A COMPUTABLE GENERAL EQUILIBRIUM (CGE) MODEL TO ADDRESS THE ISSUES OF TRADE AND ECONOMIC GROWTH IN PAKISTAN – A REVIEW OF EXISTING LITERATURE

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ABSTRACT : *Every model that is applied to investigate the problems of the economy have strengths and weaknesses. Computable General Equilibrium (CGE) models are considered the modified version of Walras model and one the most reliable method for policy recommendations. The objective of this study is to investigate the literature that used CGE modelling to explore the issues of trade, economic growth, poverty, household welfare and inequality in case of Pakistan. It was observed during the study that a portfolio of such studies have been developed and majority of the studies were conducted by Pakistan Institute of Development Economic (PIDE) aiming common characteristics. Most of studies have also used common data base with contradictory results that makes it more interesting. The study further highlighted the strengths and weaknesses of the existing knowledge in case of Pakistan and tried to explore whether Pakistan needs further investigations or not by using the same technique.*

Keywords: Trade, economic Growth, CGE Modelling, Contradictory results, Pakistan

INTRODUCTION

Pakistan came into being existence as a result of division of the sub-continent on August 14, 1947. It was an agrarian economy at the time of independence with agriculture sector playing a vital role. Service sector was scarcely existed at that time and industrial sector was at its beginning. Currently, the industrial sector is well established along with moderately developed services sector in the country and the role of agriculture sector is supportive in the structure of GDP. Since last decade, the economy of Pakistan has shown a good progress in all essential sectors [1].

Pakistan is a developing country and is still struggling to enhance the economic growth. The progress of the economy for the last sixty eight years is poor as well as impressive inspiring. It is inspiring because in spite of great population growth rate it has reached fast development rate resulting a decrease in poverty levels and an increase in per capita incomes of the country. Due to structural changes the economy has changed from an agrarian economy to a more expanded production structure economy. From country's total exports production contribute 80 percent of it. Constant economic growth of Pakistan is still a problem for the country [2].

Nature has distributed the resources in such a way that some goods are available in one community and other community may have some other goods. For example every country need oil to run the economy but very few countries are self-sufficient, so others have to import it. These sort of patterns of trade hardly need explanation. Similarly many commodities that are traded among different countries are produced at many places, so the patterns of trade are unique according to the availability and nature of land and labor. These factors directly affect the cost of production that provide competitive edge on the other countries [3].

Changes in the worldwide economic, political and legal framework not only brought many opportunities but also restrictions to many economies of the world. Especially the development during Uruguay Round of negotiations on the General agreement on Tariffs and Trade (GATT) that focused more on market orientation rather following the traditional approach of control and central planning. Similarly, expansion of European Union (EU) brought many threats and opportunities for the developing economies. Different agreements of EU are aimed to promote the economic activities in the developing world [4].

The objective of this study is to investigate the literature that used CGE modelling to explore the issues of trade, economic growth, poverty, household welfare and inequality. It is suggested by trade related literature that there exists a relationship between trade policy and poverty. Various researchers have used different conceptual and empirical approaches to examine this relationship. These approaches may have their own weaknesses, which could eventually affect the results. Therefore, the empirical evidence should be viewed in the light of the strengths and the flaws of the adopted conceptual and empirical approach. CGE model is an empirical counterpart of the well-known theoretical general equilibrium model, which has become the most widely applied counterfactual analytical tool.

1. HISTORY OF CGE MODELS APPLIED IN PAKISTAN

Many authors have observed the literature on CGE models applied to less develop and developing countries. In this section we will focus on major CGE studies on Pakistan. The strengths and weaknesses in these studies are mentioned in a useful manner in order to add some new dimensions.

[5] constructed the first ever I-O table in Pakistan with base year 1955. It was first general equilibrium analysis with strength. It meant to focus on large scale industry like mining, large scale manufacturing sector and input structures of agriculture and ignored rest of the production areas. The table classified the industry into 6 sectors (agriculture, mining, industrial, unallocated, wage and foreign trade sector) ignoring the service sector. Since then, in Pakistan a large number of I-O tables and Social Accounting Matrices (SAM) have been constructed. The first SAM was developed in 1962.

