

Si Thu Han<sup>1</sup>, Ihtisham ul Haq<sup>2</sup>  
**CAUSAL NEXUS BETWEEN ECONOMIC GROWTH,  
 EXPORTS AND IMPORTS IN MYANMAR**

*The paper investigated the long-run relationship between economic growth, exports and imports for Myanmar over the period from 1980 to 2014. The order of variables integration was determined through the unit root test. The results point out that economic growth and exports are Granger causing imports in the long run. There is no causality either from economic growth to export or from export to economic growth in the long run. In the short run, the results show that exports Granger causes GDP and GDP and exports Granger causes imports. We can conclude that export-led growth is valid only in the short run for Myanmar. Export-led or import-led growth hypothesis is not valid in the long run. It can be deduced from these findings that Myanmar did not use its foreign trade as a growth stimulator.*

*Keywords:* economic growth; exports; imports; Granger causality; Myanmar.

*JEL classification:* C32; E01; F10.

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Ши Ту Хан, Іхтішам уль Хак  
**ПРИЧИННО-НАСЛІДКОВИЙ ЗВ'ЯЗОК МІЖ  
 ЕКОНОМІЧНИМ ЗРОСТАННЯМ, ЕКСПОРТОМ  
 ТА ІМПОРТОМ: НА ПРИКЛАДІ М'ЯНМИ**

*У статті досліджено довготермінову залежність між економічним зростанням, експортом та імпортом М'янми за період 1980–2014 років. Черговість інтегрування змінних визначено за допомогою критерію одиничних коренів. Результати аналізу вказують на те, що економічне зростання та експорт у довготерміновому періоді визначають за Грейнджером імпорт. При цьому не виявлено Грейнджер-причинності між економічним зростанням та експортом (в обидва боки) на довготривалу перспективу. У короткотривалій же перспективі експорт визначає ВВП, а ВВП та експорт разом визначають імпорт (за Грейнджером). Зроблено висновок, що експортозалежне зростання в М'янмі спостерігається лише на короткотривалі періоди. Тобто, в довготривалому періоді ані експорт, ані імпорт не мають суттєвого впливу на економічний розвиток цієї країни. Таким чином доведено, що М'янма не змогла зробити зовнішню торгівлю стимулятором свого економічного зростання.*

*Ключові слова:* економічне зростання; експорт; імпорт; причинність за Грейнджером; М'янма.

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Ши Ту Хан, Іхтішам уль Хак  
**ПРИЧИННО-СЛЕДСТВЕННАЯ СВЯЗЬ МЕЖДУ  
 ЭКОНОМИЧЕСКИМ РОСТОМ, ЭКСПОРТОМ  
 И ИМПОРТОМ: НА ПРИМЕРЕ МЬЯНМЫ**

*В статье исследована долгосрочная зависимость между экономическим ростом, экспортом и импортом Мьянмы за период 1980–2014 годов. Порядок интегрирования переменных был определен при помощи критерия единичных корней. Результаты анализа указывают на то, что экономический рост и экспорт в долгосрочном периоде определяют по Грейнджеру импорт. При этом не выявлено Грейнджер-причинности между экономическим ростом и экспортом (в обе стороны) в долгосрочной перспективе. В краткосрочной*

<sup>1</sup> College of Economics and Trade, Hunan University, Changsha, China.

<sup>2</sup> College of Economics and Trade, Hunan University, Changsha, China; Kohat University of Science & Technology, Kohat, Pakistan.

*же перспективе экспорт определяет ВВП, а ВВП и экспорт вместе определяют импорт (по Грейнджеру). Сделан вывод, что экспортозависимый рост в Мьянме наблюдается только в краткосрочных периодах. То есть, в долгосрочном периоде ни экспорт, ни импорт не имеют существенного влияния на экономическое развитие данной страны. Таким образом доказано, что Мьянма не смогла сделать внешнюю торговлю стимулятором своего экономического развития.*

*Ключевые слова:* экономический рост; экспорт; импорт; причинность по Грейнджеру; Мьянма.

**Introduction.** Trade can be attributed to integration of an economy with the world economy and is considered to be a crucial factor for economic growth. It is believed that trade helps redistribute resources efficiently in an open economy. It also allows domestic economy realize its potential and economies of scale. Furthermore, trade can facilitate technological progress through knowledge diffusion and promotes competition domestically as well as internationally thus leading to production optimization (Krugman, 1979; Grossman and Helpman, 1991; Bernard et al., 2003; Bernard and Jensen, 2004; Lee, 1993; Rodriguez and Rodrik, 2001).

