ECONOMIC DIVERSIFICATION POLICY IN CONTEXT OF AZERBAIJAN'S ACCESSION TO THE WTO

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Abstract

The main objective of this article is the analysis of the accession of Azerbaijan to the WTO, the advantages and disadvantages associated with this accession, the macroeconomic effects, CGE modeling, and analyzing the outcomes obtained through endogenous combinations. This paper will also enable to determine the positive influential elements as a result of the WTO accession, the changes in tariffs during import and export, and the impact on the domestic entrepreneurial entities and employment.

Key words: WTO, macroeconomic effects, CGE modeling, import and export, entrepreneurship, employment.
JEL classification: F13, L25,

As a Republic of the Soviet Union, Azerbaijan has experienced the economic integration to the common market for 70 years. The disbandment of the Soviet Union, and Azerbaijan gaining sovereignty and independence over its resources and market was seen as a historic achievement by many. Azerbaijan started its way of progressing toward a free market economy in a turbulent economic environment. The difficulties accompanied by the detaching from a common economic area - high figures of inflation, rapidly declining levels of production, a lack of food, high unemployment and a general decrease in welfare - can be one of the reasons explaining the negative perception of greater integration into the multilateral trade system.

In this context, the in-depth analyses of the WTO accession is needed to understand the advantages and disadvantages of the WTO accession in Azerbaijan. The similar analyses were carried out for the CIS country group on the political and economic consequences (see for instance Bayramov 2008; Tumbarello 2005; Roberts and Wehrheim 2001). There also similar papers of qualitative studies

reviewing the path towards WTO accession for Azerbaijan (Hasanov and Zeynalov 2013; Kavass 2008; Fariz 2007). Nevertheless, it should be noted that, none of these studies simulate the macroeconomic consequences of WTO accession for the economy of Azerbaijan.

In addition, the above-mentioned studies have been conducted to simulate the macroeconomic effects of WTO accession using computable general equilibrium (CGE) models. For instance, in the case of China (Fan and Zheng 2001), Ukraine (Pavel et al. 2004) and the completion of the Doha Round (Hertel and Winters 2006). The lack of comparable study case of Azerbaijan makes it harder to forecast the disadvantages and the advantages of the WTO accession.

In order to analyze the macroeconomic effects WTO accession would cause for the Azerbaijani economy, a Computable General Equilibrium (CGE) model was chosen for the empirical part of this study. The idea of "general equilibrium" builds on the assumption that all markets, sectors and industries are linked with each other. CGE models can be applied to come up with numerical forecasts by obtaining results for endogenous variables based on certain assumptions about exogenous variables, their functional forms, and parameter values.

It also should be taken into account that CGE models have become a standard tool for empirical analysis and are particularly suitable to assess the aggregate welfare implications of economic policies. They are also used to study the effects of external shocks such as accession to an international organization. Studies using CGE models focus on different policy areas including development economics (De Maio et al. 1999; Robinson 1989), fiscal policy (Shoven and Whalley 1984), currency devaluation (Thissen and Lensink 2001), and social and environmental policy (O'Ryan et al. 2005; Bouvenberg and Goulder 2002) [1].

The modeling principle of CGE rests on neo-classical economic assumptions. In an economic system, consumers are assumed to maximize their utility against a budget constraint (demand side). Producers are assumed to maximize their profit given the prices of goods and production costs (supply side). As a result, the equilibrium condition for the market price is calculated for each good and production factor where demand equals supply.

Furthermore, neoclassical models assume that all commodities are tradable and that all commodities are perfect substitutes. Thus, the "law of one price" must hold, i.e. all commodities should have the same price in all markets. It is also assumed that a

country is small enough not to influence world market prices, i.e. it faces fixed world prices for exports and imports.

The CGE model employed in this paper is commonly known as a 1-2-3 model. The model developed in this paper, thus, refers to one country with two producing sectors and three goods. The commodities produced by a country are an export good *E* which is not demanded domestically and sold to foreigners. The second one is a domestic good *D* which is sold in the country domestically. Finally, the third good is an imported good *M* which is not produced domestically but imported from abroad.

