ANALYSIS OF EXCHANGE RATE VALUATION AND INDIAN TRADE: AN ELASTICITY APPROACH

Neha Gupta1 & Ganesh Kawadia2

Exchange rate plays a very important role in a country’s trade performance. In fact, the effects of undervalued currency on prices are similar to those of an export subsidy and import tax. A change in the exchange rates has two effects on the flow of trade – price effect and volume effect. Assessing the same, this paper is articulated to estimate the price and income elasticity of India’s trade. The results show that the rupee undervaluation elasticity of exports as well as imports are coming out to be negative with bigger magnitude showing rupee undervaluation is not fruitful for Indian economy.

It is also found that increasing undervaluation degree, is lowering the Indian exports especially, capital goods and raw material exports-the sectors where India need to grow in world market since Indian revealed comparative advantage is low in both the areas comparatively. Therefore, this research article hereby draws the attention of international economic bodies towards the issue of currency undervaluation which causes the dramatically negative effects on developing nations trade which could worsen the economic growth of the developing economies. This paper thus suggests to the policy practitioner that there should be framework or limits within which currencies could depreciate so that developing nations could actively take part in globalization process.

Keywords : Trade; Relative Valuation of Currency; Marshall-Lerner Condition.

Introduction

The catchphrase “Be Indian Buy Indian” again came in the motion for providing safety to domestic industries by converting the jobless growth into job-led growth within the economy. This is not the story of Indian economy, but it is widely spread across the globe. At this time, protectionism has snatched central stage in economic policies throughout the world, even among developed nations. It is a very surprising fact, that the leading economies of the world USA and UK, which were then protagonists of globalization of production and trade reversing the trend and switching towards trade protectionism, technically referred as de-globalization and Globalization 2.0. The term de-globalization coined by economic and market commentators is to present the current scenario of several countries wanting to go back to economic and trade related policies which place their national interest first.

1 Young Profession, NITI Aayog, Govt. of India, New Delhi. Mob. 9009091321, Email: annehaecon@gmail.com; neha.niti@nic.in
2 Professor, Devi Ahilya University, Indore. Mob. 9425352521 Email: ganesh.kawadia@gmail.com
Marshall Lerner quantified the success of devaluation assured by the devalued price elasticity of exports and imports. If the sum of both the elasticity is greater than unity ($e_x + |e_m| > 1$), it will lead to improvement in level of balance of payments and if the sum is less than unity ($e_x + |e_m| < 1$), it will worsen the problem. Economists ponder this approach as elasticity optimism.

As far as India is concerned, at the onset, India has followed the path of self-reliance and self-sufficiency to enhance its economic development and decided to adopt import substitution and export promotion policies. Though, India had not been involved in taking importation from outer world, it remained incognizant to the technological revolution, especially in the field of industrialization. Hence, the industrial products which India used to produce were comparatively costly, in effect of it; India’s exports were then no longer in demand by other countries due to obsolescence. On the whole, the path which India wanted to follow was disadvantageous failure. That is to say, in the world of globalization, no country can survive remaining isolated and therefore, India not by choice but by force adopted globalization and in the year 1991, finally opened the doors of its economy for foreign players. Trade openness of the Indian economy of that time was meagre 17 per cent and thereafter it progressively increased and reached the level of 55.9 in the year 2013, augmented by 213.5 per cent in the course of 25 years (World Integrated Trade Solution). With increasing trade openness, the dimension of Indian trade has been largely changed. Initially, large portion of its trade comprised of raw materials, and as the time passed, the composition gradually shifted towards finished goods and capital goods. Though, India’s total trade is contributes in world trade is measly by 1.7 per cent. Therefore, to know the pace and pattern of the Indian trade with the rest of the world and impact of relative exchange rate valuation on India’s gross trade during the period of liberalization, this study is articulated.

**Review of literature**

Incorporating theoretical underpinning in the pragmatic research, Boyd, Maria and Smith (2001) estimated Marshall- Lerner conditions and J-curve approach in their research work. This analysis along with capturing eight countries quarterly dataset from 1975 Q1 to 1996 Q4 and by using Polynomial ARDL model concludes that Marshall Lerner condition does not hold in the case of selected eight countries in the short run because J-curve affects work while in the long run export elasticity and import elasticity supports the concept of Marshall Lerner condition.
Although, this conceptual framework will not work barely through undervalued currency in pragmatic world effortlessly, it would rather depend upon the elasticity of export and import elasticity. This elasticity approach, also known as the “imperfect substitutes” model, is still widely and most commonly used in trade analysis (Boyd, Caporale & Smith, 2001).