Export expansion can lead to better resource allocation and brings in efficiency in order to be competitive at international markets, so most of developing countries shifted towards export promotion strategies in the 1970s. Resource allocation leads to capital accumulation, it also generates employment through economies of scale and technological development ensures production efficiency (Shirazi and Manap, 2005). If an economy has low exports, as a consequence it will also have low foreign exchange leading to low purchasing capacity at international markets. Fluctuations in export earnings cause economic uncertainties. These uncertainties adversely affect economic behavior, the level and efficiency of investment and have adverse effects on growth.

Export growth is the main derivative of foreign exchange income which can reduce the pressure on the balance of payment and can create new employment opportunities. Export can increase technological innovation which covers domestic and foreign demand. A.R. Kemal et al. (2002) found positive correlation between exports and economic growth in the selected South Asian economies. G.K. Zestos and X. Tao (2002) found bidirectional causality between exports and GDP and between imports and GDP in Canada. Some researchers claimed that exports lead to economic growth (Chow, 1987; Fosu, 1990; Awokuse, 2003; Ullah et al., 2009; Andrew, 2015; Saaed and Hussain; 2015). On the other hand, some studies documented that causality runs from economic growth to exports (Shan and Tian, 1998). There exists feedback effect between exports and economic growth (Ramos, 2001; Liu et al., 2002). However, in some cases empirical studies do not confirm any causal relation between exports and economic growth as such, for instance, J. Asafu-Adjaye and D. Chakraborty (1999) did not find any long-run relationship and causality in either direction between exports and economic growth in India. Similarly, L. Yuhong et al. (2010) claimed that exports did not support economic growth and E.A. Aicha (2015) did not find causality in any direction between exports and economic growth in Morocco.

The crucial role of imports has been realized in endogenous growth models as it makes possible to transfer technology and knowledge from developed to developing countries (Grossman and Helpman, 1991; Lee, 1993; Ramos, 2001). Import of for-

eign technologies plays an important role in economic development of a country (Baharumshah and Rashid, 1999). New technologies could also be embodied in imports of intermediate goods such as machines and equipment and labor productivity whereby workers can acquire knowledge to unbundle new embodied technology; T.O. Awokuse (2007) pointed out that exclusion of imports and focusing only on exports as the engine for growth may be misleading or at best incomplete. Some empirical studies confirm two-way causality between imports and economic growth (Ramos, 2001; Kogid et al., 2011; Andrew, 2015; Aicha, 2015). A.J. Saeed and M.A. Hussain (2015) found one-way causality from economic growth to imports, from exports to economic growth and from exports to imports. They concluded that imports indirectly drive economic growth in Tunisia.

**The objective of this study** is to examine whether exports, imports and economic growth are cointegrated in the log run or not in Myanmar. This study is also going to test whether export-led or import-led growth is prevailing in Myanmar, or it is the growth which determines exports or imports in Myanmar. This is the first attempt for Myanmar economy to test such hypotheses as we are unable to trace any empirical study in this regard. The rest of this paper is organized in the following the manner: the next section describes GDP, exports and imports of Myanmar. The third section runs about the methodology adopted. Empirical findings are interpreted in section four while the last section concludes.

**Myanmar economy and trade.** Myanmar had been under military government for nearly 50 years, from 1962 to 2010. Under military regime, the infrastructure had been improved in terms of highways, roads and bridges throughout the country. However, this improvement was not sufficient and poverty increase has been observed. Since 2010, civil governments carried out a number of economic reforms to support consumer and investor confidence. Myanmar's economy was estimated to grow at 8.5% in real terms in 2014/15. This is favorably comparable with other countries in the region. GDP value of Myanmar represents 0.1% of the world economy, worth 64.33 bln USD in 2014. From 1998 until 2014, its annual averaged to 24.11 bln USD reaching the highest of 64.33 bln USD in 2014 and recording the lowest at 6.46 bln USD in 1998 (Myanmar Statistical Yearbook, 2015).

