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ECONOMIC IMPLICATIONS OF BRICS FOR PAKISTAN: A CGE APPROACH

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A R T I C L E I N F O

A B S T R A C T

The BRICS i.e. Brazil, Russia, India, China, and South Africa is one of the significant economic coalitions with the main purpose to provide an integrated platform to the members; where they can enjoy new disciplines beyond the existing infrastructure provided by WTO. BRICS is one of the most important import and export destinations for Pakistan with 35.2% share in total imports and 12 % shares in total exports of Pakistan. Pakistan will likely face trade diversion as a non-member of the said economic coalition as an impact of the States economic coalition. This research examines the likely influence of BRICS member's alliance on Pakistan's sectoral imports and exports, real GDP, factor returns and household income distribution by using the global Computable General Equilibrium (CGE) model in collaboration with latest available Pakistani Social Accounting Matrix (SAM) 2013, which is a tailor-made tool for these kinds of analysis. Preliminary results show a negative impact of the presumed BRICS on both the macro as well as sectoral and household levels of Pakistan; In the same way, reduction in non-tariff barriers among BRICS member's resulted in a deterioration of 0.016%, 0.405%, 0.615%, 0.105% and 0.620% in Pakistan's Real GDP, Exports, Imports, term of trade and government's income respectively.

Disciplinary: Economic Sciences.

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1. INTRODUCTION

Failure of the Doha Development Agenda (DDA) resulted in the emergence of more and more comprehensive and motivated bilateral trade agreements. "BRIC" i.e. Brazil, Russia, India, and China; that later on became BRICS after the induction of South Africa in 2011 is one of the significant trade agreements. Cai et al. (2015) stated that BRICS is a significant emerging economic block with an important role in global trade and has a sturdy linkage with global economy due to the Simultaneous production of BRICS countries through FDI (foreign direct investment) and global

trade in the presence of international fragmented economic blocks i.e. RTA (Regional trade agreements), FTA (Free trade agreements), EPA (Economic partnership agreements), ASEAN (Association of Southeast Asian Nations) and NAFTA (North American Free Trade Agreement). The main purpose of BRICS is to provide a comprehensive and integrated platform to the member countries i.e. Brazil, Russia, India, China, and South Africa; where they can enjoy new rules and disciplines beyond the existing infrastructure provided by WTO. US National intelligence council (NIC) evaluated that the shift of global economic power is in progress from West to East; Furthermore, rise of West from 1750 is going to up-turned with restoration of Asia's global economic power by 2030. "Goldman Sachs" reported, if thing goes correctly, BRICS members could together overtake G6, where only US and Japan may sustain their positions among the six largest economies of the world by 2050 in terms of US dollar (Neill et al., 2003).

The world economy has witnessed of huge change in the last five decades, over the coming five decades; at least the variation could be impressive (Wilson and Purushothaman, 2003). After the start of the global financial crisis, 2007; BRIC members are accounted for 50% of the world's economic growth. By the end of 2020 BRIC members will be among the top seven economies of the world by dislodging all the European powers except Germany by 2030 with respect to purchasing power parity (Armijo and Roberts, 2014). Furthermore Arkhipov et al. (2013) stated that half of the world hard currency is held by BRICS members in which 78.18% is held by CHINA.

Pakistan is not a member of the BRICS alliance but the international independent organization BRICS is accelerating political, cultural and commercial cooperation among the member countries. Pakistan might face losses due to trade diversion as a non-member of the proposed BRICS i.e. Pakistan's CPFTAs (China Pakistan Free Trade agreements) with China, SAPTA rounds with India and bilateral relations with Russia, Brazil, and South Africa may affect adversely due to the BRICS members cooperate with each other.

BRICS is one the most important import and export destination for Pakistan with a 35.2% share in total 2016 import of Pakistan i.e. 29.1% from China, 3.5% from India and 2.6% from the rest three which indicates a strong linkage of Pakistan with BRICS. Besides the strong linkages through import; BRICS is an important export destination to Pakistan with 11.1% shares in total 2016 export of Pakistan i.e. 7.7% to China, 1.7% to India and 1.7% to the rest three members.

The current paper examines the economic implication of BRICS for Pakistan; motivated by the fact that BRICS is a huge beneficiary of global investment flows and among the key consumers of global commodities. Therefore, the main global economic players could be a channel to parcel financial and economic fluctuations to the rest of the world.

