Twin Deficit Challenge: An Evidence from Pakistan Economy

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Abstract

To investigate "Twin Deficit Challenge: An Evidence from Pakistan Economy" this study employed SAM 2010-11 for Pakistan (Dorosh, Niazi, and Nazli, 2015). This study used a static CGE model. The theoretical structure of the core model closely follows the Lofgren et al. (2001) model, with an extension to incorporate commonly observed specifications of a developing country (Naqvi 2011). The study concludes that the lag value of budget deficit and trade deficit are the main factors contributing to the twin deficit. Two experiments were conducted to check the effects. The experiments were conducted on Direct and Indirect tax to remove internal deficit in the economy. The study explored that the internal resources play a vital role in removing the twin deficit gap. The objective of this experiment was to determine the possibility of implementation of direct and indirect tax in the case of Pakistan and to analyze its benefits at the macro and household levels. The findings of the study recommend that budget deficits possess threats to fiscal policy. Results show that a policy mix of sales tax, income tax and government expenditure help to reduce income inequality while it reduces the financial dependency of the economy. Therefore, Pakistan should strive to reduce the budget deficit using a mix of macroeconomic policies.

***Keywords*:** Computable General Equilibrium (CGE), Social Accounting Matrix (SAM), Fiscal Policy, Inequality, Budget Deficit, Tax,

JEL Classification: C68, D63, E6, E16, E62, E68, H6, H61

Introduction:

Fiscal policy is a policy concerned with government revenue and its expenditures. Fiscal policy is concerned with all arrangements made by the government to collect the revenue and make the expenditures so that economic stability could be maintained without

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inflation and deflation. The fiscal policy considers the imposition of taxes, government expenditures, public debt, and management of public debt. With the help of this policy, government utilize its revenues and expenditures for the economic stability and welfare of the peoples. The objective of this study is to investigate the presence of budget and trade deficits in Pakistan and to suggest a policy to finance these deficits in a way to achieve sustainable economic development and growth.

In capitalistic economy inflation and deflation are big vices. Inflation makes fixed-income groups suffer economically. Moreover, inflation creates many long-run social and economic problems. Therefore, with fiscal medicines, i.e., government expenditures and taxes we can check inflation. If government expenditures are reduced and taxes are increased, they will reduce National Income (NI). Many time through the multiplier effect. On the other hand, during deflation, if government expenditures are increased and taxes are reduced, then the national income will go up through a multiplier effect and economic depression will come to an end.

If a country's foreign payment exceeds its foreign receipts, then the country faces a Balance of Payments (BOP) deficit. In other words, if at a fixed exchange rate the demand for foreign exchange is more than the supply of foreign exchange, a deficit in BOP rises. This situation critically affects the economy of the country. In this connection, if the government pursues a strict fiscal policy – desirable results can be obtained. This strict fiscal policy means a reduction in government expenditures and increases in taxes which will reduce NI through a multiplier. Hence, there will be deflationary tendencies in the economy, prices will fall and export will increase. On the other hand, due to deflation, a country's income falls and it will reduce imports of the country. Ultimately, the BOP position is improved. But a strict fiscal policy will harm the country's investment, production and employment.

In economic literature budget, deficit and trade deficit are the main problems faced by the economies of both developed as well as developing countries. Significant variation in fiscal policy can lead to expected development in the current account, which is a divisive issue. An important part of this issue is named as twin deficit analysis, according to which budget deficit and trade deficit are closely related. The government of Pakistan prepare a budget every year; the budget indicates its expected returns and expenditures in the coming financial year. The government receives receipts from different sectors, such as financial institutes, interest from loans given to other governments, tax revenues, local bodies etc. The government expenses consist of several projects like developmental and non-developmental expenditures. Pakistan is one of those developing countries that are facing

a budget deficit. Pakistan is facing major economic problems like high inflation and low economic growth.

A trade deficit represents an outflow of domestic currency to foreign markets. Pakistan faced a trade deficit of 153628 PKR million in May 2014. The history of the trade deficit in Pakistan shows that the trade balance of Pakistan tends to decline average is (-21174.22) PKR million from 1957 to 2014. This equals the all-time high of 6457 PKR million in June 2003. Which record a negative balance of (-218835) PKR million January 2014 (Balance of Trade in Pakistan is reported by the Pakistan Bureau of Statistics). Most of the countries that attempt to remove the twin deficit adopted import substitution policies. Pakistan is one of them trying to adopt an import substitution policy for defending and accelerating the process of industrialization.

The strategy of import substitution policy could not successfully achieve the objective of industrialization. Resultantly, the import substitution policy shifted into the Export Promotion Policy of Pakistan. Export Promotion Policy helps the government of the country to reduce the twin deficit. A large number of incentives and facilities have been given to the exporters to increase the number of exports from Pakistan.

The Export Promotion Bureau also makes efforts to explore new markets to boost export. Pakistan has been facing the problems of deficit in the balance of payment, the balance of trade, falling terms of trade and devaluing its currency since its inception. To remove such types of problems, the Export Promotion Bureau has been measuring different strategies by changing the objectives, priorities and tools of its policies. Nowadays the economies face a dilemma of internal and external balance. While the internal balance represents full employment, the external balance represents equilibrium in the Balance of Payments (BOP). Economists including J.E. Meade (1951), Swan (1955), Tinbergen (1969), Alexander (1952), Corden (1968), Nurksy (1958) and Harry. G. Johnson contributed to the literature in terms of twin deficits issues.

During the current financial year, the external sector performance observed a mixed trend. With the global trends, while the export performance of Pakistan's economy remained moderate in line, the import bill recorded a nominal growth. It is observed that the capital and financial accounts performance and the inflows from multilateral and bilateral financial institutions also have a positive effect on the economy.

Literature Review

G. Moeen ud Din et al. (2021), investigated the potential impact of exports on Pakistan's economy by utilizing the Computable General Equilibrium Model and concluded with favourable remarks on all the macroeconomic variables including an increase in welfare and decrease in inequality as well as poverty. Using the CGE model, G. Moeen ud Din et al. (2020), analysed the income tax impact on macroeconomic indicators of Pakistan's economy and concluded the positive effect of an increase in income tax on GDP, consumption and utility of all the types of households, investment, exports, imports, and welfare. In another study, the same researchers investigated the free trade effect on the same variables by employing the CGE technique on a small open economy also and found favourable impacts. G. Moeen ud Din et al. (2020) examined the impact of sales tax reduction on Pakistan's economy, inequality, poverty and welfare and summed up the positive results of the study.

Mudasser et al (2013) examined the relationship between the trade deficit and budget deficit in the case of Pakistan using time series data from 1980 to 2011. The results suggested the bidirectional causality between these two variables, budget deficit and trade deficit implying the twin deficit hypothesis in Pakistan. The main objective of this study was to explore the short-run and long-run relations between budget deficit and trade deficit as well as to examine the causal relationship between them. It was initiated that trade deficit causes the budget deficit positively and considerably in an economy. It was concluded that in the case of Pakistan the trade deficit is one of the determinants of the budget deficit and cause for it. Similarly, in the same era, Wakeel and Kafait (2013) investigated the impacts of Budget Deficit on macroeconomic variables such as output, the balance of trade and inflation. The budget deficit can be financed and its impact on the economy is inflationary. The study evaluated that domestic borrowing and printing new money increases the supply of money. Furthermore, if the government suffers deficit financing brings negative effects on the economy. These measures of financing budget deficit generated an upward trend in inflation. In contrast, change in money supply indirectly affects foreign services and the balance of trade. Finally, it was found that the government tries to utilize its expenditures to get economic stability.

