

# Chapter 8

## An Analysis of the Trade Relationship of Sri Lanka with Singapore Based on Trade Liberalization



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### 8.1 Introduction

Trade is an integral part of economic development and efforts sustaining the national growth of economy and prosperity. This is, in fact, a crucial instrument for industrialization while accessing to foreign exchange is essential for sustainable economic development. The liberal economist always argues that “all countries that had sustained growth and prosperity have opened up their markets to trade and investment”. On their views of comparative advantage, liberalizing trade can benefit economically. Some other useful resources such as land, physical, and human capital are to be made sure they can be highly useful at level best.

Sri Lanka’s economic growth and development experiences are viewed throughout various periods, especially after the episode of 1977 as it is more important than before. During that period, the government has implemented many development strategies and framed policies as well as they were turning to Sri Lanka’s economy. The dimension of those policies and strategies varies more than before (Balakrishnan 2010, pp. 15–16).

The government’s new policy has included flexibility on dominancy, restrictions or control and intervention, and followed liberal policy, relaxation of interest rate, strengthening market oriented, ownership, privatization, foreign investment, export oriented industrialization, and outlook development. Now, the economic liberalization policy is 35 years old. During this long period, the development and economic growth experiences and effects of the liberalization vary on large scales.

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Nowadays, the system of trade has come to be seen in a two ways. One is that of the international trade and other one is regional pattern of trade or called as intra-regional trade. Based on this point of view, the first one is indicating the mutual transaction of tradable goods and services taking place between the two countries for a long period of time. Next one is the transactions of goods and services between regional or intra-regional setup as well as neighboring countries which made it under the special circumstances (Nufile 2006).

## 8.2 Literature Review

It examines empirical research on the economic effect of regionalism based on the trade liberalization. The original study of the Jacob Viner (1950) contributes illustratively the possibilities of the trade creation and trade diversion effect through the formation of the custom union. Further, the above study divides empirical approaches into four categories: one is partial equilibrium analysis, second is general equilibrium analysis, third is gravity model approaches, and the fourth is ex-post studies of regionalism.

According to Ariffin (2007), the first and second model-based counterfactual analyses while they involve either perfectly or imperfectly competitive markets. The third group of study originally developed by Jan Tinbergen (1962) with the reason of analyzing determinants of bilateral trade flows between partners. Fourth one is followed by de la Torre and Kelly (1992).

Original empirical studies have been done over the years to calculate the economic and welfare effects of regional trading arrangement (RTAs). This type of study started soon after Viner's (1950) vital contribution in theoretical impact of trade diversion effect due to the formation of custom union. Thereafter Verdoorn (1954), Janseen (1961), and Krause (1963) also contributed to the study of the economic effects on regionalism. Balassa (1967) also pointed out their significant role in examining the custom union in his study. Originally under Viner's outline, trade creation is linked with the expansion of trade between partner countries in agreement with comparative advantage.

These researches carried out by Waqif and Chatterjee (1993), Ahuja and Bhattacharya (1993), Reddy (1993), Shrestha (1993), Thapa 1993, Wanigaratne (1993), and Yapa (1993) belong to the primary stage. These researches reveal the advantages obtained by the co-operation in the fields of agriculture, energy, manufacturing, and services through the inflow of investment with intra-regional trade. Furthermore, the limitation of economic and organizational constrains found among intra-regional economic co-operation of SAARC have been compared with that of European Union. Besides, it has been pointed out in these researches that, through regional arrangement, the increase in welfare will occur and it is inevitable that a SAARC member country continues to maintain the trade relationship with a third country.

Srinivasan and Canonero (1993), Srinivasan (1994) maintain that South Asian countries could obtain innumerable benefits through their regional co-operation and regional trade extension. The conclusion of research reached by them states that small economy of SAARC countries have contributed remarkably to the intra-regional trade development. That is to say that, trade extension has taken place comparatively in small economy more than big economy. But, according to Das (2001) big economic countries like India and Pakistan did not have a considerable trade-creation effect.

Nufile (2019) has studied to examine the trade relationship of Sri Lanka with Bangladesh after trade liberalization enforced in Sri Lanka after year 1977 by using quantitative approach. The time series data from 1980 to 2015 were used in his gravity regression model. Further, he has carried out his work through the dependent variable which is the value of total bilateral trade between Sri Lanka and Bangladesh. The independent variables of the model are defined as Per capita GDP, Total trade-GDP ratio (Openness ratio), Inflation, Exchange rate of both countries, and South Asia Free Trade Agreement. The research found that free trade system could be able to change Sri Lanka's regional trade after Sri Lanka's liberalization.

