Trade Openness and Employment Nexus in Saudi Arabia

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Abstract
Trade openness would increase the welfare of nation if it could also support the employment in the long run. This research explores the net effect of trade openness on the Saudi employment by using annual data of 1980-2015 and by using ARDL cointegration technique. Trade openness, government spending on education and economic growth have positive impacts on the employment in long run while mix evidence of these variables are found on employment in the short run with different lag effects. Based on results, we recommend the government to raise the trade openness by removing trade barriers and to increase spending on the education sector to support the higher employment level in the Kingdom.

Key Words: Employment; Trade Openness; Cointegration
JEL: E23; O24; C12

1. Introduction

Trade openness is stemming from the reduction in trade restrictions. GATT agreements and WTO are continuously stressing the importance of free trade as it can increase the welfare of the nations. In this regard, many regional trade agreement also helps in increasing the regional and world-wide trade. In case of Arab economies, GCC is an mile stone in achieving a high regional trade in Arab countries and Saudi Arabia is one of very active member of it. Further, Saudi Arabia is also very active member of GAFTA trading regional trade. Therefore, regional trade agreements are playing

very significant role in increasing trade among Kingdom and its trading partners. Trade liberalization can augment the welfare of nation in terms of better consumption but it is not guaranteed the other economic indicators like unemployment. Unemployment is major problem in the Saudi Arabia. The international trade-unemployment nexus attracts a major concern for economists. As trade can create unemployment. This is due to the shutdown of import-competing industries or fall in demand of these particular industries. Saudi Arabia is majorly depending on oil-exports and it remains very liberal in imports of a variety of commodities. The liberal import may drive out the local industry by competition or it becomes a reason for sluggish behaviour for local investors to invest in import competing industries. But, Saudi Arabia has no import-competing industry in the kingdom mostly and employment might be supported due to trade openness concept in the exports industries.

In the theoretical debates, Ricardian hypothesis suggests that more trade may increase employment and on the other hand Heckscher-Ohlin (HO) theory negative this view. In Ricardian one factor theory of trade, employment definably increases with an increase in volume of trade as labour is only factor to produce exportable items. On the other hand, HO theory suggests that employment may increase in the labour intensive exports in the labour abundant country and employment may decrease in the presence of capital intensive exports. Saudi Arabian exports are capital-intensive usually then it is very likely to has its negative impact on employment. Because, rising trade in Saudi Arabia may result in rising demand for capital goods and labour do not reaped benefits of employment. The Saudi Arabia is a highly rich oil-abundant country and is relying on most advance technology in their production. On the other hand, exports or trade may increase the aggregate demand which may increase the employment in turn. Saudi Arabia is enjoying surplus trade balance in the most of our sample period. Therefore, trade may also help in increasing employment level. Further, Saudi government's major revenue, more than 90%, depends on the oil exports and trade openness may increase the government revenues as well which may spend by government in employment generation. Saudi government is supporting employment by providing subsidies in the number of industries and directly provides a large number of jobs. This support is financed through the oil exports' revenue. Therefore, more trade can support the employment.

As, Ricardian theory advocates the importance of exports in increasing employment. But, HO model nullifies this due an argument that capital-abundant countries may have more unemployment due to rise in demand of capital-intensive goods and use of more of capital but not the labour in the productions. There is a mix view regarding this relationship in general. Further, Saudi economy is heavily depending on the capital-intensive technology and trade may not help in employment generation. Therefore, it is necessary to empirically verify influence of trade openness on employment in Saudi Arabia. This study motivates to achieve this objective by using Auto-Regressive Distributive Lag (ARDL) model to investigate this relationship with some supporting variables of government spending on education and economic growth. The present study is trying to resolve this paradox of mix evidence of positive/negative connection between trade openness and employment in Saudi Arabia. There is also no single study which has been discussed this relationship in the context of Saudi Arabia. Therefore, we are going to fill this gap.

