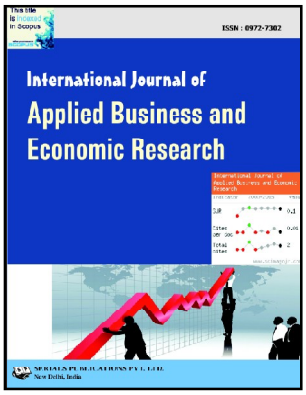

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The Effects of Agriculture, Industry, Service, Exchange Rate, and Trade Liberalization on Economic Growth of Iran

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Abstract: Economic growth is one of the most important issues in developing countries. The main purpose of research hypotheses was to investigate determinants of economic growth. Different sections of economy, exchange rate, and trade liberalization were among the important factors affecting economic growth. Therefore, the effects on agriculture, services, industry, real exchange rate, and trade liberalization sectors on Iran's economic growth were investigated using time series data during 1979-2011. To investigate traction and long-term relationship of explanatory variables, Johansen's co-integration method was used according to vector autoregressive model. The estimated coefficients from agriculture, services, industry, trade liberalization, and real exchange rate sectors showed a significant positive effect on economic growth.

Keywords: economic growth, industry, services, real exchange rate, trade liberalization, Iran

1. INTRODUCTION

Economic growth is the main symbol of governments' performance. To achieve socio-economic goals, governments should consider main determinants of economic growth (Jafari Samimi, 2006, p.6). Indeed, economic growth shows economic dynamics and capabilities of a country. Agriculture sector, due to extensive interaction with other economic sectors, is considered as one of the important and main sources of economic growth (Tabibian, 2009, p. 56). This sector, on the one hand, is a place of employment for a large population of the country; on the other hand, due to the provision of required food, it has an important role in determining welfare level of the society. In most of developing countries, agriculture sector, due to economic growth of developed countries that provides required financing, currency, and raw materials for industry and employment directly and indirectly, has been taken into consideration

(Shakoori, 2003, p. 69). As a result, the growth of agriculture sector is consider as infrastructure for growth and development goals in developing countries. Industry sector, using accumulated physical capital, natural resources, raw material, manpower, and technical knowledge can have a key role in providing most of human needs and economic growth of societies. On the other hand, the experiences of developed countries show that dynamics and growth of industry sector have a determining role in growth and development of other sectors and as a result, economic growth at macro level. Nowadays, the role of industry in economic development of societies as well as increased share of countries in international trade have been increased. However, industry is the economic development engine of societies that even lack significant natural resources (Linden *et al.*, 2007, p.8). Generally, increasing added value of industry sector and its larger share in national economy have provided the context to achieve higher rates for economic growth of different societies. On the other hand, by promoting technical skills of manpower and increased efficiency in industry sector, the context will be provided for higher living standards. Therefore, the development of industry sector is directly involved in economic growth (Najm Abadi, 1995, p.178).

Service sector is very heterogeneous and includes a large part of economic activities. The variability of services suggest that services regulate economic relationships for economic growth that can be considered as production input (Melvin, 1989, p.1182). The relationship between service sector and economic growth is not complicated. Service sector is increasingly seen as an instrument to promote economic development and decreasing poverty. In last two decades, most of developed countries focused on structural changes in this sector. High added value of services on the one and dependence of world merchandise trade on services on the other hand have led to increased attention to this sector. In most of developing countries, service sector development has highest share of Gross Domestic Product (GDP) and employment; therefore, from this perspective, service sector can facilitate economic growth (Tanderin & Ragber, 2010, p.3).

Therefore, demand sector is influenced by net exports and change in foreign exchange reserves; also, supply sector is influenced by imports and finally influences economic growth (Dani, 2008, p.170). The purposes of this study are as follow:

1. Investigating the effect of agriculture, industry, service, trade liberalization, and exchange rate sectors on economic growth.
2. Investigating the relationship between variables and economic growth.