There are three actors in the model which are: a producer, a household, and the rest of the world. The equation below is the most achievable combinations of $\boldsymbol{E}$ and $\boldsymbol{D}$ that can be realized:

$$\overline{\boldsymbol{X}} = \boldsymbol{G}\ (\boldsymbol{E}, \boldsymbol{D}^{\boldsymbol{s}};\ \Omega\ )$$

with Ω describing a constant elasticity of transformation (CET).

The composite commodity existing of $\boldsymbol{D}$ and $\boldsymbol{M}$ is consumed by the single consumer domestically. In multisector models we extend this treatment to many sectors, assuming that imported and domestic goods in the same sector are imperfect substitutes: an approach which has come to be called the Armington assumption. Following this treatment, we assume the composite commodity is given by a constant elasticity of substitution (CES) aggregation function of $\boldsymbol{M}$ and $\boldsymbol{D}$:

$$\boldsymbol{Q}^{\boldsymbol{s}} = \boldsymbol{F}(\boldsymbol{M}, \boldsymbol{D}^{\boldsymbol{D}};\ \mu)$$

with μ describing the elasticity of substitution, i.e. consumers maximize utility which is equivalent to maximizing Q in this model.

Equations (1) to (22) below illustrate an extended version of the 1-2-3 model to include government revenue and expenditure as well as savings and investment. Most governments use taxes and subsidies as well as expenditure policy to adjust their economy. Therefore, four tax instruments are included: an import tariff, an export subsidy, an indirect tax on domestic sales, and a direct tax rate.

The single household saves a fixed fraction of its income. Public savings (budgetary deficit or surplus) is defined as the balance of tax revenue plus foreign grants and government expenditures (all assumed to be determined exogenously). The Current Account balance, taken to represent foreign savings, is the residual of imports less exports at world prices adjusted for grants and remittances from abroad. Output is fixed. Foreign savings are also presently fixed, i.e. the model is savings-driven. Aggregate investment adjusts to aggregate savings.

In total, there are twenty equations and nineteen endogenous variables. According to Walras's Law, one of the equations, say the savings-investment identity, can be dropped.

Real Flows:

(1) $\overline{X} = G\ (E, D^s;\ \Omega\ )$

(2) $Q^s = F(M, D^D;\ \mu)$

(3) $Q^D = C + Z + \overline{G}$

(4) $E/D^s = g_2\ (P^e, P^d)$

(5) $M/D^D = f_2\ (P^m, P^t)$

Nominal Flows:

(6) $T = t^m * R\ * pw^m * M + t^s * P^q * Q^D + t^y * Y - t^e * R * pw^e * E$

(7) $Y = P^x * \overline{X} + tr * P^q + re * R$

(8) $S = \bar{s} * Y + R * \overline{B} + S^g$

(9) $C * P^t = (1 - \bar{s} - t^y) * Y$

(10) $P^m = (1 + t^m) * R * pw^m$

(11) $P^e = (1 + t^e) * R * pw^e$

(12) $P^t = (1 + t^s) * P^q$

(13) $P^x = g_1(P^e, P^d)$

(14) $P^q = f_1(P^m, P^t)$

(15) $R \equiv 1$

(16) $D^D - D^S = 0$

(17) $Q^D - Q^S = 0$

(18) $M - pm^e * E - ft - re = \overline{B}$

(19) $P^t * Z * S = 0$

(20) $T - P^q * \bar{G} - tr * P^q - ft * R - S^g$

Accounting Identities

(21) $P^x * \bar{X} \equiv P^e * E + P^d D^s$

(22) $P^q * Q^s \equiv P^m * M + P^t D^d$

Table 1. Endogenous variables and Exogenous variables

Endogenous variables		Exogenous variables	
E	Export	World price of exported good	World price of exported good
M	Import	World price of imported good	World price of imported good
Supply of domestic good	Supply of domestic good	Tariff rate	Tariff rate
D^D	Demand for domestic good	Sales tax	Sales tax
Q^s	Supply for composite good	Direct tax rate	Direct tax rate
Q^D	Demand for composite good	tr	Government transfers
Y	Total income	ft	Foreign transfers to government
Domestic price of exported good	Domestic price of exported good	re	Foreign remittances to private sector
Domestic price of imported good	Domestic price of imported good	Average savings rate	Average savings rate
Domestic price of domestic good	Domestic price of domestic good	Aggregate output	Aggregate output
P^t	Sales price of composite good	Real government demand	Real government demand
Price of aggregate output	Price of aggregate output	Balance of trade	Balance of trade
Price of composite good	Price of composite good	μ	Import substitution elasticity
R	Exchange rate	Ω	Export transformation elasticity
T	Tax		

S^g	Government savings		
C	Aggregate consumption		
S	Aggregate savings		
Z	Aggregate real investment		

Source: The Author's calculations, 2015

The data used for the quantitative analysis were collected from the World Bank Database, the International Monetary Fund's annual report, State Statistics Committee's sources, the Ministry of Finance database, official documents of the World Trade Organization and CESD reports on macroeconomic issues

Tables 7 to 9 describe the base data used to calibrate the model as well as its parameters and exogenous variables. Table 10 describes the values for the endogenous variables and Table 11 shows the results for each of the equations.

Table 2. Base data to run the 1-2-3 Model

1. National Accounts			**3. Fiscal Account**		
Output (Value Added)	64.8	1.00	Revenue	29.1	0.45
Wages (income of the population)	34.7	0.54	Non-Tax	0.7	0.01
GDP at market prices	70.2	1.08	Current Expenditure	12.1	0.19
Private Consumption	27.2	0.42	. Goods & Services		
Public Consumption	7.4	0.11	. Interest Payments		
Investment	25.7	0.40	. Transfers & Subsidies		
Exports	36.7	0.57	Capital Expenditure	10.3	0.16
Imports	16.9	0.26	Fiscal Balance	7.4	0.11
2. Tax Revenues			**4. Balance of Payments**		
Sales & Excise Tax	2.5	0.04	Exports - Imports	23.757	0.37
Import Tariffs	0.2830957	0.00	Interest Payments	-1.1	-0.02
Export Duties	0.0009868	0.00	Net Private Transfers	-0.083	0.00
Payroll Tax	1.8	0.03	Net official Transfers	0.71	0.01
Personal Income Tax	1.04	0.02	Current Account Balance	15.78443	0.24
Capital Income Tax	3.8	0.06	External Debt	7.608	0.12
Total	9.4	0.15	Debt Service Payments	1.9	0.03

Source: The State Statistics Committee of Azerbaijan and Author's calculations, 2015

Table 3. Parameters

Elasticity for CET (st)	0.600000
Elasticity for CES/Q (sq)	0.600000
Scale for CET (at)	2.029108
Share for CET (bt)	0.391679
Rho for CET (rt)	2.666667
Scale for CES/Q (aq)	1.905786
Share for CES/Q (bq)	0.304895
Rho for CES/Q (rq)	0.666667

Table 4. Exogenous variables

World Price of Imports (wm)	0.9835083	0.98351
World Price of Exports (we)	1.0000269	1.00003
Import Tariffs (tm)	0.0167683	0.01677
Export Duties (te)	0.0000269	0.00003
Indirect Taxes (ts)	0.0548408	0.05484
Direct Taxes (ty)	0.0893227	0.08932
Savings rate (sy)	0.4790908	0.47909
Government Consumption (G)	0.1084236	0.10842
Govt. Transfers (tr)	-0.0108309	-0.01083
Foreign Grants (ft)	0.0109568	0.01096
Net Priv Remittances (re)	-0.0175272	-0.01753
Foreign Saving (B)	-0.2985652	-0.29857
Output (X)	1.0000000	1.00000