However, despite the availability of the I-O tables and SAMs at regular intervals since 1962, the first ever CGE model was developed over 18 years by [6]. The latest SAM available for Pakistan is available with base year 2007-08 developed by [7].

[6] developed a CGE model by using SAM 1975-76 focusing on food policy reforms and how they may influence the economic growth of Pakistan. The model was an open economy with a government sector where industrial sector was disaggregated into 11 and household into three sector keeping in view the socio economic groups for both urban and rural. The major focus of the study was to observe the changes in patterns of household consumption when prices and real income changes. The simulations were performed by increasing government expenditures, removing subsidies on wheat, increasing subsidy on fertilizer, increasing wages and land reforms. The results revealed maximum impact of land reforms on the economic growth as compared to other simulation results.

[8] developed a behavioural CGE model (comparative static model) for the public sector of Pakistan aiming to check the influence of state owned manufacturing activities on the economy. The model used the SAM 1983-84 and used only government, enterprises, and household as institutions in order to check the impact of liberalized policy as well as the policy of price in thepublic sector. The results of the simulations showed that liberalization policy brings a positive change in the current account balance, it causes an increase in real GDP and reduction in prices. Furthermore the activities relating to exportable commodities have been increased converting the losses into profits of publicly owned enterprises. The model had nothing to do with the welfare impact of household.

[9] used the SAM 1983-84 for the CGE model developed aiming to analyse the economy wide impact of energy policy. The results found by the simulation show that a change in energy tax has varied influences on different commodities, i.e. if distortions are removed from taxes on petroleum products, it fulfil the objective of social equity while removal of distortion in taxes on electricity has no impact on the consumption of rural household while it showed a negative impact on urban household. On the other hand, applying a tax on natural gas brought a negative impact on the real consumption of the household. It was further discovered that removing distortions not only increase the real GDP but also bring a positive change in the trade balance. The model was simply a static model aiming comparative analysis and had nothing to do with the furcating.

[10] developed financial CGE model for Pakistan by using SAM 1983-84 aiming to calculate the impact of foreign aid and Dutch disease effect. The study found that during the era of 1980s, the economy of Pakistan was not constraint to foreign aid rather it generate strong Dutch disease effect by shrinking the exports, reducing commodity competitiveness and jolting the structural adjustment efforts. The results further found that additional depreciation of currency not only increase the cost push inflation but also reduce the real income and aggregate demand. Also a fiscal cut abroad brings deflation and a shift towards public investment from public consumption may bring a positive change in economic growth similarly a reduction in debt also seemed positive for economic growth.

[11] developed first CGE for Pakistan under MIMAP project. When the simulation occurred, it was observed that reduction in tariff also causes reduction in wages and dividends of households. This proportion of t decline in income was observed through dividends than wages. It was interesting to find that rich was more affected by the tariff reduction than the poor in the form of wages because rich was getting profit in the form of dividends while poor was only getting wages. The study further concluded that this tariff reduction reduces the income disparity between urban and rural areas.

[12] developed a CGE model under MIMAP project to investigate the changes in household income and other macro aggregates when tariffs on industrial imports are reduced. The results found that reduction in tariff reduces the prices of imported goods that ultimately reduce the output price and the structure of input prices. It further increase the gap between poor and rich household. There is an increase in consumption, which showed a positive welfare effect on the household, but this increase in consumption is greater in rich than the poor. The study further argued that the government revenue also reduced due to low investment which ultimately may affect the economic growth adversely.

[13] developed a CGE model for Pakistan by using GTAP 4 to investigate the impact of roads and transport infrastructure on the economy. The study proposed a multiregional CGE model in order to check the impact of a new road network between Karachi and Peshawar. The simulation results discovered that new road will bring positive change in the industrial sector of Punjab and NWFP (North West Frontier Province, Now KPK (Khyber Pakhtunkhwa)) provinces of Pakistan. The road network will increase the real income of households that ultimately will increase the utility level in both provinces. The study further concluded that this network will bring positive change of 16% to GDP of the economy.