Furthermore, Born et al. (2013) explored the dependence of fiscal multipliers on the exchange rate system. The study identifies the effect of fixed and flexible exchange rates on the government. However, under a fixed exchange rate system the government spending multiplier showed stronger effects. Besides this New Keynesian theory focused on and supported the variables discussed earlier so this study shows a positive effect if the

government uses a fiscal instrument to stabilize the economy. Likewise, Ucal and Balubas (2013) investigated the twin deficit in the Turkish economy. They also investigated the role of twin deficit and sustainable growth in an economy. Most of the developing and underdeveloped countries suffer twin deficit problems. In this study, the relationship between current accounts and budget deficit and its impact on the economy is examined. However, a deficit in the current account has a strong negative effect on the budget deficit. In the economics literature, the Keynesian or Ricardian Approach sometimes favours that the deficits have a relationship with each other. Finally, the economy has to deal with the current account deficit and rising production services and not with tax policies.

Lemelin et al. (2013) investigated the CGE model in regards to the endogenous current account and financial assets, the international capital monetary flow is confined by the supply-demand balance rather than exogenous regulations. The current account balance also impacts demand and supply equilibrium conditions. The analysis concluded in equal growth across the globe but with varied distributions across the constituencies Finally, the result of the world trade model has a positive effect on those exogenous variables that determined current account balances. In another analysis, Mabugu et al. (2013) examined the impact of, fiscal policy in an inter-temporal computable general equilibrium (CGE) model for South Africa. An expansionary fiscal policy would temporarily affect the gross domestic product. A tax increase will harm the macroeconomic variables. In the short run, expansionary fiscal policy affects GDP positive. This study finally concluded that the contact of fiscal policy for South Africa was significant for the development and economic growth. It would become a cause of the creation of jobs in the economy. On the contrary, the expansionary fiscal policy was positively related to factor productivity.

Amir et al. (2013) investigated the impact of Indonesia's income tax reforms. In this study, it was observed that tax reforms are a key macroeconomic variable as having an impact lying on poverty reduction, income allocation in the Indonesian economy. This study focused on, decrease in indirect tax and corporate tax and its impact on economic growth. It is found in this study that tax policy reforms have also impacted poverty reduction in the Indonesian economy. To remove income inequalities in Indonesia's economy tax cut is more favourable to the household. However, tax policy is valuable in the highest groups of income due to its small impact on poverty. Finally, the government accepted a more sustainable approach to reducing poverty to develop infrastructure in rural areas, especially in the fields of education and health.

Kaloou and Paleologos (2012) re-examined the twin deficit, hypothesis and its issue, and data set from 1960 to 2007. In this investigation, the variables used are budget

deficit, interest rate, exchange rate, and current account balance. This study found the budget and trade deficits were creating a positive association. However, an increase in the budget deficit only positive impacts the domestic product. In Greece, the economic fiscal instrument plays an important role to improve social welfare in the economy and it has affected every field. Whereas, Rashid (2012) examined the economic impact of agricultural tax on Pakistan's economy. The study found that in the last few years the price of several agricultural commodities has increased which increased rural incomes. The income tax ordinance of 2001 gave an exemption for tax on income from the agricultural sector. In this study, it is explored that agricultural tax reduction resulted in a government deficit. But two types of opponents argue on agricultural income tax; one is in its favour and the other is against it. A computable general equilibrium (CGE) model is used to estimate results. This study found that terms of trade suggest agricultural tax was not harmful. Agricultural income tax plays a very important role to remove fiscal deficit in an economy. On the other hand, agricultural income tax is not harmful to the overall economy. For the sake of economic development in a country, labour shifted from the agricultural sector towards the industry and services sectors.

Wildasin (2011) explored in his study Fiscal Competition and its impact on capital and Labour. In this observation, a computable general equilibrium (CGE) theory was used to analyse the results. The inter-temporal amendments for both assets depend on a substitute in production. A fiscal treatment in an economy of one resource must affect the adjustment of another factor also. Finally, the immediate increase in capital and labour has a positive impact on the economy over a long period. The finding of the studies shows that fiscal competition plays a vital role in a stable economy. Previously, in another study, Holmes (2011) assessed the threshold co-integration and proved that the performance of short-run and twin deficits resulted in an association between the current account and budget balance. This study is focused on utilizing fiscal policy and controlling external balance. The Keynesian points of view were illustrated and mixture theory was used in this study. The study focused on the internal balance that had to become related to the external balance in the US economy. However, the Keynesian Perspective takes precedence only in support of the central balance and its beneficial effects. Fiscal policy impact on macroeconomic variables is also noticed positively.

Literature reveals that Wang et al. (2010) observed the effect of the fiscal dimension of China's Government tax reforms on regional income and poverty reduction. The study uses a Computable General Equilibrium (CGE) model to find preferential tax policy in the eastern coastal region of China. This study proves that government reforms

in tax policy produce positive effects on reduction in poverty and significant positive impact. Simulation results suggest that fiscal policy is virtually the most effective tool for regional disparities in China, rather than government relocation. Resulting in compelling the Chinese government should transfer more money to the country's poor regions and to people who live in rural areas.

Radulescu and Similar (2010) investigated German tax reforms in 2008 and found that there were four main sections in the German economy namely firms, household, government, and ROW sector. The study focused on the effects on firms and households. The study employed the CGE model and described the impacts of tax reforms on the German economy in the short-run as well as in the long run.

The researchers Ahmed and Donoghue (2010) examined small open Economies and external shocks. This study discussed the impact of the external balance of Pakistan. It was observed in Pakistan external balance played an important role during the last decade. Foreign support from bilateral and multilateral sources boosted the economy of Pakistan and produced a positive impact. The study focused on Pakistan's relatively stable exchange rate from 2001 to 2007. After 2007, the economic activities declined under price shocks. The study used a micro-simulation model and focused on the impact of foreign savings and central price. However, the gains from these changes were noted in the agricultural sector as well as the urban population`s income distribution.

While for the same economy, Javid et al. (2010) investigated, the dynamics of fiscal policy and current account. The study focused on the effects of fiscal policy on macroeconomic variables. This study found that private savings boost the economy and its favourable impact on the fiscal deficit. It was also identified that the fiscal and current account deficit was caused by an increase in government spending. The results of this study show that adopting expansionary fiscal policy has a positive effect on current and exchange rates. Finally, it was found that expansionary fiscal policy has a constructive effect on variables.

Marinheiro (2008) analysed the twin-deficit hypothesis for the era 1974-1989 for Egypt's economy. The study found that partial equivalence and private consumption offset just a less part of a tax. In the previous year, Mukhtar et al. (2007) examined in Pakistan the twin deficit hypothesis and its impact on Investment. The study investigated, that Pakistan suffered a high rate of budget and current account deficit. The period used in this study was 1975 to 1995. The study proved that budget and current account deficit causality linked with each other.

This study employs four unconventional but equally probable hypotheses each with diverse policy implications, that all variables are independent of each other, the budget causes a current account deficit and the current account causes a budget deficit. This means that further fruitful investigation into the relationship between budget and current account deficit should be performed in the framework of the simultaneous model. So, fiscal measure plays an important role to remove such type of deficit in an economy.