Assessing the same, M-L condition in respect to the small price taking economy i.e. Ghanaian economy Bhattarai and Armah (2005) threw light on the fact that devaluation is not successful in the short run in a small economy as the imports price elasticity was come out the inelastic. Though, in the long run LMR conditions somewhat fulfills and results would be near to one after adding up the elasticities. These results are based on co integration VECM model applied on the annual data series from 1970 to 2000.

Moreover, structure of exports and imports also does matter in determining the effect of currency valuation on balance of payments. As chiefly emphasized by Singer and Prebisch (1949) that not only the elasticities but the composition of exports and imports, if the exports consist primary products and imports demand manufacturing products, it will surely deteriorate the balance of payments under the devaluation condition. More densely, it can be explained in terms of domestic economic condition of the country. If in case, the external price instability is translated into internal price instability so the cost-price structure of devaluing country is not in situation to support the desired effect of devaluation. Last but not the least, other countries must be prepared to cooperate with the devaluation of reporting country and not to think for imposing import duties, otherwise the effect of devaluation tend to vanish. One more important thing is that, if partner countries also adopt the same devaluation concurrently, the devaluation would not function because of retaliation.

On the whole, undervalued exchange rate has two effects on the trade flows – the price effect and the volume effect. The former implies that undervalued currency will cause imports to be more expensive and exports to seem cheaper in the short term. The balance of trade may deteriorate in the short run due to the time required for the exports and imports to adjust to the new exchange rate. Once the economy set off with new system, volume of trade begins to respond to the undervalued currency, the so-called “volume effect” of undervalued currency will reverse the trade balance movement and eventually improve it. In simple words, the domination of the volume effect over the price effect in the long run is known as Marshall-Lerner Condition (Jamilov, 2011).
Against the backdrop, one view is regarding elasticity pessimism (Krugman, 2016). There are two approaches that motivated the lobby of elasticity pessimistic: first one talks about that, many researchers over the period found that these price elasticity is not working in softening the trade deficit issue. Indications of this approach had firstly been seen during World War II, due to shortage of dollar, devaluation of currency had not worked in promoting the exports and fixing the imports. However, since it has been observed that trade flows barely respond to the price signal due to the global value chain system. Second mirrors the distinction between temporary and permanent changes in exchange rate. If the change is temporary in nature and will come back to the equilibrium level, so the importer, due to small price effect will adjust the cost compliances and physical quantity of trade will remain unaltered. However, small change in exchange rate price may lead to more exports – quantum effect.

Research methodology

This particular study is totally based on secondary data sources. For accomplishing the above noted research objectives, required nation wise dataset of Indian GDP; Foreign countries GDP; PPP (Purchasing Power Parity) Value; and Official Exchange Rate has been availed from World Bank Data Group.

Moreover, dataset related to four major classifications of exports and imports according to HS Standard Product Groups namely Raw Material; Intermediate Goods; Consumer Goods; Capital Goods; Revealed Comparative Advantage Index have been accessed from WITS (World Integrated Trade Solution). The detailed description of the products under each group is available at WITS Reference Menu https://wits.worldbank.org/referencedata.html.

For assessing the impact of rupee valuation(calculated with the help of given formula) over trade flows, double log Ordinary Least Square Regression Model is employed to measure the price elasticity and income elasticity, so that Marshall-Lerner Condition would further be estimated. This model is applied for detecting autocorrelation and heteroscedasticity. After finding autocorrelation, Prais–Winsten and Cochrane–Orcutt Transformation model is applied for removing the methodological fallacy. Moreover in case of heteroscedasticity, Newey-West Standard Error model is employed using Stata 11 statistical software
The mathematical model is written below:

\[ \ln Y_t = \beta_0 + \beta_1 \ln(\text{Degree of Rupee Undervaluation})_t + \beta_2 \ln(\text{GDP})_t + \beta_3 \ln(\text{GDP})_t + \mu_t \]

Where \( Y_t \) is time series of dependent variable. In this research work, all sorts of exports and imports for all bilateral relationship have been taken as dependent variable in which Gr denotes gross; RM denotes Raw Material Goods; IG represents Intermediate Goods; CG signifies Consumer Goods and CT indicates Capital Goods, while Ex is abbreviation of exports and Im of Imports.

