspian Sea border where it is wet and has the highest rainfall in Iran. There are some agricultural products shuch as pistachio (Persian Dried Fruit Exporter, 2006a) and saffron in which Iran is a world leader in terms of production and export (Persian Dried Fruit Exporter, 2006b). For example, the production of pistachio in Iran was around 45 per cent of world production from 2000 to 2004 (Food and Agriculture Organization, 2006). The share of agriculture is 25 per cent of GDP and 30 per cent employed in Iran. Sugar beet and cane, wheat and rice production were 11, 15 and 3.5 million tonnes in Iran in 2007(FAO, 2009).

This study tests the proposition that tariff reduction could result in the growth of tradable agricultural products. By examining the impacts of tariff reduction we study a tariff shock on the Iranian economy to determine macro and sectoral results under the UR. It aims to test the effects of tariff reductions on the agricultural products of Iran in both the short run and long run. A tariff scenario is analysed by simulating the computable general equilibrium (CGE) model of Iran in the short run and long run. In the long run, it is assumed that foreign and domestic investors have enough time to react to tariff and tax reforms.

Review litterateur:

Surabhi Mittal (2008) studied the impact of trade reform for rice, wheat, cotton and sugarcane. He used different estimates from different sources based on the assumption and base years in 2007. The effect of removing subsidies, cut tariff and full liberalization on the price change and production change for rice and wheat is tiny in India. Despite of small change of production, 0.19 per cent for rice and 2.38 per cent for wheat, under tariff and full liberalization rice production will increase by 16 million tons.

Cairns group countries need a large reduction of tariffs on agricultural products to have a significant growth in agricultural market access and economy. A GTEM simulation applied for developing countries in the cairns Group and its results are reported by Nair *et al.* (2006) for 2016. Their estimation shows a grate increase in agricultural exports about US$14 billion in 2016.

Despite high tariffs on agricultural products, there were negative protection rates on agricultural goods in most developing countries between the 1960s and 1980s. A substantial fall in average agricultural and manufacturing tariff has been observed in developing countries during 1990 to 2000. The average agricultural and manufacturing tariffs in developing countries dropped from 30 and 26 per cent, respectively, in 1990 and to 18 about 11 per cent in 2000 (Aksoy & Beghin, 2005).

Esalmi (2005) studied the effects of agricultural land productivity on the economy of Iran using a 25-sector CGE model and Iranian input–output table for 1991. The model was

simulated for the elimination of domestic and international market barriers. His results revealed that removing trade barriers will increase agricultural land productivity if it includes a suitable trade policy. Furthermore, an increase in the agricultural sector leads to growth in food manufacturing and employment. This policy also decreases food prices and causes an increase in welfare, real GDP and food security.

Siriwardana and Dollery (2003) studied the impacts of the Australia-Japan free trade agreement by applying the GTAP model. All assumptions were the same as in the above research. They followed two scenarios: first, the elimination of tariff barriers bilaterally; and secondly as in the first scenario, but with agricultural products left out of the liberalisation. Full liberalisation in Australia causes a considerable growth in GDP (14 per cent) while in Japan there is a GDP reduction (0.58 per cent). The Australian gain is US$735.5 million and the Japanese loss is US$2536.3 million in this FTA. In the second scenario which involved all products except agricultural products, the gain to Australia falls to 12.3 per cent from 14.4 per cent of its GDP and the loss for Japan declines from 0.58 per cent to 0.40 per cent of its GDP.

Atici (2002) studied the impacts of full trade liberalisation on household groups in the Turkish economy using a static-CGE model. He considered three scenarios: the removal of tariffs, elimination of the export subsidy, and elimination of both tariff and export subsidies. The results show that tobacco production decreased by about 31 per cent and manufactures by 2 per cent while other agricultural outputs such as agribusiness and services increased in the first scenario of a tariff cut. The first scenario had an influence on increasing household income at different levels in urban and rural areas but the revenue of Turkey's government declined by 18 per cent. Moreover, it led to a 19 per cent depreciation in the Turkish currency. The second scenario expanded agribusiness government revenue and the exchange rate by 2.36, 3.76 and 1.67 per cent respectively but other effects were less than one per cent. The third scenario had a decrease in tobacco and

manufactures output, similar to the first scenario, but household incomes declined because of the reduction in factor earnings. However, the elimination of export subsidies compensated for the loss of government revenue in comparison to the first scenario (from 18 per cent to 13 per cent).

