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**PRIMARY-EXPORT-LED GROWTH HYPOTHESIS:
A CASE STUDY OF PAKISTAN**

This paper examines the short- and long-run relationship between economic growth, exports of primary and manufactured goods and of imports of consumption and capital goods for the period of 1972-2011 using error correction model (ECM). The theoretical base of the study is that staple theory of growth emphasizes the crucial role of primary exports in the economic growth. The results indicate that there is one long-run equilibrium relationship between the variables, and there is bidirectional causality between export of primary goods and economic growth both in the short and long run. Neither short-run, nor long-run causality is found from GDP to export of manufacturing goods. But there is meaningful short-run and long-run causation from export of manufacturing goods to GDP growth. Similarly, there is no short or long-run causality from GDP to import of capital goods but there is meaningful short and long-run causation from the import of capital goods to GDP growth. The results support the primary-export-led growth strategy for Pakistan.

Keywords: imports, manufacturing sector, ECM, agricultural sector.

JEL Classification: F41, F43, C32. O11.

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ГІПОТЕЗА ЕКОНОМІЧНОГО ЗРОСТАННЯ КРАЇНИ,
ЩО ВИЗНАЧАЄТЬСЯ ЕКСПОРТОМ СИРОВИНИ
(ЗА ДАНИМИ ПАКИСТАНУ)**

У статті досліджено коротко- і довгострокову залежність між економічним зростанням, експортом сировини і готової продукції та імпортом товарів широкого вжитку і товарів промислового призначення за період 1972-2011 рр. за допомогою моделі корекції помилок. Теоретична база дослідження полягає в тому, що сировинна теорія економічного зростання підкреслює критичну роль первинного експорту в економічному зростанні. Результати свідчать про те, що існує довгостроковий стійкий зв'язок між змінними і двостороння залежність між експортом сировини і економічним зростанням, як коротко-, так і довгострокова. Ні коротко-, ні довгострокової залежності експорту готової продукції від ВВП не виявлено, але є значна коротко- і довгострокова причинна залежність зростання ВВП від експорту готової продукції. Також немає залежності імпорту товарів промислового призначення від ВВП, але є залежність зростання ВВП від імпорту товарів промислового призначення. Результати підтвердили теорію економічного зростання країни, що визначається сировинним експортом.

Ключові слова: імпорт, промисловість, модель корекції помилок, сільськогосподарська галузь.

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ГИПОТЕЗА ЭКОНОМИЧЕСКОГО РОСТА СТРАНЫ,
ОПРЕДЕЛЯЕМОГО ПРЕИМУЩЕСТВЕННО ЭКСПОРТОМ
СЫРЬЯ (ПО ДАННЫМ ПАКИСТАНА)**

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В статті досліджується коротко- і довгосрочна залежність між економічним ростом, експортом сировини і готової продукції і імпортом товарів широкого вжитку і товарів промислового призначення за період 1972-2011 рр з допомогою моделі корекції помилок. Теоретична база дослідження заключається в тому, що сировинна теорія економічного росту підкреслює критичну роль сировинного експорту в економічному рості. Результати свідчать про те, що існує довгосрочна стійка зв'язок між змінними і двостороння залежність між експортом сировини і економічним ростом, як коротко-, так і довгосрочна. Ні коротко-, ні довгосрочної залежності експорту готової продукції до ВВП не виявлено, але є значуща коротко- і довгосрочна причинна залежність росту ВВП від експорту готової продукції. Також не спостерігається залежності імпорту товарів промислового призначення від ВВП, але є залежність росту ВВП від імпорту товарів промислового призначення. Результати підтверджують теорію економічного росту країни, визначеного експортом сировини.

Ключові слова: імпорт, промисловість, модель корекції помилок, сільськогосподарська галузь.

1. Introduction. The role of staple exports in economic development dates back to the pioneering work of Canadian social scientists Makintosh (1923) and Innis (1930) who asserted the distinctive contribution of exports of natural resources and staples from Canada in country's social, political and economic development. It highlights the importance of the trade of staples such as wheat, cod fisheries and fur in Canada's development. Though the framework was basically developed to analyze the role of staples in the development of Canada but it has important economic implications for the economies heavily relying on the exports of staples. Staple theory suggests backward and forward linkages. The presence of these linkages highlights the importance of staple production in the development process even if the staple sector does not dominate in an economy in terms of output and employment (North, 1955). Therefore, irrespective of the quantitative share of staple sector, it can be viewed as an important catalyst in the process of economic growth in an economy though the relative importance of staple sector may eventually decline due to the development of other sectors of economy. Other factors may take over the driving seat in directing the process of economic change. Despite of critiques since 1950s, the staple theory still proposes an important framework for analyzing the role of trade in economic growth (Altman, 2003).