Therefore the documented degree of rupee undervaluation is computed by using the following formulae

\[ \text{Degree of Rupee Undervaluation} = \frac{\text{ER}_{it} - \text{PPP}_{it}}{\text{ER}_{it}} \times 100 \]

It signifies the distance of rupee exchange rate from its PPP value. It can be seen that, calculated degree of rupee valuation is already showing percentage change. In the regression, it is regressed with logarithmic form, hence once per cent change after applying log would signify the change from 10 to 10.01 and 10.1 will be considered as 10 per cent change.

\[ \beta_1 = \frac{\Delta \log_e X}{\Delta \log_e \text{ rupee undervaluation}} \text{ or } \frac{\Delta \log_e M}{\Delta \log_e \text{ rupee undervaluation}} \]

measures the undervalued rupee elasticity of imports and exports. In case of exports, it is expected to be positive, while in case of imports a negative sign is expected, underpinning the theoretical predictions.

\[ \beta_2 = \frac{\Delta \log_e M}{\Delta \log_e \text{ GDP}_d} \]

shows the income elasticity of Indian imports

\[ \frac{\Delta \log_e X}{\Delta \log_e \text{ GDP}_w} \]

shows the world income elasticity of Indian exports.

\( \ln \text{ GDP}_d \) is reflecting the GDP of domestic economy in the case of all sorts of imports, which represents the income (purchasing capacity) of the economy, whereas \( \text{GDP}_w \) is the GDP of world economy reflects the income of world. In case of exports, world income is taken into consideration, while with imports, Indian GDP is taken as income of the country.

Lastly, the Marshall–Lerner condition is tested to assess the net impact of rupee undervaluation on trade balance, whether it averts
the trade deficit or widens the problem of trade deficit. Theoretically, M-L Condition is the condition that an exchange rate devaluation or depreciation will only cause a balance of trade improvement if the absolute sum of the long-term export and import demand elasticities is greater than unity. It is expected that it hurts the imports and supports the exports of a country whose currency is undervalued or depreciated.

Trade Balance is denominated as

\[ \text{Net Exports (N_x)} = X - Q_e \]

Where, X denotes exports, and Q imports. Subscript e is the price of one unit of foreign currency in terms of domestic currency. This can be expressed as

\[ \frac{\partial N_x}{\partial x} = \eta_x - \eta_q - 1 \]

Where \( h_x \) & \( h_q \) are the elasticity of exports and imports with respect to the exchange rate respectively.

If the fall in relative value of exchange rate \( e \) increases the net exports, so the left hand side equation must be positive. Therefore

\[ \eta_x - \eta_q - 1 > 0 \]

Which can be written as:

\[ \eta_x - \eta_q > 1 \]

\[ \eta_x - |\eta_q| > 1 \]

If this total sum exceed unity, then and then only rupee undervaluation said to be beneficial for the Indian economy.

**Indian trade**

Referring to India’s major export basket which comprises Stone and Glass; Fuels; Textile & Clothing; Chemical and Pharmaceutical products and Metals. This is a really win-win situation that India is being increasingly involved in export with the rising economic activity. In the effect of it, trade openness of the country would also be progressively enhanced.
After World War II, all the countries across the world exerted for maintaining the peaceful environment throughout the globe and unanimously voted for no more war. Ironically, it would always be asserted that now the next III World War will be fought over water, meaning to say for natural resources. Whether it would happen or remain in the documents, is off the beneath path question, but yes, if we see the current scenario of global economy, it could be predicted that III World War might be fought over natural resources but not for water; for oil.

Indian imports basket comprises mechanical and electrical instruments, as India is characterized as a developing and emerging nation and hence, these sorts of instrument pressingly requires to get further development within economy. It also includes pharmaceuticals and metals of 18.4 billion dollar and 15.5 billion dollar respectively.

All in all, India’s major trading product basket includes same products, meaning that India cardinally exchanges same products with rest of the world. This itself breaks the classical and modern axioms of International economics stating that trade between two countries takes place wherein either both the countries avail absolute/ comparative advantage at least in producing one of the products over another or they export according to their abundance of resources.

**India’s trade trend during 2000-16**

Trade openness of a country measures degree of commercialization of an economy, that towards extent the exports and imports contribute in total GDP of the country. Bigger the value, greater the involvement in the diversified trade activities. India has endlessly been appraised over the matter of trade share in world trade, by the lobby of economists that this ratio should be larger than what it is in present according to its economic and geographic characteristics. Concerning the same, India’s exports and imports with the rest of the world is drawn in the graph 1, as is visible that Indian exports and imports were almost the same during 2000 to 2003, thereafter the imports have rapidly been growing and surpassed the exports extensively throughout the period during 2004 to 2016.