2. LITERATURE REVIEW

Several studies were conducted to forecast the trade relations within BRICS using CGE (Cheng et al., 2007; Sandrey and Jensen, 2008; Sandrey and Jensen, 2013). Wilson and Purushothaman (2003) conducted a research study to forecast the dreaming path of BRICS until 2050 while Cai et al. (2015) studied the impact of TTIP on BRICS; similarly, Na et al. (2012) studied the impact of Euro sovereign debt crisis on BRICS. Similarly, Cai et al. (2015) incorporated both direct and indirect spillover effects of non-tariff-barrier negotiations among EU and US in their study spillover effects

of transatlantic trade and investment partnership on BRICS members.

Das (2012) used a CGE model by taking BRICS two members i.e. India and China as a core region of their model; i.e. these two members are demand accelerating agents from emerged North to the emerging South. In continuation, Lemelin et al. (2013) also used the CGE model with financial and capital accounts along with endogenous current account and financial assets, composed of 12 regions and 2 BRICS members i.e. India and China. Similarly, Pereira et al. (2010) used GTAP7 to analyze the influence of DR (Doha rounds) on India, China, and Brazil in comparison with US and 25 regions of EU.

Ahmed and O'Donoghue, (2008) used a CGE model with social accounting matrix of Pakistan to examine the impact of variation in external balances of Pakistan on net welfare of Pakistan. They used CGE model with social accounting matrix of Pakistan to examine the impact of variation in external balances of Pakistan on net welfare of Pakistan. The results revealed that increase in prices of imported raw material, petroleum and other manufacturing commodities have adverse effects on growth performance, secondly in general poverty is increasing with increase in import prices. The study further suggested increase in export of dynamic items and reduction in reliance on imported raw materials for the betterment of current account balances of Pakistan.

Butt (2006) used the CGE model to examine both the short-run and long-run impacts of tariff cuts on Pakistani exports, employment, regional disparity, and output level by taking Pakistani economy as a whole, central industry and key regions of Pakistan. The result shows a reduction in regional disparities in response to trade openness in democratic eras while in military regime a positive relation was observed between regional disparities and trade liberalization. Furthermore the result revealed a significant increase in GDP to trade liberalization in long run with a minute increase in GDP in short run. The results further revealed a sharp increase in output level of the NWFP, Baluchistan, and Punjab as a result of trade liberalization.

Khan et al. (2015), adopted GTAP framework with the MYGTAP program; to examine the effect of Pakistan's agricultural trade liberalization on labor types and multiple households. After the elimination of export subsidies and import tariffs on agricultural products of Pakistan; the result shows that Pakistan's agriculture openness has the potential to increase income inequality especially in rural areas where agriculture is the major source of earning for the residents. They further stated that agricultural trade liberalization is exposing the underprivileged, banished and landless farmers of Pakistan to the globally volatile and distorted agricultural market.

Iqbal et al. (2017) carried out a research study to examine the impact of GSP (Generalized System of Preferences) plus status of Pakistan on household income. To examine the impacts at household level; the study adopted MyGTAP developed by Minor and Walmsey (2013) with latest available SAM for changes in labor types and multiple households. The overall result shows increase in GDP, provisions of trade and goods exports with increase in the current production level of Pakistan. Similarly Pakistan with proposed EBA (Everything but arms) status resulted in increase of real wages of the households belong to no agricultural land of rural Sindh.

Khan et al. (2018) conducted a research study to examine the economic implication of CPTPP (Comprehensive and progressive agreements for the Trans-pacific partnership) through CGE approach for Pakistan. The study linked extension of standard GTAP, MyGTAP to household model by adopting the latest available comprehensive SAM (social accounting matrix). The study

incorporated three simulations i.e. S1 with full trade openness between CPTPP members, S2 with full trade openness among CPTPP members and Pakistan and S3 with full trade openness among Pakistan, US and CPTPP members. The results quoted overall negative implication of current CPTPP for Pakistan while Pakistan as a proposed member of CPTPP resulted in enhancement of Pakistan's economy.

