CHAPTER-VIII

TERMS OF TRADE:

GROWTH AND INSTABILITY

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8.1 INTRODUCTION

It is long held views that export diversification, export growth, and volatility in terms of trade has a major impact on economic growth. It continues to remain a major economic issue for developing countries. In fact economic development as a distinct discipline developed with the debate regarding trade / specialization, and terms of trade / distribution of gains between commodity exporters and industrial countries.

Of the various issues, the fluctuations in the terms of trade still remain a source of perennial concern for policymakers in developing countries and industrialized nations alike.[133] This is because the sharp movements in the terms of trade (TOT) can lead to sudden changes in current account of a country's balance of payments leading to the possibility of a large external debt. In the same way within the country, sharp movements in the terms of trade can also cause sudden sectoral imbalances with export and import-competing sectors experiencing pressure of different kinds on sectoral output and wages.

Since the time of Adam Smith, the classical economist claimed that TOT of the primary goods exporting countries would improve over time. It was in the fifties that Prebish (1950) and Singer (1950) who first challenged this argument by saying that TOT of developing countries are bound to deteriorate progressively so long as the present international arrangements prevail. Beginning with this controversy, the concept of TOT has been subject to careful analysis and many new meanings have been added to its original meaning (Chisti and Bhattacharya, 1976).

Prebisch (1950) and Singer (1950) developed their hypothesis at a time when primary products dominated the exports structure of developing countries.[134] They

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[133] Terms of trade, which refers to the price of the country's exports relative to the price of its imports, is extremely volatile, terms-of-trade fluctuations are twice as large in developing countries in comparison to Developed countries. This conclusion is based on the study conducted by Baxter and Kouparitsas, (2000).

[134] See, P.Athukorala, (1990).

asserted that in view of lack of adequate data to calculate the TOT between the developing countries, which they called periphery and the industrial countries, which they termed center, the TOT between primary products and manufactured, can be used as a proxy on the ground that export structure of developing countries is predominantly agricultural.[135]

One of the first study to test this hypotheses of Prebisch and Singer was conducted by Kindelberger in the fifties. He found no conclusive evidence of deterioration in the terms of trade of primary products vis-à-vis manufactures. Nevertheless, he found some evidence of a decline in the terms of trade of the "underdeveloped" countries amongst the periphery as compared to the rest of the industrialized countries. (Kindelberger, 1956 & 1958)

Furthermore, with regards to instability in terms of trade, Hans Singer (1950) in his article proposed that the fluctuation in the terms of trade dramatically affects the funds available to underdeveloped countries for capital formation, and hence their growth is also affected. He noted that changes n the volume and value of foreign trade tends to be important for underdeveloped countries because their surplus income is often entirely dependent on export revenues. From this, it follows that investment also depends on export revenues. However, Singer could not establish the relationship between volatility and growth, may be due to data constraint. Consequently his study focused on secular trends in the terms of trade rather than instability in terms of trade.

But since 1960s there has, been a continuous and considerable shift in the exports structure of developing countries away from primary commodities and towards manufactured goods.[136] In this context, it is pertinent here to pose the question whether this emerging trade pattern has allowed developing countries to escape unequal exchange relations with the developed countries and is the terms of trade still adverse for developing countries.

Over the years, numbers of studies have been conducted addressing the issues of instability in terms of trade. These studies have combined business cycle theory,

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[135] See, Prabirjit Sarkar and H.W.Singer, (1991).
[136] See, P.Athukorala, (1993).

growth theory with the data on macroeconomic volatility to establish a relationship between volatility and growth.

One of the well-known study was conducted by Spraos (1980). He reviewed earlier literature and focused on the difficulties and complexities encountered by these works. From his own analysis, he concluded that the evidence available about the Prebisch-Singer hypothesis is inconclusive. However, Sapsford (1985), using the same data but a different specification of the relationship between the terms of trade and time, discovered a significant downward trend, and thus provided a support for the Prebisch-Singer hypothesis.