That is to say, India has permanently been experiencing trade deficit, as Indian exports have moderately been growing with the pace
of 18 per cent per annum, while the Indian imports have sharply been rising by more than the pace than exports i.e. of 22 per cent per annum. Mathematically, trade deficit is widening by 4 per cent per annum. Due to the twin effect of global financial crisis 2008-09 and global weaken demand of 2011 onwards, the trade flows of both exports and imports have narrowed.

**Indian exports and exchange rate valuation**

Concerning the same, dense analysis is employed to know the impact of degree of undervaluation over exports. Table in appendix (1) displays the income and price elasticities obtained through OLS regression; in which all sorts of exports including gross exports are taken as dependent variable and regressed over the set of independent variables which includes degree of undervaluation and Indian GDP. It can be evidently seen in table 5.5 that all the models are a good fit as the power of determination is ranging from 96 per cent to 98 per cent and also free from the problems of autocorrelation and heteroscedasticity since the all calculated values for detecting autocorrelation and heteroscedasticity are lesser than critical chi square values at respective degrees of freedom confirming the acceptance of null hypothesis inferring that Models are homoscedastic and not having serial correlation.
### Table-1. Indian exports regression results

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Ln Degree of Undervaluation</th>
<th>Ln GDP_World</th>
<th>Ln GDP_ India</th>
<th>C</th>
<th>R-squared</th>
<th>Pro布(P-statistic)</th>
<th>Durbin-Watson stat</th>
<th>Autocorrelation Test</th>
<th>Heteroscedasticity Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(-5.60)*</td>
<td>3.78*</td>
<td>(-.93)</td>
<td>(-77.3)*</td>
<td>0.98</td>
<td>0</td>
<td>1.62</td>
<td>0.22</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>(-6.5)*</td>
<td>5.7**</td>
<td>0.006</td>
<td>(-111.7)**</td>
<td>0.96</td>
<td>0</td>
<td>1.34</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td></td>
<td>(-4.9)*</td>
<td>3.2**</td>
<td>(-2.38)**</td>
<td>(-63.4)**</td>
<td>0.98</td>
<td>0</td>
<td>1.7</td>
<td>0.03</td>
<td>1.61</td>
</tr>
<tr>
<td></td>
<td>(-5.4)*</td>
<td>4.15*</td>
<td>(-90.6)*</td>
<td>(-90.6)**</td>
<td>0.97</td>
<td>0</td>
<td>1.54</td>
<td>0.35</td>
<td>4.25</td>
</tr>
<tr>
<td></td>
<td>(-6.33)*</td>
<td>10.47*</td>
<td>(-221.5)**</td>
<td>(-221.5)**</td>
<td>0.96</td>
<td>0</td>
<td>1.7</td>
<td>0.27</td>
<td>0.31</td>
</tr>
</tbody>
</table>

* H0 : No Serial Correlation
#H0 : Constant Variance/ Homoscedasticity

**: *** significant at 1 %, 5 %,10% level of significance respectively.

**Author’s Calculation**

The world income elasticity values of Indian exports are coming up positive showing that demand of Indian products increases with growing World income. The highly demanded Indian product across the world is capital goods, as increase in one per cent world income leads 10.5 per cent more demand of Indian capital exports. Moreover, the world income elasticity of intermediate goods is 3.2 per cent; 4.2
per cent of consumer goods and 5.7 per cent for raw material goods that signifies that all the exporting products of India highly are demanded throughout the globe, among these Indian raw materials are second highly demanded as the value is around six per cent. In total, gross Indian exports are increased by 3.8 per cent as the world income goes up by one per cent.

Simultaneously, growing Indian GDP checks the exports of raw material and capital goods by one per cent and 2.3 per cent respectively implying that with the growing GDP, investment activities also takes boost in effect of Keynesian multiplier. These investments are tried to make in the sectors which are not perfectly competitive as per the market ambience and in the process to grow viz. industrial and manufacturing activities, which requires raw materials and capital. Referring to undervalued elasticity of Indian exports, all the values of rupee undervalued elasticity are found negative denoting that increasing one per cent degree of undervaluation leads reduction in exports. Firstly, the misaligned rupee against USD reduces the highly demanded Indian capital goods' exports by 6.3 per cent significantly; secondly, it hurts raw material goods exports by 6.5 per cent. Thirdly, it hits India's leading exports product i.e. consumer good exports by 5.5 per cent and lessen the Intermediate goods exports by around 5 per cent. All in all, the increasing degree of undervaluation lowers the total exports by 5.6 per cent which is really a bothersome issue for developing nation like India. Notionally, devalued currency supports the exports and hinders the imports, while results of this research work contradicting the theoretical expectation signifying that continuous currency volatility causes risk and uncertainty which hinders the exports.