[14] used CGE model by using GTAP 5.4 to measure the impact of quota removal after the end of Multi-Fiber Arrangement (MFA). The study applied global CGE model to calculate the impact of the Agreement of Textiles and Clothing (ATC) on the countries like Pakistan, Bangladesh, China, India, Hong Kong, Indonesia and Taiwan, who were initially getting quota from USA and EU. The major focus of the study is Pakistan to calculate the gains and losses after quota removal. The results of the study showed that the quota removal will bring changes in the form of final goods as well as in the mix of intermediate goods. The study conclude that Pakistan will get benefit from it only if it employ its resources efficiently, but there is fear of some welfare loss.

[15] has examined the trade liberalization by employing the CGE model and adjustment in fiscal policy. The study extended the updated SAM of [11] applying the methodology of [16]. The study incorporated additional sectors and actors into the model and it also allowed the intra household allocation of resources. The SAM included nine categories of the HH with aggregation into male and female and four education levels, nine social reproductive sectors and nine

leisure sectors [1]. The SAM considered two sources of household income: the value of labour used in production sectors and adjusted income of the own account workers. The SAM also considered the market and non-market sectors as well as the paid and unpaid sectors of the economy with disaggregation of labour into male and female with further categorization in terms of four education levels [2]. The production accounts were consisted of 4 major categories; the agriculture (5 sectors), mining (1 sector), manufacturing (8 sectors) and others (7 sectors). The results found that compensatory trade liberalization increases the employability of male and female. It reduces the gap between the wages of male and female along with overburdening the female in Pakistan. It also helps to empower the women with greater pace than any other activity. The study suggested that with compensatory measures, the impact of liberalization should also be measured on the household work and leisure along with other market based activities.

[17] utilized the CGE model for Pakistan to calculate the impact of tariff cuts on the regional disparities, output, employment and exports by keeping in view different regions of the country. The study developed a PAKREG database by utilizing the I-O table of 1990-91 developed by the Federal Bureau of Statistics (FBS 2001). The study in this way helped the GTAP to recognize Pakistan as a separate country. The results of the study revealed a positive impact of trade liberalization on all regions of Pakistan in terms of improvement in output, exports and employment. The results further discovered a positive relationship between trade liberalization and regional disparities during the military regimes and opposite in case of democratic governments. The cross border tariff cuts seemed to help the increment in real GDP slightly in the short run but significant in long run.

[18] described the welfare effect of t external balances on Pakistan economy. The study used a CGE model to capture economy wide impact of policies simulation. Social accounting Matrix (2002) was used as a database and GAMS software was used to run the model .The study encompassed12 agriculture sector 16 industrial sector and 6 services sector. Households have been distributed in rural and urban. The rural households have been further distributed into 17 categories. The experiment was performed through trade liberalization simulations. The simulations were concerned with a 50 percent increase in foreign savings, 10 percent increase in overall import prices and 10 percent increase in the import prices of petroleum, etc. The result of the study suggested that the external oil price possessed high potential to affect Pakistan socio economic condition. Increase in foreign saving decrease poverty in the country. The analysis suggested that poverty is increasing with the increase in import prices.

[19] has studied the SAFTA implication on Pakistan economy using the GTAP model. The GTAP model is unable to examine the vibrant effect of trade liberalization, but it is very effective in comparative static analysis in case of any trade reforms. This study used 10 regions and 10 commodities. The experiments are based on the unilateral trade liberalization (uniform tariff rate 15 percent), regional trade liberalization, and unilateral trade liberalization (15 percent) for the rest of the world. The study used GTAP model to investigate the benefits and costs of granting MFN (Most Favored Nation) status to India and SAFTA. The results highlights the potential industries which are to be expanded or contracted. Pakistan gained highest welfare in case of SAFTA with 15percent uniform external tariff. There is high demand in the international trade for Pakistani dates, leather and garments, etc. The study identified a variety of industries in which a high potential exists. The SAFTA role is important by giving opportunity to member countries to achieve economies of scale, diversify their exports net, improves competitiveness. The study further explored that if SAFTA is fully integrated and Pakistan gets a tariff cut of 15%, it would bring highest welfare gains for the people.