Methodology

The CGE model consists of different macroeconomic variables and their functional relationship among income of various groups, the pattern of demand, the balance of payments and a multi-sector production formation. The model is in general equilibrium, as a set of prices and quantities exists.

A CGE model characterizes macroeconomic general equilibrium showing well-built strep among the production structure of multi-sectors, pattern of demand, balance of payments and income of various groups. The model integrates a set of differential equations that illustrate the behaviour of a variety of economic actors and restraints (technological and institutional), they face. This model holds a set of quantities and prices in a way that all the surplus demands (equally for commodities and factors) become zero; consequently, it shows a position of general equilibrium (Thissen, 1998).

CGE models were developed on basis of the theoretical behaviour of economic agents. The Theoretical behaviour of different economic actors was depicted in the mathematical equations on which CGE models were planned to work.

To achieve a consistent formation, the research developed the initiative of Social Accounting Matrix (SAM). A SAM is a wide-ranging method of representing all dealings along with each form of economic cause in an economy.

The first CGE model for the total household sector in Pakistan was developed by Siddiqui and Iqbal (1999). Naqvi (2010) also created a CGE model for Pakistan which was based on the Social Accounting Matrix (SAM) for the years 1983-84. An extension that contains disaggregation of the household sector was made in this model by Siddiqui and Iqbal. Since CGE modelling is a new development in the field of economics consequently it did not obtain a due concentration in the case of Pakistan. However, according to Siddiqui and Iqbal (2001), the work of CGE modelling is now ahead of the pace here in Pakistan.

Results and Discussion

A SAM uses the data for the years 2010 and 2011 and is considered the most recent model. The SAM 2010-11 for Pakistan includes 64 sectors of activity, 12 factors and 16 groups of households. This SAM 2010-11 describes the employment of the semi-input and

output multiplier model. As the sectors like households, land, labour and agriculture are not being analysed here so no disintegration is needed for them. Therefore, we shall apply their aggregates values inside Social Accounting Matrix (SAM).

Interpretation of Results

The result exegesis claimed that an increase in direct tax and indirect tax has a constructive impact on various entities of Pakistan to remove the twin deficit in an economy. The macroeconomic measure of Pakistan's economy has changed in the desired direction as a result of an increase in Pakistan's exports, savings, investment, government consumption, consumption in the private sector, the income of households and overall welfare of people have increased. Two experiments were conducted to estimate the impact of the increase in direct and indirect taxes on various aggregates in Pakistan. In the first simulation (SIM-I) direct tax (DT) increased by 98.5%, in the second simulation (SIM-II) indirect tax (IT) increased by 355% to remove the twin deficit in Pakistan's economy.

Macro Level

The GDP of Pakistan has recorded growth of 0.825% and decreasing 3.661% in SIM-I and SIM-II respectively. There exists a gap of 0.319%, and negatively 8.635% in the respective two experiments. Investment developed by 0.859% and 5,546% in the exacting of two simulations. This increase in investment and decks is theoretically justified, but the increase in institutional income and the consequent increase in savings has impacted higher investments. Government consumption has inflated by 0.814% and 1.025%. Though private consumption has turned down by 3.024% and 3.341% due to a reduction in the incomes of institutions, they were also accompanied by the decline in prices of various consumer goods and the rise in import prices denominated in local currencies due to the inflation of the domestic currency. The growth rate of export is higher than that of imports and exports have grown by 1.054 and declined by 3.349. While the impact of a rise in DT and IT on import is negatively 43.2315% and 102.017% correspondingly. Moreover, a decrease in imported inputs is due to a decline in the prices of different commodities. This positive growth of imports is mainly the result of a fall in the price of imports due to the appreciation of the domestic currency in foreign exchange reserves due to more exports. The positive impact of Simulation-I (Direct Tax) is noticed on all the macroeconomic variables. It is 0.825% on GDPFC, 0.319% on GDPGAP, 0.795% on GDPMP1, 0.829% on GDPMP2, 0.814% on GOVCON, 1.054% on EXP, 0.969% on NITAX, while negative impact on IMP by 43.231% is noticed, which results into reduction in deficit (if) of Balance of Payments. On the other-hand Simulation-II results in a negative impact on a few macroeconomic indicators, whereas positive on remaining variables. Thus, the negative

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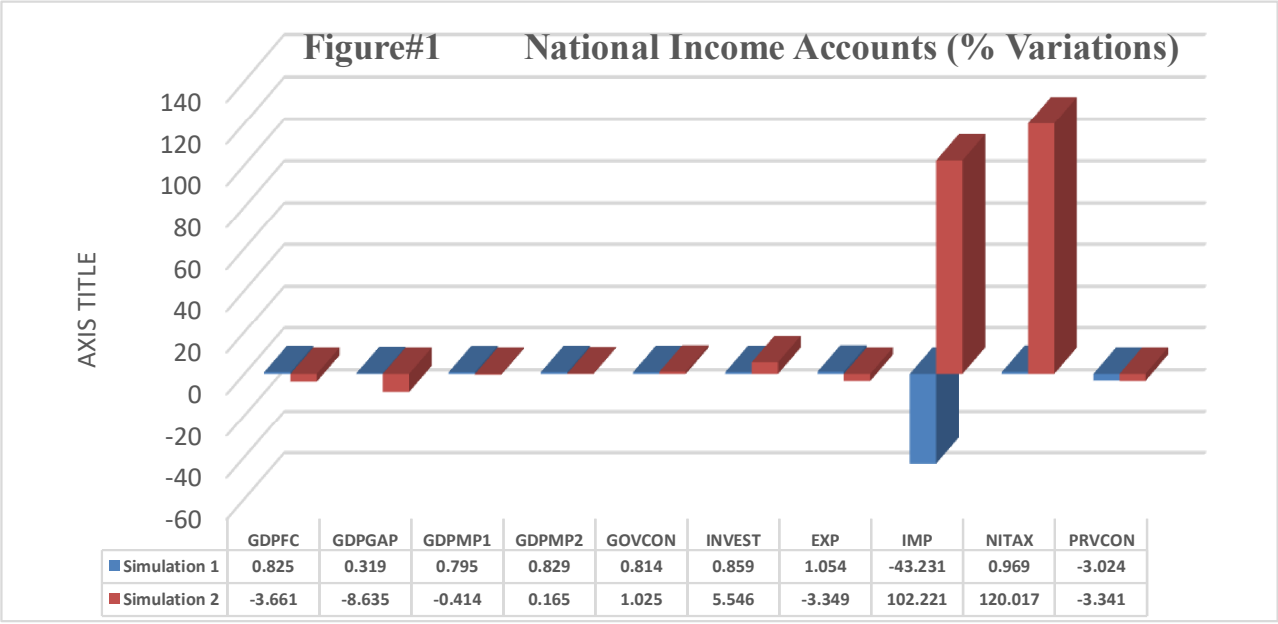
impact on GDPFC, GDPGAP, GDPMP1, EXP, and PRVCON are recorded as 3.661%, 8.635%, 0.414%, 3.349%, and 3.341% respectively. The highest adverse impact noticed is on GDPGAP. While favourable effect of the test is noted on GDPMP2 (0.165%), GOVCON (1.025%), INVEST (5.546%), IMP (102.221%), and NITAX (120.017%). National income accounts of diverse macroeconomic agents are shown in table/figure#1.

