Analysis of the Potential impacts of World Trade Organization (WTO) Agreements on Ethiopian Economy

By

BAHIRU, Wubishet Kassa

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF DEVELOPMENT POLICY

2021

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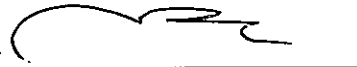
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Committee in charge:

Professor Tabakis, Chrysostomos, Supervisor _____

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SUBMITTED TO: KDI SCHOOL OF PUBLIC POLICY AND MANAGEMENT

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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3/4/2021

Declaration

I Mr. BAHIRU Wubishet Kassa   confirmed that this Graduate thesis entitled "analysis of the potential impacts of world trade organization (WTO) agreements on Ethiopian economy" submitted for the partial fulfillment of Master of development policy (MDP) to Korea Development Institute, School of public policy and management, is my original work that is not copied or reproduced from the works of somebody else.

Wubishet Kassa

Name of student's   Signature   Date

Advisor Statement: *I have reviewed the enclosed Graduate Thesis entitled on "analysis of the potential impacts of world trade organization (WTO) agreements on Ethiopian economy" submitted for the partial fulfillment of Master of development policy (MDP) to Korea Development Institute, School of public policy and management, by Mr.BAHIRU Wubishet Kassa. It is the original work carried out by him under our guidance and find it meets the standards of the discipline of Master of development policy (MDP) to Korea Development Institute, School of public policy and management for a graduate thesis.*

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Acknowledgement

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Abstract

Ethiopia is an observer of the World Trade Organization (WTO) since 1997 and applied for membership on January 13, 2003, but until now the accession process has not yet been completed. The objective of this study is to identify the economy wide impact of Ethiopians' WTO accession. The model development was based on the 2000 – 2018 aggregate data. We find that a unit shock to the state variable applied tariff rate (atr) reduces private final consumption expenditure (c), investment (i) and gross domestic product (y) by an estimated -2.16e-15,unit -2 unit and -2.78e-15 unit respectively; raises exports (x) by an estimated 1 unit, the impact on imports (m) and tax revenue (tax) are not estimated because of lack of numerical precisions. The effect on its one-period-ahead is 0.7721677 unit. The impulse response function causes almost zero temporary effect to private final consumption expenditure (c), government final consumption expenditure (g), and gross domestic product (y); temporary decreases to investment (i), and imports (m) and temporary increase to exports (x). The dynamic forecast captures a general upward trend in export (x), private final consumption expenditure (c) and gross domestic product (y) and the general temporary downward trend in investment (i), import, and tax revenue (tax) from 2018–2031.

Keywords: World Trade Organization (WTO), multilateral trade agreement, applied tariff rate, dynamic stochastic general equilibrium model, and system of national account.

Acronyms and definitions

ADLI	:	Agriculture development led industrialization strategy
AU	:	African union
COMESA	:	The common market for eastern and southern Africa
CVA	:	Agreement on customs valuation
DMO	:	Domestic market obligation
DSGE	:	Dynamic stochastic general equilibrium
ECA	:	Economic commission of Africa
ECOSOC	:	The united nations economic and social council
EPRDF	:	Ethiopian people revolutionarily democratic front
EU-ICEPA	:	European union–Indonesia comprehensive economic partnership agreement
GATT	:	The general agreement on tariffs and trade
GDP	:	Gross domestic product
GPS	:	Geographic positioning system
GTP-I	:	The first growth and transformation plan
GTP-II	:	The second growth and transformation plan
IGAD	:	Intergovernmental authority on development
IMF	:	International monetary fund
IRF	:	impulse–response function
LDCs	:	Least developed countries
PASDEP	:	Plan for accelerated and sustained development to end poverty
RECs	:	Regional economic communities
SDPRP	:	Sustainable development and poverty reduction program
SNA	:	System of national account identity
SPS	:	Agreement on sanitary and phyto-sanitary measures
TBT	:	Agreement on technical barriers to trade
TRIPs	:	Trade-related aspects of intellectual property rights
TRIMs	:	Agreement on trade related investment measures
UNECA	:	The united nations economic commission for Africa
WTO	:	World trade organization

CHAPTER ONE

1. Introduction

1.1 Background of the study

Ethiopia is geographically to be found in the horn of Africa. According to the central statistics agency of Ethiopia, its population is projected to be 100.829 million by 2020 and 136.792 by 2037. Ethiopia is the 2nd most densely populated country in the continent of African following Nigeria and it is the world most densely populated landlocked country. Ethiopia is currently working to develop into a lower middle income country by the year 2025 G.C, by sustaining the growth of the economy, that has been registered for the past two decades. Yet the Country is one of the poorest nations in the world. Erratic rainfall and commodity prices shock have a major negative shock on Ethiopian.

Experience in the World Trade Organization (WTO) accession has shown us for a member country of WTO; it takes nine years and six months from the date of application to accession on average. According to the world trade Organization, the fastest accession registered is less than 3 years, which is the Kyrgyz Republic accession of WTO. Whereas the accession of Seychelles takes 20 years, which is the longest registered membership process in the history of the world trade organization. Ethiopia is an observer in WTO since 1997 and applied for membership on 13 January, 2003, but until now the accession process has not yet been completed. Therefore, the starting point of this study is to identify the potential economy wide impact of Ethiopian's WTO accession in order to help Ethiopia to realize its vision by maximizing the economic and social benefits gained from the accession and by overcoming the expected negative impacts of WTO accession.

The founders of WTO have been agreed to make international trade and economic linkages between member countries in a way that can improve the livelihoods of citizens', creates a wide ranges of job opportunities for citizens by improving the incomes of the peoples sustainably so as to promote the capacity to utilize the goods and services produced, enhance production and productivity, expanding international trades, utilization of world natural resources must be

maintained following of sustainable development principles. Furthermore, it is important to note that the need of making a number of positive efforts in the system of global trading for the developing countries particularly LDC's to contribute to the growing economic development needs. To attain this objective and make all equitably beneficiary from international trade significant reduction of tariffs and non-tariff protections and avoiding unfair international trading systems among various trading partners are required.

Being a member of WTO multilateral trading system and taking an active role in the organizations requires a great deal of commitment. First of all, when Ethiopia intends to become a member of the WTO, it requires a commitment to open Ethiopian economy to international competition because the only way to take part in the WTO multilateral trading system is to open the economy. In other words, the competitiveness of local manufacturers and exporters is a top priority in order to do good to the system. Although it may take a long time to be a member of the WTO, it is a fact that there are immediate costs of membership, the need for economic reforms, and Ethiopian producer's vulnerability to international competition.

To become a member of the WTO multilateral trading system and to benefit from it, Ethiopia needs to comply with the WTO multilateral trading system agreements. Accordingly significant changes required to the existing Ethiopian trade related laws and regulations. Although the WTO multilateral trading system will place strong competition on indigenous producers, while by eliminating taxes and other incentives on export can also create opportunities for new exporters to export their goods and service to a wider market access. In the system only, firms that can adapt themselves to these changes can benefit, while weak and incompetent firms will be badly affected from strong international competition.

However, it is believed acceding WTO can expand large market access for the services and goods produced in Ethiopia and creates the availability of wide ranges of alternative goods and services at a fair prices for Ethiopian consumers and firms that would import intermediate products and inputs of production based on the competitive advantages that will be created by the new market opportunities. The benefits that Ethiopia can gain by becoming a member WTO multilateral trading system depends on its ability to gain the opportunities of acceding WTO, as

well as the ability to handle and effectively manage changes in the private sector and the government, the establishment of appropriate institutions, the development of proper policies,

1.2   The key objective of the study

The key purpose of this study is empirically investigate the potential aggregate economy wide impacts that will result by accessing WTO and to provide policy recommendation.

1.2.1   The specific objectives of the study

1) Assess the WTO accession experiences of selected countries,
2) Examine the principles and core agreements of the WTO trading system and the improvements being undertaken in Ethiopia to comply with it.
3) Conducting an in-depth analysis data and providing relevant policy recommendations.

1.3   Importance of the study

Currently, almost all international trade is undertaken through the WTO multilateral trading system by following the multilateral trading agreements principles. The numbers of member states in the WTO have increased, and as of today 164 countries have joined the world trade organization. According to the united nations national classifications of countries based on the level of the development of their Economy, currently there are 47 least developed countries. Out of these least developed countries 36 countries are members of the WTO, and 8 other countries have applied for membership. They are being at various levels of negotiation phase. In order to take the advantage of a relatively simple requirements set by the WTO for least developed countries to acceded WTO, Ethiopia needs to accelerate the process of WTO accessions and must accede WTO before Ethiopia categorized out of least developed countries. Rigorous analysis of the impacts of WTO agreements on Ethiopian economy is quite important for the government of Ethiopia, the Ethiopian WTO accession technical committee members, for the academia as well as for graduate and undergraduate students as a reference material for advance study on the economy wide impacts of multilateral trade agreements on Ethiopian economy. There for optimizing the economy wide impacts of multilateral trade agreements and to

effectively manage potential adverse consequences on the Ethiopian economy by making timely, accurate and complete information about the problems encountered is crucial.

1.4   Research questions

This study paper is tried to respond the below major research question.

What is the potential short term and long-term economy-wide impacts of Ethiopia's future WTO accession on the basic system of national account (SNA) identity variables (national income, consumption, investment, expenditure, export, import, and tax revenue)?