### 8.3 Objective of the Study

The objective of this study is to examine the trade relationship of Sri Lanka with Singapore after trade liberalization in year 1977.

### 8.4 Methodology

It explains the sources of data and explains the coverage of this study that runs over a period of 38 years, from 1980 to 2018. This study covers a total of 02 countries. These countries are chosen on the basis of importance of trading partnership with Sri Lanka and availability of required data. Data used in this part of research cover a period of 38 years (1980–2018) after the trade liberalization in Sri Lanka. The two countries such as Sri Lanka and Singapore are analyzed in this study to achieve the objective of this study.

For this objective, a regression analysis of the gravity model is used as follows:

$$\begin{aligned} \text{Log } T_{ij} = & \beta_0 + \beta_1 \log (\text{PCGDP}_{ij}) + \beta_2 \log (\text{TR}_i/\text{GDP}_i) \\ & + \beta_3 \log (\text{TR}_{ij}/\text{GDP}_j) + \beta_4 \log (\text{IF}_{ij}) + \beta_5 \log (\text{ER}_{ij}) \\ & + \beta_6 \log (\text{IEF}_{ij}) + \epsilon_{ij} \end{aligned} \quad (8.1)$$

where

$T_{ij}$  = total bilateral trade (US \$) between Sri Lanka and country  $j$  (Singapore) at  $t$  time,

$PCGDP_{ij}$  = per capita GDP (US \$) of Sri Lanka and country  $j$  (Singapore) at  $t$  time,

$TR_i/GDP_i$  = trade-GDP ratio [openness (US \$)] of Sri Lanka at  $t$  time,

$TR_{ij}/GDP_j$  = total bilateral trade-GDP ratio [openness (US \$)] of country  $ij$  (Singapore) at  $t$  time,

$IF_{ij}$  = inflation (GDP Deflator) annual percentage of Sri Lanka and country  $j$  (Singapore) at  $t$  time,

$ER_{ij}$  = nominal exchange rate of Sri Lanka and country  $j$  (Singapore) at  $t$  time,

$IEF_{ij}$  = index of economic freedom of country  $i$  and country  $j$  (Singapore) at  $t$  time,

$\epsilon_{ij}$  = error term, and  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6,$  and  $\beta_7$  = parameters.

## 8.5 Analysis and Findings

### 8.5.1 *The Effects of Free Trade on Sri Lanka's Bilateral Trade with Singapore*

The objective of this study is to examine how the trade of Sri Lanka and Singapore as member of SAARC/SAFTA has been carried out during the period of study (1980–2018). This study analyses the trade patterns of Sri Lanka with Singapore to examine how the trade has changed, especially post-economic liberalization period of Sri Lanka. Thus, this study is to examine the trade relationship of Sri Lanka with Singapore.

#### 8.5.1.1 Sri Lanka–Singapore Bilateral Trade

The importance of region of the ASEAN countries has been taken as the second effort to make out the characters of determining factors of Sri Lanka's bilateral trade. However, the countries are considered in alphabetical order which is systematically simplified. Therefore, the fifth is Singapore that is an AFTA member country which is used to estimate the relationship between selected variables and intra-regional trade. Table 8.1 explains the trade directions between Singapore and Sri Lanka (Figs. 8.1 and 8.2). The exports of Sri Lanka to Singapore and the imports of Sri Lanka from Singapore and the exports of Singapore to Sri Lanka and the imports of Singapore from Sri Lanka ranging from year 1980 to year 2018 are vividly depicted in Table 8.1.

