# Pakistan's Dependency on Imports and Regional Integration

## Nasir Iqbal[*], Ejaz Ghani[**], and Musleh ud Din[***]

### Abstract

*With growing global and regional economic integration, Pakistan, too, is actively seeking to enhance regional economic cooperation; it has entered into various regional and bilateral trade agreements that encompass trade policies ranging from import substitution to export promotion. However, the country's imports remain concentrated in a few product categories as well as in terms of origin. Despite several regional trade agreements, Pakistan has not been able to source its imports from regional trading partners. This stems from constraints relating to trade facilitation, regulatory frameworks, and physical infrastructure. Our empirical analysis shows that, while changes in real income and import prices have a significant effect on import demand in the long run, variations in the domestic price level do not. If Pakistan is to grow at 7–8 percent per annum as envisaged in official development plans, it will continue to experience strong growth in imports to meet its rising industrial and consumer needs. Pakistan needs to develop a strategy to use regional integration schemes as a platform for enhancing trade ties in both imports and exports. This will ensure greater trade and investment links with its regional trading partners, helping to lower the transaction costs of trade and boosting economic growth.*

**Keywords**: Pakistan, import demand, regional integration.

**JEL classification**: E64, F13.

## 1. Introduction

Pakistan's economy is characterized by a fairly open trade regime with imports accounting for the bulk of total trade. Like many developing economies, Pakistan depends on a variety of imports to meet its production and consumption needs. However, the demand for imports is highly concentrated in a few products and import markets. The country's major imports include machinery, petroleum products, chemicals, transport equipment, edible oils, iron, steel, fertilizer, and tea, which

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together constitute around 80 percent of total imports. Among these commodity groups, petroleum products have the highest share (around 34 percent of total imports), followed by machinery and chemicals (Pakistan, Ministry of Finance, 2013).

Pakistan's major import markets include Saudi Arabia, Kuwait, Japan, the US, Germany, and the UK. Like other developing countries, Pakistan has witnessed a substantial increase in the value of imports as a percentage of GDP from 12.8 percent in 1972 to 20.3 percent in 2012 (World Bank, 2014).

We argue that Pakistan's trade regime needs to be seen in the context of increasing regional economic integration. In recent decades, global and regional economic integration has grown substantially: as of 31 July 2013, some 575 regional trade agreements have been notified to the World Trade Organization, of which 379 are presently in force.[1] The purpose of integration is to facilitate the free flow of goods and services and factors of production among countries through the elimination of tariff and nontariff barriers. With the implementation of regional trade agreements and substantially lower trade restrictions, most developing countries' imports have risen rapidly. Regional integration encourages free trade among member countries, which helps expand trade. Pakistan, too, is actively pursuing policies aimed at enhancing regional economic cooperation; it has entered into various regional and bilateral trade agreements that encompass trade policies ranging from import substitution to export promotion.

Our objective is to analyze Pakistan's structure of imports with special reference to regional economic integration. We review the importance of regional and bilateral agreements in diversifying imports, estimate import elasticities, and spell out policy options for reaping the benefits of regionalization. Section 2 presents some stylized facts on Pakistan's import structure. Section 3 reviews import trends with reference to regional economic integration. Section 4 describes the data and methodology used. Section 5 presents our empirical findings and Section 6 concludes the discussion.

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[1] http://www.wto.org/english/tratop_e/region_e/region_e.htm

## 2.   Stylized Facts

Imports undoubtedly have a significant impact on economic growth. Endogenous growth models emphasize the importance of imports in channeling foreign technology and knowledge into the domestic economy (Grossman & Helpman, 1991). Pakistan's imports as a percentage of GDP have trended upward over the last four decades, with a strong positive relationship between the GDP and import growth rates (Figure 1).[2] A trend analysis shows low or negative import growth during periods of low average GDP growth. During 2003–06, a period of high growth, the import growth rate was above average. Post-2007, the import growth rate has trended downward, coinciding with slowing economic growth. GDP growth declined from 5.8 percent in 2006 to 2.9 percent in 2013, when the growth rate of imports declined from 31 percent to –0.5 percent. Pakistan's economic development is thus strongly linked to the external sector's development.