Wu et al (2013) incorporated a scenario analysis in CGE model based on tariff reduction and trade facilitation among BRICS members; the paper presented 4 scenarios for comparison with reference scenario i.e. S0 for reference scenario, S1 for no tariff, S2 for tariff reduction, S3 for trade facilitation and S4 for reduction of agricultural subsidy. Firstly the study accomplished a reference scenario without imposing any limitations on tariff reduction or trade facilitation for comparison; that results in long-lasting growth of all BRICS members. S1 was designed with zero tariff line among all BRICS members; resulted in favor of India. S2 was based on "Harbinson approach" of tariff reduction shows comparatively slow export growth to S1. In case of S3 China, India and Russia show increase in both the welfare and GDP rates while the rest two in long run. S4 observed as a less responsive scenario to export the total region.

Sandrey and Jensen (2013) incorporated 4 scenarios in their study to examine PTA's (preferential trade agreements) among BRICS members; they stated that zero tariff line is not feasible at this point with imposed 50% and 25% reduction in tariff lines for scenario1 and 2 respectively with 2% additional cutup in NTB (non-tariff barriers) backed by gains from close cooperation among BRICS members in shape of infrastructure and efficiency enhancement. Similarly, scenario3 applied scenario1 by allowing the clothing and footwear industry to not reduce tariffs while scenario4 allow India to not reduce gold tariff for South Africa.

There are very few studies investigated the impact of BRICS on non-member countries by using different co-integration or other econometric models (Samake and Yang, 2014; Fedoseeva and Zeidan, 2016). Up to the best of our knowledge, no study has been investigated the impact of BRICS on any non-member country by using CGE models. The current study examined the impact of FTA's among BRICS countries on Pakistan.

3. METHOD

The current study examines the probable economic impact of tariff and non-tariff barriers reduction scenarios i.e. reduction in tariff lines with 50% (S1) and non-tariff lines with 14% (S2) among BRICS members on Pakistan in CGE (Computable Generalized Equilibrium) framework, a brief discussion is as below;

3.1 COMPUTABLE GENERALIZED EQUILIBRIUM

CGE (Computable Generalized Equilibrium) uses actual economic data for analysis in response to changes in technological, environmental and government policies. It explicates the precise behavioral information of an economic agent. It considers organizations as income increasing and cost decreasing while households as utility increasing agents of the economy. It further assumed that prices are the main bases for agent's decisions regarding consumption and production, which are observed by the supply and demand's equilibrium. CGE model is the most appropriate and extensively used tool for the analysis of inequality, poverty, and welfare (Savard, 2003). On the other side, economic theory is notional which is unable to grant comprehensive implications of reforms in

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governmental policies and is insufficient since it cannot take descriptions of multi-sectoral and household distributions as discussed by Harrison et al. (2010) and Winter et al. (2004). CGE model links several economic sectors through arrangement of equations and several computer tools i.e. GEMPACK, MATLAB, and GAMS workout on these arrangements (Bandra, 1991). Blake (1998) quoted that CGE is neoclassical by its nature as the household is keeping utility-maximizing while the producers are keeping cost-minimizing behaviors.

A CGE model has two distinguishing attributes; firstly, the model observes the behavioral response of consumers and producers in response to policy reforms regarding adjustment in relative prices, secondly, it integrates a number of different sectors (Adam et al. 1998). Shaikh et al. (2012) further quoted that AGE and CGE models are gifted with observing economy-wide linkages and interaction among distinctive sectors with internal consistency. The model is capable of analysis of trade policy influence on several endogenous variables with subsequent interaction among the variables. Kehoe and Kehoe (1994) stated that CGE models are multipart and are capable to observe the inter-relations among different economies as well as different segments of the economies. On the other side, models based on Partial equilibrium take only account of some endogenous variables and regularly relay on historical time series data.

Global edition of CGE model functions in the same way with an advantage on the simple version; as global edition of CGE keeps accounts of inter-linkages among distinctive economies. The GTAP model supports the Global edition of CGE model with the providence of database and modeling frame for CGE operations i.e. the key source for multi-economies data is GTAP database as discussed in the next section.

The only arrangement among policymakers and researchers is the GTAP (global trade analysis project). The main attraction of GTAP is that it is accounted for annual flows of services and commodities within a specified base year. The database further provides a ground for researchers to suggest the influence of country-specific and also sector or class-wise policies reforms on the global level. GTAP is a manifold regional CGE model designed for fixed analysis of relative reforms in trade policies (Adam et al. 1997).