[3] applied CGE model using SAM 2002 to investigate the fiscal strictness and the trade liberalization impact on household welfare and inequility. The study expolored that there are two principal effects of export taxes and tariffs. Firstly, they reduce trade volumes on both the import and export sides. Secondly, they impose economic costs by inducing resource misallocation. Therefore, if trade related taxes are eliminated, an economy can avoid production and consumption distortions. It is an established fact that free trade leads to enhanced efficiency The case of efficiency for free trade is the converse process to Tariff's cost benefit analysis. The study further discovered that for a small country like Pakistan, imposing a tariff does not allow it to influence world prices. However, prices for domestic consumers and domestic producers do rise as a result. Consequently, imports and consumption are reduced and the production of import substitute increased.

[20] used CGE model to investigate the gains and losses of SAFTA (South Asia from South Asian Free Trade Agreement) to members of and non-member countries. The study analyzed both the situations of including and excluding the products of sensitive list in the process of trade liberalization. The results revealed that if trade if liberalized at its full strength (including all products), it simply results into trade diversion effect. This liberalization did not seem to be in favor of LDCs of the region. Further it was discovered that this liberalization is increasing the income of unskilled labour at higher rates. The study concluded that SAFTA is promising a low tariff income for all member countries.

[21] utilized CGE models to measure the latest terms of trade for the agriculture sector comparing it to industrial sector in Pakistan during the years of 2000-2010 and to study the impact of agriculture income tax on Pakistan economy by using social accounting matrix (SAM 2002). The result of the experiment showed a 5% and 10% increase in the government revenue through the imposition of agriculture tax. The study further elaborated that manufacturing and imports flourished while construction and exports faced decline. The labor demand in non-agriculture sector raised, whereas the

[1] The study also incorporated the time allocation in market and non-market activities.

[2] The four education levels are.no education, less than 5 year of education, 5 but less than 10 years and 10 and above 10 years of education.

demand of labor in agriculture sector reduced due to increase in the agriculture income tax.

[22] attempted to describe an economy wide linked CGE model dynamic in nature and a regional water system model (RWSM). The study used this CGE-W model to investigate the impact of water stress on the agriculture productivity. The main focus of the study was to investigate the Indus river water basin water flow and shocks that ultimately influence the agriculture productivity in Pakistan. The model (RWSM-Pak) applied on Pakistan is newly developed by the World Bank. The experiments investigated the changes in water supply due to changes in weather and found that water shocks adversely affect the agricultural productivity. The study concluded that any change in water supply from rivers due to weather changes may adversely affect the agriculture sector but the effects can be minimized by building Diamer-Basha dam on the Indus basin.

[23] developed a CGE model to investigate the impact of agricultural trade liberalization (the elimination of import tariff and the removal of export subsidies) on income inequality of Pakistan. The study adopted the newly developed MyGTAP model developed by [24]. The model used a two kind of data base, i.e. GTAP and SAM (2007-08). This study deeply analysed the impact of agricultural trade liberalization on multiple households. The study encompassed 18 households, 12 regions and 37 sectors. The result of agriculture trade liberalization suggested that income inequality in Pakistan is increased by 0.49% from the baseline. Medium and large household types are aided, and there is nominal increase in the real wages of medium and large agricultural labors. The labor intensive crops are replaced by capital intensive and cheap imported products that ultimately helped to enhance the income inequality in Pakistan.

2. DRAWBACKS IN PREVIOUS STUDIES

The majority of the CGE studies conducted in Pakistan includes the following issues, Changes in Tax, food policies, Government expenditures and investments, policies related energy crisis, performance of public sector organizations, trade liberalization, Dutch disease effect, unequal distribution of wealth, and poverty condition in Pakistan.

The study tries to find out the weaknesses and strengths of the previous studies with a focus to build a foundation and to give new dimensions for future CGE studies on Pakistan and also tries to avoid those drawbacks highlighted in previous studies.