**Figure 1: Import growth rate and GDP growth rate**
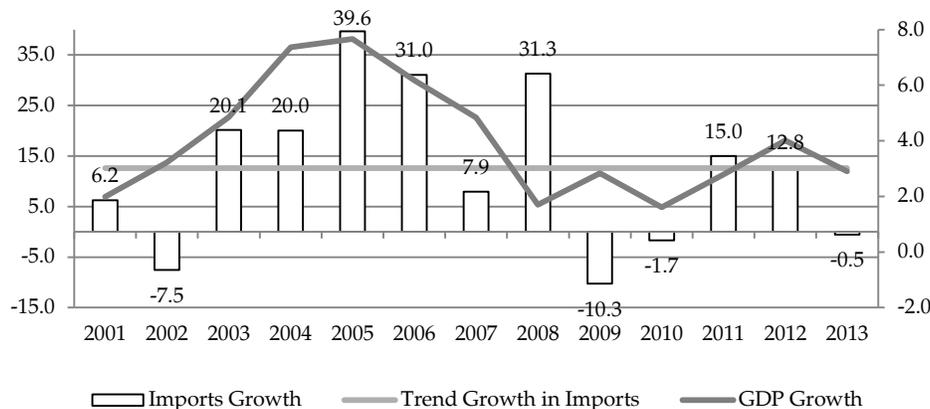


*Sources*: State Bank of Pakistan (2014); World Bank (2014).

Figure 1 also shows that the import growth rate can be highly volatile, ranging from a high growth rate of around 40 percent in 2005 to a negative growth rate of –10.3 percent in 2009. The trend growth rate in imports is 12 percent. This, in turn, leads to volatility in economic growth. To ensure sustained and high economic growth, Pakistan needs to maintain an import growth rate of at least 12 percent per annum.

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[2] The simple correlation between these two variables is 0.6.

Figure 2 shows that the value of imports as a percentage of GDP increased from 12.8 percent in 1971 to 20.3 percent in 2011. However, this is still quite low compared to other countries in South Asia. Pakistan's average import growth rate as a percentage of GDP is around 1.4 percent per annum, while India's imports as a percentage of GDP grew from 3.6 percent in 1971 to 31.5 percent in 2011: an annual average growth rate of around 18.2 percent. Similarly, in Bangladesh, imports as a percentage of GDP increased from 8.1 percent in 1971 to 32.2 percent in 2011: an average growth rate of 7.1 percent per annum. Sri Lanka's imports increased from 23.9 percent of GDP in 1971 to 36.5 percent in 2011. These statistics reveal that, although Pakistan has significantly enhanced its imports, imports as a percentage of GDP remain very low compared to neighboring countries.

**Figure 2: Imports as a percentage of GDP in South Asia**
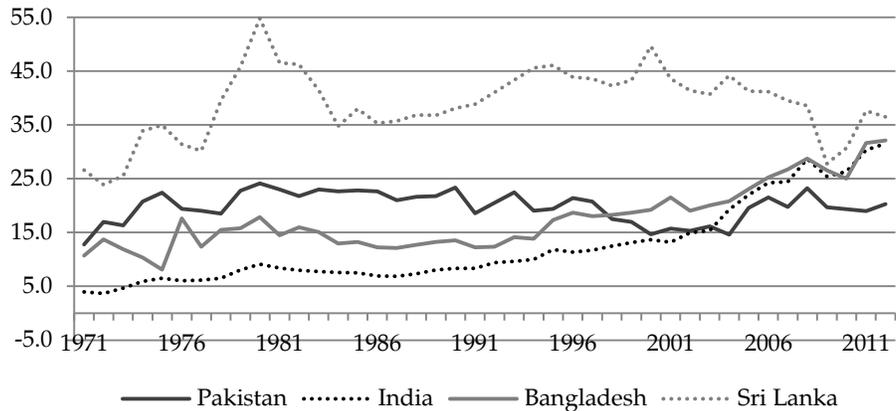


*Source*: World Bank (2014).

Pakistan's import composition has also remained stagnant. In 2012, about three quarters of its total imports comprised machinery (14.5 percent), petroleum products (34 percent), chemicals (13.6 percent), transport equipment (4.8 percent), edible oils (5.4 percent), iron and steel (3.9 percent), fertilizer (2.8 percent), and tea (0.8 percent) (Table 1). We find a similar pattern occurring over the last decade.