3.2 GTAP (GLOBAL TRADE ANALYSIS PROJECT)
A comprehensive utility function and an individual household are taken to conduct a GTAP model with allotment of regional expenditures to three elements i.e. savings, government expenditures, and private expenditures. The framework presumed that individual households provide their service's commodities to local organizations and make earnings. The organizations, then, offer the final goods to government and private household's demand after combining these service's commodities with transitional supplies. Private household purchases some of the raw materials and capital goods to fulfill their individual demand for reserves. In the open economy package, GTAP model is composed of 2 global sectors i.e. first, an international bank that works as an agent among regional and global saving and the second one is transport and trade accounts. The current study uses MyGTAP, a modified version of khan (2018).

3.3 MYGTAP
The MyGTAP model provides an extended version of the standard GTAP model by extending the single regional household into segregated different private and government households as they all have different expenditure and income accounts. The government has two sources of earnings i.e.

foreign aids and tax, similarly, Government spends some portion of their earnings into expenditure on services and commodities while the rest became the government's saving. The model recognizes several sources of private household earnings which include i.e. foreign remittances, factors, and capital earnings. Private households then used their incomes either with SEF (specified expenditure function) or CDE (constant difference expenditures). Walmsley and Minor (2013) quoted that MyGTAP provides various extra features over the standard GTAP model i.e. by allowing flexibility in handling of government's savings and spending, by allowing the capital income and remittances transfers among different regions and by providing an extended version of GTAP to examine the influence of policy reforms on distinctive factors and household types within the global CGE framework.

3.4 DATASETS OF THE STUDY

This study uses two different kinds of datasets, the latest available GTAP 9a database by Aguiar et al. (2016) with a recent Pakistani complete SAM (Social Accounting Matrix) 2013 (IPFRI, 2016). The currently available GTAP 9a databases are based on the global economy for four base years i.e. 2004, 07 and 11. The current study uses the latest 2011 base year database. The subject database is consisting 119 economies, 140 regions, 57 sector, and 21 collective regions. To assist simulations, the study further aggregated the 140 regions into 8 regions i.e. Brazil, Russia, India, China, South Africa, United states, Pakistan and the rest of Asia. Similarly, 57 goods sectors are aggregated into 11 sectors (Tables 3 and 4).

The comprehensive Pakistani SAM 2013 affords comprehensive information regarding 17 groups of households (Table 6) categorized by urban and rural geographical regions; furthermore, the household groups are divided on the basis of land ownership and sizes. Similarly, Standard GTAP's 5 factors of production are disaggregated from the Pakistani SAM 2013, 27 production factors. The MyGTAP model by Walmsley and Minor (2013) took factors, ownership and consumption influence from SAM Pakistan to disaggregate factors, household consumption and earnings respectively. To make the original GTAP database consistent with the total returns of consumptions and factors, the obtained weights are adjusted to the GTAP database.

4. RESULT AND DISCUSSION

The starting point for the study analysis is the final standard MyGTAP model which assumes perfect competition in all the economic sectors with zero profit. It is further assumed that natural resources and the land is stagnant while labor and capital are entirely mobile among all the sectors. Similarly, government's pay-outs are set to be an unvarying portion of government's income and the government deficit will only increase in case of tariff revenue reduction instead of tax replacement. Ups and down in Factors prices will assume to be the drivers of foreign income flows in the economy where they are placed. ERA (Expected rate of returns) and sum of private households are assumed to be the driver of investment and domestic saving with government deficit respectively as in standard GTAP; thus, the trade equilibrium is endogenous.

4.1 WORLDWIDE WELFARE IMPACTS OF BRICS MEMBERS COALITION

Worldwide influence of tariff and non-tariff barriers reduction among BRICS members can be seen in column2 and 3 of table1 respectively. Column2 and 3 of table1 represent that Pakistan real GDP responded with fall of 0.012% and 0.06% in a result of simulation1 and 2 respectively which is

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26.06 and 35.1 million in dollar terms. Furthermore, it can be seen that this potential BRICS free trade agreement would have the greatest welfare loss to United States i.e. 663 and 2034 million dollars, secondly to Europe i.e. 1002 and 4561 million dollars in response to simulation1 and 2 respectively.