1.5   Research hypothesis

Hypothesis 1 ： The accession and implementation of WTO multilateral trade agreement will increase the national income (GDP) level of Ethiopian economy.

Hypothesis 2 ： The accession and implementation of WTO multilateral trade agreement will increase the consumption level of Ethiopian economy.

Hypothesis 3 ： The accession and implementation of WTO multilateral trade agreement will increase investment level of Ethiopian Economy.

Hypothesis 4 ： The accession and implementation of WTO multilateral trade agreement will increase the export earning of Ethiopian economy.

Hypothesis 5 ： The accession and implementation of WTO multilateral trade agreement will reduce the import expenditure of Ethiopian economy.

Hypothesis 6 ： The accession and implementation of WTO multilateral trade agreement will have no impact on tax revenue.

1.6   Contribution

This paper contributes in bridging the gap between the usual static analysis of trade policy impacts of on Ethiopian economy and the dynamic economy wide impacts of trade policy resulting from the WTO multilateral trade agreements on Ethiopian economy, which I cannot get any literatures that have been done before for Ethiopia. The findings of this research work used as a reference for the Ethiopian government, multilateral trade agreement negotiation string and

technical committees of Ethiopia to make information-based decisions and also for those who want to study further as a baseline reference for Ethiopia. The model we used here is adopted from a simplified version of (Fabio Ghironi and Melitz's, 2004) setup of (DSGE) model and (Stefan Reitz and Ulf D. Slopek, 2005), but different in its scope, sample size, variables of interest, and model specification. Therefore in this research we mainly focused on a dynamic, stochastic, general equilibrium (DSGE) model setup, how the induced exogenous tariff shocks on applied tariff rate transmits its impact to the economy and dynamically affect the macroeconomic aggregate variables in response to WTO multilateral trade agreements. The model setup which I used is believed to be rich enough to deliver a variety of novel results because it assumes that there are inter-temporal problems and agents rationally form expectations, exogenous stochastic process may shift aggregates, all markets are always in equilibrium, and exogenous or unpredictable shocks may temporally deviate the economy from the equilibrium.

CHAPTER TWO

2. Literature review

2.1   Recent evolution of economic development policies and programs in Ethiopia

From 1974 -1991 Ethiopia is under the regime of Derg. The regime chose the socialist economic system. According to the world bank data, during this period GDP per-capita is growing about

3.06 % on average from 1982-1991, and reached to 271.4 US$. While the population of Ethiopia was around 50 million with the average growth rate of 3.63% on average during this period.

Following the downfall of Derg regime by May 1991, the Ethiopian People revolutionarily democratic front (EPRDF) has got power to lead Ethiopia and implemented the structural adjustment policies and Programs of market liberalization with the support of international monitory fund (IMF) and the world bank (WB). During this period the officially formulated and inaugurated economy policy of Ethiopia is agriculture development led industrialization strategy (ADLI). Four consecutive development programs are implemented during this period: -

1) Sustainable development and poverty reduction program (SDPRP), 2002 / 03 -2004 / 05.
2) Plan for accelerated and sustained development to end poverty (PASDEP), 2005 / 06 - 2009 / 10.
3) First growth and transformation plan (GTP-I), 2010 / 11-2014 / 15.
4) Second growth and transformation plan (GTP-II), 2015 / 16-2019 / 20.

2.2 Ethiopian foreign trade sector performance

Ethiopia's export trade is essentially concentrated in low value primary agricultural and mining products such as coffee, oil seeds, fruits, flowers, live animals; animal products, gold and opal. tourism, information technology, and air transport services are also the main sources of foreign exchange earnings for Ethiopia. Processing trade of Ethiopia is at the lower end of supply chain with very low value added and low technology application and utilization. While Ethiopia's imports are mainly high valued industrial products including capital goods, fuel, aircraft, semi-finished goods, and raw materials are the major imported goods. This makes the country depends on outside partners for its industrial needs which are considerable.

Table 1: Merchandize export and import of Ethiopia

Year	GDP at constant market prices in millions Birr (LCU)	FOB value export in million Birr (LCU)	CIF value import in million Birr (LCU)	Net export in million Birr (LCU)	Period weighted average exchange rate (Birr/US$)
1999/00	65986.00	3780.15	13431.2	-9651.05	8.20
2000/1	67351.00	3685.12	13431.2	-9746.08	8.42
2001/2	65895.00	4174.95	14249.2	-10074.25	8.543
2002/3	72703.00	4968.49	14720.6	-9752.11	8.581

2003/4	85800.00	4614.29	25766.4	-21152.11	8.635
2004/5	105415.00	5088.43	19233.1	-14144.67	8.652
2005/6	130334.00	8278.7	22077.2	-13798.5	8.681
2006/7	170281.00	9903.41	25184.4	-15280.99	8.794
2007/8	245836.00	13775.3	30519.4	-16744.1	9.244
2008/9	332060.00	15241.2	53089.6	-37848.4	10.4205
2009/10	379135.00	24908.4	55860.3	-30951.9	12.8909
2010/11	515078.50	39683.5	61882.6	-22199.1	16.1178
2011/12	747326.50	46747.3	81129.6	-34382.3	17.2536
2012/13	866921.10	48422.1	100451	-52028.9	18.1947
2013/14	1060825.00	56370.8	83122.6	-26751.8	19.0748
2014/15	1297962.00	55925.9	122513	-66587.1	20.0956
2015/16	1541277.00	57235.2	140730	-83494.8	21.1059
2016/17	1806656.00	62504.6	142549	-80044.4	22.4137
2017/18	2202373.00	59066.4	326752	-267685.6	26.1082
2018/19		59066.35	326752.00	-267685.65	28.0543

Source: Planning and development commission, Custom and revenue authority and National bank of Ethiopia

As it indicated by table 4 above both export earnings and import bills are increasing from year to year but the increment in the import bills is higher than the increment in export earnings as a result the negative trade balance is worsened from year to year. This implies that the capability of the export earnings to cover the import bills has been declining from year to year and stood at below 20 percent by 2018/19. The productivity and production of those exportable products is performing weakly from year to year as a result of this the availability of reliable and sufficient amount of foreign exchange to import capital goods and services is a challenge for Ethiopia. Improving the performance of export sector of Ethiopia is one of the means to support Ethiopian efforts to reduce its dependence on external savings gradually and to sustain the speedy economic growth and development by setting the basis for structural economic transformation. But to improving the performance of the export sector also needs to modernize the export of goods and services of Ethiopia as well as properly intervene in the import substitution strategies.

2.3 The Ethiopian WTO membership process

Ethiopia is a member of the league of nations, a founding member of the UN, WB and IMF. Ethiopia is also served as a commissioner of the intergovernmental authority on development (IGAD) and the united nations economic commission for Africa (UNECA) and actively

participates in the common market for eastern and southern Africa (COMESA). Given these conditions, it is a puzzle why Ethiopia did not join the general agreement on tariffs and trade (GATT) in 1940s. The negotiations were held under the auspices of the united nations economic and social council (ECOSOC), of which Ethiopia is a founding member. There was no significant ideological difference in the political economy thinking at that time. I.e. the emperor's regime from 1941-1974 was very close to the western world.

In 1997, two years later the establishment of the WTO, Ethiopia has applied to be given an observer position to gain insight into the organization's objectives, principles and practices, to enter into negotiations in the near future. According to the Laws of the WTO, a country that apply for membership of the WTO are required to begin negotiations within 5 years from the date of application. The WTO accepted Ethiopia's request on 22 October, 1997, but failed to comply with the five-year deadline and asked the WTO to sustain its observer set and to accede the WTO by 2003. Ethiopians request approved and accepted.

During this time, working committees from various offices have been formed to carry out preliminary assessment studies and the results of the study shows that it will be useful to join the organization. Hence the membership application was submitted by the government believing that joining the WTO on 13 January, 2003 will accelerate economic growth and support development strategies.

2.4   The world trade organization multilateral trade agreements

The numbers of WTO member countries were 164 since 29 July 2016 and 25 countries are being with observers. WTO is anticipated to offer a shared institutional framework among its member countries for the behavior of trade relations in problems associated with the WTO agreements defined in Annexes I, II, III and IV (which is the optional plurilateral agreements). The package of WTO agreements must be accepted as a "single undertaking" with some exceptions. procurement.

2.5 Theoretical review

The theory of trade and development traditionally believed that, trade is an important engine for the economic development. The major supporting argument of trade barriers and protectionism is the protection of an infant industry. The findings of many researchers show that tariff barriers creates inefficiency and cause countries to be uncompetitive on the international market. The speed, at which tariff reduction is implemented is a decisive factor that influences tariffs levy impact on national economy. Although, governments in less developed countries (LDCs) considered tariffs levied as a major sources revenue, the role of tariff levied as government source of revenue has been diminished because contemporary governments usually prefer nontariff barriers to protect domestic industries. Paul R. Krugman, Maurice Obstfeld, and Marc J. Melitz , (2018). International Finance Theory and Policy. Pearson Educational limited.