Indian imports and exchange rate valuation

Pertaining the same issue of income and price elasticity, analysis have been made with the Indian imports tabulated in table (appendix table 2). The coefficient values of Indian income elasticity of Indian imports simply income elasticity are positive and greater than one showing that Indian imports are highly income elastic, as the GDP rises by one per cent the capacity to buy imports obviously enhanced and thereby the demand for all sorts of imports increases by 1.5 per cent. As it can be noticed that, the intercept term of two regression models namely raw material imports and intermediate goods imports is found significant positively. That is to say, without having income enhancement, India needs raw materials and intermediate goods for surviving the economy. This is the front most issue of India’s widening trade deficit.
## Table-2. Indian imports regression results

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>L Gross Im</th>
<th>L RM Im</th>
<th>L IG Im</th>
<th>L CG Im</th>
<th>L CT Im</th>
</tr>
</thead>
<tbody>
<tr>
<td>L Degree of Undervaluation</td>
<td>(-8.14)*</td>
<td>(-8.52)*</td>
<td>(-8.66)*</td>
<td>(-7.02)*</td>
<td>(-7.14)*</td>
</tr>
<tr>
<td>L GDP_ India</td>
<td>1.43*</td>
<td>1.2*</td>
<td>1.5*</td>
<td>1.52*</td>
<td>1.54*</td>
</tr>
<tr>
<td>C</td>
<td>19.69***</td>
<td>13.32***</td>
<td>4.32</td>
<td>4.83</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.97</td>
<td>0.94</td>
<td>0.98</td>
<td>0.95</td>
<td>0.93</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.37</td>
<td>1.39</td>
<td>1.52</td>
<td>1.08</td>
<td>0.7</td>
</tr>
<tr>
<td>Autocorrelation Test</td>
<td>Breusch-Godfrey</td>
<td>1.14</td>
<td>1.01</td>
<td>0.12</td>
<td>3.49</td>
</tr>
<tr>
<td>LM Test*</td>
<td>degree of freedom</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Durbin’s alternative*</td>
<td>0.93</td>
<td>1.22</td>
<td>0.09</td>
<td>3.37</td>
<td>3.4</td>
</tr>
<tr>
<td>degree of freedom</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Autocorrelation Detection</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Heteroscedasticity Test</td>
<td>Breusch-Pegan#</td>
<td>0.54</td>
<td>3.9</td>
<td>0.22</td>
<td>0.18</td>
</tr>
<tr>
<td>degree of freedom</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>White Test#</td>
<td>5.35</td>
<td>9.89</td>
<td>6.28</td>
<td>6.97</td>
<td>3.82</td>
</tr>
<tr>
<td>degree of freedom</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Heteroscedasticity Detection</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**degree of freedom for Chi-square distribution**

* H0 : No Serial Correlation

# H0 : Constant Variance/ Homoscedasticity

*; **; *** significant at 1 %, 5 %, 10% level of significance respectively.

*Author’s Calculation*

Coming to the rupee undervaluation elasticity, all the values are coming out to be negative. As is observed that, the degree of rupee undervaluation hurts raw materials and intermediate goods’ imports by 8.5 per cent clarifying that as the rupee undervalued by one per cent against spot USD leads 8.5 per cents reduction in these two sorts of imports, which is necessary for India as mention in above paragraph. Whilst, it hits the consumer and capital goods imports by 7 per cent.