Similarly, all the BRICS members would get welfare gain from the proposed economic coalition i.e. China would get the most benefits from the proposed economic coalition i.e. 4435 and 43913 million dollars, secondly, India with 1587 and 24401 million dollars, thirdly Brazil with 2794 and 20101 million dollars, then Russia with 993 and 8607 million dollars and South Africa with 738 and 6615 million dollars in a result of reduction in tariff and non-tariff barriers among BRICS members respectively.

Table 1: Worldwide Welfare Impacts of BRICS Members Coalition.

% (million$) Impact of BRICS coalition on real GDP of Selected economies		
Country/region	SIM1 [BRICS (5)]	SIM2 [BRICS (5)]
Pakistan	-0.012%(-26.06)	-0.016%(-35.1)
United States	-0.004%(-663)	-0.013%(-2034)
Brazil	0.11%(2794)	0.812(20101)
Russia	0.052%(993)	0.452%(8607)
India	0.084%(1587)	1.3%(24401)
China	0.060%(4435)	0.60%(43913)
South Africa	0.182%(738)	1.63%(6615)
Rest of Asia	0.0007%(7.5)	-0.00039%(-4.2)
Europe	-0.006%(-1002)	-0.029(-4561)

4.2 INFLUENCE OF TARIFF AND NON-TARIFF BARRIERS REDUCTION AMONG BRICS MEMBERS ON PAKISTAN

4.2.1 IMPACT OF BRICS COALITION ON MACRO-ECONOMY OF PAKISTAN

Column2 and column3 of Table2 represent the impact of 50% reduction in tariff-lines and 14% reduction in non-tariff lines among BRICS member's on macro-economic factors of Pakistan respectively. Column2 represents that Pakistan's Real GDP, Real Imports, overall term of trade and government income shows a deterioration of -0.012%, -0.374%, -0.175% and -2.98% respectively in responses to the presumed reduction in tariff-lines among BRICS members. Similarly, column3 represents that Pakistan's Real GDP, Real Imports, Real Exports, overall term of trade and government income shows a deterioration of -0.016%, -0.405%, -0.615%, -0.164% and 0.62% in response to non-tariff barriers reduction respectively. This negative impact of BRICS coalition on Pakistan clearly shows the adverse impacts of BRICS coalition on non-members i.e. Pakistan economy, which may result in economy-wide drop as a non-member.

Table 2: Impact of BRICS Coalition on Macro-Economy of Pakistan.

% (million$) Change in Macro Economy of Pakistan		
Macro factors	SIM1 [BRICS (5)]	SIM2 [BRICS (5)]
Real GDP (qgdp)	-0.012(-26.1)	-0.016 (-35.1)
Real Exports (qxwreg)	0.012(3.62)	-0.405 (-0.004)
Real Imports (qiwreg)	-0.374(-213)	-0.615(-350)
Terms of Trade (tot)	-0.175(-0.002)	-0.164(-0.002)
Government Income (gincome)	-2.98	-0.620

4.2.2 IMPACTS OF BRICS COALITION ON PAKISTAN'S SECTORAL-PRODUCTION

Column2 of Table3 shows the impact of 50% reduction on tariff lines among BRICS members on the Sectoral production of Pakistan. The result shows a negative impact on BRICS member coalition on output level of VegFuit, procFood and Until_Cons with -0.14%, 0.043% and 0.14% respectively while rest of the sectors shows positive response to 50% reduction in tariff lines among BRICS members i.e. Gran Crops with 0.003%, MeatLstk with 0.026%, Extraction with 0.166%, TextWapp with 0.098%, LightMnfc with 0.018%, HeavyMnfc with 0.114%, TransComm with 0.001% and Other Services with 0.007%. These positive impacts of sectoral outputs may be due to decrease in overall imports of Pakistan due to the BRICS member dealings with each other as shown in Table2; the availability of expensive imports to Pakistan as a non-member of BRICS alliances increased Pakistani sectoral output to engage the local demands with cheap domestic products. Similarly, coulumn3 shows the influence of NTB reduction among BRICS members on sectoral-production of Pakistan.

Table 3: Impacts of BRICS Coalition on Pakistan's Sectoral Production.