2.1 limited focus on Trading Blocks and especially European Union

Pakistan is a member of World trade organizations WTO and like other less developed countries they are restricted to continue trade liberalization determine. Particularly in manufacturing or industrial products they will need to reduce more tariffs. Only one known study conducted by [19] focussed on the impact of trade with a regional trading block SAFTA by using GTAP data base. As mentioned above around 7 studies in Pakistan were focused on trade liberalization. Almost 6 studies which were conducted by PIDE professionals have tried to examine the impact of trade liberalization on poverty and income discrimination under different situations. Researcher found that trade liberalization in Pakistan reduces poverty in the country and increase level of income for households. Other studies on trade liberalization [14] has used global CGE model in their study and found that the termination of textiles and clothing quotas in the EU, US and Canada against all less developed countries bound by these quotas also reduces the Pakistan's income level. The European Union is the biggest trading partner of Pakistan but there is not a single known study that specifically focused on the issue by using CGE models. The CGE model used in this study for Pakistan is built with the aim to tackle this drawback for the existing CGE literature in Pakistan. This model would be able to measure the impact of European Union current policies on the Pakistan economy as a whole.

3.2 Usage of Inadequate Databases

About 9 studies of CGE on Pakistan used inadequate databases. 2 groups have been developed from these 9 studies. The first group consists of 3 studies that use GTAP databases, and remaining 6 studies focused on trade liberalization and income discrimination that have been conducted by the PIDE professionals.

The studies that have used GTAP database in Pakistan include [13]; [19]; and [14]. It raises some serious concerns if the GTAP database was used to develop an I-O table and to develop a global CGE model for Pakistan. [13] used GTAP 4 database in order to deduct I-O table for Pakistan. However, for a single country like Pakistan data was not available in GTAP 4 database. So in order to find out the data for Pakistan, Bangladesh and Maldives the residual database was used. So this data was not able to reflect a true image of Pakistan.

[14] to develop a global CGE model for Pakistan have used GTAP 5.4 database but even though GTAP 6.0 was not able to give the true data for a single country of Pakistan. So Pakistan still falls in the residual database list countries like Bangladesh, Maldives, Nepal and Bhutan. So there is no proof of that this residual value will show the true image of Pakistan's economy. [17] made serious efforts by developing PAKREG to make to introduce Pakistan as a separate country in future GTAP databases. Remaining studies which were focusing on trade liberalization are based on SAM ranging from 1989-1990. Without having an import matrix in I-O framework the analysis of trade liberalization raises doubts in the researcher about the reliability of these results. [23] used MyGTAP to utilize the maximum updated SAM for Pakistan. So in order to cope with this problem the study is using latest GTAP 9 first time in Pakistan.

3.3 Poor Quality of Limited Number of Studies on Regional Issues

There is only one known study conducted by [13] that developed multiregional CGE to analyze the impact of policies at regional level of Pakistan. The study have some serious drawbacks that may negatively affect the reliability of it for policymakers. First of all the quality of the database is not very satisfactory. Secondly, because the data is much aggregated in terms of macroeconomic and only 8 sectors are identified so, the results are very limited in value terms. Thirdly the study does not identify the impact of macroeconomic variables of shocks like aggregate real investment, aggregate real consumption, balance of trade,

government real expenditures and the fluctuations in the stock exchange rates and trade policies. Fourthly, it seems that long run closure has been followed, but it does not give information regarding closure of the model itself. So the researcher can conclude that no authentic and reliable study on CGE on regions of Pakistan has been applied till now.

3.4 Single Model Repetition to Analyze Trade Liberalization

As mentioned above out of 7 studies on trade liberalization of Pakistan 6 were conducted by the PIDE professionals. These studies were based on SAM but having different production level sectors. Except [14] used GTAP 5.4, [19] used GTAP 4 database in their study. Only one model cannot be used for analyzing trade liberalization of Pakistan. It was only [23] who attempted to perform experiments with new and updated technique in the absence of latest data base with GTAP.