**Table 1: Pakistan's major imports (percentage share of total imports)**

| Commodity | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Machinery | 17.1 | 18.5 | 17.8 | 22.5 | 21.3 | 22.0 | 18.5 | 19.2 | 15.6 | 2.2 | 14.5 |
| Petroleum products | 27.1 | 25.1 | 20.3 | 19.4 | 23.4 | 24.0 | 28.8 | 27.1 | 28.9 | 49.9 | 34.0 |
| Chemicals | 15.9 | 15.1 | 16.1 | 15.2 | 12.7 | 12.3 | 12.4 | 12.6 | 14.0 | 2.1 | 13.6 |
| Transport equipment | 4.8 | 5.6 | 5.6 | 6.2 | 7.8 | 7.6 | 5.5 | 3.8 | 5.6 | 0.9 | 4.8 |
| Edible oils | 3.8 | 4.8 | 4.2 | 3.7 | 2.6 | 3.1 | 4.3 | 4.3 | 3.9 | 0.9 | 5.4 |
| Iron, steel | 3.3 | 3.3 | 3.3 | 5.1 | 5.6 | 4.9 | 4.2 | 5.0 | 4.6 | 0.7 | 3.9 |
| Fertilizer | 1.7 | 2.1 | 1.8 | 2.0 | 2.4 | 1.5 | 2.2 | 1.6 | 2.7 | 0.2 | 2.8 |
| Tea | 1.5 | 1.4 | 1.2 | 1.1 | 0.8 | 0.7 | 0.5 | 0.6 | 0.8 | 0.1 | 0.8 |
| Subtotal | 75.2 | 75.9 | 70.3 | 75.2 | 76.5 | 76.1 | 76.4 | 74.1 | 76.1 | 57.0 | 79.7 |
| Others | 24.8 | 24.1 | 29.7 | 24.8 | 23.5 | 23.9 | 23.6 | 25.9 | 23.9 | 43.0 | 20.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

*Source*: Pakistan, Ministry of Finance (2013).

Over the last four decades, raw material has accounted for the highest share of overall imports. Table 2 shows that imports of capital goods gradually declined from 29 percent in 1975 to 24 percent in 2012. During 1980–2005, imports of capital goods remained constant at around 30 percent of total imports. On the other hand, the share of raw material for consumer goods increased from 40 percent in 1975 to 56 percent in 2012. The share of consumer goods fell until 2008, after which it began to increase (from 10 percent in 2008 to 14 percent in 2012).

**Table 2: Composition of imports (percentage share of total imports)**

| | | Raw material for | | | |
|---|---|---|---|---|---|
| Year | Capital goods | Capital goods | Consumer goods | Consumer goods | Total |
| 1975 | 29 | 9 | 40 | 23 | 100 |
| 1980 | 36 | 6 | 42 | 16 | 100 |
| 1985 | 32 | 6 | 46 | 16 | 100 |
| 1990 | 33 | 7 | 41 | 19 | 100 |
| 1995 | 35 | 5 | 46 | 14 | 100 |
| 2000 | 26 | 6 | 54 | 14 | 100 |
| 2001 | 25 | 6 | 55 | 14 | 100 |
| 2002 | 28 | 6 | 55 | 11 | 100 |
| 2003 | 31 | 6 | 53 | 10 | 100 |
| 2004 | 35 | 6 | 49 | 9 | 100 |
| 2005 | 36 | 8 | 46 | 10 | 100 |
| 2006 | 37 | 7 | 45 | 11 | 100 |
| 2007 | 36 | 7 | 47 | 10 | 100 |
| 2008 | 29 | 8 | 53 | 10 | 100 |
| 2009 | 29 | 9 | 49 | 13 | 100 |
| 2010 | 28 | 7 | 52 | 13 | 100 |
| 2011 | 24 | 7 | 53 | 16 | 100 |
| 2012 | 24 | 6 | 56 | 14 | 100 |

*Source*: Pakistan, Ministry of Finance (2013).

Over the last two decades, Pakistan's imports from developed countries have declined from 49 percent of total imports in 1995 to 21 percent in 2012 (Table 3). On the other hand, imports from developing countries have increased from 49 percent of total imports to 78 percent in the same period. The bulk of this increase originates from members of the Organization of Islamic Cooperation: from 21 percent of total imports in 1995 to 41 percent in 2012. About 75 percent of Pakistan's total imports originate from ten countries: the UAE, China, Saudi Arabia, Kuwait, Malaysia, Japan, India, the US, Indonesia, the UK, and the Republic of Korea (Pakistan, Ministry of Finance, 2013).