2. Literature Review

There is sufficient literature on the relationships between trade and employment nexus. For example, Baldwin (1995) investigates the influence of trade on employment level after incorporating FDI in analysis for OECD countries. He concludes that increasing trade particularly imports has becoming a reason for rising unemployment level. Further, he finds that FDI has a positive influence on the labour productivity. Greenaway et al. (1999) investigates this relation for industrial sector of UK for a data 1979-1991. He finds that trade, either exports or imports, creates a negative influence on local employment level. Landesmann et al. (2002) investigates the influence of trade on the employment level of North-South model for 7-industrail countries using a period 1980-1996. They find that Southern imports have a negative influence on employment but exports have a positive influence. A negative influence is also found due to out-sourcing of production processes.

Dutt et al. (2009) examine the trade openness and employment nexus for a panel. After investigating the dynamic panel estimates, they conclude a positive influence of trade on the employment level. Therefore, they conclude that trade is helping in reducing unemployment level in the selected sample countries. Kien and Heo (2009) explore this topic for Vietnam by using the industry-specific data of a time period 1999-2004. They find that rising exports are helping in generating the employment and hence unemployment decreases. On the other hand, rising wage rate is becoming a reason for unemployment. Chinembiri (2010) conducts the analysis for South Africa to inspect the influence of trade on sector-specific employment. Their estimates show that rising imports has a negative influence on the primary and manufacturing sector employment. Further, exports remain insignificant contributor in rising employment level in all sectors of economy.

Kim (2010) investigates this issue on the twenty OECD economies by using a period of 1961-2008. They explore this relationship by controlling the quality of institutions in the analysis. They find that trade is accelerating the unemployment in rigid institutions and has a pleasant effect on employment level in the elastic atmosphere. Hasan et al. (2012) examine the influence of trade, by using state-level data, on unemployment in India. Trade has been reduced the unemployment level in the springy atmosphere. In particular, exports are found helped in reducing unemployment level. Further, tariff and other measures in India have also helped in reducing unemployment level. Ranjan (2012) explores the linkages of trade openness and employment. In trade sector, import-rivals increase the employment and export-rivals reduce the employment opportunities. Overall effect of trade openness remains inconclusive on employment. Further, trade openness also increases the income-disparities. Gozgor (2014) investigates this issue for G-7 countries and finds an adverse influence of trade on employment. Further, unemployment has been increased by the rising population. On the other hand, income, labour-productivity and inflation have negative influence on unemployment. This result is also confirming the Phillips-Curve hypothesis.

In conclusion of literature review, trade or trade openness has been provided mix evidence of its effect on employment level. Therefore, it can be claimed as more empirical question instead of theoretical debate. Further, we do not find any single study which investigate this issue for Saudi Arabia or any other GCC country. Therefore. Our research claims an empirical contribution in the Saudi literature after achieving its objectives.

3. Methodology

3.1 Model and Data

Trade openness could be claimed as a determinant of employment in any country. Further, government expenditure on education and economic growth can be considered the major determining factor of employment. Therefore, we are hypothesizing the following model:

$$\log SEMP_t = f(\log TO_t, \log EDUEXP_t, \log GDPG_t) \quad (1)$$

Here, $\log SEMP_t$ is log of employed labour in millions in Saudi Arabia. $\log TO_t$ is log of ratio of total trade to GDP, a proxy for trade openness. $\log EDUEXP_t$ is a log of percentage of government expenditures on the education out of total spending. $\log GDPG_t$ is log of GDP growth rate. *t* is showing our sample time period of 1980-2015. Source of all data is SAMA (2017).