3.5 Contradictory Results of Some Studies on Trade Liberalization

[11] from PIDE was the first researcher who conducted the first study on Trade liberalization in Pakistan. The study found that because of the trade liberalization income level of each household would decrease. [27] have indicated that as a result of trade liberalization income level of the household would increase [25] and [26]. These PIDE professionals also found that trade liberalization creates income discrimination but also enhance household welfare.

3. POTENTIAL CGE STUDY IN LIGHT OF PAST LITERATURE REVIEW

All of the previous studies conducted on Pakistan using CGE have some common characteristics that include some behavior related phenomenon like producer behavior, consumer behavior and international trade are some common features used by many researchers. Secondly, most of these researchers use Neo classical comparative static CGE model in their studies. These are single country model except [17] who developed PAKREG a regional CGE model in the study to discuss the Tariff cuts, exports and regional disparities, which aimed to help Global Trade Analysis Project (GTAP) for the trade issues relating to Pakistan.

In previous section many weaknesses have been described in CGE studies in Pakistan that creates doubts in the minds of policy makers. So in order to remove the drawbacks of the prior studies another study require that may calculate the impact of FTA between a trading block and Pakistan. A comparative static CGE model is more useful for Pakistan in order to find the impact of tariff cuts on Pakistan.

4. CONCLUSION

In previous section many weaknesses have been described in CGE studies in Pakistan that creates doubts in the minds of policy makers. There is not even a single study that have used the impact of FTA between a trading block and Pakistan .So in order to remove the drawbacks of the prior studies the study, A new CGE study is necessary focussing to resolve this issue too. The comparative static CGE model is more useful for Pakistan in order to find the impact of tariff cuts on Pakistan.

REFERENCES

[1] Husain, I. (2005). *Current issues in Pakistan's economy.* State Bank of Pakistan.

[2] Zaidi, S. A. (2015). *Issues in Pakistan Economy.* Oxford University Press.

[3] Naqvi, H. A. (2010). *The Potential Impact of Trade Liberalization and Fiscal Strictness on Households' Welfare and Inequality in Pakistan.* PhD Thesis, University of Dundee.

[4] Naeem, A. R. (2006). *Trade Implications for Pakistan in the European Union Market in the Milieu of EU Enlargement from EU15 to EU25.* Glasgow: University of Glasgow, U.K.

[5] Fei, J. C., Ahmad, I., Rahman, A., Khan, M. I., Khan, R. A., & Naseem, S. M. (1962). A Preliminary Input-Output Table for Large Scale Industries in Pakistan. *Pakistan Development Review, 1*, 47-83.

[6] McCathy, D., & Taylor, L. (1980). Macro Food Policy Planning: A General Equilibrium Model for Pakistan. *The Review of Economics and Statistics, 62*(1), 107-121.

[7] Debowicz, D., Dorosh, P., Haider, H., & Sherman Robinson , S. (2012). *A Social Accounting Matrix for Pakistan, 2007-08.* International Food Policy Research Institute. Islamabad: Pakistan Strategy Support Program.

[8] Labus, M. (1988). *The Pakistan Economy: A CGE Approach to Price Liberalisation Policy and Public Sector Losses.* University of Belgrade.

[9] Naqvi, F. (1998). A Computable General Equilibrium Model of Energy, Economy and Equity Interactions in Pakistan. *Energy Economics*, 347-373.

[10] Vos, R. (1998). Aid Flows and Dutch Disease in a General Equilibrium Framework for Pakistan. *Journal of Policy Modeling, 20*(1), 77-109.

[11] Siddiqui, R., Siddiqui, S., & Zafar, I. (1999). *Tariff Reduction and Functional Income Distribution in Pakistan: A CGE Model* . Islamabad: PIDE. Retrieved October 10, 2015, from http://pide.org.pk/Mimap/Report09.pdf

[12] Kemal, A. R., Siddiqui, R., & Siddiqui, R. (2001). *Tariff Reduction and Income Distribution: A CGE-Based Anal ysis for Urban and Rural Households in Pakistan.* MIMAP Technical Paper Series N o.11, Pakistan Institute of Development Economics, Islamabad.