The basic assumption of the staple theory is that staple exports are the leading sector of the economy. That is, the export sector acts as a key propulsive sector, propelling the rest of the economy forward. Economic development involves diversification around this export base. The central concept of the staple theory, thus, is the impact of export activity on economy and society. The continuation of growth depends on the ability to import scarce factors. If the supply of foreign factors is elastic, the customary tendency for the expansion of one sector - in this case exports - to affect domestic sectors adversely by driving up factor prices is mitigated (Roemer 1970). Corden (1971) analyzed a "supply-motored" version of the staple theory. It stresses the supplies that is a feature of growth in staple economies. The staple theory can be expressed in the form of a disaggregated multiplier-accelerator mechanism.

The domestic investment resulting from the increased activity of the export sector can be disaggregated into three linkage effects, i.e. backward, forward and final demand linkage.

The staple theory, although very illuminating, is beset by certain drawbacks which include, among others, (i) staple exporters (specifically, those exercising political control) may develop an inhibiting "export mentality." This may result an over-concentration of resources in the export sector and the reluctance to promote domestic development; and (ii) the economy may get caught in a "staple trap" which may involve specialization in the wrong kind of staple. Sustained growth requires the capacity of the economy to shift attention to new foreign or domestic markets. This necessitates transformation of the institutions and values as the economy grows. In the absence of such transformation, the growth process propelled by the staple export is likely to be halted.

Pakistan is a semi-agrarian economy and agricultural sector has a significant role in export sector of the economy. Two significant changes occurred in the agricultural sector in the last 3 decades. The first is the paradigm shift in the prices for agriculture products. For the first time since independence terms of trade have moved decisively in favor of agriculture. The trade-off between manufactured products and the producing of land has moved in favor of the latter.

The changes in trade brought about a new set of opportunities for the developing world including Pakistan. This change is due to the simple reason that the structure of demand and the refashioning of the system of industrial production have moved in new directions so that a given quantity of agricultural produce can buy a larger quantity of industrial output. It puts the countries like Pakistan at great advantage that has not realized the full potential of the agriculture.

The other major change affecting agricultural sector of Pakistan is taking place right in country's neighborhood. There is a rapidly growing demand for agricultural products in the oil-producing and exporting countries of the Middle East. The increase in incomes of the oil-exporting countries resulting from catapulting oil prices has changed the structure of domestic demand in these economies. It has, in particular, increased the demand for high value-added agricultural products: animal products, exotic fruits, vegetables, flowers and other types of processed foods. Some of these oil rich countries are looking for secure sources of supply of these important items for domestic consumption.

In this context it becomes important to empirically investigate the role of export of primary products of agriculture in Pakistan's economic growth. This paper attempted to explore the causal link between exports and GDP by means of unit root properties, cointegration, and augmented Granger causality tests. Cointegration technique was used to establish long-run relationships these economic variables.

The objective of this study is to investigate the between relevance of the staple theory and primary-export-led growth hypothesis for Pakistan by testing causal links between primary export and GDP. Furthermore, to see casualty between export of manufactured goods and GDP and between import of capital, consumption goods and GDP.

2. Literature Review. There is a variety of studies on export-growth hypothesis with varying results. Primary export-led growth is mainly concerned with natural resources. Natural resources seem to have been more of a curse than a blessing for

many developing economies. Numerous researchers have supported the view that resource-poor countries often outperform resource-rich countries in economic growth. Sachs and Warner (1995) found a negative association between natural resource abundance and growth in a large cross-country study. However, Hausmann and Rigobon (2002) considered the trade structure and showed that (export) diversified economies are less likely to suffer negative effects of natural resource wealth.

Ledermann and Maloney (2003) also found positive effect of natural resources on growth using the share of primary exports in total exports and primary exports over total labor force. Davis (1995) used the share of mineral exports in total merchandise exports as one of the natural resource proxies, showing a positive relationship with economic development. Leite and Weidmann (1999) and Sala-i-Martin and Subramanian (2003) found ambiguous growth effects when disaggregating resource exports into agricultural, fuel and nonfuel mineral products. Xu (1998) found evidence of export-led growth hypothesis and concluded that exports have played a leading role in economic growth of Japan.