To resolve this debate about the terms of trade, Singer (1987) himself conducted another study in the eighties. He came up with the proposition that despite the shift in the commodity composition of exports, the net barter terms of trade of developing countries continues to deteriorate. Because "the type of manufactures exported by these countries in relation to the types of manufactures exported by Industrial countries share some of the disadvantages pointed earlier by Prebish-Singer for primary commodities in relation to manufactures."[137]

Sarkar and Singer (1991) attempted to test this new hypothesis by examining the behaviour of net barter terms of trade for total manufactured exports from developing countries during 1970-87 and manufactured exports from 29 individual developing countries during 1965-85. From their study, they concluded that aggregate and country – level results support the hypothesis put forward by Singer.

As oppose to the above view, P.Athukorala (1993) concluded that the terms of trade for manufactured exports from developing countries has been basically trend less. It appears that through the expansion of manufactured good exports, developing countries as a group have been able to achieve significant gains in import purchasing power without generating any significant adverse impact on their NBTT.

Further, Ramey, Garey and Valerie Ramey (1995) in their study examined the cross-country evidence between macroeconomic volatility and growth using data from 92 developing and developed economies for period between 1962 and 1985. The

[137] See, Singer, (1987).

authors found that volatility and government spending fluctuations are significantly related, and that countries with higher macroeconomic volatility have lower mean growth. A number of studies have investigated the specific relationship between terms of trade volatility and development, relying primarily on African experience.

Deaton, A. and Miller, R.I (1996) from their study concluded that a secular improvement in the terms of trade leads to higher levels of investment, and hence a long- run economic growth. Whereas, while higher volatility in terms of trade reduces the investment and hence growth, because of aversion to risk.

Mendoza, Enriquez (1997). He proposed a stochastic growth model whereby terms of trade uncertainty can adversely affect savings and growth. He found that a planned consumption growth is an increasing function of terms of trade growth. This is because of the impact of planned consumption on the lifetime income.[138] But planned consumption is a decreasing function of terms of trade volatility. Volatility in terms of trade makes people to save more as a hedge against risk.

He formalizes the intuition that terms of trade volatility should discourage saving by assuming that households consume imported goods and save in order to be able to consume in the future. This implies that fluctuations in the terms of trade translate directly into fluctuations in the returns to saving. Further he states that a rising trend in the terms of trade also has the expected stimulating effect on investment and growth while a negative movement has the opposite effect. In a sample of 40 industrial and developing countries for 1970–1991, Mendoza confirms the predicted positive relationship between terms of trade trends and growth, and the negative relationship between terms of trade volatility and growth.

Similarly, Kose Ayhan and Raymond Riezman (2001) examined the role of fluctuations in import and export prices in explaining macroeconomic fluctuations in 22 non-oil exporting African countries for a period between 1970-1990. Constructing a multi-sector model of a small open economy, and fitting African data to this model, they found that fluctuations in the prices of these tradable account for roughly half of the fluctuations in aggregate output. Moreover, they found that adverse shocks induce a significant decrease in aggregate investment.

[138] See, Mendoza, Enriquez (1997).

Bleaney Michael and David Greenway (2001) obtained a similar finding for a sample of 14 sub-Saharan African countries. They found that growth and investment increases when the terms of trade improve and vice versa.

But the above studies relied on the data collected from those developing countries where a large part of investment often comes from abroad, not domestically. Further, very few studies have been conducted with India as a sample. It is this lacuna that the present chapter makes an attempt to fill.

Thus, the issue regarding the trends and instability of net barter terms of trade has been attempted with India as a sample country. As already seen in the previous chapter India has experienced a structural change in her exports from primary commodities to manufactured commodities over a period of time. In this context, therefore, an effort has been made to examine the movement and trends of NBTT of India for a period between 1980-81 to 2006-07 which corresponds to pre and post reform period. The rest of chapter is divided in to five sections. In section two definition and concept is explained. Section three describes methodology and source of data. Section four presents the results and finally in section five the conclusions are drawn.