Table:1 National Income Accounts (% Variations)

	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
GDPFC	1480.834	0.825	-3.661
GDPGAP	1078.665	0.319	-8.635
GDPMP1	16403.551	0.795	-0.414
GDPMP2	15324.886	0.829	0.165
GOVCON	1103.494	0.814	1.025
INVEST	5419.963	0.859	5.546
EXP	2688.289	1.054	-3.349
IMP	-4540.436	-43.231	102.221
NITAX	474.052	0.969	120.017
PRVCON	11732.240	-3.024	-3.341



Domestic Output

The output of three commodities has shown a positive effect when there is an increase in DT. Which is mining (C-MINE), manufacturing (C-MANF) and services (C-SER) as shown in table/figure#2. The highest decline in the output of textile (C-TEXT) and energy (C-ENRG) is witnessed. To cover the twin deficit gap two simulations has been adopted in the quantity of domestic output. SIM-II has more effect on domestic output. All of the commodities show a declining trend. However, the decreasing trend in the output of textile (C-TEXT) is at the highest rate and it shows the fall of 0.678% and 4.731% in the respective two experiments. In Sim-I (Direct Tax – 98.5%), the results of the quantity of domestic output of selected goods indicate a declining trend by 0.206%, 0.229%, 0.678%, 0.310%, 0.124% in C-AGRI, C-FMAN, C-TEXT, and C-SER respectively, while, Sim-II (Indirect Tax – 355%) indicates all the results in falling tendency. That is, C-AGRI by 0.676%, C-MINE by 0.671%, C-FMAN by 0.422%, C-TEXT by 4.731(highest), C-MANF by 0.523%, C-ENRG by 1.117%. the lowest decreasing impact is noticed on food manufacturing.

Table 2: Quantity of Domestic Output of Commodities (% Variation)

Commodities	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
C-AGRI	3093.084	-0.206	-0.676
C-MINE	874.140	1.338	-0.671
C-FMAN	2500.121	-0.229	-0.422
C-TEXT	3523.414	-0.678	-4.731
C-MANF	5714.493	0.580	-0.523
C-ENRG	320.405	-0.310	-1.117
C-SER	10237.307	-0.124	-0.568

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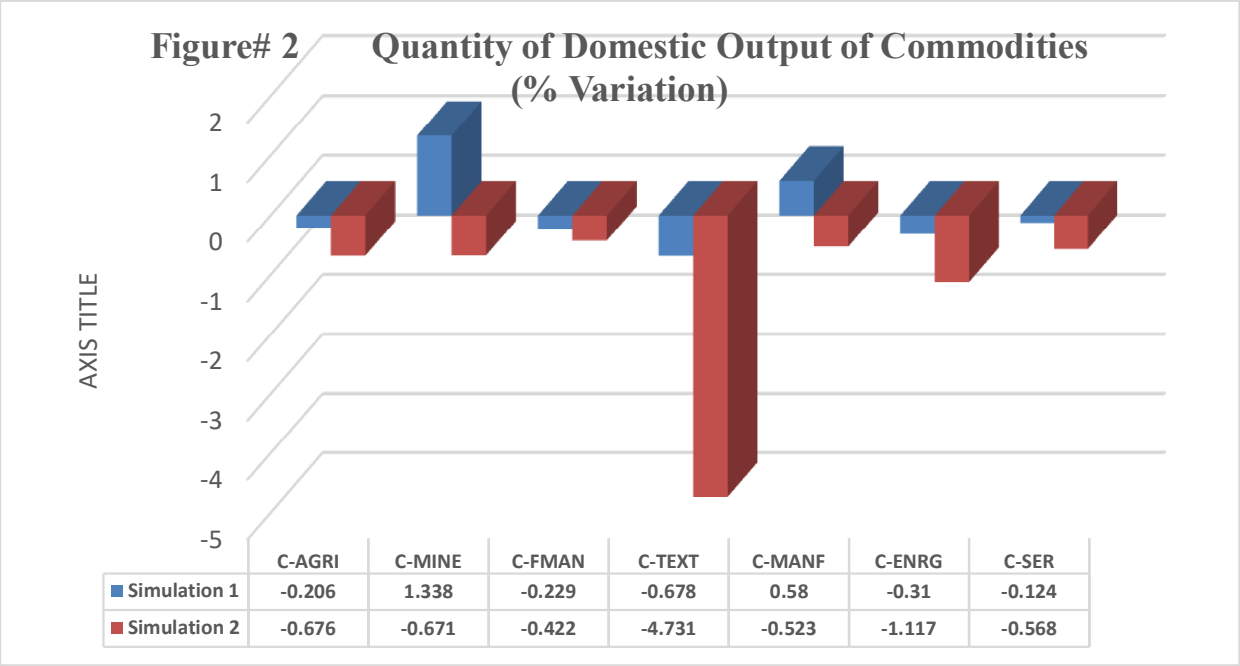

	C-AGRI	C-MINE	C-FMAN	C-TEXT	C-MANF	C-ENRG	C-SER
Simulation 1	-0.206	1.338	-0.229	-0.678	0.58	-0.31	-0.124
Simulation 2	-0.676	-0.671	-0.422	-4.731	-0.523	-1.117	-0.568

Consumption and Savings

Most of the household sectors in table/figure#3 illustrate a declining trend when imposing Simulation-I and Simulation II. Only two kinds of household sectors show positive saving impact which are Household – Landless (H-OF) 0.035% and Rural non-farm quintile-1 (H-NFQ1) 0.125%. Whereas, the negative effect on remaining households is recorded as 2.011% (H-MF), 6.874% (H-SF), 1.938% (H-AGW), 2.310% (H-NFQ2), 2.259% (H-NFOTH), 0.368% (H-UQ1), 1.532% (H-UQ2), and 2.917% (H-UOTH). Sim-II, which shows negative growth in the Household sector when Indirect Tax increase. Saving of Household – Landless (H-OF) increased by 0.035% at 98.5% when Direct Tax was imposed in SIM-I. Saving of rural nonfarm quintile1 (H-NFQ1) household sector also grew 0.125% at SIM-I but showed a declining trend at the rate of 3.351% at SIM-II respectively. All of the households in Simulation II show a negative trend. 3.633% for H-MF, 3.331% for H-SF, 3.319 for H-OF, 3.269% for H-AGW, 3.351% for H-NFQ1, 3.285% for H-NFQ2, 3.228% for H-NFOTH, 3.230% for H-UQ1, 3.207% for HUQ2, and 3.356% for H-UOTH.