3.2 Hypotheses

H_1: More Trade openness, greater the employment

Trade openness could have both positive and negative influences on the employment. Ricardian theory, in one factor labour model, suggests that increasing trade can support the employment. An increased trade needs more labour to produce the commodities for exports as capital is not factor in this theory. On the other hand, Heckscher-Ohlin theory argues that employment may decrease with increase in trade in the capital intensive country like Saudi Arabia. Further, trade has two major components exports and imports. If any country has surplus trade balance then aggregate demand would increase as surplus trade balance is an addition in aggregate demand. Resultantly, employment can be increased with the increase in aggregate demand and trade openness. In the empirical literature, exports are also positively impacting the employment as reported by Landesmann et al. (2002), Dutt et al. (2009), Kien and Heo (2009) and Hasan et al. (2012). In case of trade deficit situation, aggregate demand can be depressed due to surplus imports and it could have bad influence on the employment. In the empirical literature, imports have unfavourable impact on employment reported by Baldwin (1995), Greenway et al. (1999), Landesmann et al. (2002), Chinembiri (2010), Kim (2010) and Gozgor (2014). Hence, the negative impact of trade through imports is more reported in literature but we are hypothesizing a positive relationship as Saudi Arabia has surplus trade balance in most of our sample years and further, economic activities and employment are majorly depending on the oil exports. Secondly, Saudi Arabia has not any import-substitution industry in the Kingdom and therefore, an increasing imports cannot depress the employment level in import-substitution industry. On aggregate, a rising trade can support the higher employment argument in Saudi Arabia.

H_2: More Government spending on education, greater the employment

Employment impact of Government spending is depending on the educational policy which is to be pro-labour market or not. Saudi Arabia is heavily investing on the education sector now-a-day and producing the graduates according to the skill shortage of labour market. Therefore, government efforts in terms of educational spending can bring positive impact on employment. Further, government spending is also a direct component of aggregate demand and rising aggregate

demand through spending could have pleasant effects on employment as well. Therefore, a positive relation between government educational spending and employment is expected and hypothesized.

H_3: Higher economic growth, greater the employment

The most of employment in any country can be claimed as demand driven employment i.e. cyclical component of employment. A higher economic growth means increasing economic activities in the country at higher pace. Resultantly, aggregate demand would increase and demand for labour/ employment may also increase. Therefore, we are hypothesizing the positive relation between economic growth and employment.

3.3 Estimation Strategy

A first estimation step in time series analysis is claimed as unit root test for confirming stationarity and normality of the data. We are using the GF-GLS unit root test developed by Elliot et al. (1996). This test is more efficient due to two reasons. Firstly, it uses data in detrended form and secondly it compares the calculated t-statistic with modified t-statistic for confirming the stationarity. The test equation is as follows:

$$\Delta x_t^d = \gamma x_{t-1}^d + \sum_{j=1}^{q} \nu_j \Delta x_{t-j}^d + \xi_t \qquad (2)$$

x_t assumes any variable of our model after detrended procedure. Detrending procedure remove the outliers and data become very smooth for testing unit root problem. The null hypothesis, $\gamma = 0$, if rejected then we may ensure the stationarity. After investigating the unit root problem, we are using ARDL test innovated by Pesaran et al. (2001). This is even efficient in case of mix order of integration. We can express our model (1) in the ARDL technique as follows:

$$\begin{aligned}\Delta \log SEMP_t &= \alpha_0 + \alpha_1 \log SEMP_{t-1} + \alpha_2 \log TO_{t-1} + \alpha_3 \log EDUEXP_{t-1} + \alpha_4 \log GDPG_{t-1} \\ &+ \sum_{i=1}^{m} \beta_{1i} \Delta \log SEMP_{t-i} + \sum_{i=0}^{m} \beta_{2i} \Delta \log TO_{t-1} + \sum_{i=0}^{m} \beta_{3i} \Delta \log EDUEXP_{t-1} + \sum_{i=0}^{m} \beta_{4i} \Delta \log GDPG_{t-1} + \varepsilon_t \end{aligned} \qquad (3)$$