8.2 DEFINITION AND CONCEPT

Originally, the concept of terms of trade was introduced by J.S.Mill for measuring the gains from international trade between different countries. He had used the concept of barter terms of trade as a quantitative relation between two commodities traded between two countries. In the latter discussion of gains from international trade, a multiplicity of concepts viz. net, gross and double factoral terms of trade have been used (Diakosavvas and Scandizzo, 1991).

The terms of trade measures the relative change in export and import prices. It is defined as percentage ratio of the export unit value index to the import unit value index.

The net TOT will be favourable or unfavorable in a given year depending upon whether the unit value index of exports is higher or lower than the unit value index of imports, each index being considered in relation to one base year. When the

unit value index of exports in a given year is higher than the unit value index of imports it means the country gets more goods from abroad for the same quantity of foreign exchange earned through exports and vice versa.

Even though the concept is most widely used, it is still not free from ambiguity, for a number of reasons (Mathur, 1973). First, it fails to taken into account changes in export productivity and in the volume of exports. This means it is possible to have opposite movement in net TOT and other concepts like factoral TOT. For example, if the price of exports in terms of imports falls by a smaller percentage than the percentage increase in the country's productivity, the country is clearly better off as it obtains a greater quantity of imports per unit of factors embodied in its exports. Second, the net TOT may deteriorate even if there is economic growth in the economy. This means that even if economic development causes deterioration in the net TOT, the loss from the adverse TOT is more than offset by the gains from growth in output. Third, the accuracy with which the net TOT can be measured is also subject to the error of understatement or over-statement resulting from under-invoicing of exports or over-invoicing of imports.

Further, since net TOT does not take into account the influence of changes in trade volumes. The net TOT, therefore, can not completely indicate the impact of changing market conditions on the trade balance of a country. This limitation is overcome by the second concept *viz.* 'the income terms of trade' (ITT). ITT is defined as the net TOT multiplied by export volume. An alternative interpretation is that the ITT measures the purchasing power of exports in terms of importable goods and services. Despite these drawbacks, the concept of net TOT dominates the literature (Prebisch, 1950).

8.3 METHODOLOGY

To find out the trends and instability in the terms of trade two methods: semi-log model and Coppock's instability index are used.[139] For this, the commodity groups have been classified as follows:[140]

I. Food and Food Articles

[139] The methodology has been explained in the introductory chapter.

[140] This classification is as per the *Hand Book of Statistics on Indian Economy* (RBI)

II. Beverages and Tobacco

III. Crude Materials, Inedible except Fuels

IV. Mineral Fuels, Lubricants and Related Materials

V. Animal and Vegetable Oils and Fats

VI. Chemicals

VII. Manufactured Goods, Classified Chiefly by Material

VIII. Machinery and Transport Equipment

IX. Miscellaneous Manufactured Articles

X. General index

8.4 ANALYSIS

The analysis is divided in to three parts. In part one growth is examined. In part two, instability is analysed and finally relationship between the growth and instability is dealt with.

8.4. a. Growth:

Table 8.1shows that general index (G.I) of terms of trade achieved a statistically significant growth of 1.12% during the study period. This is mainly due to the positive and significant growth in the TOT of commodity group such as Crude materials, inedible except fuels (2.17%), Mineral fuels, lubricants and related materials (1.90%), Machinery and transport equipment (1.60%) and Miscellaneous manufactured articles (4.14%).

During post-reform period, TOT growth deteriorated from 3.27% in pre-reform period to negative -0.51% during post-reform period. This is mainly due to the decline in the terms of trade of commodity group such as Food and food articles (0.09%), Mineral fuels, lubricants and related materials (-1.68%), Animal and vegetable oils and fats (1.80%), Chemicals (-2.20%), Manufactured goods (-0.22%) and Miscellaneous manufactured articles (-0.03%).