Methodology,

The Iranian CGE model is replicated from the ORANI-G model. The ORANI-G is a static general equilibrium model of the Australian economy which was first produced for Australia and subsequently it has been used for many countries in various studies. The aim of ORANI-G is to develop a tool to analyse the effect of changes in external variables on imitative macroeconomic variables. These changes describe trade reform policies, pricing policy for domestic or foreign outputs and/or exports. Changes in the costs of domestic inputs such as labour and capital can also be modelled. External shocks are represented through exogenous variables and an alternation in the endogenous variable in the CGE model. The CGE model is a sophisticated model so we explain two structure that are applied in model. Structure of production and supply to domestic market and exports are present as follow.

Structure of production:

Each industry can produce several commodities by using a number of inputs. According to specific assumptions, a multi-input, multi-output production structure is applied in the model. The relationship between inputs and outputs can be formulated by a production function. Inputs are composed of primary factors, intermediate goods and other costs. Figure (1) illustrates schematically the structure of production. Primary factors (land, capital and labour) are combined with the constant elasticity of substitution (CES) function

at the bottom level of the nested structure. A CES production function was used to combine land, labour and capital in producing units of primary factor in the formulation of equation:

$$Z_j = A\left(\sum_{i,j=1}^{h,n} \delta_{ij} X_{ij}^{-\rho}\right)^{-\frac{1}{\rho}} \qquad i = 1,\ldots, h \text{ and } j = 1,\ldots,n \qquad (1)$$

Where Z_j the CES is production function for industry *j* or is the aggregate factors for industry *j*. *A* is a positive coefficient, δ_{ij} is a distribution parameter with *i* from 1 to h for primary factors (Capital, Labour and Land) and 1 to n for industries. X_{ij} is primary factor i used in industry *j*, ρ is a substitution parameter that is greater than zero and the elasticity of substitution is equal to $\frac{1}{1+\rho}$.

This structure was selected for all industries because we assume that the structure of production is the same in different sectors in Iran. Moreover, this assumption decreases the number of equations and calculations required. The domestically-produced and imported intermediate inputs are combined in the same way, using the CES form. Among intermediate inputs, there is imperfect substitution. In addition, at a higher level (Activity), aggregate intermediate and aggregate primary inputs are combined with other costs through a Leontief production function to produce outputs. Aggregate primary factors, intermediate inputs and other costs cannot be substituted for each other. The Leontief production function is equivalent to a CES production function with the substitution elasticity set to zero. It is a fixed proportion production function that factors are always used in fixed ratios. This function only operates along the ray where it shows a constant ratio of factors.