**Table 3: Origin of imports (percentage share of total imports)**

| Region | 1995 | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| Developed countries | 49.3 | 36.7 | 38 | 34.2 | 33.3 | 30.2 | 29.1 | 26.3 | 22.2 | 21 |
| OECD | 48.5 | 36.1 | 34.7 | 32.4 | 31.5 | 27.1 | 27.8 | 25.3 | 21.6 | 19.9 |
| Other European | 0.8 | 0.6 | 3.3 | 1.8 | 1.8 | 3.1 | 1.3 | 1.0 | 0.6 | 1.1 |
| CMEA | 2.1 | 1.2 | 2.1 | 2.2 | 1.8 | 1.4 | 3.1 | 1.2 | 1.1 | 1.1 |
| Developing countries | 48.6 | 62.1 | 59.9 | 63.6 | 64.9 | 68.4 | 67.8 | 72.5 | 76.7 | 77.9 |
| OIC | 21.3 | 35.2 | 29.2 | 33.7 | 32.0 | 33.4 | 33.9 | 37.4 | 38 | 40.8 |
| SAARC | 1.4 | 1.9 | 3.2 | 3.3 | 4.5 | 5.0 | 3.8 | 3.9 | 4.7 | 3.7 |
| ASEAN | 12.6 | 10.2 | 10.0 | 9.1 | 9.5 | 9.9 | 10.4 | 11.4 | 11.9 | 11.8 |
| Central America | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 |
| South America | 1.4 | 1.0 | 1.1 | 1.4 | 0.8 | 1.8 | 1.2 | 0.6 | 1.1 | 0.6 |
| Other Asian countries | 9.5 | 10.3 | 13.7 | 13.7 | 15.9 | 15.7 | 15.2 | 16.3 | 17.8 | 18.3 |
| Other African countries | 2.2 | 3.0 | 2.4 | 2.2 | 1.9 | 2.2 | 3.0 | 2.5 | 2.9 | 2.6 |
| Central Asian states | 0.1 | 0.3 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 | 0.2 | 0.2 | 0.1 |

*Source*: Pakistan, Ministry of Finance (2013).

## 3. Import Trends and Regional Integration

Like many other developing countries, Pakistan has actively pursued a policy aimed at enhancing regional economic cooperation. In 1993, it became signatory to the SAARC Preferential Trade Arrangement (SAPTA), which aimed to promote and sustain mutual trade and economic cooperation within the SAARC region. The agreement dealt exclusively with trade in goods and was the first step toward establishing an economic union in South Asia.

The establishment of the South Asian Free Trade Area (SAFTA) was another milestone in economic cooperation. Pakistan signed the SAFTA agreement in 2004 when the SAPTA expired on 31 December 2003. This agreement requires member countries to reduce customs tariffs for goods from other member states. Pakistan has also signed various other bilateral agreements with countries including Afghanistan, China, Malaysia, Sri Lanka, Iran, Mauritius, and Indonesia (see Appendix). In spite of all this, the benefits of trade have remained limited for Pakistan. Imports from SAARC members have remained about the same even after SAFTA (Table 4). Of the SAARC countries, India accounts for the highest share of imports (4 percent of total imports).

**Table 4: Imports from SAARC (percentage share of total imports)**

| SAARC | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Afghanistan | 0.22 | 0.28 | 0.30 | 0.19 | 0.17 | 0.25 | 0.23 | 0.27 | 0.40 | 0.03 | 0.03 | 0.11 |
| Bangladesh | 0.11 | 0.27 | 0.29 | 0.30 | 0.23 | 0.19 | 0.17 | 0.23 | 0.23 | 0.21 | 0.16 | 0.15 |
| India | 1.81 | 1.36 | 2.45 | 2.66 | 2.81 | 4.05 | 4.25 | 3.43 | 3.53 | 4.04 | 3.10 | 4.18 |
| Sri Lanka | 0.28 | 0.31 | 0.31 | 0.22 | 0.25 | 0.21 | 0.15 | 0.19 | 0.16 | 0.15 | 0.14 | 0.17 |
| SAARC* | 2.41 | 2.23 | 3.36 | 3.36 | 3.45 | 4.70 | 4.81 | 4.11 | 4.32 | 4.43 | 3.43 | 4.60 |

* Only the four above-mentioned countries.

*Source*: State Bank of Pakistan (2014).