About the conducted studies on this context, the following cases can be pointed out: Falsaphian et al. (2010) in a study entitled "investigating the casual relationship between agriculture sector and economic growth in Iran" investigated the causal relationship between agriculture sector and economic growth in Iran during 1971-1994. The results of co-integration test indicated the existence of a bilateral causal relationship between agriculture growth and economic growth that states agriculture sector growth and economic growth are influenced by each other. Tehranchian (2007) in his study entitled "the role of agriculture in economic growth of Iran (1961-2002)" investigated the role of agriculture in national economy and economic growth of Iran during 1961-2002. The results of autoregressive test showed a long-term relationship between independent and dependent variables in models of interest. In this case, due to a long-term relationship between dependent and independent variables in proposed models that was significant, estimation was done using Ordinary Least Squares (OLS) method. The results showed that during these years, service and oil sectors had highest share in GDP and agriculture sector has lowest share in GDP.

Also, the results showed that for 1% increase in added value of agriculture sector, economic growth increases by 13%. Also, if investment in agriculture sector is increased by 1%, GDP increases by 15%. The results of estimating elasticity coefficient of GDM and the ratio of investment in agriculture sector in model (3) show that for 1% increase in investment in agriculture sector, other sectors show increase in production by 8%.

Farough *et al.* (2013) in a study entitled "key factors affecting GDP in Pakistan during 1975-2011" investigated the effect of key factors such as agriculture, industry, service, trade liberalization, and exchange rate on economic growth of Pakistan. The results showed that variables of agriculture, industry products, trade liberalization, and exchange rate with coefficients of 5%, 42%, 35%, 25%, and 62% had a significant positive effect on GDP.

Jamah and Kanset (2007) in their study entitled "review of agriculture and economic growth" investigated the relationship between agriculture and economic growth in Africa during 1975-2004. For this purpose, Granger Causality Test was used to investigate the relationship between economic growth and agriculture. Before investigating the casual relationship between variables, researchers investigated stability of variables using generalized Dickey-Fuller test. After investigating stability of variables, co-integration was studied. For this purpose, Johansen's co-integration test was used. The results of this test showed a long-term relationship between variables.

2. METHODOLOGY

This study aims to investigate the effect of key factors including growth in agriculture, industry, service, exchange rate, and liberalization on economic growth of Iran during 1979-2011. For this purpose, vector autoregressive model was used as follow.

$$\begin{aligned} l(top) = \vartheta_0 &+ \sum_{i=1}^{k} \vartheta_{1i} L(Agri)_{t-i} \\ &+ \sum_{i=1}^{k} \vartheta_{2i} L(Ind)_{t-i} \\ &+ \sum_{i=1}^{k} \vartheta_{3i} L(Ser)_{i-t} \\ &+ \sum_{i=1}^{k} \vartheta_{4i} L(top)_{i-t} + \sum_{i=1}^{k} \vartheta_{5i} L(ER)_{t-i} + \sum_{i=1}^{k} \vartheta_{6i} L(GDP)_{t-i} + \pi_t \end{aligned} \quad (1)$$

$$\begin{aligned} l(er) = \sigma_0 &+ \sum_{i=1}^{k} \sigma_{1i} L(Agri)_{t-i} \\ &+ \sum_{i=1}^{k} \sigma_{2i} L(Ind)_{t-i} \\ &+ \sum_{i=1}^{k} \sigma_{3i} L(Ser)_{i-t} \\ &+ \sum_{i=1}^{k} \sigma_{4i} L(top)_{i-t} + \sum_{i=1}^{k} \sigma_{5i} L(ER)_{t-i} + \sum_{i=1}^{k} \sigma_{6i} L(GDP)_{t-i} + \tau_t \end{aligned} \quad (2)$$

Here, our equations are as VAR, because variables are estimated simultaneously. For example, GDP is a dependent variable in equation (1), but in equation (2) it is an independent variable.