The cointegration can be tested from equation (3) by applying bound test on the null hypothesis of $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ after choosing optimal lag-length through AIC. In the presence of cointegration, we can capture the effects of trade openness, educational spending and economic growth on employment through the normalizing procedure by α_2 / α_1 , α_3 / α_1 and α_4 / α_1 respectively. After long run estimates, we can proceed for Error Correction Model (ECM). The ECM for our model is as follows:

$$\begin{aligned}\Delta \log SEMP_t &= \sum_{i=1}^{m} \delta_{1i} \Delta \log SEMP_{t-i} + \sum_{i=0}^{m} \delta_{2i} \Delta \log TO_{t-i} + \sum_{i=0}^{m} \delta_{3i} \Delta \log EDUEXP_{t-i} \\ &+ \sum_{i=0}^{m} \delta_{4i} \Delta \log GDPG_{t-i} + \delta_5 ECT_{t-1} + \omega_t \end{aligned} \qquad (4)$$

Where, an estimated negative and significant value of δ_5 is an evidence for short run relationships in the model. Further, it is also an alternative way for a claim of cointegration suggested by Pesaran et al. (2001). The lag length is used same as in equation 3. Further, short run effects can be

explained with the value of coefficients of all differenced variables after a confirmation of short run relationship.

4. Data Analyses and Discussions

Table 1 shows the DF-GLS unit root test results. Results show that $logSEMP_t$, $logTO_t$ and $logEDUEXP_t$ are non-stationary at the levels and $logGDPG_t$ is stationary at level. Further, all variables are stationary at first differences. Therefore, we have found the confirmation of a mix order of integration. Based on results, we can proceed for ARDL test as it is efficient even in this case.

Table 1: DF-GLS Test

Variable	Intercept	Intercept and Trend
$logSEMP_t$	-0.3143 (9)	-2.2919 (9)
$LogTO_t$	-1.0289 (0)	-1.7944 (0)
$LogEDUEXP_t$	-1.1053 (0)	-2.6552 (0)
$logGDPG_t$	-3.7717 (0)***	-4.4567 (0)***
$\Delta logSEMP_t$	-4.1066 (8)***	-4.5215 (8)***
$\Delta logTO_t$	-4.5985 (0)***	-4.4948 (0)***
$\Delta LogEDUEXP_t$	-6.4079 (0)***	-6.7097 (0)***

Note: *** is showing stationary at 1%. () contains lag lengths.

Table 2 shows the ARDL results. F-value is relatively low to claim the cointegration but it is alternatively proved in the model through negative and significant coefficient of ECT_{t-1} as advocated by Pesaran et al. (2001). In the long run results, trade openness is showing a positive and statistically significant effect on the employment with a low elasticity. The coefficient demonstrates that 1% increase in trade openness can be resulted in 0.2743% increase in the employment. This result is also confirming our hypothesis H_1. It means that exports' components in the trade openness variable is more dominating and it has positive effect on the employment as more exports are responsible for more employment in the previous empirical testing of Landesmann et al. (2002), Dutt et al. (2009), Kien and Heo (2009) and Hasan et al. (2012). Further, a positive effect of trade openness is corroborating a fact of mostly surplus trade balance in Saudi Arabia and also corroborates a fact that most of economic activities and employment are depending on the oil exports which are major component of total exports in Saudi Arabia. Furthermore, import component of trade openness could not harm the employment in the Kingdom as argued in the H_1. But, long run result only show a pleasant effect. Secondly, our results are also supporting H_2. The impact of educational expenditure is also found positive on the employment. One percent increase in spending could improve the employment by 0.024%. This result is supporting the right educational policy of Saudi Arabia which is proved helpful, in our estimations, in increasing

employment level in the Kingdom. Further, government spending is directly helping the aggregate demand and employment level to grow. Therefore, it has indirect influence on employment through aggregate demand as well. Lastly, our H_3 is also validated by the positive and significant coefficient of economic growth variable. One percent increase in economic growth could improve the employment by 0.005%. It means that rising economic growth level, which means that income and aggregate demand are growing at faster face, is also supportive for employment generation in the Kingdom. In both educational expenditures and economic growth, the elasticity parameters are statistically significant but have a very low magnitudes. It means that these variables have a minute effect on the employment level than that of trade openness.