Under its free trade agreement with China (2007), various products manufactured in Pakistan are allowed access to Chinese markets at zero duty. These include industrial alcohol, cotton fabric, bed linen and other household textiles, marble and other tiles, leather articles, sports goods, mangoes, citrus fruit, other fruits and vegetables, iron and steel products, and engineering goods. The trade agreement with China has certainly had a positive impact on imports from China. Figure 3 shows that Pakistan's imports from China accounted for 12 percent of its total imports in 2013 compared to 5.6 percent of total imports in 2002.

**Figure 3: Imports from China as a percentage of total imports**
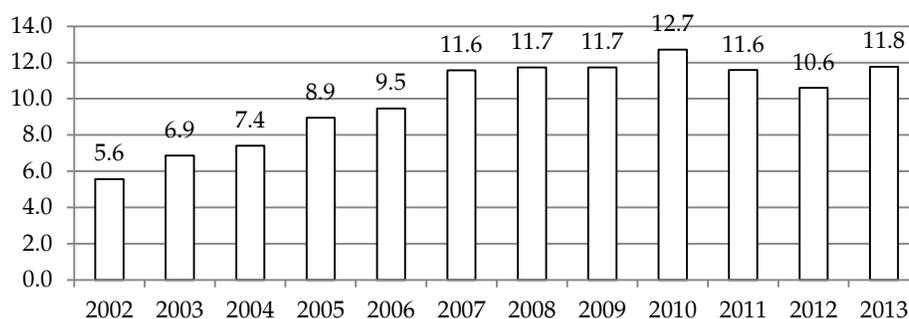


Pakistan has also signed several bilateral trade agreements with ASEAN members (Table 5). However, its total imports from ASEAN have not changed very much over the last ten years (ranging from 10 percent of total imports to 15 percent over the period 2002–13). These statistics indicate that Pakistan has failed to reap the benefits of regional integration with no substantial increase in imports from these countries. Constraints that might account for this low level of trade include inadequate measures to facilitate trade, the high cost of doing business, poor regulatory and institutional frameworks, and a weak infrastructure.

**Table 5: Imports from ASEAN (percentage share of total imports)**

| ASEAN | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indonesia | 2.34 | 2.11 | 2.29 | 2.79 | 2.65 | 2.77 | 2.95 | 2.42 | 1.85 | 1.17 | 1.67 | 1.74 |
| Malaysia | 4.41 | 4.64 | 3.86 | 3.29 | 2.48 | 3.10 | 3.86 | 4.59 | 5.03 | 4.96 | 5.34 | 4.41 |
| Singapore | 3.12 | 3.49 | 3.15 | 1.81 | 1.62 | 1.58 | 1.94 | 1.59 | 2.34 | 7.03 | 6.94 | 7.91 |
| Thailand | 1.72 | 1.86 | 1.73 | 2.01 | 2.28 | 1.95 | 1.48 | 1.68 | 2.06 | 1.42 | 1.44 | 1.38 |
| ASEAN* | 11.58 | 12.10 | 11.04 | 9.91 | 9.03 | 9.40 | 10.23 | 10.28 | 11.28 | 14.58 | 15.39 | 15.44 |

* Only the four above-mentioned countries.
*Source*: State Bank of Pakistan (2014).

## 4. Methodology and Data

Policymakers must understand how imports react to changing economic conditions if they are to implement effective trade policies. This makes it important to examine the behavior of import demand. Various studies that have estimated import demand functions for different countries (including Pakistan) show that import demand is determined largely by income and relative prices (see Sarmad & Mahmood, 1987; Sarmad, 1989; Afzal, 2001; Islam & Hassan, 2004; Rehman, 2007). They find that income elasticity is greater than unity while price elasticity is less than unity. Following Doroodian, Koshal, and Al-Muhanna (1994) and Rehman (2007), we estimate the following import demand model for Pakistan:

$$Ln(M_t) = \phi_0 + \phi_1 \ln(Y_t) + \phi_2 \ln(P_{mt}) + + \phi_3 \ln(P_{dt}) + \phi_4 \ln(M_{t-1}) + \varepsilon_t$$

where $\ln(M)$ is the log of the volume of imports, $\ln(Y)$ is the log of real income/GDP, $\ln(P_m)$ is the log of import prices, and $\ln(P_d)$ is the log of domestic prices.