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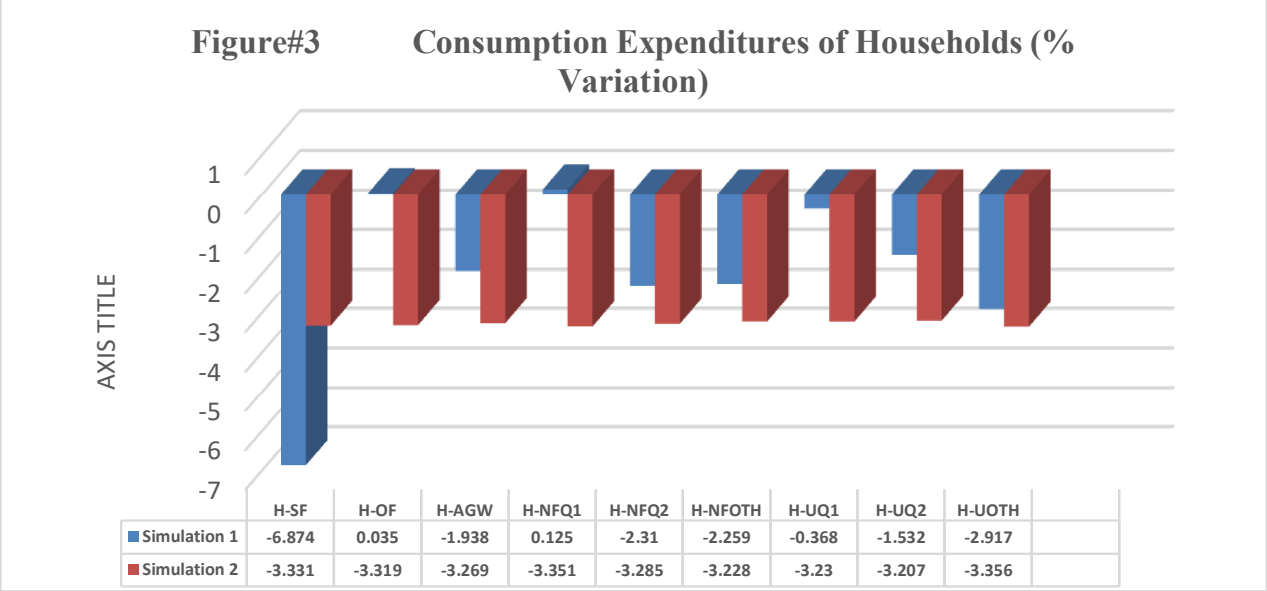
Table 3: Consumption Expenditures of Households (% Variation)

Households	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
H-MF	1268.959	-2.011	-3.633
H-SF	2229.231	-6.874	-3.331
H-OF	561.571	0.035	-3.319
H-AGW	413.461	-1.938	-3.269
H-NFQ1	392.734	0.125	-3.351
H-NFQ2	445.291	-2.310	-3.285
H-NFOTH	2099.634	-2.259	-3.228
H-UQ1	349.819	-0.368	-3.230
H-UQ2	441.351	-1.532	-3.207
H-UOTH	3530.189	-2.917	-3.356



In SIM-I mining (C-MINE), manufacturing (C-MANF) and services (C-SER) grow at positive trend but other commodities like agriculture (C-AGRI), food manufacturing (C-MANF), textile (C-TEXT) and energy (C-ENRG) show a declining trend.

Balance of Trade Taxes also plays an important role in removing external deficits. Simulation-I and Simulation-II also show an increasing trend in BOT as the commodities'

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exports are increasing. On the other hand, the performance of mining (C-MINE), textile (C-TEXT), manufacturing (C-MANF) and services (C-SER) show an increasing trend. The other commodities like agriculture (C-AGRI), food manufacturing (C-FAMN) and energy (C-ENGR) show a declining trend in both SIM-I and SIM-II correspondingly. Increasing export and import are the indication of growth and removal of external gap consumption both inside and outside of the country except energy (C-ENRG) which is undetermined.

Export commodities are shown in table#figure4. SIM-I show positive growth in agriculture (C-AGRI), mining (C-MINE), food development (C-FMAN) while other commodities show a declining trend. Table#5 also depicts some positive and negative trends in both experiments. Mining (C-MINE) shows a positive trend when DT and IT are imposed up to 1.776% and 2.015%. The commodities like manufacturing (C-MANF) 2.335% and 0.005%, services (C-SER) also show an increasing trend of 3.918% and 0.498% respectively.

Table 4: Quantity of Exports for Commodities (% Variation)

Commodities	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
C-AGRI	9.675	6.708	8.780
C-MINE	0.013	0.903	-3.286
C-FMAN	75.615	6.808	5.636
C-TEXT	1214.268	0.798	-4.621
C-MANF	298.003	-0.773	-0.934
C-SER	716.660	-1.035	-1.240

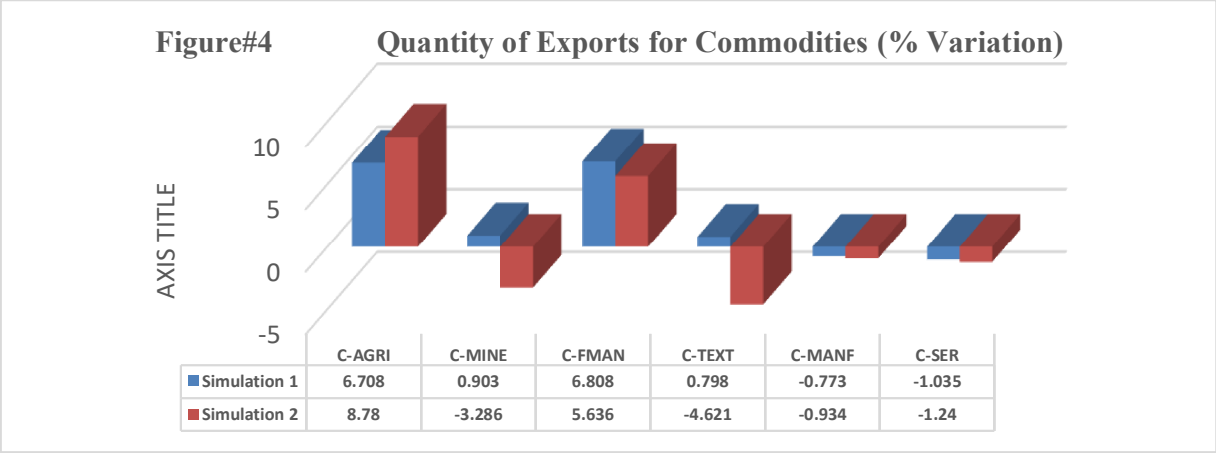

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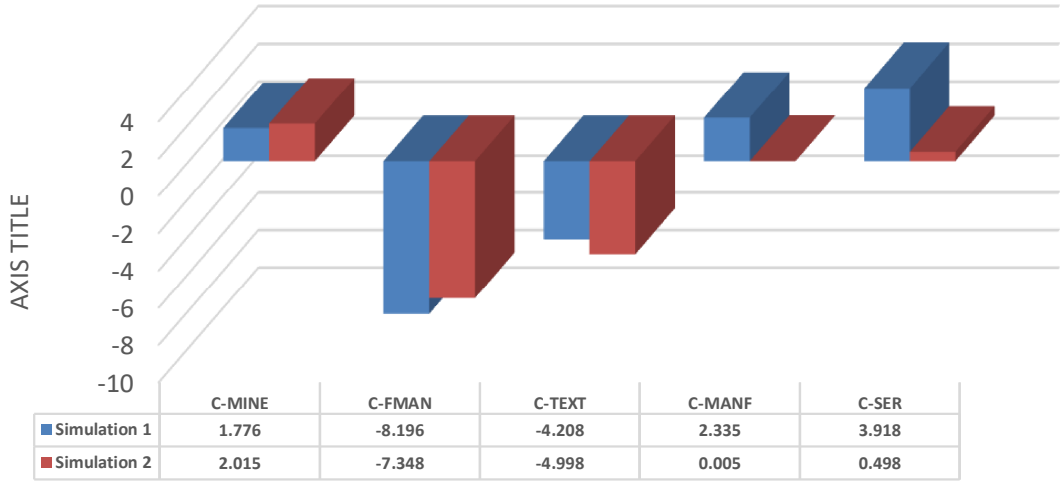
Table 5: Quantity of Imports for Commodities (% Variation)