Although other commodity group such as Beverages and tobacco, Crude materials, inedible except fuels and Machinery and transport equipment have shown improvement in their terms of trade. Similar trend of deterioration in the general index (G.I) is witnessed when the analysis is conducted for the post-adjustment period. The growth rate of G.I of terms of trade declined from 4.70% in adjustment period to -0.84% during post-adjustment period. This is mainly due to decline in the growth rate of commodity group such as Mineral fuels, lubricants and related materials (-5.30%), Chemicals (-3.38%) and Miscellaneous manufactured articles (-11.70%).[141]

The overall analysis of growth indicates deterioration in the terms of trade during both post-reform and post-adjustment period. This deterioration in the terms of trade is due to the higher growth registered by the imports unit value index as compare to exports unit value index. This shows that reforms have not improved the deteriorating trend of India's terms of trade. Although there are certain commodity group that have indicated an improvement such as Crude materials, inedible except fuels, Beverages & tobacco, and Machinery and transport equipment.

8.4. b. Instability:

Table 8.2 shows that the instability index of G.I (TOT) during the study period was 10.90. This is due to the high instability in the imports unit value index (i.e. 10.48), rather than the exports unit value index (i.e.7.02).[142]Among the commodity groups it is, Miscellaneous manufactured articles that have recorded the highest instability index of 42.20 during the study period.[143]

During the reform period the TOT instability has declined from 11.70 in pre-reform period to 10.40 during post-reform period. This is mainly due to the lower instability registered by commodity group such as Beverages &

[141] This decline is due to fall in the growth of exports unit value of Coal, Articles of apparel & clothing accessories and Footwear.
[142] See, Appendix Table A.28 and A.29.
[143] This is due to higher instability recorded by imports unit value index (33.99) as compared to exports unit value index (17.46).

tobacco, Mineral fuels, lubricants and related materials and Chemicals.[144] However, during post-adjustment period the instability of TOT has gone up from 8.60 in adjustment period to 10.90 during post-adjustment period. This is mainly due to commodity group such as Animal and vegetable oils and fats and Miscellaneous manufactured articles.[145] In case of commodity group Animal and vegetable oils and fats both exports unit value index and imports unit value index have shown higher instability during post-adjustment period as compared to adjustment period. While in case of Miscellaneous manufactured articles it is the exports unit value index that indicated the rising trend rather than the imports unit value index.

Although some commodity groups such as Food and food articles, Chemicals and Manufactured goods have shown lower instability during post-adjustment period, mainly due to lower instability trend shown by both exports and imports unit value index.[146]

The overall analysis of instability shows higher instability during the post-adjustment period as indicated by G.I of terms of trade. This is due to higher instability index registered by of Animal and vegetable oils and fats and Miscellaneous manufactured articles. At the sometime, it is the instability in the imports unit value index that is responsible for the higher instability rather than the exports unit value index.[147]

8.4. c. Growth and Instability:

As argued earlier that growth and instability cannot be viewed in isolation. There is a need to have a relationship between the two. Among the

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[144] This is due to lower imports unit value index instability of commodities such as Beverages, Petroleum crude, Petroleum products, Medicinal & pharmaceutical products, Fertilisers, manufactured and Artificial resins & plastic material & cellulose ester.

[145] Here the instability of imports unit value index of Professional scientific & controlling instruments & apparatus increased from 13.17 in adjustment period to 71.84 during post-adjustment period.

[146] This includes commodity such as Fish & fish preparations, Cereals, Coffee, Textile yarn, Textile fibres, where exports unit value index has shown more stability. Similarly, imports unit value index of Dairy products, Cereals, Inorganic chemicals, Medicinal products, Iron & steel, Aluminium and Lead have shown more stability.

[147] See, Appendix Tables A.28 and A.29.

various possibilities, it is the possibility of higher growth of terms of trade with lower instability of terms of trade that is more favorable for an country.