Table 2: Regression Results

Long Run Estimates			
Variables	**Coefficients**	**t-value**	**p-value**
$logTO_t$	0.2743	6.4940	0.0000
$logEDUEXP_t$	0.0241	2.8246	0.0099
$logGDPG_t$	0.0049	2.1801	0.0402
Intercept	5.7827	10.93361	0.0000
Short Run Estimates			
$\Delta logSEMP_{t-1}$	0.2859	1.6797	0.1072
$\Delta logSEMP_{t-2}$	0.7096	3.7851	0.0010
$\Delta logTO_t$	0.0466	0.6631	0.5141
$\Delta logTO_{t-1}$	-0.2327	-2.9613	0.0072
$\Delta logEDUEXP_t$	0.0037	0.5112	0.6143
$\Delta logEDUEXP_{t-1}$	-0.0145	-1.9776	0.0606
$\Delta logGDPG_t$	0.0031	2.0710	0.0503
ECT_{t-1}	-0.6378	-4.2470	0.0003
Bound Test (F-value)	3.1525		
Heteroskedasticity	2.1249		0.1004
Serial Correlation	0.9211		0.3481
Ramsey RESET	0.8512		0.3667

The estimate of ECT_{t-1} is negative and therefore short run relationship is found in our model. Further, employment's first lag is not determining the current employment but its second lag is positively and significantly affecting the current employment. Here, we can claim current employment level is also boosting future employment through aggregate demand effect and channelization effects of labour references. Trade openness is showing insignificant impact but its lag is showing a negative and significant impact. It means that past year trade openness has negative effect on employment and here the past import-effect is more prominent to determine the present employment. Educational expenditures are also showing the same pattern of effect as trade openness is showing. It means that educational expenditure are producing graduates which have negative effect on employability of labour through competition. Further, it may also claim due to frictional unemployment argument in the short run as labour is not fitted in right places in short run. But, its long run positive impact is proving that educational expenditures are helpful in raising employment level in the long run. It means that the frictional unemployment removes in the long run and labour gets fitted in right places. Lastly, economic growth has positive impact on employment in short run as well.

5. Conclusions

We explore the employment-trade openness nexus in Saudi Arabia by using a sample period of 1980-2015 and by apply ARDL cointegration. Unit root results has showed a mix of level and difference integration and long run relationship is also proved. In long run, our hypothesized variables trade openness, educational spending and economic growth are positively impacting the employment but all impacts are found inelastic and significant. In connection of trade openness and employment, export-effect is dominant than that of import-effect on employment in the long run but lagged trade openness effect is found negative in the short run. It means that import-effect is more dominant in the short run. Further, government education expenditures has lagged negative effect on the employment which may claim due to frictional unemployment, a miss-match of jobs and qualification of labour in the short run. But, government education expenditures have positive impact in long run which support and proof the right and strong government's educational policy in the Kingdom. Lastly, economic growth has positive impact on employment. It means that increasing economic growth due to increasing economic activities are supporting employment.

Based on the results, we recommends the government of Saudi Arabia to enhance the trade openness by removing trade restrictions and by providing subsidies particularly to the export sector to promote employment. Further, trade openness is not helpful in raising trade with all the world due to different economic development levels, due to different demand compositions and due to different cultures and habits across the countries. Therefore, we recommend the Saudi Arabia to increase the trade openness with the Arab world particularly, because of common culture, language and development levels in neighboring countries. Secondly, educational expenditure are found very helpful in raising employment. Therefore, we recommend the government to further increase the expenditures to support the employment in the Kingdom. Particularly, there is a need to spend on the vocational institutes which could promote education of particular skills in the labour according to the requirement of job market.

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