Currently a number of research papers explored the impact of multilateral trade agreements on nation's economy. Many of these studies detected that acceding the WTO multilateral trading system have positive impact on the national economy. Among these studies (Stefan Reitz and Ulf D. Slopek, 2015) found that in the short run, tariff reduces aggregate demand, output and consumption while this decline in aggregate demand, output and consumption is diminished in the long run. Tariff increases the domestic prices of imported goods and services, but, it's terms of trade effect is unambiguously dominate the demand diversion caused by the domestic price increase of imported goods. Since the potential benefits from the multilateral free trade are much greater, the best policy option is to pursue the multilateral free trade agreement (Kozo Kiyota , 2006). Multilateral trade liberalization has positive impact on public revenue, and as countries experience higher real per capita income the impact increases (Gnangnon, 2017). By comparing the instantaneously completed tariff reduction with gradually over time tariff reduction, and also founds that the only effects of time path is on the aggregate variables transitional path. His dynamic analysis conducted using numerical simulations by assuming an initial average tariff rate of 10 %, resulted in 2- 3% and 1.5 - 3% increase of the long run, output and the aggregate capital stock, if the tariff removal is done instantaneously and if implemented gradually respectively (Erratum , 2015).

2.6 Lessons from selected countries

The macro economic impact of WTO accession should be positive in the long run this is driven by better resource allocation because the acceding country opens its economy to international trade makes deep structural adjustment reforms so as to align its trade related laws, regulations, institutions and policies with the WTO standards. However, in the short term, implementation of WTO commitments may lead to significant adjustment costs. Dadush, U., & Osakwe, C. (2015). WTO Accessions and Trade Multilateralism. Cambridge University Press.

China accede WTO by 2001, it has the main stabilizer and strong accelerator for China's economic take-off. China conducted the largest legislative reform in its history to comply its trade regime with WTO rules by scrubbing over 3,000 laws, decrees and regulations at the central level and almost 200,000 at the regional level. Therefore the concept of non-discrimination, transparency, and the rule of law are no longer trade jargon. Following the WTO accession China's overall bound tariff has been cut from 15.3% to 9.8%, significantly below than the mean of rest of the developing countries, the mean tariff on agriculture products even below from some major developed countries. It has also opened up more than one hundred service sub-sectors, including banking, insurance and telecommunications, at a level similar to those in developed countries. Dadush, U., & Osakwe, C. (2015). WTO Accessions and Trade Multilateralism. Cambridge University Press.

Russia acceded WTO by 2012 the experiences of Russian's WTO accession shows that WTO accession by itself cannot bring a negative or a positive impact on the development of national economy. Countries could get benefits in the various ranges of time, through the creation of better terms for its trade within the WTO itself. WTO membership is a vital complement to the general social and economic policy of any market-oriented economy. The economic regulation of an acceding country is affected by the accession process. The result of continuity, lengthy accession negotiations and the gradualism of the accession process is that the accession itself does not bring painful shocks to the economy. Dadush, U., & Osakwe, C. (2015). WTO accessions and Trade Multilateralism. Cambridge University Press.

In 1992 after the declaration of Ukraine independence, it goes to WTO accession. acceding WTO leads to increased grave competition leads to hurting for some companies. on the other

hand, the pessimistic scenarios foreseen by some researchers did not occur. actually, the WTO accession of Ukraine brings new incentives for structural and long-lasting change in the national economy. Dadush, U., & Osakwe, C. (2015). WTO accessions and Trade Multilateralism. Cambridge University Press.

In October 1994, Cambodia applied to accede the WTO and in May 2003 the negotiations was completed in the framework of LDC accessions decision taken by the WTO general council. Members countries of WTO agreed that LDCs seeking to join the WTO would be bound by certain restraints. Cambodia is the first least developed countries (LDCs) which join WTO under this framework. Cambodia acknowledged that acceding WTO could be crucial in accelerating its economic growth and development. Cambodia's WTO accession is taken as one of the main pillars of its successful economic performance. Dadush, U., & Osakwe, C. (2015). WTO Accessions and Trade Multilateralism. Cambridge University Press.

The revolution of Yemen which undertaken in 2011 causes to the formation of government which concludes Yemen's WTO accession process in 2014. It was Yemen's WTO accession process was considered as not only an end by itself, but also as a means to achieve, other multiple objectives, such as reduction of poverty, unemployment and improving the levels of sustained growth and development. Dadush, U., & Osakwe, C. (2015). WTO Accessions and Trade Multilateralism. Cambridge University Press.

Kenya is among the founding member of the world trade organization WTO. Like any other countries stakeholders with various interests were participate in the issues of international and domestic trade. While there have efforts to engage all parties in the decision making process. The lack of efficient mechanisms for coordination and consultation weekend the trade strategic objectives and Kenya's policy stand. Kenya, like other developed countries also be deficient in capacity of trade policy formulation. Gallagher, P., Low, P., & Stoler, A. , L. (2005). Managing the Challenges of WTO Participation. Cambridge University Press.

Malawi has been a member of WTO since 31 May 1995. The stakeholders in Malawi are conscious about opportunities of WTO accession through its strong rules-based structure to shelter the stakeholders against the influential countries. The benefits will become even larger as

it continue to integrate into the worldwide economy. Lessons can be drawn from Malawi's experience, on the way how trade contribute to the development, how successfully utilize technical assistance to strengthen institutional capacity, the use of countervailing measures and safeguard mechanism, means of financing the cost of compliance with WTO commitments, means of dealing with the shortcomings ahead of tariffs bindings, boost programs to improve the contribution of the private sector as a result the supply-side constraints are overcome, how to handle the issue of preference erosion and other border measures. Gallagher, P., Low, P., & Stoler, A. , L. (2005). Managing the Challenges of WTO Participation. Cambridge University Press.

2.7   The status of Ethiopia's WTO accession process.

Ethiopia's application to accede the WTO accepted by the WTO general assembly on 10th February, 2003 and a Working Party was formed. Following the formation of the working party, a national committee was formed to oversee the matter and a technical committee to carry out technical work under it was established.

Figure 1 : The Current status of Ethiopia in the WTO accession process
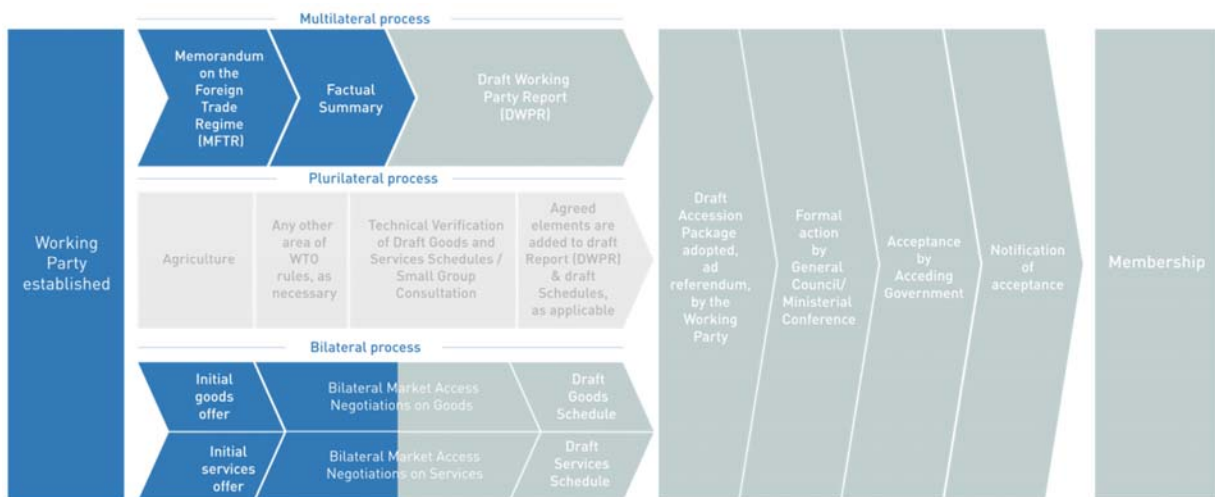
Source: WTO Website

2.8 Legal and regulatory assessments of Ethiopia

Fair and predictable trade regime that encourages trade and investment is one of the priorities of the government of Ethiopia to accede WTO. To achieve this objective a special advisory council was established composed of mostly from independent professionals, private sector, academia and civil society to provide an innovative and participatory reform to ensure Ethiopia's legislation is in conformity with WTO requirements.

2.8.1 Agricultural products

Although the applied tariff rate in the agricultures of Ethiopia is low, it is believed that member countries may ask Ethiopia to make the current applied tariff rate to be binding during negotiations. Since, it is not possible to raise the binding tariff rate in the future without negotiation, it would be better to negotiate more than the current applied tariff rate. Exports and imports quota restrictions are prohibited by the WTO agreements, and banning raw hides and skins export at the time is subject to negotiation by member states and hence subject to be changed in to the proposed tax. Currently, Ethiopia does not provide any subsidies to farmers and may be pressured not to do so in the future during negotiation.

2.8.2 Non-agricultural products

The current applied tariff rate of non-agricultural products of Ethiopia is 16.6 Percent, while Ethiopia sent for to the WTO accession negotiation is 63.9 percent which is well above the 35 percent bench mark set for least developed countries (LDCs) by WTO. Therefore it is believed that member states may ask Ethiopia to reduce the negotiated applied tariff rate below the 35 percent ceiling on non-agricultural products during negotiations. The special loans provided to the manufacturing industries through the export trade development fund are not comeply with the WTO agreement on subsidy and countervailing measures and hence it may be an issue during the negotiation. In particular, the current applied tariff rate on textiles, clothing, and leather should remain the same rate and, if possible, should be negotiated a bit higher.