$$\begin{aligned}\Delta L(GDP) = \alpha_0 & \\ & + \sum_{I=1}^{K} \alpha_{1i} \Delta L(AGRI)_{t-i} + \sum_{i=1}^{k} \alpha_{2i} \Delta L(LND)_{t-i} + \alpha_{3i} \Delta L(SER)_{t-i} \\ & + \alpha_{4i} \Delta L(TOP)_{t-i} + \alpha_{5i} \Delta L(ER)_{t-i} + \alpha_{6i} \Delta L(GDP)_{t-i} \\ & + \alpha_8 ECT_{t-1} + V_t\end{aligned} \tag{3}$$

L (GDP): logarithm of gross domestic product (economic growth), L (agri)t-i: logarithm of agriculture sector, L (LND)t-i: logarithm of industry sector, L (Ser)t-i: logarithm of service sector, L (Top)t-i: logarithm of economic openness degree, L (ER)t-i: logarithm of exchange rate.

To ensure the reliability of results, stability of variables will be investigated. For this purpose, generalized Dickey-Fuller test was used. To investigate long-term relationship between variables, Johansen's co-integration test was used. Also, using Granger Causality Test, causal relationship between variables was studied. Then, if there is a long-term relationship between variables, to link short-term behavior with long-term equilibrium values, error correction model is used as follow:

$$\begin{aligned}\Delta L(GDP) &= \alpha_0 + \alpha_{11} \Delta L(AGRI)_{t-1} + \alpha_{21} \Delta L(lnd)_{t-1} + \alpha_{31} \Delta L(ser)_{t-1} \\ &\quad + \alpha_{41} \Delta L(top)_{t-1} + \alpha_{51} \Delta L(er)_{t-1} + \alpha_{61} \Delta L(AGRI)_{t-1} + \alpha_{71} ECT \\ &\quad + V_t \\ \Delta L(Agri) &= \partial_0 + \partial_{11} \Delta L(GDP)_{t-1} + \partial_{21} \Delta L(lnd)_{t-1} + \partial_{31} \Delta L(ser)_{t-1} \\ &\quad + \partial_{41} \Delta L(top)_{t-1} + \partial_{51} \Delta L(er)_{t-1} + \partial_{61} \Delta L(AGRI)_{t-1} + \partial_{71} ECT \\ &\quad + u_t \\ \Delta L(LND) &= \delta_0 + \delta_{11} \Delta L(GDP)_{t-1} + \delta_{21} \Delta L(lnd)_{t-1} + \delta_{31} \Delta L(ser)_{t-1} \\ &\quad + \delta_{41} \Delta L(top)_{t-1} + \delta_{51} \Delta L(er)_{t-1} + \delta_{61} \Delta L(AGRI)_{t-1} + \delta_{71} ECT \\ &\quad + \varepsilon_t \\ \Delta L(SER) &= \delta_0 + \delta_{11} \Delta L(GDP)_{t-1} + \theta_{21} \Delta L(lnd)_{t-1} + \delta_{31} \Delta L(ser)_{t-1} \\ &\quad + \delta_{41} \Delta L(top)_{t-1} + \delta_{51} \Delta L(er)_{t-1} + \delta_{61} \Delta L(AGRI)_{t-1} + \delta_{71} ECT \\ &\quad + \varepsilon_t \\ \Delta L(TOP) &= \vartheta_0 + \vartheta_{11} \Delta L(GDP)_{t-1} + \vartheta_{21} \Delta L(lnd)_{t-1} + \vartheta_{31} \Delta L(ser)_{t-1} \\ &\quad + \vartheta_{41} \Delta L(top)_{t-1} + \vartheta_{51} \Delta L(er)_{t-1} + \vartheta_{61} \Delta L(AGRI)_{t-1} + \vartheta_{71} ECT \\ &\quad + \pi_t\end{aligned} \tag{4}$$

2.1. Data and Statistical Sources

In this study, all required statistics were extracted from the site of Central Bank of Islamic Republic of Iran, Bureau of Investigation, and Economic Policies. GDP and added value of agriculture, industry, and service sectors equal Billion Rial as the fixed cost of 1997. It should be noted that exchange rate is a formal rate and trade liberalization is obtained from the ratio of total exports and imports to GDP as fixed costs.