Source: The State Statistics Committee of Azerbaijan and Author's calculations, 2015

Table 5. Endogenous variables

Export Good (E)	0.56566	0.17953	0.31739
Import Good (M)	0.26491	0.27225	1.02772
Supply of Domestic Good (Ds)	0.43434	0.82047	1.88899
Demand of Domestic Good (Dd)	0.43434	0.82047	1.88899
Supply of Composite Good (Qs)	0.69925	1.09272	1.56270
Demand of Composite Good (Qd)	0.69925	1.09272	1.56270
Tax Revenue (TAX)	0.12952	0.15101	1.16593
Total Income (Y)	0.97164	1.07912	1.11062
Aggregate Savings (S)	0.20388	0.22564	1.10673

Consumption (Cn)	0.39755	0.76869	1.93359
Import Price (Pm)	1.00000	0.99900	0.99900
Export Price (Pe)	1.00000	0.99900	0.99900
Sales Price (Pt)	1.05484	1.02912	0.97562
Price of Supply (Pq)	1.00000	0.99900	0.99900
Price of Output (Px)	1.00000	0.99900	0.99900
Price of Dom. Good (Pd)	1.00000	0.99900	0.99900
Exchange Rate (Er)	1.00000	0.99900	0.99900
Investment (Z)	0.37599	0.21925	0.58315
Government Savings (Sg)	0.03694	0.03811	1.03174
Walras Law (Z-S)	0.19273	0.00000	

Source: The State Statistics Committee of Azerbaijan and Author's calculations, 2015

Table 6. CGE Equations

Eq.#	Equations	Value
	Real Flows	
1	CET Transformation (CETEQ)	1,38749
2	Supply of Goods (ARMG)	1,01801
3	Domestic Demand (DEM)	1,09637
4	E/D Ratio (EDRAT)	1,30233
5	M/D Ratio (MDRAT)	0,60990
	Nominal Flows	
6	Revenue Equation (TAXEQ)	0,16075
7	Total Income Equation (INC)	0,97067
8	Savings Equation (SAV)	0,25684
9	Consumption Function (CONS)	0,45256
	Prices	
10	Import Price Equation (PMEQ)	0,99900
11	Export Price Equation (PEEQ)	0,99900
12	Sales Price Equation (PTEQ)	1,05379
13	Output Price Equation (PXEQ)	0,99900
14	Supply Price Equation (PQEQ)	0,99900
15	Numeraire (REQ)	1,00000
	Equilibrium Conditions	
16	Domestic Good Market (DEQ)	0,00000
17	Composite Good Market (QEQ)	0,00000
18	Current Account Balance (CABAL)	0,09479
19	Government Budget (GBUD)	0,06120

Source: The State Statistics Committee of Azerbaijan and Author's calculations, 2015

Results and Implications

The generated macroeconomic consequences of WTO accession for the Azerbaijani economy based on the results of our model. According to the results, WTO accession will exert a positive impact on all three measures of general welfare, i.e. income, consumption and aggregate savings. Both income and aggregate savings are forecasted to increase by approximately 11 percent in case Azerbaijan joins the World Trade Organization. Most interestingly, consumption is predicted to increase by a stunning 93 percent compared to the benchmark value. Our analysis suggests that households would be the primary beneficiaries of WTO accession [4].