2.8.3 The service sector

The challenge for Ethiopia in the service sector negotiation is that consolidated regulatory framework has not yet been implemented in the five service sectors i.e. transportation, telecom, wholesale trade and retail trade, financial and tourism sectors. Negotiators may ask that the country's obligations be at least as much as the obligations of the least developed countries in the Uruguay round or the obligations of recent member states and transitional countries. Caution should be taken in enforcing obligations on consumer-oriented business services such as distribution services, as it could create strong competition on local distribution service providers, but it would be beneficial for the rest of the sub-sectors which can bring technology transfer.

2.8.3.1 The transport sectors

Transparency is one of the basic principles of the WTO agreements and hence the publication of laws, regulations and directives in the transport sector must be available and accessible directly to the users on the Ministry's website.

A proclamation no. 468/1997 to provide for the regulation of proclamation and maritime sector administration proclamation no. 549/1999 of Ethiopia should be revised in accordance with the requirements of article 6 of the world trade organization trade agreement. Council of ministers maritime transport regulation no. 84/1995 should be amended to enable foreign investors to provide shipping services in Ethiopia. This resolution does not allow foreign merchant shipping companies to transport 12 cargos from the starting point to the final destination. The Council of ministers air transport regulation no. 84/1995 should be amended to enable foreign investors to sell air transport tickets. Ethiopia's obligations under the WTO are in line with the e-service required by the passenger before booking. The involvement of foreign investors in the sale of transport tickets will help to avoid inconsistencies between the bilateral air transport agreements that Ethiopia is a party to and the above-mentioned council of ministers regulations. Although it is known that shipping and customs representation are different services, many companies offer the services in a single supply chain. Under Ethiopian law, the separation of these services does not consider the current situations and the law, which prohibits others from participating in those services, is an impediment to the government's efforts to coordinate all transport services.

2.8.3.2   The telecom sectors

Ethiopia inevitably asked to open up its telecommunications sector during the negotiations to accede WTO. However, it was difficult to predict the extent of the question until now and that the government needed to be prepared to respond and that a strategy for this crucial sector was needed. Since the service sector is one of the WTO agreements, the process of joining the WTO is unlikely to succeed unless Ethiopia is engaged in a meaningful liberalization obligation of the telecom sector. Given Ethiopia's level of development, member states may ask a more lenient question. In this regard, Ethiopia's strategy is to open up the market and accept telecommunications liberalization to some extent through time. If this is not the case, the purpose of joining the organization can only be extended by telecom. The role of the telecom sector for the overall economic growth of Ethiopia will be able to bring competition in a better way.

2.8.3.3   The financial sector

Based on the experience of different countries cautious liberalization of the financial sector is important and will strengthen the performance of the economy. According to various studies, liberalization in the financial sector will be of great benefit and will contribute considerably to the economic growth. Foreign exchange system must comply with the requirements of article VIII of the IMF.

2.8.4   Sanitary and Phytosanitary measures (SPS)

Agreement on sanitary and Phytosanitary measures (SPS) related laws was inconsistent and lacks integrations among sectors. Therefore, there is a need for a clear division of mandates between different government institutions. Since the SPS issue is closely related to exports and can now be addressed by the export coordinating committee chaired by the prime minister, it is suggested that establishing a trade promotion and expansion council headed by the prime minister, which would include concerned government bodies and representatives of the chamber of commerce as a solution. The absence of the inquiry point and notification authority is also one of the issues that have been a problem during the accession process. Based on the experience gained from other countries, the Ethiopian standards agency as the inquiry point and the Ministry of trade and industry is could serve as the national notification authority.

2.8.5 Agreement on technical barriers to trade (TBT)

According to the study, the lack of a technical regulatory body and executive body is a gap in the implementation of the agreement on technical barriers to trade (TBT), and one of the main things Ethiopia needs to do is to issue a technical regulation proclamation in accordance with WTOTBT agreements and establish a body to monitor its implementation. By strengthen the Ethiopian conformity assessment enterprise it is possible to provide quality assurance for export and import products.

2.8.6 Agreement on trade related investment measures (TRIMs)

Article 12.2 of proclamation no. 295/1978 of Ethiopia stipulates that investors who want to invest in the petroleum operation sector should use the domestic resources if the inputs are available at competitive prices and quality domestically, domestic market obligation (DMO). This article is not in line with the WTO's agreement on trade related investment measures (TRIMs), and GATT article XI. It should be amended in accordance with TRIMS. However, it is said that petroleum is a natural resource that is highly valued in terms of national interest and security, and it is possible to take a strong position during negotiations.

Article 5.4 of proclamation no. 249/2001 stipulates that an export trade duty incentive scheme is an incentive for investors seeking to import inputs for export. Notwithstanding the provision laid-down above, exporters in the export where there raw-materials equivalent in price and quality to those they imported are locally available shall not be beneficiaries of the schemes. The law that allows for the right to import duty-free does not contradict the TRIMs agreement. However, the fact that an imported product is available locally at a reasonable price and quality does not preclude the investor from importing the same product in violation of GATT article III: 1 (national treatment). There should be no difference between locally produced and imported similar products.

2.8.7 Agreement on customs valuation (CVA)

The rules and regulations of Ethiopian ministry of revenue and customs authority should be amended the provisions comply with the WTO agreement on customs valuation (CVA). In the case of country of origin, customs authority divides all the countries into which the product is

made into four groups, and the customs value is the same for the same product from the same countries, sometimes applied equally to some products. This practice should be adjusted using the correct pricing system. Customs enforcement bond would provide transparency and accountability for all products without discrimination. Post release verification and audit and risk assessment and management law must establish, and Ethiopia's current laws and regulations on trade related intellectual property rights (TRIPs) must be compatible to the WTO agreement.

CHAPTER THREE

3. Data and methodologies

In order to better understand the economy wide impacts of multilateral trade agreements in Ethiopian economy, an in-depth reading of the relevant literature is conducted and the relevant data is collected from the responsible institutions. Due to the significant interdependence between the various macro-economic variables, and trade barriers in order to gauge the economy wide impacts of implementing multilateral trade agreements in Ethiopia an empirical analysis will performed in a standard dynamic general equilibrium setting. In order to capture the economy wide impacts of the shock introduced on applied tariff rate as a result of implementing the multilateral trade agreements.

3.1 Assumptions about the economic agents

In this model three rational economic agents (households, firms, and the government) are considered and the assumptions for each economic agent are stated below.

The basic assumption about household are; they are rational, they earn income, consume goods and services, take inflation and interest rate as given, and save some amount out of the income they earn. Let $u(X)$ be the household's direct utility function and $v(\mathbf{P}, \mathrm{m})$ be his indirect utility function. P interprets as the firms (FOB) price. If $\mathbf{t}$ is the vector of taxes, then the price vector faced by the household is $\mathbf{P} + \mathbf{t}$ this yields the household a utility of $v(\mathbf{P} + \mathbf{t}, \mathrm{m})$ and yields the government tax revenue $R(t) = \sum_{i=1}^{k} t_i x_i \, (\mathbf{P} + \mathbf{t}, \boldsymbol{m})$. Varian, H., (1992). Microeconomic Analysis. New York: Norton.

The basic assumption about firms are, they produce output $Q_i = h_i + e_j$ for both home consumption (h_i) and export to country $\mathbf{j}$ (e_j), set price, take demand as given, have constant marginal cost, the total cost of production for firm i is, $C(h_i, e_i) = c(h_i + e_i)$, the firms also incur tariff costs on exports: if firm i exports e_i to country $\mathbf{j}$ when government $\mathbf{j}$ has set the tariff rate t_j, then firm $\mathbf{i}$ must pay $t_j e_i$ to government $\mathbf{j}$. exports are assumed as an increasing function of the exchange rate. $X = X(E)$ Where $X'(E) > 0$, and imports are assumed as decreasing function of the exchange rate but an increasing function of income $M = M(Y, E)$ Where $M_Y > 0, M_E < 0$. Varian, H., (1992). Microeconomic Analysis. New York: Norton.

The basic assumptions about government (public sector) are government consumption is assumed to be exogenous (set by policy); taxes are assumed to be increasing function of income. $\frac{dT}{dY} = T'(Y)$ is the marginal tax rate ($0 < T'(Y) < 1$), government earn revenue and consume output, take inflation and interest rate as given. Varian, H., (1992). Microeconomic Analysis. New York: Norton.

3.2   The data

Data are the backbone of the analysis that describe the past and current conditions which strongly influence results of the model specification and analysis. In other words, looking at a relevant data is essential to understand where do we stand and come from before assessing where we may be heading to especially in the case of dynamic stochastic general equilibrium modeling. Hence time series aggregate level macro data such as GDP, consumption, investment, government expenditure, export, import, tax revenue, current transfer, custom revenue, inland tax revenue, are collected and the variable openness and applied tariff rate data from 2000 –

2018 is collected from planning and development commission of Ethiopia, national bank of Ethiopia, Ethiopian ministry of trade and industry, Ethiopian ministry of revenue. Ethiopian custom authority, world bank (WB), and UNCTADStat are the main sources of data that we explored to get the available desired relevant data.