[13] Okuda, T., & Brohi, K. M. (2001). An Applied General Equilibrium Analysis on Economic Impacts of Road Transport Network in Pakistan. *Journal of the Eastern Asia Society for Transportation Studies, 4*(6), 17-32.

[14] Martin, W., Manole, V., & Mensbrugghe, V. M. (2004). Dealing with Diversity: Analyzing the Consequences of Textile Quota Abolition. *7th Annual Conference on Global Economic Analysis, Trade, Poverty and Environment.* Washington DC.

[15] Siddiqui, R. (2005). Modelling Gender Dimensions of the Impact of Economic Reforms on Time Allocation among Market, Household, and Leisure Activities in Pakistan. *Pakistan Development Review, 44*(4), 615-639.

[16] Fontana, M., & Wood, A. (2000). Modeling the Effects of Trade on Women, at Work and at Home. *World Development, 28*(7), 1173–1190.

[17] Butt, M. S. (2006). *Impact of Tariff Cuts on Pakistan: A Computable General Equilibrium Analysis with Particular Focus on Main Exports and Regional Disparities.* PhD Thesis, Griffith University, Griffith Business School. Retrieved April 10, 2015, from https://www120.secure.griffith.edu.au/rch/file/a9c4c359-5e58-717a-001e-e4fe7c1a0055/1/02Main.pdf

[18] Ahmed, V., & O' Donoghue , C. (2008). Welfare impact of external balance in Pakistan: CGE-microsimulation analysis. *Eleventh Annual Conference on Global Economic Analysis.* Marina Congress Centre in Helsinki, Finland.

[19] Shaikh, F. M., & Rahpoto, S. M. (2009, April). Impact of Trade Liberalization and SAFTA on Pakistan's Economy by Using CGE Model. *International Journal of Business and Management, 4*(4), 192-209.

[20] Bouet, A., Debucquet, D. L., Dienesch, E., & Elliott, K. (2010). *The Costs and Benefits of Duty-Free, Quota-Free Market Access for Poor Countries: Who and What Matters.* Working Paper 206, Center for Global Development.

[21] Rashid, S. (2013). *Domestic Terms of Trade for Agriculture in Pakistan and Agricultural Income Tax.* IFPRI. Retrieved 12 14, 2015, from http://pssp.ifpri.info/files/2013/05/Domestic-tems-of-trade-for-agriculture-in-Pakistan-and-agriculture-income-tax.pdf

[22] Robinson, S. (1988). Multisectoral Models. In H. Chenery, & T. N. Srinivasan, *Handbook of Development Economics* (pp. 885-947). Elsevier Science Publishers.

[23] Khan, M. A., Saboor, A. A., & Mohsin, A. Q. (2015). Impact of agricultural trade liberalization on Income inequality in Pakistan. *Journal of Agricultural Research, 28*(1), 28-37.

[24] Minor, P., & Mureverwi , B. (2013). A Household Level Analysis of African Trade Liberalization: The Case of Mozambique, Venerability of Low Income Households. World Bank, BNPP Program. Retrieved 6 13, 2015, from https://www.gtap.agecon.purdue.edu/resources/download/6501.pdf

[25] Siddiqui, R., & Kemal, A. R. (2002). *Poverty Reducing or Poverty Inducing? A CGE Based Analysis of Foreign Capital Infl ows in Pakistan.* Islamabad: PakisInstitute of Development Economics.

[26] Kemal, A. R., Siddiqui, R., & Siddiqui, R. (2003). *An Assessment of the Impact of Trade Liberalis ation on Welfare in Pakistan: A General Equilibrium Analysis.* MIMAP Technical Paper Series No.16, Pakistan Institute of Development Economics, Islamabad.

[27] Siddiqui , R., & Iqbal, Z. (2001). *Tariff Reduction and Functional Income Distribution in Pakistan: A CGE Model.* MIMAP Technical Paper Series No. 10 , Pakistan Institute of Development Economics. Retrieved 10 15, 2015, from http://www.pide.org.pk/Mimap/Report10.pdf