**Table 8.1** Sri Lanka–Singapore bilateral trades (1980–2018) values in US \$ million

| Year | Sri Lanka (01)            |                             | Singapore (02)            |                             |
|------|---------------------------|-----------------------------|---------------------------|-----------------------------|
|      | Exports<br>(to Singapore) | Imports<br>(from Singapore) | Exports<br>(to Sri Lanka) | Imports<br>(from Sri Lanka) |
| 1980 | 11.8                      | 91.3                        | 159                       | 18                          |
| 1985 | 45.9                      | 73.7                        | 193                       | 43                          |
| 1990 | 45.0                      | 103                         | 222                       | 33                          |
| 1995 | 73.0                      | 250                         | 377                       | 54                          |
| 1996 | 60.0                      | 258                         | 387                       | 51                          |
| 1997 | 58.0                      | 286                         | 398                       | 47                          |
| 1998 | 44.0                      | 311                         | 524                       | 48                          |
| 1999 | 44.54                     | 451.77                      | 465                       | 38                          |
| 2000 | 61.00                     | 496.02                      | 461                       | 55                          |
| 2001 | 57.12                     | 410.43                      | 396                       | 33                          |
| 2002 | 72.25                     | 431.96                      | 382                       | 50                          |
| 2003 | 65.86                     | 522.20                      | 485                       | 52                          |
| 2004 | 86.48                     | 698.45                      | 592                       | 74                          |
| 2005 | 79.39                     | 736.86                      | 681                       | 59                          |
| 2006 | 74.70                     | 992.75                      | 922                       | 53                          |
| 2007 | 80.46                     | 1107.12                     | 836                       | 70                          |
| 2008 | 76.99                     | 1600.63                     | 989                       | 71                          |
| 2009 | 87.83                     | 1116.7                      | 761                       | 76                          |
| 2010 | 513.33                    | 1614.97                     | 1199                      | 87                          |
| 2011 | 406.42                    | 1534.5                      | 1333                      | 142                         |
| 2012 | 93.43                     | 1275.3                      | 1564                      | 83                          |
| 2013 | 103.17                    | 1804.6                      | 1965                      | 141                         |
| 2014 | 140.13                    | 1270.62                     | 1751                      | 109                         |
| 2015 | 78.05                     | 922.53                      | 1381                      | 107                         |
| 2016 | 107.82                    | 1030.69                     | 1310                      | 88                          |
| 2017 | 191.37                    | 1292.7                      | 1827                      | 129                         |
| 2018 | 153.25                    | 1411.38                     | 1785                      | 95                          |

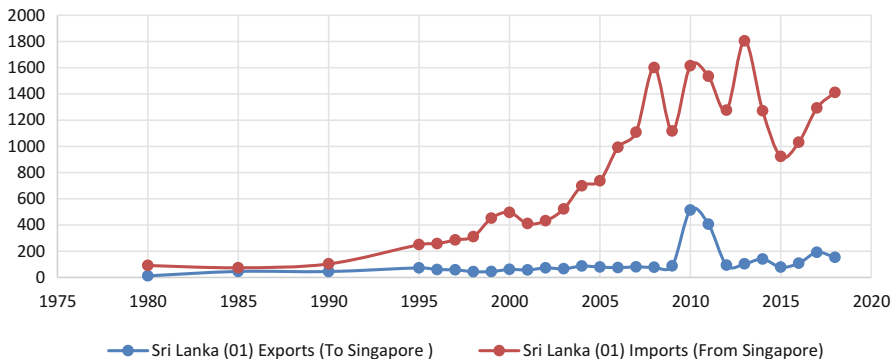
Sources: IMF (1987–2019), “Direction of Trade Statistics Year Book”

### 8.5.1.2 Sri Lanka–Singapore Bilateral Trade

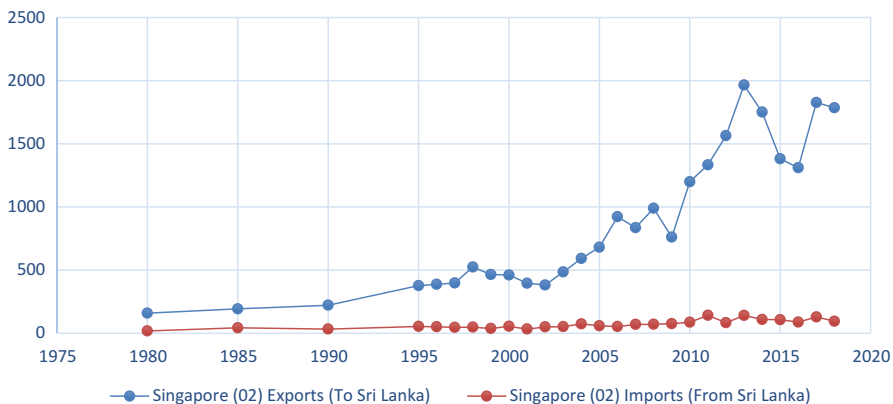
The following multiple regression model of log–log has been used in this study and this is the best model selected based on various model selection statistics.

$$\begin{aligned} \text{Log } T_{ij} = & \beta_0 + \beta_1(\text{PCGDP}_{ij}) + \beta_2(\text{TR}_i/\text{GDP}_i) + \beta_3(\text{TR}_{ij}/\text{GDP}_j) \\ & + \beta_4(\text{IF}_{ij}) + \beta_5(\text{ER}_{ij}) + \beta_6(\text{IEF}_{ij}) + \epsilon_{ij} \end{aligned} \quad (8.2)$$

According to the values of all model selection statistics, adjusted *R* square, “*F*” value and VIF are very good in all models. But “*F*” value is not sufficient in only linear-log model. However, VIF value is very good in linear-linear and log-linear



**Fig. 8.1** Sri Lanka’s trade with Singapore (1980–2018)



**Fig. 8.2** Singapore’s trade with Sri Lanka (1980–2018)

models and other two models like log–log and linear–log models have a problem. Further, Variance-Inflating Factor (VIF) is estimated between 1.2 and 13.9 in all the models. It indicates that there is serious multi-co-linearity among the variables in log–log and linear–log models.