3.3   Model Specification

I used the dynamic stochastic general equilibrium (DSGE) model to analyze the economy wide impact of multilateral trade agreements on Ethiopian economy which is mainly focused on the change in applied tariff rate channeled with the aggregate national income account identity variables.   The model is for multiple time series used to analyses the economy wide impacts and forecasting of multilateral trade agreements the leads to the adjustment of applied tariff rate in Ethiopia. The model is motivated by economic theory and in which future expectation values of the aggregate macro-economic variables play an important role. Since the model is based on economic theory, the parameters of this model can characteristically expressed in terms of the motivating economic theory. The decision rules of individuals' economic agents' come from the optimization of dynamic stochastic problems, and stochastic processes for exogenous variables. Individuals' expectations of future values are assumed to be correct, on average and said to be model-consistent. In the model dynamic means there are inter-temporal problems and agents' rational expectations; stochastic means exogenous stochastic process may shift aggregates; general equilibrium means that all markets are always in equilibrium.   Exogenous or unpredictable shocks may temporally deviate from the equilibrium.

Three kinds of variables are involved in the model; the first one is the control variables which includes; national income, consumption, investment, export, import, and tax revenue. The system of equations determines the values of those control variables in the current time period and determines the future value of the state variables one period ahead. The second one is the state variables which include; openness, government spending, applied tariff rate, transfer, custom revenue and domestic tax revenue. The third one is a shock variable which is introduced on the state variable applied tariff rate.

In an open economy the national income account (GDP) identity is

$$Y = C + I + G + NX \qquad\qquad\qquad (Eq-1)$$

The model assumes that a portion of the income is spent in the form of taxes (TA) and the household receives net transfers (TR) in addition to the national income. Therefore disposable income (Yd) is equal to income plus transfer minus taxes.

$$Yd = Y + TR - TA \qquad (Eq-2)$$

The household allocate its disposable income in to consumption and saving.

$$Yd = C + S \qquad (Eq-3)$$

By combining identity 2 and 3

$$C + S = Yd = Y + TR - TA \qquad (Eq-4)$$

$$C = Yd - S = Y + TR - TA - S \qquad (Eq-4a)$$

Substitute the right-hand side of equation (4a) for C in identity (5) and making some rearrangement, we can obtain

$$S - I = (G + TR - TA) + NX \qquad (Eq-5)$$

In $Eq-5$ $(G + TR - TA)$ is the government budget deficit. $(G + TR)$, consisting of government purchase of goods and services and (G) plus government transfers (TR) and tax revenue TA. Thus $Eq-5$ states that the excess of saving over investment $(S-I)$ of the private sector is equal to the sum of budget deficit and trade surplus.

$$TA = Cutaxr + Dtaxr \qquad (Eq-6)$$

In $Eq-6$, the amount of tax received by the government which is the sum of custom tax revenue ($Cutaxr$) and inland tax revenue ($Dtaxr$).

$$S^p = Y - T - C \qquad (Eq-7)$$

In $Eq-7$ private saving is the portion of disposable income which is saved not consumed.

$$S^g = T - G \qquad (Eq-8)$$

In $Eq-8$ government saving is net tax revenue, tax revenue minus government purchases

$$S = S^p + S^g \qquad (Eq-9)$$

$$S = (Y - T - C) + (T - G) \qquad (Eq-10)$$

$$S = Y - C - G \qquad (Eq-11)$$

In $Eq-(9-11)$, national saving (S) is equal to the sum of private and government saving.

$$CA = EX - IM = Y - (C + I + G) \qquad (Eq-12)$$

In $Eq-12$, trade surpluses or deficits (current account surplus or deficit)

$$S = I + CA \qquad (Eq-13)$$

In $Eq - 13$, an open economy can save not only by building up its capital stock (as a closed economy) but also by acquiring foreign wealth.

$$Atr = \frac{Cutaxr}{Im} \qquad\qquad (Eq - 14)$$

In $Eq - 14$, is describing the applied tariff rate (Atr) which is the ratio of custom tax revenue $(Cutaxr)$ to imports (Im) and it is the actual tariff rate.

$$O = \frac{Ex + Im}{Y} \qquad\qquad (Eq - 15)$$

$Eq - 15$, depicts the ratio of international trade which is the sum of export and import $(Ex + Im)$ to gross domestic product (Y), which is an indicator of trade 'openness' has increased for most trading nations, and is a result of globalization, and trade liberalization.

By bridging everything together to specify the dynamic stochastic general equilibrium (DSGE) model, consisting of some equations that are nonlinear. Hence, before the estimation of the model, log linearization is conducted and the variables are expressed as deviations from its steady state. After log linearization it specified as follows:

$$c_t = \left(E_t(y_t) + E_t(ctr_t) - E_t(tax_t) - E_t(s_t)\right) \qquad Consumption\ (Eq - 1)$$

$$y_t = c_t + i_t + g_t + x_t - m_t \qquad National\ output (Eq - 2)$$

$$i_t = s_t - x_t + m_t \qquad Investment (Eq - 3)$$

$$x_t = o_t - m_t + y_t \qquad Export (Eq - 4)$$

$$m_t = cutaxr_t - atr_t \qquad Import (Eq - 5)$$

$$tax_t = cutaxr_t + dtaxr_t \qquad Government\ tax\ revenue (Eq - 6)$$

$$s_{t+1} = \beta_s s_t + \pi_{t+1} \qquad National\ Saving\ (Eq - 7)$$

$$o_{t+1} = \gamma_0 o_t + \omega_{t+1} \qquad Openness (Eq - 8)$$

$$g_{t+1} = \delta_g g_t + \psi_{t+1} \qquad Government\ spending (Eq - 9)$$

$$atr_{t+1} = \zeta_{atr} atr_t + \chi_{t+1} \qquad applied\ tariff\ rate (Eq - 10)$$

$$ctr_{t+1} = \eta_{ctr} ctr_t + \phi_{t+1} \qquad Transfer (Eq - 11)$$

$$cutaxr_{t+1} = \theta_{cutaxr} cutaxr_t + \tau_{t+1} \qquad Custom\ tax\ revenue (Eq - 12)$$

$$dtaxr_{t+1} = \rho_{dtaxr} dtaxr_t + \sigma_{t+1} \qquad Domestic\ tax\ revenue (Eq - 13)$$

In **equation-1,** private consumption is assumed to be strictly increasing function of disposable income (Y-T). And we denote disposable income as $Y^d = Y - T$, then the private consumption function can be expressed as $C = C(Y^d)$, Where $dC/dY^d = C'(Y^d)$ is the marginal propensity to consume which is ($0 < C'(Y^d) < 1$). The model specifies private consumption at time t (c_t) as a function of expected income at time t, expected current transfer at time t, expected tax at time t, and the expected current saving at time t. **Equation -2** is the national income accounting identity of the economy. **Equation-3** specifies an investment function which a function of national saving and current account (export – import). **Equation -4** specifies export as a function of openness, import and national income. **Equation -5** specifies import as a function of custom revenue and applied tariff rate. In **equation -6**, taxes are assumed to be increasing function of income. $\frac{dT}{dY} = T'(Y)$, is the marginal tax rate which is ($0 < T'(Y) < 1$), and the model specifies government tax revenue as the function of custom tax revenue and domestic tax revenue. From **equation 7-13**, national saving, openness, government spending or government consumption applied tariff rate, transfer, custom tax revenue, and domestic tax revenue are state variable determined one period in the future and assumed to be set by policy. The shock parameters; π_{t+1}, ω_{t+1}, ψ_{t+1}, χ_{t+1}, ϕ_{t+1}, τ_{t+1}, and σ_{t+1} enter the system through the state equations of their corresponding variable. A shock is attached to each state equation as a default but I am interested only on the shock entered in to the applied tariff rate χ_{t+1} for this analysis. The general assumption of the model is that economic agents maximize utility and firms maximize profits subject to the budget constraint and the production function respectively, in addition to that the goods and labor markets clear.

CHAPTER FOUR

4. Result and discussion

4.1. The parameter estimation and interpretation

All the estimated parameters have structural interpretations. The variables; π_{t+1}, ω_{t+1}, ψ_{t+1}, χ_{t+1}, ϕ_{t+1}, τ_{t+1}, and σ_{t+1} are shocks attached to corresponding variable. On this research work I am interested only on the shock χ_{t+1} which is introduced on the applied tariff rate.