The log-linear form is considered appropriate by various empirical studies (see, for example, Boylan, Cuddy, & O'Muircheartaigh, 1980). This functional form yields elasticity coefficients directly. We have used the following sources of data for our empirical estimation: the World Development Indicators database, various annual reports of the State Bank of Pakistan, and the International Finance Statistics database for the period 1971–2012. The variables used in this analysis are defined below:

- **Imports of goods and services** represent the value of all goods and other market services received from the rest of the world. This variable is measured at constant 2005 US$.

- **GDP per capita** is the country's GDP divided by the midyear population and is measured at constant 2005 US$.

- **Domestic prices** are measured using the GDP deflator as a proxy for the domestic price index.

- **Import prices** are measured by the unit value of imports as a proxy for the import price index.

We examine the stationarity of these variables using the standard augmented Dickey-Fuller (ADF) unit root test. After establishing the time-series properties of the variables, we estimate the import demand function for Pakistan using the autoregressive distributed lag (ARDL) bounds testing approach to cointegration (Pesaran, Shin, & Smith, 2001). To examine the stability of the ARDL approach, we apply the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) test. The Akaike information criterion (AIC) is used to select the optimal lag length.

## 5.  Empirical Results

Table 6 presents the results of the ADF test. All series are nonstationary at level and stationary at first difference. This implies that all series are integrated of order 1.

### Table 6: Results of unit root test

| Variable | Test with intercept | Test with intercept + trend | Stationarity |
|----------|---------------------|------------------------------|--------------|
| **At level** | | | |
| ln (M) | -0.72 | -3.20 | Nonstationary |
| ln (Y) | -1.29 | -1.71 | Nonstationary |
| ln ($P_m$) | -0.08 | -1.62 | Nonstationary |
| ln ($P_d$) | -1.34 | -2.28 | Nonstationary |
| **At first difference** | | | |
| Dln (M) | -6.77 | -6.61 | Stationary |
| Dln (Y) | -5.59 | -5.66 | Stationary |
| Dln ($P_m$) | -4.42 | -4.36 | Stationary |
| Dln ($P_d$) | -5.21 | -4.98 | Stationary |

*Note*: Critical values = –3.60, –2.94, and –2.61 at 1, 5, and 10 percent, respectively, with intercept, and –4.20, –3.52, and –3.19 at 1, 5, and 10 percent, respectively, with intercept and trend.
*Source*: Authors' calculations.

The long- and short-run impact of income and prices on imports is estimated using the ARDL approach to cointegration with an appropriate lag length based on the AIC. The F-statistic obtained for the demand

function is 5.8, which supports the hypothesis of cointegration for the proposed model (Table 7). We also apply various diagnostic tests to ensure that the model is adequately specified. The F-statistic confirms the adequacy of the estimated model. The results of the serial correlation test, normality test, and heteroskedasticity test are consistent with their requirements. The CUSUM and CUSUMSQ tests are applied to examine the stability of the long-run parameters. Figure A1 in the Appendix shows that the plotted data points fall within the critical bounds, implying that our long-run estimates are stable.

**Table 7: Long-run and short-run estimates**

| Variable | Coefficient | T-statistic | P-value |
|---|---|---|---|
| **Long run** | | | |
| Constant | 16.110 | 3.29 | 0.00 |
| Log of GDP per capita | 1.060 | 1.83 | 0.08 |
| Log of domestic prices | 0.090 | 0.65 | 0.52 |
| Log of import prices | -0.030 | -2.16 | 0.04 |
| **Short run** | | | |
| Constant | 0.153 | 3.15 | 0.00 |
| D (Log of GDP per capita) | 0.572 | 1.68 | 0.10 |
| D (Log of domestic prices) | 0.607 | 1.65 | 0.10 |
| D (Log of import prices) | -0.248 | -1.81 | 0.08 |
| ECM (–1) | -0.649 | -5.23 | 0.00 |
| **Diagnostic tests** | | | |
| R-sq. | 0.55 | | |
| F-statistic | 3.15*** | | |
| Serial correlation | 0.60246[.438] | | |

*Source*: Authors' calculations.