Commodities	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
C-AGRI	274.606	-6.703	-9.353
C-MINE	306.502	1.776	2.015
C-FMAN	561.774	-8.196	-7.348
C-TEXT	135.770	-4.208	-4.998
C-MANF	2528.925	2.335	0.005
C-SER	308.850	3.918	0.498

Figure#5 Quantity of Imports for Commodities (% Variation)



Table/figure#6 depicts composite goods supplied domestically. In the first experiment when DT increase, an increase in mine (C-MINE) by 1.463%, manufacturing (C-MANF) by 1.162%, and service (C-SER) by 1.157% are exhibited respectively. have shown an increasing trend. The negative impact of increasing direct tax on composite goods supplied domestically is registered as 0.643% for C-AGRI, 1.590% for C-FMAN, 1.708% for C-TEXT, 0.310% for C-SER. Mine (C-MINE) shows a positive impact in both experiments which are 1.463% and 0.091% also. Test of indirect tax (Sim-II) indicates a negative impact on all the selected commodities except C-MINE. The adverse effect on C-

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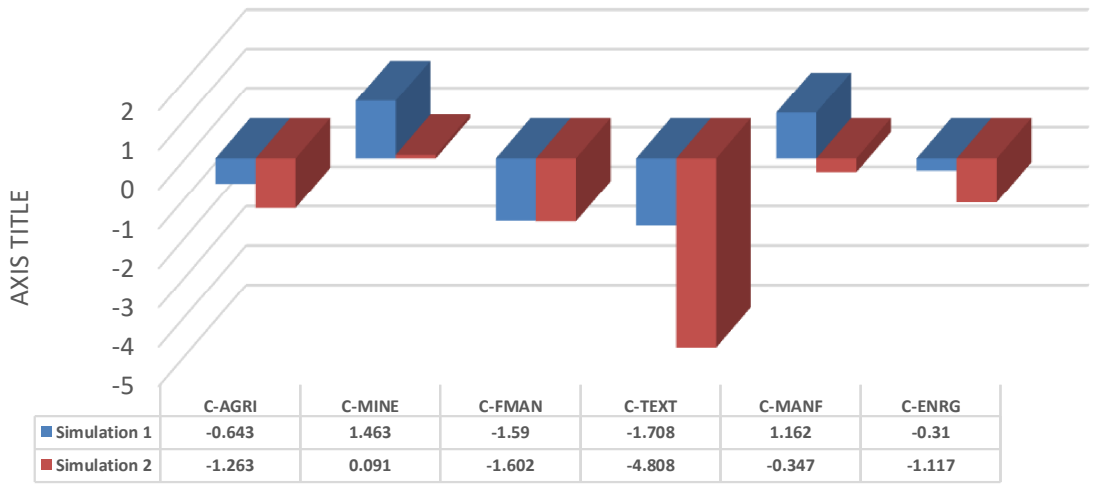
AGRI is found to be 1.263%, on C-FMAN by 1.602%, on C-TEXT by 4.808% (highest), on C-MANF by 0.347%, on C-ENRG by 1.117%, and on C-SER by 0.464%.

Table 6: Quantity of Composite Goods Supplied Domestically (% Variation)

Commodities	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
C-AGRI	1451.672	-0.643	-1.263
C-MINE	1253.741	1.463	0.091
C-FMAN	4085.111	-1.590	-1.602
C-TEXT	2755.226	-1.708	-4.808
C-MANF	10477.586	1.162	-0.347
C-ENRG	320.405	-0.310	-1.117
C-SER	10429.625	1.157	-0.464

Figure#6 **Quantity of Composite Goods Supplied Domestically (% Variation)**



Incomes of Households

Income of household showing rising trend when both experiments are performed. When direct tax is imposed, all household sectors show a positive trend. In simulation-I, the urban quintal-1 (H-UQ1) and urban quintal-2 (H-UQ2) resulted in a 1.096% and 1.113% increase respectively. In simulation II most of the household sector shows a

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negative trend. The average price of all factors like labour, the land is unchanged except Capital (K) in table/figure#7. The price of unskilled labour shows the highest rate of growth. The first-factor labour (L) shows a positive effect, capital (K) shows a negative, and land (N) also shows a declining trend in both simulations. On manpower resources, it is positive with 1.058% in both the tests while on artificial as well natural resources, it seems negative, as on capital (K) it is 1.290% and 4.189%, on land 0.706% and 2.292% respectively in both the simulations.

Table 7: Average Price of Factors (% Variation)

Factors	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
L	1.058	1.058	1.058
K	1.949	-1.290	-4.189
N	1.067	-0.706	-2.292

Welfare of Households

The welfare of households shows a declining trend in both experiments. Only two household sectors, landless (H-OF) and rural non-farm quintile-1 (HNFQ1), illustrate a positive trend when direct tax increases. In the simulation-I most affected household sector is a small farm (HSF) with a declining 6.647%. The positive impact of increasing DT is noticed on the utility of the households categorized as H-OF with 0.462% and H-NFQ1 with 0.145%, whereas all the other types of households show a decline in their utility when direct tax is increased. That is, the H-MF category suffered by 2.564%, H-SF by 6.647%,

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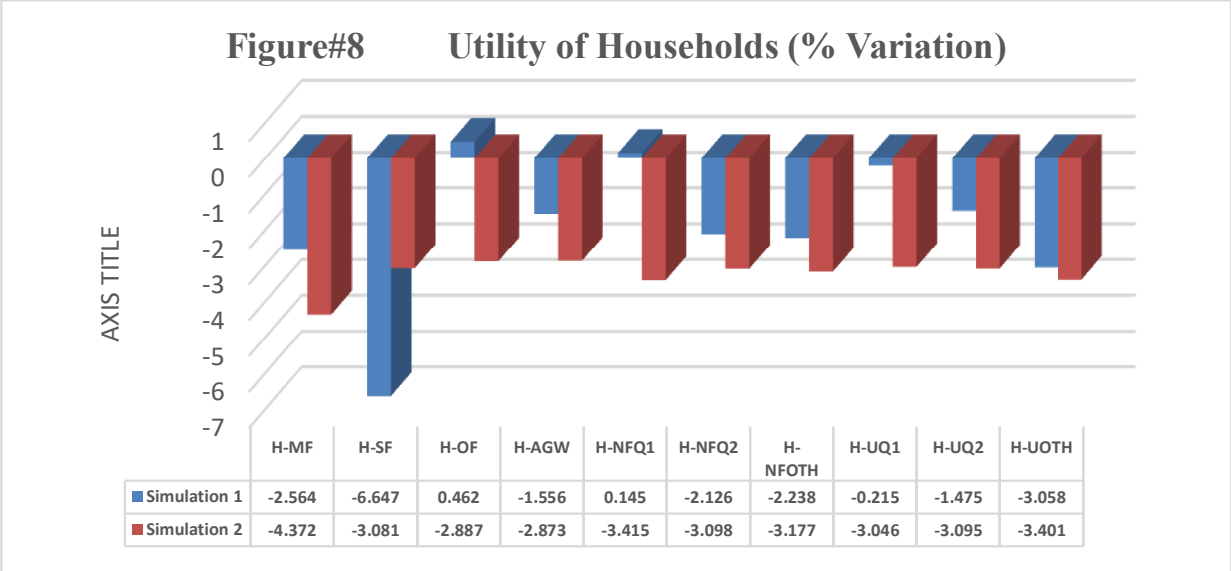
H-AGW by 1.556%, H-NFQ2 by 2.126%, H-NFOTH by2.238%, H-UQ1 by 0.215%, H-UQ2 by 1.475%, and H-UOTH by 3.058%. In simulation-II all the households' types show a declining trend. This decline in the utility of households is noticed as 4.372% for the type H-MF, 3.081 for H-SF, 2.887% for H-OF, 2.873% for H-AGW, 3.415% for H-NFQ1, 3.098% for H-NFQ2, 3.177% for H-NFOTH, 3.046% for H-UQ1, 3.046% for H-UQ2, and 3.401% for H-UOTH. (see table/figure#8).