2.2.1. The Trend of GDP and Added Value of Agriculture, Industry, and Service Sectors in Iran

Diagram (1) indicates the trend for GDP and added value of different economic sectors. As can be observed, GDP of Iran during 1979-1988 was negative in most of years and during implementation of the first socio-economic development plan, positive growth was seen again. The reasons for negative growth of GDP after Islamic Revolution consisted of political instability, war, and sanctions by western governments. After 1989, this trend was increasing and shows production growth of the country.

According to the diagram, the added values of agriculture show a moderate increasing trend in most of the years, so that this added value increased from 19727 Billion Rial in 1979 to 83399 Billion Rial in 2011. This sector showed annual growth of 4.6% and had the lowest share in GDP. About added value of industry sector, a fluctuating but increasing trend is observed that at the last year of the study, reached to its highest level with average annual growth of 4.8%.

The added value of service sector by having more than 50% of GDP in most of the years shows the greatest share in GDP. According to this diagram, the added value of service sector shows an increasing trend. A major part of growth in added value of service sector after the revolution is caused by the added values of estate, commerce, and transportation services. It should be noted that in Diagrams (2-3), the vertical axis is GDP, added value of agriculture, industry, and service sectors as fixed costs based on Billion Rial.

2.2.2. Real Exchange Rate Trend in Iran

Diagram (2) shows the real exchange rate trend in Iran. As the diagram shows, real official exchange rate trend in Iran has shown fluctuations during the study period. The official exchange rate in 1992 by 2000% growth reached 1458.5 Rial (real exchange rate increased from 8 Rial to 143 Rial). After that, until 2002, although official exchange rate showed increasing trend, it shows decreasing trend according to the consumer price index and in 2002, by 353% increase from 1755 Rial reached 7958 Rial that this level can be observed in the diagram by 291% increase from 17 Rial in 2001 to 106 Rial in 2002.

2.2.3. Trade Liberalization Trend in Iran

The openness of trade in this study is the simple share of trade that is equal to total exports and imports to GDP that the vertical axis shows it. As the diagram shows, after Islamic Revolution and reform in policies as well as war, the liberalization showed decreasing trend. Then, by reform in trade policies and implementation of trade liberalization policies in 1990s and increased trade exchanges by emphasis on more exports, liberalization showed increasing trend.

3. RESULTS AND FINDINGS

To find the relationship between different economic sectors such as added value of agriculture, industry, service, trade liberalization, and real exchange sectors with and economic growth, using a vector autoregressive model and Eview, research hypotheses were tested and research questions were answered.

3.1. Unit Root Test

Each time series can produce a product that can be called a stochastic or random process. However, a random process is called stationary process when the mean of its mean and variance is stable in time series and its covariance level between two time series is only dependent on the interval between two series and is not related to real time to compute covariance. Econometric modelling is based on stability of time series variables. Studies show that about most of time series of macro economy, this hypothesis is not true and most of these variables are unstable. Therefore, to escape from spurious regression problem in regression analysis, it is necessary to ensure their stability. In order to investigate stability of each variable, using generalized Dickey-Fuller test p: H – 1 is tested against P: H1<1. If absolute value of computational ADF is larger than the critical value of the table, the hypothesis is rejected and the variable is stable. Otherwise, the variable is unstable and stability test should be performed on first-order difference equation. Tables (1), (2), and (3) showed the results of variables' stability test using Dickey-Fuller test.

Table 1
The results of generalized Dickey-Fuller stability test at the surface with y-intercept

Variable	*Calculated statistic*	*Test result*
L (Gdp)	-2.13	Unstable
L(Agri)	-0.04	Unstable
L(Ind)	-0.35	Unstable
L(ser)	-2.22	Unstable
L(op)	-2.03	Unstable
L(Er)	-2.56	Unstable
	Critical value at 5%: -2.95	

As can be seen from Table (1), the calculated statistic is smaller than the critical value at 5% that indicated instability of variables at the surface with y-intercept. The results of stability test at the surface and the trend are presented in Table (2).