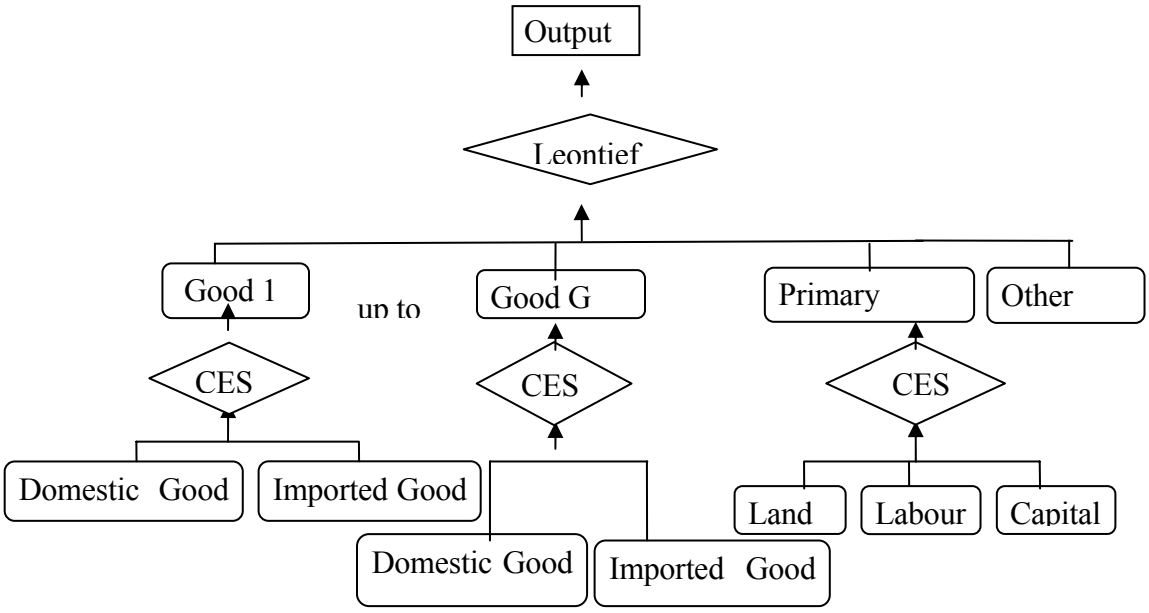

Figure (1) production structure

We assume local market is perfectly competitive. The aggregate supply of a commodity depends on all producers' supply. Multiplying the number of producers and the amount of their production together makes aggregate supply. Aggregate supply is equal to total demand at the equilibrium price. This supply is also named market supply and it shows the quantity of products that is transfered to the local market at the equilibrium price. Exporters in small countries are price takers in the world market, and as a result their supply curve is perfectly elastic. This means that an increase or decrease in exports does not affect the export price. On the contrary, the price of a commodity in the local market is derived from the equilibrium point where the supply and demand curves intersect. Figure (2) illustrates supply to the local market (Q1) at the equilibrium price (P1) at the equilibrium point. If the price of a commodity increases to P2, production and therefore total quantity supply of commodity rise to Q2 but quantity demanded falls to Q3. This leads to excess quantity supplied (Q3Q2), thus creating a potential for export.

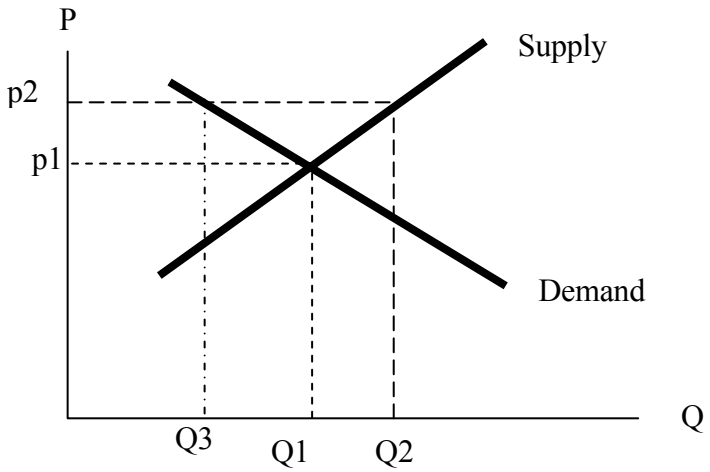

Figure (2) Amount of supply and demand at equilibrium price

Produced commodities are supplied to the local market or exported to foreign countries. Foreign demand for exports is associated with foreign prices (relative price) and the exchange rate, and any other shifters which move the foreign demand curve.

The ORANI-G model consists of two categories for export demand for commodities. The first one is demand for an individual commodity that relates inversely to its price; and the second one is for remaining exports or collective export commodities such as services and transport. This demand is inversely related to the average price of all these commodities (Horridge, 2003).

Equation 4-26 shows the export demand function for the first category:

$$X_{EX} = F_{EX}^{q}\left(\frac{P_{EX}}{P_{hi}F_{EX}^{P}}\right)^{\beta} \qquad (2)$$

where X_{EX} is foreign demand for domestic output; F^{q}_{EX} is a quantity shifter of foreign demand; F^{p}_{EX} is a price shifter of foreign demand; $\frac{P_{EX}}{P_{hi}}$ is the price of export commodities

in foreign currency; P_{EX} is the price of commodity that is exported. *Phi* is the exchange rate; and β is a negative constant elasticity of demand. Demand for exports relates to the domestic price of export commodities, the exchange rate and external shocks to shift price and quantity of foreign demand. A rise in the domestic commodity price decreases domestic demand and increases export demand. However, depreciation of the domestic currency might support the growth of foreign demand for domestic products. Any changes in foreign preferences, tastes and incomes modify the demand for exports.