Table 8: Utility of Households (% Variation)

Households	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
H-MF	1143.083	-2.564	-4.372
H-SF	1817.992	-6.647	-3.081
H-OF	449.274	0.462	-2.887
H-AGW	332.416	-1.556	-2.873
H-NFQ1	328.430	0.145	-3.415
H-NFQ2	363.535	-2.126	-3.098
H-NFOTH	1744.321	-2.238	-3.177
H-UQ1	286.500	-0.215	-3.046
H-UQ2	364.752	-1.475	-3.095
H-UOTH	2975.685	-3.058	-3.401



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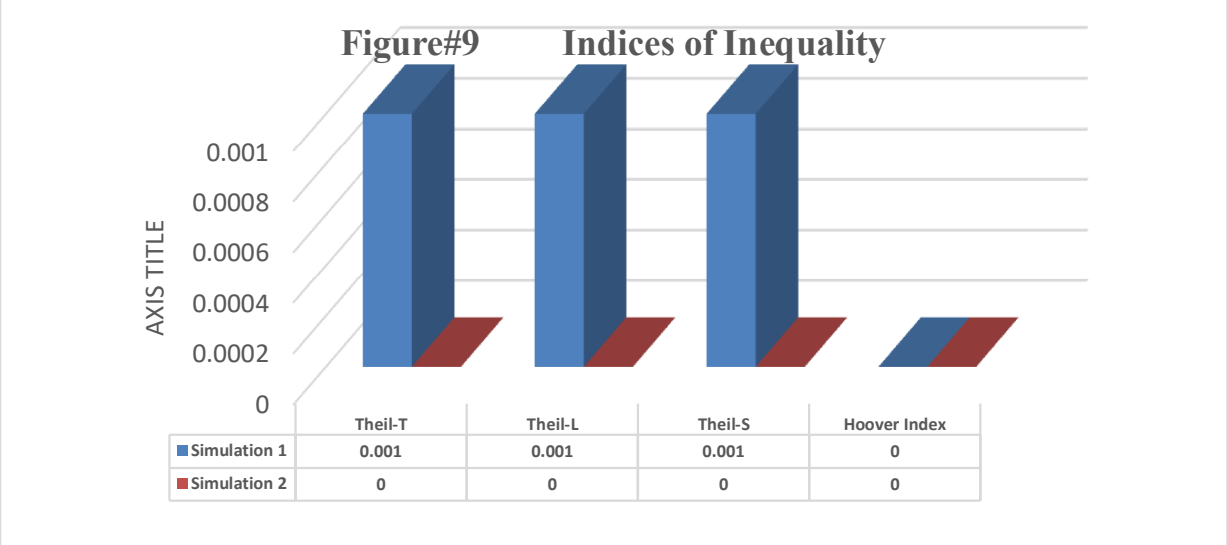
Inequality

Inequality is a debatable question. A great deal of economic literature has been devoted to answering whether it is related the economic growth or sparks it. Several strategies are used to measure inequality and the most famous and common one is the Hoover index and Theil indices. Theil-L, Theil-T and Theil-S are measured by these indicators. Thus, this study also shows the inequality among groups. These indices results show in table/figure#9. This table shows that due to the increase in Direct tax and Indirect tax to remove the twin deficit gap in Pakistan the inequality among the households group decreases.

Table 9: Indices of Inequality

Indices	Base	Simulation-I Direct Tax (98.5%)	Simulation-II Indirect Tax (355%)
Theil-T	0.420	0.001	0.000
Theil-L	0.430	0.001	0.000
Theil-S	0.425	0.001	0.000
Hoover Index	0.368	0.000	0.000



Conclusion

The nature and structure of SAM 2010-11 for Pakistan has been discussed in this study. Aggregation of economic agents on the origin of SAM 2010-11 has been made as per the condition of the study. The SAM 2010-11 constructed for this study comprises

seven types of activities including three types of basic factors of production, ten types of households and two types of institutions government and the rest of the world. The data employed in SAM 2010-11 is in line with the arrangement of the SAM designed for this study.

In the end interpretation and suggestions of results have been discussed. The results of the study have exposed positive effects on private and public consumption, saving and investment. This study depicts the role of direct tax (DT) and indirect tax (IT) to eradicate the twin deficit gap. In simulation I (SIM-I) when direct tax (DT) is imposed it will create positive changes as well as declining trends that remove this gap. When direct tax (DT) is increased it brings positive changes in households landless (H-OF) and rural nonfarm quintile 1 (H-NFQ1) and other households sectors grow under declining trends.

When direct tax (DT) and indirect tax (IT) are imposed to remove external and internal gaps they get some positive as well as negative trends in export and import sectors. Several positive effects can be seen in the export sector when DT and IT are 90 imposed. Under its influence agriculture (C-AGRI) and food manufacturing (CFMAN) shows positive trends. As far as imports are concerned mining (C-MINE), manufacturing (C-MANF) and services (C-SER) show positive growth as other sectors tend to decline. This study concludes that on one hand taxes bring negative trends in macroeconomic variables while on the other hand they also help to remove the internal and external gap. Consequently, taxes are the only instruments in the hands of the government to remove the twin deficit gap.

Policy Recommendations

In the light of the results of this study, it is obvious that direct tax (DT) and indirect tax (IT) remove the twin deficit gap. When direct tax is imposed it will create some positive changes as well as declining trends. So, direct tax and indirect tax are imposed to remove the internal and external gap. It is suggested that on one hand taxes create a negative effect on macroeconomic variables but the other hand, they also remove the internal and external gap. It is clear from the result of this study that in the case of Pakistan twin deficit can be covered by utilizing fiscal policy. The twin deficit gap is caused by two factors, one is a budget deficit and the other is the balance of payment (BOP) deficit. A budget deficit is an internal deficit and can be removed either by increasing revenue or by decreasing expenditures. Revenue increases when direct tax is raised along with indirect tax.

In the case of Pakistan, developmental expenditures cannot be moderate as Pakistan is a developing country while on the other hand decrease in non-developmental expenditures does not make much difference in an economy. That is why, according to

policymakers, the best way to remove the internal gap is to increase both direct and indirect taxes. The external deficit that is related to the balance of payment (BOP) can be removed if the Government employs a strict fiscal policy. This increases exports and decreases imports. But according to the World Trade Organization (W.T.O) policy, there is no restriction on imports. Now external deficit can only be decreased by increasing exports. If policymakers develop a good relationship with European as well as 94 African countries, it will help to sort out new markets to increase export. To ensure the emergence of new markets Pakistan should diversify the export markets. To accomplish this goal, research and development activities should be encouraged. Foreign direct investment should be attracted to enhance employment opportunities which will meet the increase in domestic demand. Pakistan has an abundance of cheap labour and availability of raw materials so it is beneficial for foreign enterprises to invest in Pakistan.