%Change in Sectoral Production of Pakistan		
Sectors	SIM1 [BRICS (5)]	SIM2 [BRICS (5)]
Grain Crops	0.003 (1.70)	0.022(11.7)
VegFruit	-0.140(-7.08)	-0.191(-9.65)
MeatLstk	0.026(3.74)	0.039(5.6)
Extraction	0.166(20.4)	-0.209(-25.6)
ProcFood	-0.043(-30.4)	-0.067(-47.5)
TextWapp	0.098(38.2)	0.763(299)
LightMnfc	0.018(7.32)	-0.026(-10.7)
HeavyMnfc	0.114(50.1)	-0.034(-15.1)
Until_Cons	-0.140(-57.8)	-0.301(-124)
TransComm	0.001(1.17)	-0.012(-12.3)
OthServices	0.007(5.88)	0.054(43.6)

4.2.3 IMPACT OF BRICS ALLIANCE ON SECTORAL IMPORTS AND EXPORTS OF PAKISTAN

Table 4 summarizes the possible influence of BRICS alliances on sectoral exports and imports of Pakistan. Mostly all the sectors show a negative response with respect to both exports and imports. The overall influence of tariff barriers reduction among BRICS on Pakistan exports and imports is negative. Similarly, in response to the reduction in non-tariff barriers among BRICS members; Pakistan shows deteriorations in most of the import and export sectors as shown in columns 4 & 5.

Table 4: Impact of BRICS Alliance on Sectoral Imports and Exports of Pakistan

% Change in SECTORAL EXPORTS AND IMPORTS				
	SIM1 [BRICS (5)]		SIM2 [BRICS (5)]	
Sectors	**Exports**	**Imports**	**Exports**	**Imports**
Grain Crops	0.0889	-2.80	-0.468	-0.37
VegFruit	-1.21	-0.325	-2.24	-0.921
MeatLstk	2.50	-0.056	6.46	0.487
Extraction	1.56	-0.121	-12.6	-0.645
ProcFood	-0.408	0.002	-0.963	-0.042
TextWapp	-0.040	-1.44	1.06	-3.47
LightMnfc	-0.099	-0.712	-1.13	-1.12
HeavyMnfc	-0.080	-0.377	-1.54	-0.51
Until_Cons	0.256	-0273	-0.122	-0.174
TransComm	0.388	-0.174	0.183	0.024
OthServices	0.233	-0.059	-0.274	0.321

4.2.4 IMPACT OF BRICS ALLIANCE ON REAL RETURNS OF PAKISTANI FACTORS

The most recent Pakistani Social Accounting Matrix (SAM, 2013) bring-up several extensions of capital, land, and labor to examine the possible influence of the BRICS alliance on Pakistan. The SAM made 27 categories of capital, land, and labor to examine the specific categorized influence of tariff reduction among BRICS members. Table 5 represents the influence of BRICS member's coalition on factor rewards of Pakistan across different categories. All the categories expect Natural resources and livestock shows very rapid decline in response to BRICS member's tariffs line reduction as shown in column2. In the same way all types of labors categories, land categories, and capital categories show an immediate deterioration in response to the presumed alliances. Furthermore, mix responses of Pakistani Real Returns of Factors (RRF) in response to NTB reduction among BRICS members can be seen in column 4.

Table 5: Impact of BRICS Alliance on Pakistani Real Returns of Factors

% Change in Real Returns of Factors			
hhldincome[*Pakistan]	Explaination	SIM1 [BRICS (5)]	SIM2 [BRICS (5)]
1 Land	Land	-0.119	0.267
2 Unsklab	Unskilled labor	-0.04	-0.056
3 Sklab	Skilled labor	-0.059	-0.105
4 capital	Capital	-0.063	-0.124
5 NatlRes	Natural resources	1.13	-1.52
6 NATRES	Natural resources2	1.13	-1.52
7 LAB_S	Small labor	-0.056	0.274
8 LAB_M	Medium labor	-0.02	0.339
9 LAB_W	Worker labor	0.077	0.09
10 LAB_L	Labor low	-0.043	-0.11
11 LAB_H	Labor high	-0.059	-0.105
12 LN_SM1	Land small1	-0.081	0.329
13 LN_SM2	Land small2	-0.091	0.313
14 LN_SM3	Land small3	-0.44	-0.256
15 LN_MD1	Land medium1	-0.092	0.312
16 LN_MD2	Land medium2	-0.042	0.393
17 LN_MD3	Land medium3	-0.246	0.061
18 LN_LG1	Land long1	-0.038	0.399
19 LN_LG2	Land long2	-0.036	0.403
20 LN_LG3	Land long3	-0.209	0.122
21 LN_DR1	Land dry1	-0.065	0.357
22 LN_DR2	Land dry2	-0.036	0.403
23 LN_DR3	Land dry3	-0.355	-0.116
24 FLIV	Livestock	0.12	0.385
25 CAP_A	Agriculture capital	-0.032	0.378
26 CAP_F	Formal capital	-0.067	-0.149
27 CAP_I	Informal capital	-0.063	-0.131