Table 2
The results of generalized Dickey-Fuller stability test at the surface with the trend

Variable	*Calculated statistic*	*Test result*
L (Gdp)	-0.77	Unstable
L(Agri)	-2.54	Unstable
L(Ind)	-3.20	Unstable
L(ser)	-1.42	Unstable
L(op)	-1.13	Unstable
L(Er)	-2.56	Unstable
	Critical value at 5%: -3.56	

The results of stability test show instability of variables. In this case, stability of variables in y-intercept with differencing will be investigated.

Table 3
The results of generalized Dickey-Fuller stability test with differencing at y-intercept

Variable	*Calculated statistic*	*Test result*
L (Gdp)	-4.67	Stable
L(Agri)	-5.74	Stable
L(Ind)	-4.86	Stable
L(ser)	-5.22	Stable
L(op)	-5.03	Stable
L(Er)	-5.66	Stable
	Critical value at 5%: -2.96	

Table 3 shows that for all variables, the calculated statistic is larger than the critical value at 5% that indicates stability of variables with single differencing.

3.2. Structural Failure Test

The results in previous section showed that none of variables are stable. Instability of variables at the surface can be due to structural failure. Therefore, in years with structural failure, changes can be found in y-intercept of round function, slope of the round function, or both y-intercept and slop of the round function.

To perform structural failure test, Perron test was used. The status of variables provides the probability to understand changes in potential modes if absolute value of tp is larger than table's tp. Then, structural failure is the reason for instability of variable. The results of structural failure test that lead to change in y-intercept of the round function are presented in Table (4).

Perron believed that all economic variables are stable unless a structural variable in economy (e.g. great crisis, oil shock) leads to instability of variables.

Table 4
The results of structural failure test at change in y-intercept of the round function

Equation	λ	$t_{\hat{\rho}}$	$t_{\hat{\rho}}$	*result*
LGDP= 4/003+0/09DU+0/06DTB +0/01T+ 0/66Ly (-1) + 0/29dly(-1)	0.2	-3.70	-3.78	Unstable
Lagri=3/40+0/009DU+ 0/10DTB +0/01T+0/65lagri(-1)- 0/004dlagri(-1)	0.2	-2.33	-3.78	Unstable
Llnd=7/26+0/09DU+0/01DTB +0/03T+0/41llnd(-1) +0/35dllnd(-1)	0.2	-3.47	-3.78	Unstable
LSer=3/68+0/13DU+0/08DTB +0/01T+0/67lser(-1)+0/35dlser(-1)	0.2	-1.94	-3.78	Unstable
LTop=1/21+0/19DU+0/05DTB+0/003T+0/49Ltop(-1) +0/02diTop(-1)	0.2	-3.64	-3.78	Unstable
Ler=0/48+0/32DU+2/54DTB+0/005T +0/81ler(-1) +0/05dler(-1)	0.4	-1.72	-3.78	Unstable

According to the results of structural failure test, it can be stated that structural failure is not the reason for instability of variables; therefore, the null hypotheses based on the root instability cannot be

rejected. Then, structural failure test is performed in slope and y-intercept of the function and the results are presented in Table 5.

Table 5
The results of structural failure test at change in y-intercept and slope of the round function

Equation	λ	$t_{\hat{\rho}}$	$t_{\hat{\rho}}$	*Result*
LGDP=2/5+0/07DU+0/03TB +0/04T-0/03dtt+0/77GDP(-1) + 0/25dlGDP(-1)	0.2	-2.3	-3.99	unstable
Lagri=3/00+0/09DU+0/01DTB +0/03T-0/01dtt+0/68lagri(-1) +0/006dlagri(-1)	0.2	-2	-3.99	unstable
Llnd=4/96+0/46DU+0/007DTB +0/15T+0/12dtt+0/48llnd(-1) + 0/002dllnd(-1)	0.2	-3.25	-3.99	unstable
Lser=2/44+0/16DU+0/06DTB+ 0/05T+0/07dtt+0/76lser(-1) + 0/25dlser(-1)	0.2	-3.42	-3.99	unstable
LTop=71+0/01DU+0/14DTB+0/03T+ 0/6dtt+0/47Top(-1) +0/17dlTop(-1)	0.2	-3.78	-3.99	unstable
Ler=0/6+0/42DU+2/43DTB+0/05T+ 0505dtt+0/74ler(-1)+0/08dler(-1)	0.4	-2.16	-4.22	unstable

As can be seen, absolute value of tp is smaller than table's tp. As a result, structural failure at y-intercept and slop of the round function is unstable. In general, it can be stated that structural failure is not the reason for instability of variables and all variables are stable by single differencing.