Economic theories enlighten those taxes takes negative effects on the economy but on the other side of the country holds a strong tax constitution for the same tax to spend on the welfare of the peoples. When government consumes these tax revenues for the welfare of the people unemployment should decrease. A case study of Pakistan's tax structure is not stable. Policymakers and governments should struggle to make a stable tax structure to remove the internal and external gap. Besides Pakistan also suffered badly at the hands of political instability. Along with political instability, the two other factors that cause an internal and external gap are poor law and order situation and unstable government. It is suggested that if the government and policymakers make certain strategies for a stable law and order situation and also meet energy crises in the country.

Since, the objective of this study was to determine if the short-term effects of the policy are compatible with the dynamic stability of the economy, for future research, a simple three-gap model of the open economy has to be developed to distinguish the gaps (Sanding-Investment, Trade, Fiscal) which are essential parameters in the growing adjustment process of developing countries.

References

Ahmed, V., & O'Donoghue, C. (2010). External shocks in a small open economy: A CGE-Microsimulation analysis. *The Lahore Journal of Economics*, *15*(1), 45.

Alexander, S. S. (1952). Effects of a Devaluation on a Trade Balance. *Staff Papers-International Monetary Fund*, *2*(2), 263-278.

Amir, H., Asafu-Adjaye, J., & Ducpham, T. (2013). The impact of the Indonesian income tax reform: A CGE analysis. *Economic Modelling*, *31*, 492-501.

Born, B., Juessen, F., & Müller, G. J. (2013). Exchange rate regimes and fiscal multipliers. *Journal of Economic Dynamics and Control*, *37*(2), 446-465.

Corden, W. M. (1968). Australian tariff policy. *Welcome to the electronic edition of Australia's Economy in Its International Context, volume 2.*

Debowicz, D., Dorosh, P. A., Robinson, S., & Haider, S. H. (2015). A 2007-2008 Social Accounting Matrix for Pakistan.

Meade, J. E. (1951). The removal of trade barriers: the regional versus the universal approach. *Economica*, *18*(70), 184-198.

Holmes, M. J. (2011). Threshold co-integration and the short-run dynamics of twin deficit behaviour. *Research in Economics*, *65*(3), 271-277.

Iqbal, Z., & Siddiqui, R. (2001). Critical review of literature on computable general equilibrium models.

Javid, A. Y., Javid, M., Arif, U., & Sabir, M. (2010). Fiscal Policy and Current Account Dynamics in the Case of Pakistan [with Comments]. *The Pakistan Development Review*, 577-592.

Johnson, H. G. (1972). The monetary approach to balance-of-payments theory. *Journal of financial and quantitative analysis*, *7*(2), 1555-1572.

Kalou, S., & Paleologou, S. M. (2012). The twin deficits hypothesis: Revisiting an EMU country. *Journal of Policy Modeling*, *34*(2), 230-241.

Lemelin, A., Robichaud, V., & Decaluwé, B. (2013). Endogenous current account balances in a world CGE model with international financial assets. *Economic Modelling*, *32*, 146-160.

Mabugu, R., Robichaud, V., Maisonnave, H., & Chitiga, M. (2013). Impact of fiscal policy in an intertemporal CGE model for South Africa. *Economic Modelling*, *31*, 775-782.

Malan, P. S. (1977). *Foreign Exchange Constrained Growth in a Semi-Industrialized Economy: Aspects of the Brazilian Experience, 1946--1976*. University of California, Berkeley.

Marinheiro, C. F. (2008). Ricardian equivalence, twin deficits, and the Feldstein–Horioka puzzle in Egypt. *Journal of Policy Modeling*, *30*(6), 1041-1056.

Meade, J. E. (1951). The removal of trade barriers: the regional versus the universal approach. *Economica*, *18*(70), 184-198.

Moeen-ud-Din, G., Bhatti, A. A., & Naqvi, H. A. (2020). The Income Tax Impact on Macroeconomic Indicators: A CGE Inquest for Pakistan Economy. *Journal of Managerial Sciences*, *14*.

Moeen-ud-Din, G., Bhatti, A. A., & Naqvi, H. A. (2020). Does Free Trade Affect Macroeconomic Variables in a Small Open Economy? A CGE Analysis for Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, *40*(3), 1469-1483.

Moeen, G., Naqvi, H. A., & Khan, M. A. (2021). Impact of Sales Tax Reduction on Pakistan`s Economy. *Studies of Applied Economics*, *39*(4).

Moeen-ud-Din, G., Naqvi, H. A., & Hashmi, A. M. (2021). The Potential Impact of Exports on Pakistan's Economy: A CGE Analysis. *Journal of Business & Economics (JBE)*, *13*(1), 59-69.

Mudassar, K., Fakher, A., Ali, S., & Sarwar, F. (2013). Validation of twin deficits hypothesis: A case study of Pakistan. *Universal Journal of Management and Social Sciences*, *3*(10), 33-47.

Mukhtar, T., Zakaria, M., & Ahmed, M. (2007). An Empirical Investigation for the Twin Deficits Hypothesis in Pakistan. *Journal of Economic Cooperation Among Islamic Countries*, *28*(4).

Naqvi, H. A., Hakeem, M. M., & Naeem, R. A. (2011). Impact of Agricultural Income Tax on Household Welfare and Inequality: Pakistan A Case-in-Point. *International Journal of Business and Social Science*, *2*(6), 103-118.

Radulescu, D., & Stimmelmayr, M. (2010). The impact of the 2008 German corporate tax reform: A dynamic CGE analysis. *Economic Modelling*, *27*(1), 454-467.

Iqbal, Z., & Siddiqui, R. (1999). Impact of fiscal adjustment on income distribution in Pakistan. *The Pakistan Development Review*, 1-24.

Thissen, M. (1998). *A classification of empirical CGE modelling*. Graduate School/Research Institute Systems, Organisation and Management.

Tinbergen, J. (1969). The theory of the optimum regime. In *Economic Models, Estimation and Risk Programming: Essays in Honor of Gerhard Tintner* (pp. 133-189). Springer, Berlin, Heidelberg.

Uçal, H., & Bölükbaş, M. (2013). The Role of Twin Deficits Problem in Sustainable Growth: An Econometric Analysis for Turkey. *Journal of Economic and Social Studies*, *3*(2), 39-52.

Wakeel, I., & Ullah, K. (2013). Impacts of budget deficit on output, inflation and balance of trade. *Journal of global and scientific issues*, *1*(1), 40-52.

Wang, L., Li, X., Wang, W., & Zhou, G. (2010). Fiscal Policy, Regional Disparity and Poverty in China: A General Equilibrium Approach (No. 2010-11). PEP-MPIA.Wang, L., Li, X., Wang, W., and Guangbao, Z. (2010), "Fiscal policy and Regional Disparity and Poverty in China. MPIA working paper 2010.

Wildasin, D. E. (2011). Fiscal competition for imperfectly-mobile labour and capital: A comparative dynamic analysis. *Journal of Public Economics*, *95*(11-12), 1312-1321.