Sherazi and Manap (2004) investigated the export-led growth hypothesis for Pakistan by applying the Granger causality on annual time series data for the years 1960-2003. The results strongly support a long-run relationship among imports, exports and output growth. The study found a unidirectional causality from export to output growth. Ramzi and Hernandez (2011) analyzed the adaptation of East Asian growth model based on export-led growth, by developing economies. Using the panel data of Asian economies, the study concluded that proportion of country's manufacturing exports destined for industrialized countries is most robustly associated with output growth. Afzal and Hussain (2010) used the quarterly time series data for Pakistan and explored that exports (as well as imports) and economic growth are not cointegrated suggesting absence of long-run relationship. However, imports and exports Granger cause each other. Impulse response function showed that income shocks have negative impact on imports and exports. Shahbaz et al. (2011) also using the quarterly time series data through ARDL bound testing approach and error correction method confirmed the validity of export-led growth hypothesis in Pakistan. We will analyze the impact of primary exports on economic growth of Pakistan, using time series data, that is the originality of the study.

3. Data and Methodology. The time series data for 1972-2011 have been taken from various sources, such as Pakistan Economic Survey (various issues) by State Bank of Pakistan (SBP), Pakistan Statistical Year Book (various issues) by Federal Bureau of Statistics (FBS) and International Financial Statistics by International Monetary Fund (IMF). All the variables are expressed in logs.

$LRGDP = \log(\text{GDP/CPI})$

$LRMENG = \log(\text{Value of Export of Manufacturing Goods/CPI})$

$LRPEM = \log(\text{Value of Exports of Primary Goods/CPI})$

$LRIKG = \log(\text{Value of Imports of Capital Goods/CPI})$

$LRICONG = \log(\text{Value of Imports of Consumption Goods/CPI})$

To assure correct model specification and to avoid the possibility of obtaining misleading results, it is important to check the time series characteristics of the data by testing for unit root and cointegration. To see the variables are cointegrated (the long-run relationship exists between the variables), first test the integration order of

each variable. A variable is integrated of order d , denoted $I(d)$, if it is differenced d times to achieve stationarity. The augmented Dickey-Fuller (ADF) test has been used in the current study for integration order of each variable. The optimal lag period for each ADF test is chosen by AIC and SC criteria. To examine the causal long-run relationship between non-stationary time series is possible only when the variables under examination are cointegrated. Failure to account for cointegration would lead to evidence of simultaneous correlations rather than causal relations between the variables. Thus, the validity of the parameter estimate would be questionable. The test for cointegration in the study by Johansen (1988) and Johansen and Juselius (1990) maximum likelihood estimators are used. The Johansen procedure is based on the error-correction representation of the vector auto-regression (VAR).

To test the causality between the variables, the most popular approach is Granger causality (Granger, 1969). The presence of cointegration between the variables will suggest the evidence of Granger causality and imply that there must be at least one instance of Granger causality either unidirectional or bidirectional (Granger, 1988). That is either x must Granger cause y , or y must Granger cause x .

To test the following hypothesis we compared the F-statistic value with critical value of F (probability) y .

Ho: x does not Granger cause y , if $F_c < \text{critical value of } F$.

HA: x does granger cause y if $F_c > \text{critical value of } F$.

To determine the direction of causality between GDP and export and import, the error correction modeling approach is employed. As opposed to the conventional Granger causality test, an error correction model combines the short-run dynamics with the long-run properties of the data, thus providing a convenient tool for investigating short as well as long-run causal patterns. The error-correction models are formulated as follows:

$$\Delta Y_t = a_0 + b_0 \text{ et-1} + c_0 Y_{t-1} + d_0 X_{t-1} + u_t, \quad (1)$$

$$\Delta X_t = a_1 + b_1 \text{ et-1} + c_1 X_{t-1} + d_1 Y_{t-1} + u_t \quad (2)$$

In equation (1) the causality from X to Y will be tested and in equation (2) — vice versa.

4. Econometric Estimates. We examined the time series property of the data using augmented Dickey Fuller (ADF) test based on the inclusion of intercept term. The results are shown in Table 1.

Table 1. ADF Unit Root Test

Variables	Level	lags length	Is Difference	lag length
LRGDP	-2.663831	0	-9.572089	0
LREMG	-3.418240	0	-5.452135	1
LREPG	-1.746496	0	-6.885359	1
LRIKG	-.616810	2	-4.878455	1
RICONG	-3.568196	0	-5.131321	1

With intercept and no time trend, lag length is based on Sc and AIC criterion.