Table 2: Model estimation

DSGE model
Sample: 2000 - 2018   Number of obs   =   19
Log likelihood = -48.840335

	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf. Interval]	
/structural						
beta	.9885206	.015883	62.24	0.000	.9573904	1.019651
gamma	.9864427	.0186172	52.99	0.000	.9499538	1.022932
delta	.6930611	.1178824	5.88	0.000	.4620159	.9241063
zeta	.7721677	.3296697	2.34	0.019	.1260271	1.418308
eta	.9914742	.0120097	82.56	0.000	.9679357	1.015013
theta	.7318686	.1019746	7.18	0.000	.5320019	.9317352
raho	.7278176	.1131682	6.43	0.000	.5060121	.9496231
sd(e.s)	.2681862	.0445759			.1808191	.3555533
sd(e.o)	.2415367	.0401301			.1628832	.3201903
sd(e.g)	.5141546	.1472767			.2254977	.8028116
sd(e.atr)	.0325584	.1402422			-.2423113	.307428
sd(e.ctr)	.0113543	.0172884			-.0225304	.0452389

sd(e.cutaxr)	.4436197	.1228984		.2027433	.6844961
sd(e.dtaxr)	.0877828	.0547952		-.0196138	.1951793

As it is shown in table 2 above, I estimate the structural parameters of the model in equation 7 up to equation 13. Equation (7) is known the national saving, which is a residual left over after people do their consumption spending as it is assumed in Keynes's theory, which itself is dependent only (or predominantly) upon incomes and saving behavior of the agents. The parameter beta (β) which is the slope of the first-order autoregressive processes national saving, the slope of national saving is considered to be positive theoretically and my model is also estimates it as positive and significant. Equation (8) is known the degree of openness which is the most natural measure of a country's integration in world trade and the parameter gamma (γ) is the slope of the first-order autoregressive processes openness which expected to be always positive and relatively increased as the country integrated more to the world trade i.e. the higher γ, the more open is the country. Gamma (γ) is considered to be positive theoretically and my model is also estimating it as positive and significant. Equation (9) is known government final consumption expenditure, and the parameter delta (δ) is the slope of the first-order autoregressive processes of government final consumption expenditure and it depend on government revenue mainly tax revenue and set by fiscal policy of the country. Delta (δ) is considered to be positive theoretically and my model is also estimating it as positive and significant. Equation (10) is known as applied tariff rate, the coefficient on applied tariff rate is parameter zeta (ζ) is the slope of the first-order autoregressive processes of tax revenue. Zeta (ζ) is considered to be positive theoretically and my model is also estimating it as positive and significant. Equation (11) is known as current transfer, the coefficient on current transfer is parameter eta (η) is the slope of the first-order autoregressive processes of current transfer. Eta (η) is considered to be positive theoretically and my model is also estimating it as positive and significant. Equation (12) is known as custom tax revenue, the coefficient on custom tax revenue is parameter theta (θ) is the slope of the first-order autoregressive processes of custom tax revenue. Theta (θ) is considered to be positive theoretically and my model is also estimating it as positive and significant. Equation (13) is known as domestic tax revenue, the coefficient on domestic tax revenue is parameter raho (ρ) is the slope of the first-order autoregressive processes of custom tax revenue. Raho (ρ) is considered to be positive theoretically and my model is also estimating it as positive and significant.

4.2. Post estimation of the model

4.2.1. Policy matrix

The Policy and transition matrices of the model are the matrix of parameters in the state-space form that specifies how national saving (s_{t+1}) the degree of openness (o_{t+1}), government final consumption expenditure (g_{t+1}), applied tariff rate (atr_{t+1}), current transfer (ctr_{t+1}), custom tax revenue ($cutaxr_{t+1}$), and domestic tax revenue ($dtaxr_{t+1}$) affect the control variables. Each policy matrix parameter is the effect of a one-unit shock to a state variable on a control variable.

Table 3 : Policy matrix

Policy matrix

		Coef.	Delta-method Std. Err.	z	P>|z|	[95% Conf. Interval]	
c	atr	-2.16e-15	5.46e-12	-0.00	1.000	-1.07e-11	1.07e-11
y	atr	-2.78e-15	2.35e-12	-0.00	0.999	-4.60e-12	4.60e-12
i	atr	-2	1.25e-11	-1.6e+11	0.000	-2	-2
x	atr	1	7.83e-12	1.3e+11	0.000	1	1
m	atr	-1	.	.	.	.	.
tax	atr	0	(omitted)				

In table 3 above, the results of post estimation of policy matrixes are listed equation by equation. The first row is the policy equation for private final consumption expenditure (c), and a unit shock to the state variable **atr** reduces private final consumption expenditure (c) by an estimated -2.16e-15 unit, but it is not statistically significant. The second row is the policy equation for gross domestic product at current market prices (y) and a unit shock to the state variable **atr** reduces gross domestic product at current market prices (y) by an estimated -2.78e-15 unit, but it is not statistically significant. The third row is the policy equation for gross capital formation or investment (i) and a unit shock to the state variable **atr** reduces gross capital formation or investment (i) by an estimated -2 and it is statistically significant. The fourth row is the policy equation for exports of goods and services (x) and a unit shock to the state variable **atr** raises exports of goods and services (x) by an estimated 1 and it is statistically significant. The fifth row

is the policy equation for imports of goods and services (m), a unit shock to the state variable **atr** on imports of goods and services (m) is not estimated because of lack of numerical precisions and the sixth row is the policy equation for tax revenue (tax) which is omitted.

4.2.2. Policy transition matrix

The state transition matrix of parameters specifies the dynamic process for the state variables in the model. The current values of the state variables and its future values are related by the state transition equation. The parameters of each state transition matrix, is the effect of a one-unit shock to a state variable on its one-period-ahead mean. All the state variables are modeled as autoregressive processes, so the results in estat transition repeat the estimates of π_{t+1}, $\omega_{t+1}, \psi_{t+1}, \chi_{t+1}, \phi_{t+1}, \tau_{t+1}$, and σ_{t+1} from the dsge output. In this case, the other entries in the state transition matrix are 0 or differ from 0 only because of lack of numerical precision. Our model includes more than two state variables and some of the state equation depends on a control variable, the state transition matrix will contain new information about that state variable. As it is indicated in table 7 below, in the state transition matrix parameter the effect of a one-unit shock to a state variable applied tariff rate (**atr**) on its one-period-ahead is 0.7721677 unit and statistically significant.

Table 4 : Transition matrix of state variables

Transition matrix of state variables

		Coef.	Delta-method Std. Err.	z	P>|z|	[95% Conf. Interval]	
F.s	atr	-1.11e-16	7.98e-13	-0.00	1.000	-1.56e-12	1.56e-12
F.o	atr	3.33e-16	7.43e-12	0.00	1.000	-1.46e-11	4.60e-12
F.g	atr	2.78e-17	9.79e-13	0.00	1.000	-1.92e-12	1.92e-12
F.atr	atr	.7721677	.3296697	2.34	0.019	.1260271	1.418308
F.ctr	atr	0	(omitted)				
F.cutaxr	atr	0	(omitted)				
F.dtaxr	atr	0	(omitted)				

4.2.3. Impulse responses

The state-space form allows us to trace the path of a control or state; private final consumption expenditure (c), government final consumption expenditure (g), gross capital formation or investment (i), imports of goods and services (m), exports of goods and services (x), and gross

domestic product at current market prices (y) that occur for reasons of introduced shock on applied tariff rate in response to a shock to a state variable applied tariff rate (atr). This path is known as an impulse–response function (IRF).

Figure 2: Impulse responses of the state and control variables

Graphs by irfname, impulse, and response
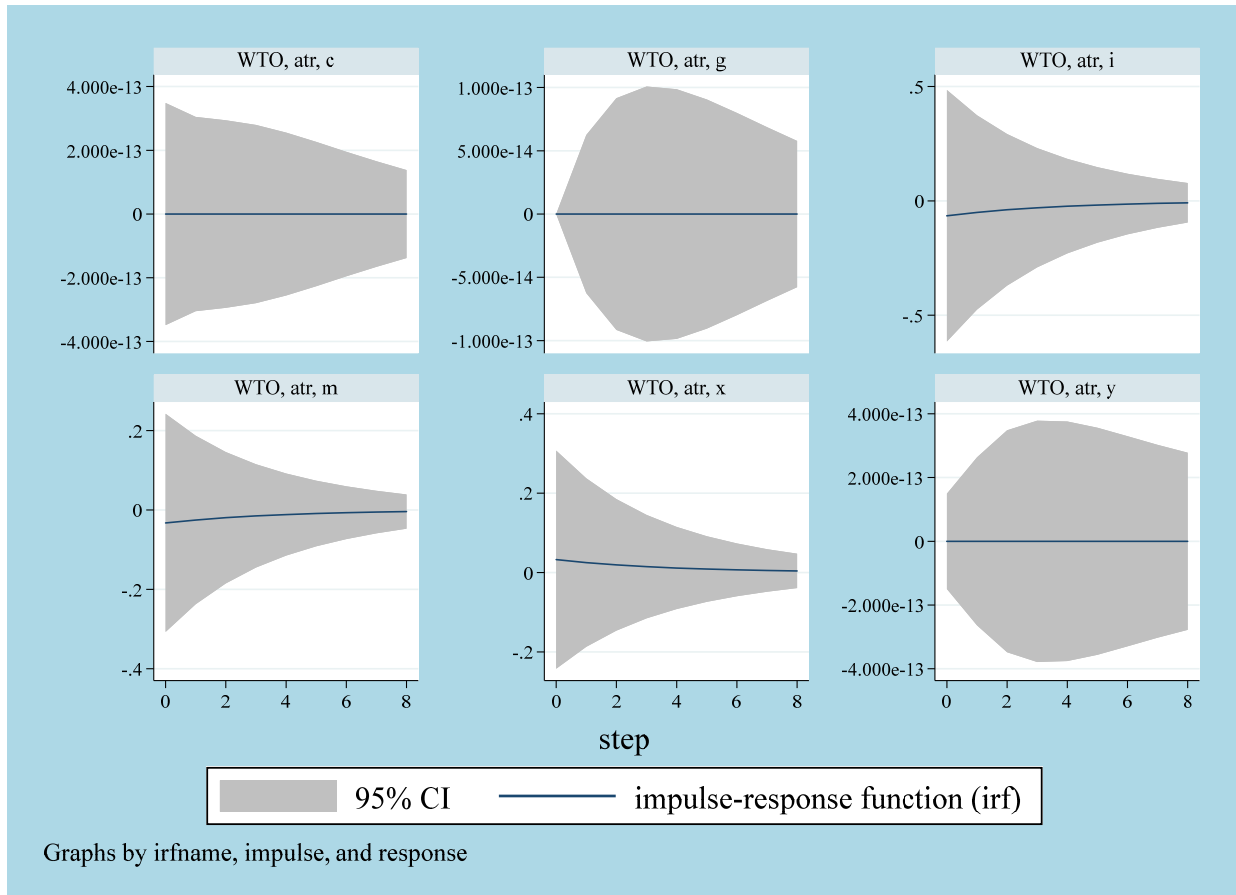
The state variable applied tariff rate (**atr**) models' movements in the private final consumption expenditure (c), government final consumption expenditure (g), gross capital formation or investment (i), imports of goods and services (m), exports of goods and services (x), and gross domestic product at current market prices (y) that occur for reasons of introduced shock on applied tariff rate. As it shown in figure 2 above, this shock causes almost zero temporary effect to private final consumption expenditure (c), government final consumption expenditure (g), and gross domestic product at current market prices (y). on the other hand, this shock causes temporary decreases to gross capital formation or investment (i), and imports of goods and