4.2.5 IMPACT OF BRICS ALLIANCES ON HOUSEHOLD INCOMES OF PAKISTAN

All the household types except the only medium rural farmer (quantile1) shows an immediate deterioration in response to BRICS member presumed alliance. Table 6 presents the likely impacts of BRICS member alliance on different types of households in Pakistan.

Table 6: Impact of BRICS Alliances on Household incomes of Pakistan.

Households types			%Changes in Household's Earnings	
Hhldincome [*Pakistan]	Explanation	Population (Million)	SIM1 [BRICS (5)]	SIM2 [BRICS (5)]
1 MainHHLD	Main household		-0.234	-0.466
2 hhd_rs1	Small Rural farmer (q1)	4193	-0.192	-0.25
3 hhd_rs234	Small Rural farmer (q234)	15,565	-0.228	-0.178
4 hhd_rm1	Rural farmer + medium (q1)	208	0.235	-0.784
5 hhd_rm234	Rural farmer + medium (q234)	2914	-0.203	-0.079
6 hhd_rl1	Landless rural farmer (q1)	3348	-0.188	-0.256
7 hhd_rl234	Landless rural farmer (q234)	7292	-0.226	-0.212
8 hhd_rw1	Rural farm worker (q1)	6333	-0.093	-0.462
9 hhd_rw234	Rural farm worker (q234)	8305	-0.153	-0.427
10 hhd_rn1	Rural non-farm (1)	12,595	-0.209	-0.55
11 hhd_rn2	Rural non-farm (q2)	10,888	-0.223	-0.544
12 hhd_rn3	Rural non-farm (q3)	9088	-0.233	-0.544
13 hhd_rn4	Rural non-farm (q4)	6316	-0.246	-0.551
14 hhd_u1	Urban (q1)	5930	-0.199	-0.545
15 hhd_u2	Urban (q2)	8820	-0.223	-0.531
16 hhd_u3	Urban (q3)	11,506	-0.235	-0.528
17 hhd_u4	Urban (q4)	17,080	-0.25	-0.54

5. CONCLUSION

This research examines the possible influence of BRICS member alliances on Pakistan; an extension form of the standard GTAP (MyGTAP) is employed in collaboration with household delegated model by using the most recent available SAM (2013) and observed the likely influence of tariff and non-tariff barriers reduction among BRICS members on distinctive types of households, factor wages, earnings distributions and GPD of Pakistan.

This study concluded the overall adverse impacts of the BRICS on Pakistan. These adverse effects are caused by the negative impacts of trade diversion on Pakistan as a non-member of the said BRICS. In response to tariff-lines reduction among BRICS members, Pakistan's Real GDP, Imports, government income and tot (term of trade) deteriorate with immediate shocks of 0.012%, 0.374%, 2.98%, and 0.175% respectively. In the same way, in response to non-tariff barriers reduction, Pakistan's Real GDP, Exports, Imports, government income and tot (term of trade) deteriorate with immediate shocks of 0.016%, 0.405%, 0.615%, 0.620%, and 0.164% respectively.

Similarly, the household level results also deteriorate with immediate shocks to BRICS alliance and all the 11 types of households faced decrease in their real wages in response to both tariff and non-tariff line reductions except medium-rural-farmer-(q1) with a slight increase of 0.23% to tariff-lines reduction. Furthermore, Sectoral-Imports and Exports, RRF (real returns to factors) and Sectoral-production do also deteriorate in response to the presumed BRICS alliances. Finally, the current paper encourages further researchers to conduct studies on the said economic coalition i.e. BRICS to further explore the possible implications on Pakistan by proposing Pakistan as a member of BRICS alliances. Secondly, further researchers should also study the likely spillover (direct and indirect) on other regions and economies of the world.

6. AVAILABILITY OF DATA AND MATERIAL

Data can be made available by contacting the corresponding authors

7. REFERENCES

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