The long-run estimates show that income has a positive impact on imports. The long-run income elasticity is greater than unity, indicating that an increase in income leads to an increase in imports in the long run. Import prices have a negative and significant impact on imports in the long run, but the estimated coefficient is very small, implying inelastic long-run import price elasticity. Domestic prices have a positive but insignificant impact on imports in the long run. Our short-run estimates show that income and domestic prices have a positive impact on imports while import prices have a negative impact on imports. These statistics reveal that imports are influenced largely by the country's development and by import prices. The estimated elasticities indicate that changes in

real income and import prices significantly affect import demand in the long run, while variations in the domestic price level do not.

## 6.  Conclusion

We have examined Pakistan's import structure in the context of regional economic integration and found that its imports remain concentrated in a few product categories and markets. Despite several regional trade agreements, Pakistan has not been able to source its imports from regional trading partners. This indicates the existence of constraints to trade facilitation, regulatory frameworks, and physical infrastructure.

Our empirical analysis has shown that changes in real income and import prices significantly affect import demand in the long run, unlike variations in the domestic price level. If Pakistan is to grow at 7–8 percent per annum as envisaged in its official development plans, it needs to expand its imports to meet the country's growing industrial and consumer needs. It also needs to develop a strategy to use regional integration schemes as a platform for enhancing trade ties in both imports and exports. This will ensure greater trade and investment with regional trading partners, in turn lowering the transaction costs of trade and boosting economic growth.

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*Appendix*

## Table A1: Summary of trade agreements

| No. | Agreement | Scope | Type | Status/year |
|---|---|---|---|---|
| 1 | Pakistan-China | Bilateral | FTA + EIA | In force since 2007 |
| 2 | Pakistan-Malaysia | Bilateral | FTA + EIA | In force since 2008 |
| 3 | Pakistan-GCC | Bilateral | FTA | Under negotiation since 2006 |
| 4 | Pakistan-Iran | Bilateral | PTA | In force since 2006 |
| 5 | Pakistan-Mauritius | Bilateral | PTA | In force since 2007 |
| 6 | Pakistan-MERCOSUR | Country bloc | PTA | Under negotiation since 2006 |
| 7 | Pakistan-Morocco | Bilateral | PTA | Under negotiation since 2008 |
| 8 | Pakistan-Singapore | Bilateral | FTA | Under negotiation since 2005 |
| 9 | Pakistan-Sri Lanka | Bilateral | FTA | In force since 2005 |
| 10 | Pakistan-Turkey | Bilateral | PTA | Under negotiation since 2004 |
| 11 | Pakistan-US | Bilateral | Framework agreement | Under negotiation since 2003 |
| 12 | SAFTA | Regional | FTA | In force since 2006 |
| 13 | Pakistan-Bangladesh | Bilateral | FTA | Under negotiation since 2003 |
| 14 | Indonesia-Pakistan | Bilateral | PTA | In force since 2013 |

*Source*: UNESCAP/APTIAD/trade agreement database; Pakistan, Ministry of Commerce.

## Figure A1: Cumulative sum and cumulative sum of squares of recursive residuals

Cumulative sum of recursive residuals          Cumulative sum of squares of recursive residuals
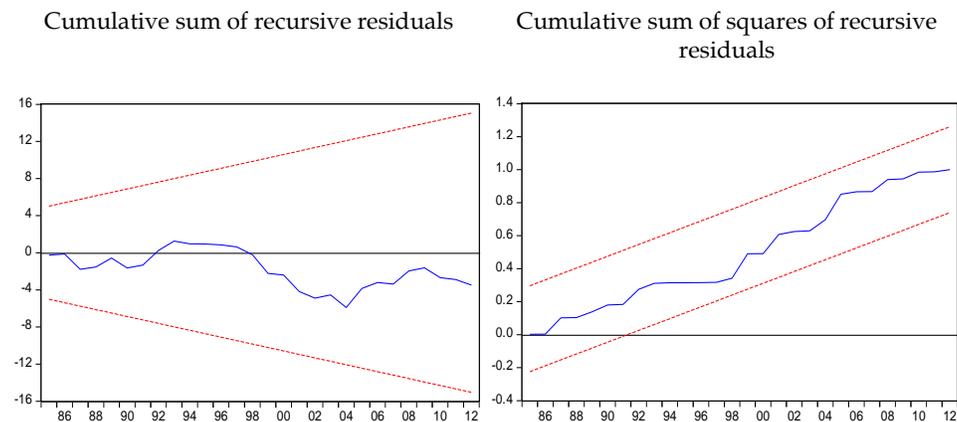


Note: The straight lines represent the critical bounds at a 5 percent significance level.