Table 7. Macro Indicators

Income	0,97164	1,07912	11,06
Consumption	0,39755	0,76869	93,36
Aggregate Savings	0,20388	0,22564	10,67

Source: The State Statistics Committee of Azerbaijan and Author's calculations, 2015

Table 16 shows the likely results of WTO accession on other macroeconomic indicators, i.e. government savings, tax revenue, exports and imports. Exports are forecasted to decrease by 68 percent compared with a relatively modest increase in imports of 3 percent. Although revenues through customs and tariffs are likely to drop after WTO accession, tax revenue is projected to increase by 17 percent due to higher levels of consumption and increased household incomes. The results implicate that Azerbaijani exports will plummet in the case of WTO accession which is likely to trigger wide ranging consequences for the Azerbaijani oil industry. [3]

Table 8. Macro indicators, continued

Government Savings	0.03694	0.03811	3.17
Tax Revenue	0.12952	0.15101	16.59
Exports	0.56566	0.17953	-68.26
Imports	0.26491	0.27225	2.77

Source: The State Statistics Committee of Azerbaijan and Author's calculations, 2015

Implications

As the result of our model, we can state that consumers in the domestic markets will enjoy lower prices, among other, due to reduced import tariffs from Azerbaijan's accession to the WTO. The consumption will be stipulated by the

higher disposable income. An important insight from our study is that the average consumer will be better off in case Azerbaijan joins the WTO.

At the same time, it should be noted that the Azerbaijani oil industry, which is the main source of the income, would experience a severe setback given the forecasted drop in exports. Recall from early chapters that the energy industry contributes almost half to total Azerbaijani GDP and that oil accounted for 95 percent of Azerbaijani exports in 2013. Considering the share of the oil revenues in the budget, these insights are important because they suggest harsh opposition from the Azerbaijani oil industry when it comes to WTO accession. Additionally, this paper makes it clear that diversifying Azerbaijani economy before joining the WTO is a critical point.

The WTO accession and its consequences of for local business are ambiguous. Nevertheless, local entrepreneurs will be incentivized to import certain parts of machinery and innovative technology from abroad for their own domestic manufacturing thanks to the better market access for foreign equipment. In addition, WTO accession is likely to stimulate technology transfer from abroad, which could also benefit domestic production not only of machinery and equipment but also of agricultural products. With factors of production projected to be decreasing, the overall costs of production will also be lower and domestic manufacturing could become more competitive. Hence, by becoming more competitive in the local market and improving the quality of the produced goods, they also will be incentivized to export the products to the world market.

By way of contrast, the potential negative consequences also should be considered, and the positive impacts on WTO accession on domestic manufacturing must be weighed against. After accession, foreign capital and qualified products will get access to the domestic market and their market power could potentially force further local enterprises out of business. In the long run, direct subsidies provided by the government to protect an infant manufacturing industry would be prohibited under WTO regulations. As a result of WTO membership, competition with foreign products could harm domestic production. The positive effects generated by Azerbaijan’s accession to the WTO at the first stage can fade out through decreased levels of production and higher unemployment.

Nevertheless, it worth mentioning that, under the WTO regulations, new member countries can carry out certain measures for shielding infant industries in a

transition period. In fact, WTO policy is only to commit the government to implement strategies for a prudential tariff policy in the future. This would allow the Azerbaijani government to not decrease the tariffs dramatically after accession. At the same time, it should be noted that, once WTO regulations take full effect, the accession would dramatically increase the pressure for a more diversified economy to avert negative welfare implications.

Alongside the domestic manufacturing industry, a more diversified economy can also be achieved by increasing agricultural production. Diversification of the economy, in this case, is the key to all expected disadvantages. Some types of subsidies will be impermissible under WTO regulation. Azerbaijani farmers fear that after WTO accession, they will lack the financial means previously granted through government subsidies to compete with cheaper agricultural products from abroad. Again, whether the agricultural sector will benefit or lose from WTO accession will depend on how competitive the industry will become during the transition period when certain agricultural subsidies can still be carried out [5].

For the time being, in Azerbaijan, there is a lack of specialized experts in the service market. The securities market has not developed yet. By international standards, the Azerbaijani banking system is not competitive and is of minor importance in the international financial markets. Lack of competition hinders the development of new financial products and innovations. Again, the Azerbaijani finance industry has to rapidly adjust to a new market environment to compensate for a potential drop in oil revenues. The WTO accession will increase competition from foreign companies in this sector, too.

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