Myanmar exports are mostly primary products like gas, rice, agricultural products, gems and many minerals. Gas exports are strong and increased by 43% in nominal terms from 3 bln USD in 2013/14 to an estimated 4.3 bln USD over the same period in 2014/15. Most of gas productions are exported to China and Thailand. In 2014/15, gas export mounted 42% of the total exports. Official exports of minerals, including gems, slowed down in 2014/15 and early 2015/16 while mineral exports rose to around 1.4 bln USD (12% of goods exports) as compared to 1.1 bln USD over the same period last year. Within minerals, jade contributed around 8% of Myanmar's total exports between September 2014 and February 2015. Over this period, official statistics showed that jade exports declined by 38% as compared to the same period last year. Media reports from the annual gems emporium indicate that sales proceeds at this year in July declined by 63% to 1 bln USD as compared to record of the sales previous year. This is linked to disruption in extraction due to ongoing conflict in jade producing areas but could also be due slowing demand in China. So, total exports increased to 1018.40 mln USD in September from 930.2 mln USD in August 2015.

Exports in Myanmar averaged 872.27 mln USD from 2010 until 2015 reaching the highest value of 1747.30 mln USD in December, 2013 and recording lowest of 502.60 mln USD in April 2011 (Myanmar Statistical Yearbook, 2015).

Imports of Myanmar are mostly driven by purchases of capital machinery. In 2014/15, the share of machinery in the total imports was around 37%, amounting to 4.6 bln USD, similar to the same period of the previous year. Import of base metals also remained at a comparable level of around 1.4 bln USD. Capital goods and intermediate inputs have averaged around three quarters of the total imports in the last two years, reflecting rapid growth in private sector investment demand. Imports of consumables such as food and beverage, and light manufactures, have remained relatively low and steady at around 5 and 7% of the total imports respectively. Imports decreased to 1090.6 mln USD in September 2015 from 1259.8 USD in August same year. Imports averaged at 1001.44 mln USD from 2010 until 2015, reaching the highest value of 1967.1 mln USD in July 2015 and the record low level of 334.2 mln USD in October 2010 (Myanmar Statistical Yearbook, 2015).

**Research methodology.** Johansen cointegration test is going to be used to determine the long-run relationship among GDP, imports and exports for Myanmar. However, usually time series data has unit root problem so augmented Dickey-Fuller (Dickey and Fuller, 1979) test will be used to solve this problem. If one does not do so, it may lead to spurious regression and one cannot rely on the results. When variables become stationary at first difference, then one has to apply Johansen cointegration test for long run relationship instead of least squares (Johansen and Juselius, 1990). This test can be expressed in equation form as below:

$$\Delta X_t = \mu + \phi D_t + \Pi X_{t-p} + \Gamma_{p-1} \Delta X_{t-p+1} + \dots + \Gamma_1 \Delta X_{t-1} + \varepsilon_t, \quad t = 1, \dots, T, \quad (1)$$

where  $\Gamma_i = (\Pi_1 + \dots + \Pi_i - I)$ ,  $i = 1, \dots, p - 1$ ;  $\Gamma$  represents the cointegration vector.

When long-run relationship is found, then VECM model is used to test short-run and long-run causality among variables. The following VECM shown in (2) has to be employed to determine the causality in both short and long run:

$$\begin{bmatrix} \Delta GDP_t \\ \Delta IMP_t \\ \Delta XP_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \end{bmatrix} + \begin{bmatrix} \beta_{11p} & \beta_{12p} & \beta_{13p} \\ \beta_{21p} & \beta_{22p} & \beta_{23p} \\ \beta_{31p} & \beta_{32p} & \beta_{33p} \end{bmatrix} \times \begin{bmatrix} \Delta GDP_t \\ \Delta IMP_t \\ \Delta XP_t \end{bmatrix} + \begin{bmatrix} \varphi_1 \\ \varphi_2 \\ \varphi_3 \end{bmatrix} ECT_{t-1} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \end{bmatrix}. \quad (2)$$

In the above equation,  $t$  denotes time;  $\varepsilon_t$  is the error term and  $ECT$  is the lagged error correction term.  $ECT$  or error correction model is commonly used for data with long run stochastic trend, also called cointegration. The significance of  $ECT$  coefficient will determine long-run causality. Short-run Granger causality can be done by joint significance of lagged coefficients of the variables based on F-test.

Data on GDP of Myanmar was collected from the United Nations Conference on Trade and Development website over the period from 1980 to 2014. Data on exports and imports (1980 to 2011) was gathered from the United Nations Conference on Trade and Development website and for the period from 2012 to 2014 – from Myanmar Statistical Yearbook (2015).