Results:

Decreased tariffs reduce domestic production costs and as a result, output grows in the directly affected industries. According to agricultural sector results in table 1, production in rice increases by 2.98 and 4.66 per cent in short and long run respectively but the production of wheat and Sugar (beet and cane) reduces by 0.50 and 1.85 in short run and by 0.19 and 4.55 in long run respectively.

Table 1 Projection of the Effects of Tariff reduction under UR on the Production of Industries (Percentage changes)

Industry		Projection	
Rank	Description	Short run	Long run
1	Rice	2.98	4.66
2	Wheat	-0.50	-0.19
3	Sugar(beet and cane)	-1.85	-4.55

Despite of small growth in rice production, absolute expansion would be about 95 thousand tonnes. It seems wheat production decreases steadily but sugar has higher rate of reduction.

Conclusion:

This study has analysed the effects of trade reforms and trade liberalisation on the economy of Iran under the UR using an Iranian CGE model. In order to study the effect of tariff cuts under the UR, sectors were divided into two parts: agriculture and non-agriculture. Two tariff shocks were defined as a 24 per cent reduction in tariffs on agricultural products and a 27 per cent decrease in tariffs on non-agricultural goods. The model was simulated in the short run (1-2 years) and long run by tariff reductions under the UR.

Producers would gain in terms of lower factor costs, so demand for factors such as labour and capital would increase by the level of tariff cuts. Producers' demand for investment would be increased by a fall in the rental price of capital and an increase in the rate of return. With a constant rate of return, the lower rental price of capital would lead to a higher demand for investment and production. The aggregate investment price would largely decrease if tariffs were reduced under the UR. Producers would therefore increase their demand for labour. Thus, real wages would increase substantially in the long run.

We expect rice production and its employees would be grown as result of tariff reduction, but wheat reduced a little and sugar beet and cane decreased. Wheat has been a strategic crop and it supported by Iranian government. The reason for a small reduction in terms of tariffs cut is farmers behaviour in planting wheat during long period time. Sugar beet and sugar would be reduced because world price of sugar is lower than local market in Iran.

References:

Aksoy, M. A. & Beghin, J. C. (2005), Global agricultural trade and developing countries. *The International Bank for Reconstruction and Development*/*The World Bank*, 17-71.

Athukorala, P. C. (2004), Agricultural trade reforms in the Doha round. *Journal of World Trade*, Vol.38, No.5, pp. 878-897.

Atici, C. (2002). *The impacts of a complete trade liberalization on household groups in Turkish economy*. Paper presented at the Erc/METU International Conference in Economics VI, Ankara, Turkey.

Estelami, H. (1999), A study of Iran's responses to U.S. economic sanctions. *Middle East Review of International Affairs* Vol.3, pp.51-61.

Food and Agriculture Organization. (2006), *Production, crops (Pistachio, Saffron)*, 2006, http://faostat.fao.org/site/408/default.aspx

Food and Agriculture Organization. (2009), *Production, crops (Wheat, Rice and Sugar)*, 2009, http://www.fao.org/crop/statestics

Horridge, J. M. (2003), *ORANI-G: A general single-country computable general equilibrium mode*l, Retrieved 12/11/ 2005, www.monash.edu.au/policy/oranig.htm

Persian Dried Fruit Exporter. (2006), *Pistachio*. Retrieved 2006, http://www.irandriedfruit.com/iran-pistachio.php

Nair, R., McDonald, D., Chen, M., Gunasekera, D. and Fisher, B.S. 2006, *The Cairns Group: Catalyst for Agricultural Trade Reform*, ABARE Research Report 06.11, Canberra, Australia

Siriwardana, M. & Dollery, B. (2003), *An empirical analysis of the proposed Australia-Japan free trade agreement* (Working paper No. 2003-2). University of New England, School of Economics, Armidale.

Mittal, S. (2007), *OECD Agricultural trade reforms impact on India's Prices and producers welfare* (working paper No. 19), Indian Council for reaserch on international economic relations, India

World Trade Organisation (WTO). (2006), *The agriculture agreement: new rules and commitment.* Retrieved March 28, 2006, www.wto.org/