3.4. Determining the Optimal Lag

Since the purpose of this study is to estimate long-term and short-term relationships between variables, it is necessary to determine optimal lag before estimation. The result of optimal lag determination are presented in Table (6) based in Schwarz's Bayesian Criterion (BIC) and Akaike Information Criterion (AIC).

Table 6
The results of optimal lag determination

Lag	*BIC*	*AIC*
0	57/16-	17/17-
1	*48/19-	70/21-
2	16/19-	26/23-
3	12/19-	*72/24-
4	03/19-	03/23-

(* indicates optimal lag)

As can be seen from Table (6), optimal lag according to AIC is 3 and according to BIC is 1. Usually, BIC shows lower lag compared to AIC. Since number of observations is smaller than 100 and high lag leads to loss of more degree of freedom, to determine optimal lag, the benchmark is BIC. As a result, the optimal lag is 1.

Table 7
The results of impact test in determining number of co-integration vectors

H0	*Alternative hypothesis*	*Computational statistics*	*Critical value of 5%*
0 = r	1 ≥ r	159.93	103.84
1 ≥ r	2 ≥ r	79.39	76.97
2 ≥ r	3 ≥ r	46.79	54.07
3 ≥ r	4 ≥ r	27.53	35.19
4 ≥ r	5 ≥ r	11.89	20.26

Table 8
The results of maximum eigenvalue test in determining number of co-integration vectors

H0	*Alternative hypothesis*	*Computational statistics*	*Critical value of 5%*
0 = r	1 = r	88.54	40.95
1 ≥ r	2 = r	24.59	34.80
2 ≥ r	3 = r	19.26	28.58
3 ≥ r	4 = r	15.64	22.29
4 ≥ r	5 = r	8.84	15.89

Comparison of impact test and maximum eigenvalue test at the level of 5% in Tables (7) and (8) shows that according to both tests, one co-integration vector is determined for model variables that indicates a long-term relationship between model variables. Table (9) shows the obtained co-integration vector.

Table 9
The results of co-integration vector estimation

Variable	*Non-normalized co-integration vector*	*Normalized co-integration vector*
L (Gdp)	2.79	1
L(Agri)	38.74	-13.88
L(Ind)	30.40	-10.89
L(ser)	9.06	-3.24
L(op)	23.39	-8.02
L(Er)	20.7	-0.25
y-intercept	33.34	11.94

According to Table (9), the relationship between all variables with GDP was positive and all research hypotheses were confirmed. Although the effect of exchange rate is very weak, the estimated equation is as follow:

(5) LGDP=-11/94+13/88LAgri+10/89Lind+3/24LSer+ /02OP +0/25LER
(3.79) (4.87) (2.00) (3.03) (4.85) (2.36)

The above equation shows that 1% increase in agriculture, industry, service, trade liberalization, and real exchange rate sectors leads to increased GDP as 13.88, 10.89, 3.24, 8.25, and 0.25%, respectively.

3.5. Estimating Short-term Relationship using Vector Error Correction Test

Vector error correction model states that change in dependent variable is a function of long-term equilibrium relationship and other changes in explanatory variables. Here, in order to investigate the short-term relationship between variables, error correction model was used. The results of estimation are presented in Table (10).