Table 8.3 shows that the lower and negative growth of TOT is associated with the lower instability during post-adjustment period as compared to pre-reform period. Among the commodity group, Beverages and tobacco have indicated the favorable possibility by registering higher growth of TOT along with lower instability during post-reform period as compared to pre-reform period. Further, during post-adjustment period the trend has changed since negative growth of TOT is associated with the higher instability index. However, commodity group Beverages and tobacco, Crude Materials, inedible except Fuels and Machinery and transport equipments exhibited the favorable possibility. The growth and instability relationship for different commodity group in the post-adjustment period has been summarised below:

Commodity Group	Possibilities	Situation
I. Food and food articles, IV. Mineral fuels, lubricants and related materials, VI. Chemicals, VII. Manufactured goods.	First	Unfavorable
IX. Miscellaneous manufactured articles, G.I. General index.	Second	Unfavorable
V. Animal and vegetable oils and fats	Third	Unfavorable
II. Beverages and tobacco, III. Crude materials, inedible except fuels, VIII. Machinery and transport equipment.	Fourth	Favorable

Source: Compiled from Table 6.1, 6.2, 6.3, 6.4, 6.5 and 6.6.

8.5 CONCLUSION

As per the analysis under taken here, the following are the conclusions:

1. During the study period, terms of trade grew at a significant rate of 1.12%. This is due to the improvement in the terms of trade of commodity group Miscellaneous manufactured articles as well as due to higher growth of export unit value index (8.20%) as compared to import unit value index (7.12%).

2. However, during post-reform and post-adjustment period terms of trade registered a negative growth. This is mainly due to the higher growth of import unit value index as compared to export unit value index. This shows that terms of trade deteriorated due to the rising trend of imports unit value index.

3. During the study period the highest instability is registered by Miscellaneous manufactured articles (IX). This shows that the commodity group that has registered the highest growth (4.14%) has also recorded the highest instability (42.20). This is due to higher instability of imports unit value index as compared to export unit value index.

4. During post-reform period, the terms of trade instability has declined. But in the post-adjustment period instability has gone up because of rising trend in the instability of imports unit value index (9.60) as compared to exports unit value index (5.84). This shows that TOT became instable during post-reform period due to import unit value index.

5. Lastly, the TOT of commodity group Beverages and tobacco (II), Crude materials, inedible except fuels (III) and Machinery and transport equipment (VIII) have shown the best possibility of higher growth and lower instability during post-reform period. This higher growth is due to the higher growth and rising trend of exports unit value index as compared to imports unit value index on the other hand lower instability is due to the lower and falling trend in the instability of import value index. However, the overall analysis shows a deterioration in the terms of trade not only this it is also associated with the higher instability.

The external sectors reform was undertaken in India with the objective of bringing improvement and stability in terms of trade. But from the results it can be said that the reforms have failed to bring an improvement and also failed to provide stability in India's terms of trade. It has been observed that high instability is the result of instability in the import value index rather than the instability in the export value index. Similarly, the deterioration is due to

the higher growth of import unit value index than the exports unit value index. From this, it can be said that India needs to adopt such a policy with its trading partners who leads to a stabilization of import prices. So as to make the terms of trade favourable to India. For this, agreements, fixation of the quotas etc within the ambit of WTO may be required.

TABLE 8.1

TERMS OF TRADE: GROWTH RATE

	Commodity Group	1980-81 to 1990-91	1991-92 to 2006-07			1980-81 to 2006-07
			1991-92 to 1995-96	1996-97 to 2006-07	Overall	
I.	Food & food articles	4.60*	-6.80*	-3.15	0.09	-0.36
II.	Beverages & tobacco	-7.60*	-6.90	3.74**	1.52*	-2.70
III.	Crude materials	-0.10	1.60	5.50	5.20**	2.17*
IV.	Minerals fuels & lubricants	4.40	19.30*	-5.30*	-1.68	1.90**
V	Animal & vegetables oil, fats & waxes	2.50	-0.50	2.68	1.80	-1.30
VI.	Chemicals & related products	-1.60	1.20	-3.38	-2.20**	-0.70
VII.	Manufactured goods	0.05	-5.20	-0.67	-0.22	-0.90
VIII.	Machinery & transport equipments	-3.50	1.10	4.00	0.98	1.60**
IX.	Miscellaneous manufactured articles	-2.35	31.40*	-11.70*	-0.03	4.14*
G.I	General Index	3.27*	4.70	-0.81**	-0.51*	1.12*

(*): Significant at the 1 percent level, (**): Significant at the 5 percent level.