services (m), on the contrary this shock causes temporary increase to exports of goods and services (x).

4.2.4. Forecasts

The forecast suite of commands produces dynamic forecasts from the fitted model.

Figure 4 : Out-of-sample forecast of GDP
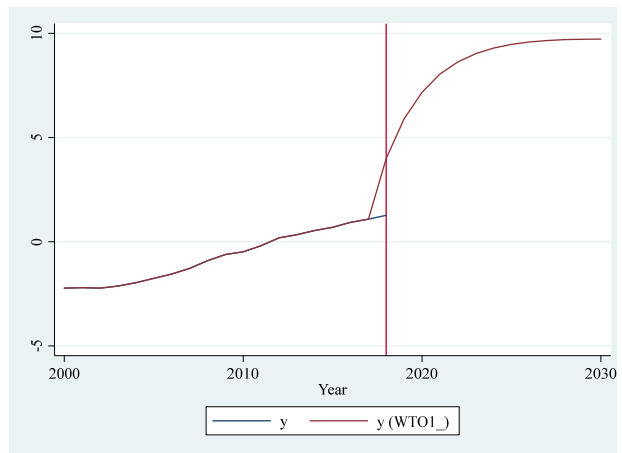
The forecast captures the general upward trend in gross domestic product at current market prices (y) from 2017–2031, but it does not predict the variation in gross domestic product at current market prices (y) around the upward trend.

Figure 5 : Within-sample forecast of private final consumption expenditure   *Figure 6 : Out-of-sample forecast of private final consumption expenditure*
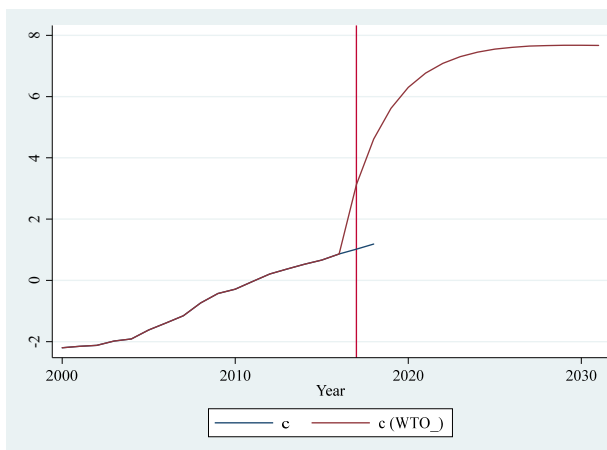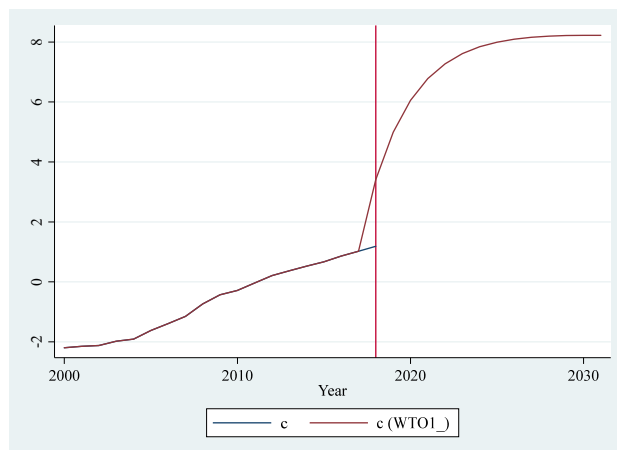
The forecast captures the general upward trend in private final consumption expenditure (c) from 2017–2031, but it does not predict the variation in private final consumption expenditure (c) around the upward trend.

Figure 7 : Within-sample forecast of gross capital formation (investment)
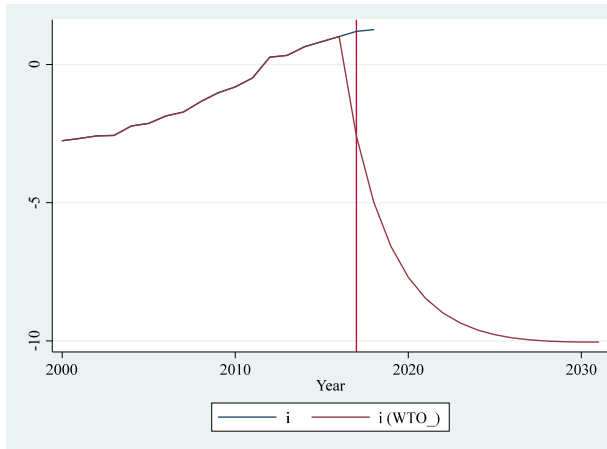
Figure 8 : Out-of-sample forecast of gross capital formation (investment)
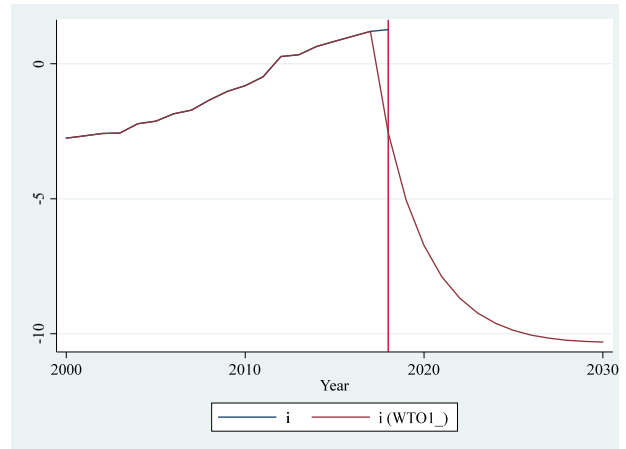
The forecast captures the general downward trend in gross capital formation or investment (i) from 2017–2031, but it does not predict the variation in gross capital formation or investment (i).

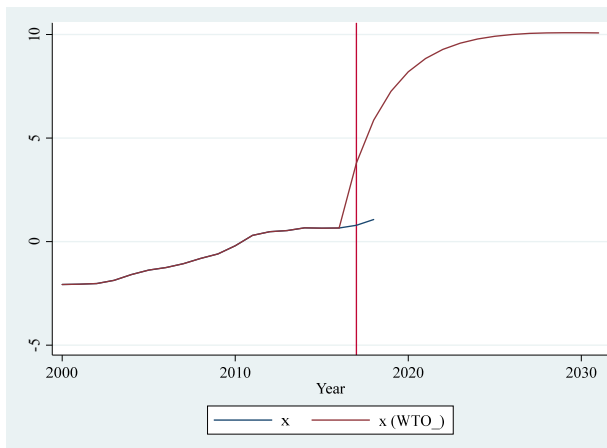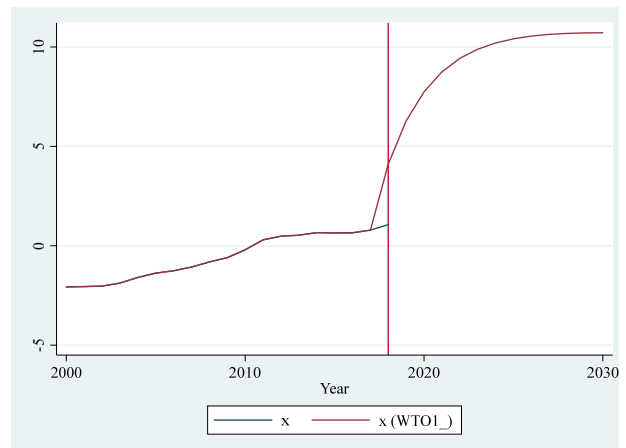*Figure 9 : Within-sample forecast of exports of goods and services*

Figure 10 : Out-of-sample forecast of exports of goods and services

The forecast captures the general upward trend in exports of goods and services (x) from 2017–2031, but it does not predict the variation in exports of goods and services (x) around the upward trend.