**India’s trade elasticity**

Though, the undervaluation of the rupee is dampening the both trade flows as the elasticity values are found negative. However, income elasticity is all over found positive. Now for assessing the total effect of undervaluation and growing income over trade, Marshall-Lerner condition and gross effect of price and income elasticity values are totalled in table 3.
Table 3. India’s trade elasticity with rest of the world

<table>
<thead>
<tr>
<th>Elasticity</th>
<th>Gross</th>
<th>RM</th>
<th>IG</th>
<th>CG</th>
<th>CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Elasticity ($e_x$)</td>
<td>(-5.60)*</td>
<td>(-6.5)*</td>
<td>(-4.9)*</td>
<td>(-5.4)*</td>
<td>(-6.33)*</td>
</tr>
<tr>
<td>Income Elasticity ($e_{wi}$)</td>
<td>3.78*</td>
<td>5.7**</td>
<td>3.2**</td>
<td>4.15*</td>
<td>10.47*</td>
</tr>
<tr>
<td>$e_x + e_{wi}$</td>
<td>-0.8</td>
<td>-1.7</td>
<td>-1.25</td>
<td>4.14</td>
<td></td>
</tr>
</tbody>
</table>

Import’s Elasticity

<table>
<thead>
<tr>
<th>Elasticity</th>
<th>Gross</th>
<th>RM</th>
<th>IG</th>
<th>CG</th>
<th>CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Elasticity ($e_m$)</td>
<td>(-8.14)*</td>
<td>(-8.52)*</td>
<td>(-8.66)*</td>
<td>(-7.02)*</td>
<td>(-7.14)*</td>
</tr>
<tr>
<td>Income Elasticity ($e_{di}$)</td>
<td>1.43*</td>
<td>1.2*</td>
<td>1.5*</td>
<td>1.52*</td>
<td>1.54*</td>
</tr>
<tr>
<td>$e_x + e_{di}$</td>
<td>-7.32</td>
<td>-7.16</td>
<td>-5.5</td>
<td>-5.6</td>
<td></td>
</tr>
</tbody>
</table>

Marshall Lerner Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Gross</th>
<th>RM</th>
<th>IG</th>
<th>CG</th>
<th>CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$e_x +</td>
<td>e_m</td>
<td>$</td>
<td>2.54</td>
<td>2.02</td>
<td>3.76</td>
</tr>
</tbody>
</table>

M-L Condition

| Condition | Yes | Yes | Yes | Yes | No |

*; **; *** significant at 1 %, 5 %, 10% level of significance respectively.

$e_{wi}$ is the world income elasticity of Indian exports
$e_{di}$ is the Indian income elasticity of Indian imports

Author’s Calculation

It has been theorized that GDP of the countries has been mounting with the passage of time; hence purchasing power of the countries in the world is increasing. Simultaneously, Indian rupee has been undervaluing against major currencies signal that real purchasing power of the currency is relatively devaluing. In order to know which elasticity affects the most and overweighted to other one. Gross elasticity of price and income for exports and imports has been added up. Gross elasticity of exports is all along negative except capital goods exports denoting that undervaluation effect overweight the income effect in case of Indian exports. However, demand of Indian capital goods is so high that undervaluation would not be able to cross the line, though diminishing the demand by 6 per cent due to cost push inflation. In case of Indian imports, undervaluation elasticity is again found compelling and checks the imports significantly, yet demand from outer world adjust the import level somewhat at moderate level. Though, the value of gross effects regarding curtail imports ranges from 5.5 to 7.5.

As far as Marshall Lerner condition is concerned, all the values are coming out more than unity inferring that ML condition hold true in case of Indian trade during 2000 to 2016. That implies trade deficit of country is improving, but on the cost of reducing trade share.
Conclusion

On a whole, it can be concluded that India mainly imports fuels from the outer world, whilst exchanging same basket of vivid products. India supremely leads in exports of textiles and clothing. Indian exports and imports, both trade flows have continually been increasing with the passage of time, however the rate of imports are much higher than export rate. In the wake of it, trade deficit has been widening progressively. On the other hand, Indian exports were not demanded by the rest of the world due to global tardy demand, thus showing a steep downfall during 2014-16. Income elasticity of both the trade flows is found highly elastic positively. Moreover, the rupee undervaluation elasticity of exports as well as imports are coming out to be negative with bigger magnitude showing rupee undervaluation is not fruitful for Indian economy. It has also been found that increasing undervaluation degree is lowering the Indian exports especially, capital goods and raw material exports- the sectors where India need to grow in world market since Indian revealed comparative advantage is low in both the areas comparatively. Therefore, this research article hereby draws the attention of international economic bodies towards the issue of currency valuation which causes the dramatically negative effects on developing nations trade which could be worsen the economic growth of the developing economies. This paper thus suggests to policy practitioner that there should be framework or ceiling limits within which currencies could fluctuate (depreciate or appreciate), so that investments and other macro-economic parameters of emerging markets especially developing nations do not affect adversely.

REFERENCES


Singer_The_Terms_of_Trade_Fifty_Years_Later__Convergence_and_Divergence.pdf