But, since the value of Durbin–Watson (DW)  $d$  statistic has been estimated at  $d_L = 1.14674 \leq DW \leq d_U = 2.29259$ , three models such as log–linear, log–log, and linear-log are situated between the zone of not rejecting area. However, the linear-linear model consists of the zone of indecision area. Therefore, log-linear model has been selected because there is no autocorrelation among the error observation ( $\alpha = 0.01$ ). Further, all these values are very good in log-linear model. Therefore, the log-linear model is accepted for Sri Lanka–Singapore trade test completion.

According to Table 8.2, signs of all variables are as expected in the theoretical or hypothetical argument. Regression results show that  $TR_t/GDP_{it}$ ,  $TR_{ijt}/GDP_{jt}$ ,  $IF_{ij}$ , and  $IEF_{ijt}$  are statistically highly significant to determine the bilateral trade of Sri Lanka with Singapore. However, the variables such as Per capita Income and

**Table 8.2** Regression results for the log-linear model of post-liberalization period (1980–2018) (influence factors on Sri Lanka–Singapore bilateral trade)

| “Predictor/variables”                | “Coefficient” | “Probability” |
|--------------------------------------|---------------|---------------|
| Constant                             | 19.942        | 0.000***      |
| PCGDP <sub>ijt</sub>                 | −0.00000002   | 0.376         |
| TR <sub>i</sub> /GDP <sub>it</sub>   | 3.3685        | 0.000***      |
| TR <sub>ijt</sub> /GDP <sub>jt</sub> | 0.31577       | 0.000***      |
| IF <sub>ijt</sub>                    | −0.002914     | 0.030**       |
| ER <sub>ijt</sub>                    | 0.02843       | 0.450         |
| IEF <sub>ijt</sub>                   | −0.0019367    | 0.000***      |

Note: Estimated  $\alpha = 0.1^*$ ;  $0.05^{**}$ ;  $0.01^{***}$

Exchange Rate do not affect the bilateral trade of both countries. Though the two factors such as TR<sub>i</sub>/GDP<sub>it</sub> and TR<sub>ijt</sub>/GDP<sub>jt</sub> are positively influencing on the bilateral trade, other two variables such as Inflation and Index of Economic Freedom are negatively affecting the bilateral trade of the two countries. The results show that all the estimated coefficients are highly statistically significant because their *p* values are either zero or extremely small.

The estimated coefficients are interpreted as follows. The trade to GDP ratio is 3.3685, meaning that, if trade to GDP ratio goes up by 1 unit, the bilateral trade goes up by 3.36%, holding other variables constant. So, the openness of unilateral trade has facilitated to both countries for the expansion of bilateral trade. While Intra-Trade Ratio goes up by 1 unit, the bilateral trade goes up by 0.31% holding other variables constant. While the inflation goes up by 1 unit, bilateral trade goes down by 0.29%. Hence, inflation factor hits the bilateral trade negatively.

The index of economic freedom is also negatively (−0.0019367) influencing on bilateral trade, that is, the coefficient of IEF<sub>ijt</sub> tells us that as IEF<sub>ijt</sub> goes up 1 unit, bilateral trade goes down by 0.19%. It clearly explains that unilateral economic freedom (Singapore as a first rank of the country at IEF<sub>ijt</sub> in the world) never helps Sri Lanka. Here, the free trade system could be able to change Sri Lanka’s regional trade after Sri Lanka’s liberalization.

## 8.6 Summary and Conclusions

There is a clear proof from the results that the trade liberalization is more helpful to Sri Lanka for her bilateral trade expansion or increase with SAARC member countries. But, individually, the per capita Gross Domestic Product (GDP) differs as larger among them. Singapore is consisting of large number of population in comparison with Sri Lanka. Thus, Sri Lanka tried to have more exports through the free trade agreement. The matter of inflation was cut down by the bilateral trade. And also, the practice of existing economic freedom did not support to both countries. Thus, Sri Lanka tried to have more exports through the free trade agreement. The

both countries benefited through the meaningful achievement from the operation of existing economic freedom.

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