Table 2. MacKinnon Critical Values

Critical level	lag (0)	lag (1)	lag (2)
1%	-3.646342	-3.661661	-3.661661
5%	-2.954021	-2.96041	-2.960411
10%	-2.615817	-2.619160	-2.619160

According to the results of the ADF tests all the variables become stationary at first difference, so they are integrated of order one.

Johansen's cointegration test is applied to analyze the cointegration relationship between the variables. The results are shown in Tables 3 and 4.

Table 3. Unrestricted Cointegration Rank Test (Trace)

Ho No. of CE(s)	Eigen value	Trace Statistics	0.05 Critical Value	Prob**
None	0.761865	87.11878	69.81889	0.0011
At most 1	0.477658	41.20146	47.85613	0.1823
At most 2	0.290031	20.41959	29.79707	0.3948
At most 3	0.255808	9.458504	15.49471	0.3247
At most 4	0.000122	0.0039.3	3.8414466	0.9489

Trace test indicates 1 cointegration eqn (s) at the 0.05 level.

* denotes rejection of the hypothesis at the 0.05 level.

** Mackinnon-Haug-Michelis (1999) p-values.

The trace statistic values are compared with the critical values and on the basis of the results obtained from trace statistic it is concluded that there is cointegrated long-run relationship between GDP and exports and imports of the country. The presence of one cointegration equation indicates that all the variables have common drifting to each other, so they have long-run equilibrium relationship between themselves. So there is a chance for short-run and long-run causal links between the variables.

Table 4. Results of Causality Test

Direction of causation	Dependant variable	T-statistics	F-statistics
GDP to REMG	Δ REMG	1.031106	0.602832
REMG to GDP	Δ GDP	7.128920	26.01838
GDP to REPG	Δ REPG	3.06179	4.22198
REPG to GDP	Δ GDP	4.335594	13.08869
GDP to RIKG	Δ RIKG	0.387985	2.451719
RIKG to GDP	Δ GDP	6.386250	21.93073
RIKG to REMG	Δ REMG	-1.283904	0.869131

Table 4 reports the results of Granger causality test based on the error correction model. The column 3 provides the t-statistics for the error correction term, while column 4 contains the F-statistics for the joint significance of the lagged independent variables in the causality equation. The statistical significance of the error-correction term and the F-statistics respectively indicate the presence of long- and short-run causality. The results explained that no short as well as long-run causality exists from GDP to export of manufacturing goods. But there is a meaningful short- and long-run causation from export of manufacturing goods to GDP growth. It is evident that there is bidirectional causality between export of primary goods and economic growth both in the short and long run. It is also clear that there is no short- as well as long-run causality from GDP to import of capital goods but there is meaningful short- and long-run causation from the import of capital goods to GDP growth.

5. Discussion and Conclusion. The paper attempted to test the hypothesis of primary-export-led growth in Pakistan for the period 1972-2011. The theoretical framework used in the study is the staple theory of growth. A staple is a primary product that

has a large and growing demand at the world market. The staple theory emphasizes the fact that staple exports are the leading sector of the economy which set the pace for economic growth. Economic growth is a consequence of the trickle-down effects of the primary export sector.

On the basis of Johansen's maximum likelihood procedure and the augmented Granger causality tests, it is concluded that there is bidirectional causality between export of primary goods and economic growth both in the short and long run. It represents the multiplier-acceleration mechanism. Agriculture sector produce the staple primary export of Pakistan. The sector may become a dynamic part of the economy, to accelerate the GDP growth rate, reduce the incidence of poverty and narrow down the income and wealth inequalities in the economy.

From the meaningful short- and long-run causation from exports of manufacturing goods to GDP, it may be concluded that Pakistan has been able to spread the dynamic gains from trade to other sectors of the economy. The benefits of economies of trade and positive externalities (the dynamic gains) exist in Pakistan. Precisely, primary exports have been a major growth-generating force. It is postulated that Pakistan has gained from its comparative advantage in primary commodities as a source of economic growth.

Pakistan has lost many opportunities in the past to develop its economy by encouraging exports. Consequently, the country remains dependent on foreign capital to pay for the growing trade deficit. Now the country should strategize the export of primary commodities. The increase in the price for commodities and the demand for agricultural and livestock products in the Middle East has increased the potential of primary exports from Pakistan. A meaningful causation of import of capital goods to GDP also supports the export-growth strategy by enhancing the country's ability to earn foreign exchange and imports of capital goods.

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