Source: Calculated from the date *Hand Book of Statistics on Indian Economy*, (RBI), 2008-09.

TABLE 8.2

TERMS OF TRADE: INSTABILITY INDEX

	Commodity Group	1980-81 to 1990-91	1991-92 to 2006-07		Overall	1980-81 to 2006-07
			1991-92 to 1995-96	1996-97 to 2006-07		
I.	Food & food articles	17.40	18.80	11.40	19.40	22.20
II.	Beverages & tobacco	24.7	21.70	19.20	20.10	23.70
III.	Crude materials	16.00	19.30	18.70	18.80	17.80
IV.	Minerals fuels & lubricants	42.70	35.00	23.30	29.10	34.30
V	Animal & vegetables oil, fats & waxes	28.20	26.60	57.50	47.80	41.90
VI.	Chemicals & related products	34.30	30.00	22.00	23.80	27.80
VII.	Manufactured goods	8.90	27.50	22.40	23.70	18.70
VIII.	Machinery & transport equipments	22.60	61.50	29.20	38.70	33.20
IX.	Miscellaneous manufactured articles	39.30	30.60	46.80	45.30	42.20
G.I	General Index	11.70	8.60	10.90	10.40	10.90

Calculated by Coppock's method.

TABLE 8.3

TERMS OF TRADE: INSTABILITY INDEX AND GROWTH RATE

	Commodity Group	1980-81 to 1990-91	1991-92 to 2006-07		Overall	1980-81 to 2006-07
			1991-92 to 1995-96	1996-97 to 2006-07		
I.	Food & food articles					
	Instability.I	17.40	18.80	11.40	19.40	22.20
	Growth	4.60*	-6.80*	-3.15	0.09	-0.36
II.	Beverages & tobacco					
	Instability.I	24.7	21.70	19.20	20.10	23.70
	Growth	-7.60*	-6.90	3.74**	1.52*	-2.70
III.	Crude materials					
	Instability.I	16.00	19.30	18.70	18.80	17.80
	Growth	-0.10	1.60	5.50	5.20**	2.17*
IV.	Minerals fuels & lubricants					
	Instability.I	42.70	35.00	23.30	29.10	34.30
	Growth	4.40	19.30*	-5.30*	-1.68	1.90**
V	Animal & vegetables oil, fats & waxes					
	Instability.I	28.20	26.60	57.50	47.80	41.90
	Growth	2.50	-0.50	2.68	1.80	-1.30
VI.	Chemicals & related products					
	Instability.I	34.30	30.00	22.00	23.80	27.80
	Growth	-1.60	1.20	-3.38	-2.20**	-0.70
VII.	Manufactured goods					
	Instability.I	8.90	27.50	22.40	23.70	18.70
	Growth	0.05	-5.20	-0.67	-0.22	-0.90
VIII.	Machinery & transport equipments					
	Instability.I	22.60	61.50	29.20	38.70	33.20
	Growth	-3.50	1.10	4.00	0.98	1.60**
IX.	Miscellaneous manufactured articles					
	Instability.I	39.30	30.60	46.80	45.30	42.20
	Growth	-2.35	31.40*	-11.70*	-0.03	4.14*
G.I	General Index					
	Instability.I	11.70	8.60	10.9	10.40	10.90
	Growth	3.30*	4.70	-0.81**	-0.50	1.12*

Source: Compiled from Tables 8.1 and 8.2

(*): Significant at the 1 percent level, (**): Significant at the 5 percent level.