Table 10
The results of model estimation using vector error correction model
(dependent variable, GDP)

Variable	*Coefficient*	*t-statistic*
y-intercept	0.04	2.08
Δ LGDP (-1)	0.82	2.09
Δ LAgri(-1)	1.31	-2.32
Δ Llnd (-1)	3.51	-4.04
Δ LSer (-1)	5.19	-42.5
Δ LTop (-1)	3.22	-76.2
Δ LEr (-1)	0.09	0.81
ECT (-1)	-0.63	3.32
0.72:R2	0.69 :LM	With, no cross term

The important point in error correction model is error correction coefficient that shows speed adjustment of imbalance process toward balance in long-term. As can be seen, this coefficient is significant negative. Since error correction coefficient is obtained as 0.63, it states that in each year, 0.63% of imbalance is adjusted, that means if a shock is implemented on the model, adjustment takes less than 2 years.

It should be noted that to ensure the obtained results, diagnostic tests were used. Possible value (0.52) obtained from white test shows that null hypothesis cannot be rejected; therefore, error sentences of variance are regressive. Also, probability of 0.69 in LM test shows that null hypothesis (lack of autoregressive relationship) cannot be rejected.

R2- 0.72: independent variables explain 72% of dependent variables.

Granger Causality Test by vector error correction model states that if two variables are together, a vector error correction model will exist between them. As a result, to investigate the casual relationship between variables, vector error correction method has been used by Wald coefficients test.

To investigate casualty and null hypothesis, Wald test has been used.

Table 11
Results of Wald test

Dependent variable	*Effective variable*	*H0*	*X2*	*Probability*	*Result*
LGDP	LAGRI	A11=a71=0	10.42	0.005	Lagri-lgdp
Ler	LGDP	A11=a71=0	24.7	0.02	LGDP-LAGRI

Table (11) shows the results of Wald test in Equations (2) and (3). The results show a bilateral Granger casualty relationship between GDP and agriculture sector.

Dependent variable	*Effective variable*	*Ho*	*X2*	*Probability*	*Result*
LGDP	LAGRI	A11=a71=0	8.02	0.01	LLND-lgdp
Ler	LGDP	A11=a71=0	63.10	0.004	LGDP-LLND

Table (12) shows the results of Wald test in Equations (2) and (4). The results show that there is a bilateral Granger casualty relationship between GDP and industry sector.

Table 13
The results of Walt test

Dependent variable	*Effective variable*	*Ho*	*X2*	*Probability*	*Results*
LGDP	LAGRI	A11=a71=0	7.05	0.04	Ltop-lgdp
Ler	LGDP	A11=a71=0	10.63	0.03	LGDP-Ltop

Table (13) shows the results of Wald test in Equations (2) and (5). The results show that there is a bilateral Granger casualty relationship between GDP and trade liberalization sector.

Table 14
The results of Wald test

Dependent variable	*Effective variable*	*Ho*	*X2*	*Probability*	*Result*
LGDP	LAGRI	A11=a71=0	2.82	0.08	Ler-lgdp
Ler	LGDP	A11=a71=0	3.63	0.04	LGDP-Ler

Table (14) shows the results of Wald test in Equations (2) and (7). The results show that there is a bilateral Granger casualty relationship between GDP and trade real exchange rate. However, casualty relationship from exchange rate toward economic value is weak and at the significance level is 10%.

CONCLUSION

According to the results of this study, 1% increase in agriculture, industry, service, trade liberalization, and real exchange rate sectors leads to increased GDP as 13.88, 10.89, 3.24, 25.5, and 0.8%, respectively.

Increased production that has been created by agriculture growth, has provided the context for additional export and imports. These incomes not only improve the balance of payments, but can help the government in industry sector. Increased real exchange rate is the result of decreased costs and leads to increased exports and decreased imports as well as economic growth. Trade increased production potential of producers and increased economic growth. There is a bilateral and casual relationship between agriculture, industry, service, trade liberalization, and exchange rate with GDP. According to the positive effect of economic sectors including agriculture, industry, and service sectors on GDP, it is suggested that governments should not only concentrate on oil and gas and must support these sectors in terms of facilities and subsidy to increase GDP and economic growth. According to trade liberalization, by decreasing tariffs, government can increase production potential through increased economic growth.

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