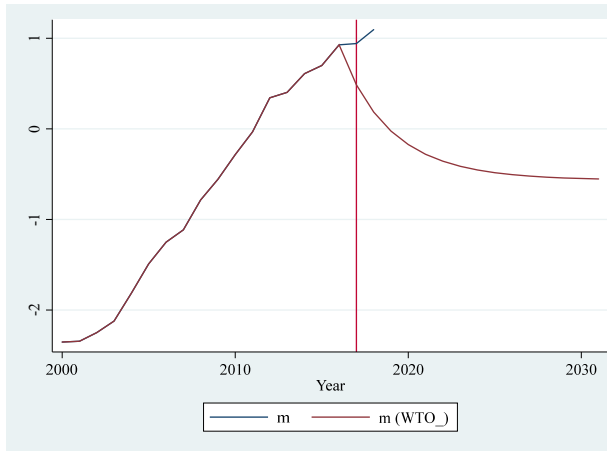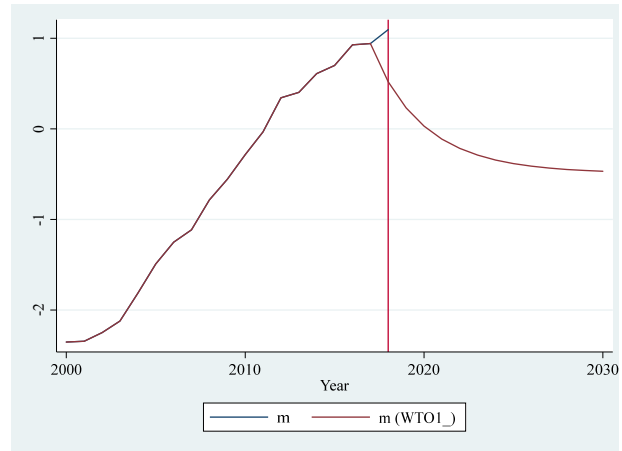*Figure 11 : Within-sample forecast of imports of goods and services*

Figure 12 : Out-of-sample forecast of imports of goods and services

The forecast captures the general downward trend in imports of goods and services (m) from 2017–2031, but it does not predict the variation in imports of goods and services (m) around the downward trend.

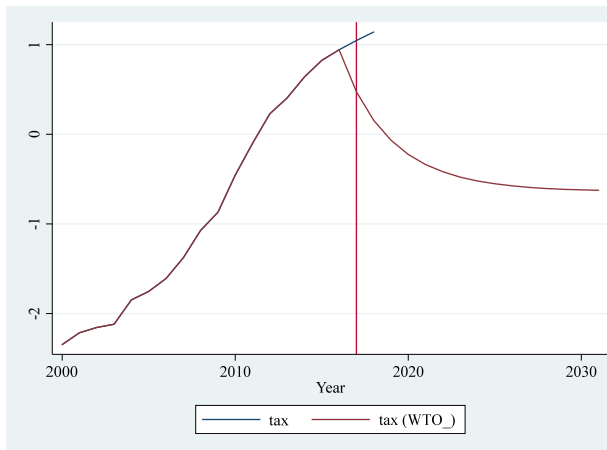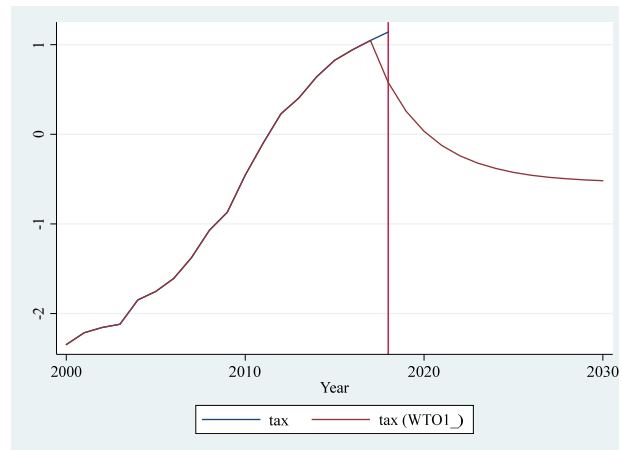*Figure 13 : Within-sample forecast of tax revenue*

Figure 14 : Out-of-sample forecast of tax revenue

The forecast captures the general downward trend in tax revenue (tax) from 2017–2031, but it does not predict the variation in tax revenue (tax) around the downward trend.

CHAPTER FIVE

5. Conclusion, recommendations and policy implications

5.1 Conclusion

The world trade organization agreements are lengthy and complex legal texts covering a wide range of activities. But the fundamental principles run throughout all of these documents and form the foundations of the multilateral trading system are trade without, tariff reduction and bindings schedule of concession, tariffs preferred, and transparency of trade regulations and reciprocity. Currently world economy is becoming highly integrated and international trade is conducted through the principles and agreements of world multilateral trading system. According to the 2020 annual report of the world trade organization, the numbers of member countries of WTO are 164 and they represent 98 % of world trade. After eight-year silence, Ethiopia reactivated its accession process to the world multilateral trading system by circulating a comprehensive set of documents to the Working Party, which met in January 2020 for the first time since March 2012, and hopefully to conclude the accession process by the end of 2021 before Ethiopia moves up from the category of LDC under UN classification so as to benefit the opportunities given to LDCs by the WTO.

The major conclusions drawn regarding the analysis of the potential impacts of multilateral trade agreements on Ethiopian economy is entirely based on the dynamic stochastic general equilibrium modeling approach using data from planning and development commission of Ethiopia, Ethiopian national bank and Ethiopian custom and revenue authority. Ethiopia registered fast and sustains economic growth for the past two decades. Ethiopian foreign trade sector is experiencing current account deficit in all the sampling period of this study and the magnitude of the deficit is getting increased from time to time. The applied tariff rate of Ethiopia is becoming lower and lower from time to time and currently it is significantly lower and / or it is about equivalent to what the world multilateral trading agreement required from the Least developed countries like Ethiopia, in addition there is no tariff leaved on export of goods and services at all in Ethiopia.

In sum the model predicts and forecasts the shock introduced in applied tariff rate as a result of acceding the multilateral trading agreements in the dynamic stochastic general equilibrium setup of my model forecast captures the general upward trend in exports of goods and services (x), and private final consumption expenditure (c) from 2018–2031. consumption expenditure is the one of the major macroeconomic variables that contribute more than 60% of the national income in any economy, and hence my model forecast also captures the general upward trend in gross domestic product at current market prices (y) from 2018–2031. On the other hand, the forecast my model captures the general downward trend in gross capital formation or investment (i), imports of goods and services, and tax revenue (tax) from 2018–2031 as a result the shock introduced in applied tariff rate in acceding the multilateral trading agreements in the dynamic stochastic general equilibrium setup. But in all cases the model does not predict the variation in the control variables around the upward or downward trends. Since it is a forecast, the model does not predict the variation in private final consumption expenditure (c) around the upward trend. Those temporary changes on the basic macroeconomic variable that occur for reasons of introduced shock on applied tariff rate in response to a shock to a state variable applied tariff rate (atr) follows a declining path and converges to its mean value (steady state level) as the time gets larger and larger according to the model impulse–response function (IRF).

Tax revenue is the major sources of government revenue and custom tax revenue is the major contributor of tax revenue since custom tax revenue is a function of applied tariff rate and import the shock attached in applied tariff rate following the principles and agreements of the world multilateral trading system have a negative effect on applied tariff rate this in turn potentially reduces the amount of money collected from tax revenue and finally tax revenue of the government. Government expenditure has a direct relation with government tax revenue. Almost all the major or mega investment projects are owned by government and shortage of government tax revenue has a negative effect on investment activities of Ethiopia. Similarly, government is one of the major economic agent participating on the importation of goods and service for those investment activities as well as consumable products for various issues in one way the negative impacts on government tax revenue on the other hand the decline in investment activities will result a shortage of foreign currency to import as a result the model also predicts and forecasts a temporary decline in imports.

Therefore the government of Ethiopia should strength the domestic tax revenue collection capacity and create conducive environment for private sector investment in line with the world trading system agreements so as to enhance the growth and development of the overall economy if Ethiopia accedes WTO. But by incorporating more variable of interest and micro level data it can also possible to see the potential impact at sartorial level and hence this research work can serve as the base for further rigorous analysis.

5.2 Recommendations and policy implications

The policy implication of the findings of this study is that, the accession of WTO multilateral trading system will open various opportunities and challenges for Ethiopian economy as a whole by affecting the decisions of each economic agent dynamically.

1. In terms of opportunities:

- Acceding the WTO can increase Ethiopian exports of goods and services and private final consumption expenditure, and a temporary decline in Ethiopian imports of goods and services, and finally the gross domestic product of Ethiopia.
- Acceding WTO will bring better quality of goods and services at an optimal prices for the large consumer base of Ethiopia.
- Acceding the WTO is considered as a strong guarantee for foreign investors and contributes to the flow of quality foreign investment in to Ethiopia.

2. In terms of challenges

- Acceding the WTO will result a temporary decline in Ethiopian gross capital formation or investment, imports of goods and services, and tax revenue therefore the government of Ethiopia should create favorable environment to enhance investment and strengthen domestic tax collection capacity to overcome those temporary declines .
- Large amount of budget expenditures will require to amend existing trade related policies, laws, regulations and or develop new ones as needed to align it with the WTO agreements.
- The accession of WTO will narrow the domestic policy environment of Ethiopia as it is required in accordance with the basic principles of the world trade organization.

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