**Empirical results and discussion.** After we have performed ADF unit root test, we obtained the results shown in Table 1. At level, we found these variables are not stationary but they become stationary after taking first difference. So we can state that

GDP, export and imports are free of non-stationary problem at first difference and integrated in the same order that is order one.

*Table 1. Unit root test results, authors'*

	Level	First difference
<i>IGDP</i>	-0.72	-4.95***
<i>IIMP</i>	-1.72	-5.95***
<i>IXP</i>	-2.26	-4.83***

\*\*\* significance at 1% level.

Then we proceed to determine the optimal lag length for VAR before Johansen test for cointegration. According to the length lag criteria, we found that the lag one is the optimal lag to be used in cointegration analysis. The results of lag length criteria are shown in Table 2.

*Table 2. Lag order selection results, authors'*

Lag	FPE	AIC	SC	HQ
1	3.15e-05*	-1.85289	-1.440652*	-1.716244*
2	3.18E-05	-1.856347*	-1.03187	-1.583056
3	3.66E-05	-1.749216	-0.512501	-1.33928

\* lag order selected by criteria.

Using the optimal lag we generated above, Johansen cointegration test was performed for 3 variables. The information of cointegration test are shown in Table 3. We found there is one cointegration vector among 3 variables where trace statistics (32.67) is greater than critical value (29.79). Max-Eigen statistics (21.45) was also found greater than critical value (21.13). This result confirms GDP, export and import in Myanmar have long run relationship.

*Table 3. Cointegration test results, authors'*

Trace statistics	0.05 critical value	Max-Eigen statistics	0.05 critical value
32.67003*	29.79707	21.44727*	21.13162
11.22276	15.49471	11.21895	14.2646
0.003819	3.841466	0.003819	3.841466

\* rejection of null hypothesis at 5% level.

Finally we determine short-run and long-run causality through VECM model. The results are shown in Table 4. In the last column, the significance of ECT determines long-run causality; we found only one-way causality from GDP to imports and from exports to imports in the long run. This result is similar to the results of (Saeed and Hussain, 2015) for Tunisia. But our result contradicts the findings of (Fosu, 1990; Awokuse, 2003; Ullah and Asif, 2009; Andrew, 2015; Saeed and Hussain, 2015) who found that exports lead to economic growth. Therefore, we can conclude that export-led and import-led growth is not valid for Myanmar in the long run. In the short run causality highlighted that export Granger causes GDP and GDP and export Granger cause import.

Table 4. Causality results, authors'

	$\Delta LGDP$	$\Delta LIMP$	$\Delta LXP$	ECT
$\Delta IGDP$	-	0.64	2.46 *	0.74
$\Delta IIMP$	8.54***	-	17.82 ***	-3.76 ***
$\Delta IXP$	2.25	2.04	-	0.57

\*\*\* and \* significance at 1% and 5% respectively.

One of the reasons that neither exports, nor imports lead to economic growth in Myanmar in the long run is its political situation. Myanmar remains under military regime from 1962 to 2010 and still has partial democratic set up since 25% of seats in the parliament are reserved for military. The inward-looking policy and poor economic management kept Myanmar underdeveloped. Myanmar's economy still relies on primary production while exports and internal instability and external sanctions are the main barriers for future economic development. Although, the military regime has introduced economic reforms; these economic reforms have either been incomplete, or short-lived and failed to achieve fundamental transformations of the economic system, thus the economy is still beset with serious macroeconomic and structural problems (Asian Development Bank, 1999). Political stability and further substantial economic liberalization are required to boost the country's future development.

**Conclusion.** The study aimed to inspect causal relationship among GDP, exports and imports in Myanmar during the period from 1980 to 2014. Augmented Dickey-Fuller test was applied to identify whether variables are suffering from non-stationarity problem. This test suggested that the variables are integrated of order one. The results of Johansen cointegration declared that variables are cointegrated in the long run. The error correction models test confirmed the short-run causality where exports Granger causes GDP and GDP and exports Granger cause imports. For long-run causality, one-way causality from GDP to imports and from exports to imports was found. These findings highlight that growth-led imports approach works for Myanmar. Imports did not come out as the factor of economic growth in Myanmar, but exports are stimulating economic growth in the short run, so Myanmar has to improve its exports base by shifting from primary exports to manufacturing goods exports as primary exports usually depend on rather uncontrollable factors. Apart from this, the price of primary exports is lower as compares to manufactured goods' exports. Thus, strong base of exports and less dependence on primary exports would help Myanmar reach more stable economic growth.

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