

EVIDENCE OF A J CURVE IN INDIA

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ABSTRACT

This paper attempts to explore the relation between the depreciation of the currency and the balance of trade. The current account balance should improve with a weaker currency but it has been visible that in the short run, there is actually deterioration. This is called the J curve phenomenon. The evidence of the same has been found in India based on monthly data from April 2010 to July 2012. The selected variables are Indian exchange rate in terms of US dollar, exports, imports and trade balance. The weakening rupee and the worsening trade balance will however be visible for a short period. From a policy perspective, the existence of a J curve is very significant. The impact of exchange rates on trade quantities will determine whether long run monetary or fiscal policy should be taken to stabilize the value of the currency. In the absence of a J curve, it is preferable to accommodate a currency depreciation to stimulate net exports.

Keywords: Currency Depreciation, Exchange Rate, Exports, Imports, J-Curve, Trade Balance

INTRODUCTION

The J- curve is a phenomenon where, in the short term, the devaluation of a currency leads to the worsening of balance of trade due to import volumes remaining the same or higher and decline in the export volume. It alludes to impact of depreciation of currency on a country's trade balance under a certain set of assumptions. A weaker currency means imports are more expensive and exports are more competitive which should lead to a surplus on the Balance of trade. However this does not happen immediately. Before the Balance of trade turns into a surplus it goes through a phase of deterioration and the deficit deepens. J. Magee (1973) labeled this phenomenon as the J curve effect.

The following graph shows the short term deterioration in the Balance of Trade followed by a long term improvement. The shape of the curve explains the name given to the phenomenon.

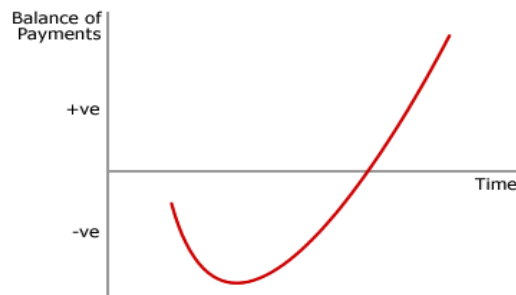


Fig 1. The J curve

The immediate worsening of the balance of trade following depreciation can be explained by the inelastic imports and exports. Over the longer term, depreciation in the exchange rate can however have the desired influence of improving the current account balance. Thus, a depreciation of a country's currency should, in the long run, lead to a fall in the current account deficit.

The theoretical basis of the J-curve comes from Marshall and Lerner condition. The Marshall-Lerner condition states that the sum of absolute values of export and import demand elasticity has to be at least one for the currency devaluation to have a positive impact on trade balance. The impact of a weaker currency is analyzed by price and volume effects. With cheaper export prices, the volume of exports may not change substantially, the export revenues will not increase. Similarly with more expensive imports, import volumes may not fall thus increasing the import bill. On both counts, the trade deficit will worsen. This inelasticity in exports and imports may be attributed to historical contracts of the exporters and importers. In the long run, once these contracts expire, elasticity increases and the volume effect becomes stronger to result in a positive change in the trade balance.

Empirically, it has been found that goods tend to be inelastic in the short term, as it takes time to change consuming patterns. Thus, until the Marshall-Lerner condition is not met, and devaluation is likely to worsen the trade balance initially. In the long term, consumers will adjust to the new prices, and trade balance will improve.

The impact of devaluation can be divided into three parts: the contract period, pass through period and the adjustment of quantity period. Contracts already negotiated before the currency weakens will keep both exports and imports inelastic to price. The following period sees quantities unaffected as the impact of depreciation sets in. In the third period, the volumes start adjusting to the prices. The sequence of these effects causes the J shape of the curve. This paper seeks to explore the evidence of the J curve in India in the face of the weakening rupee.

LITERATURE REVIEW

In the US, the presence of J curve exists for only non agricultural goods with industrialized nations i.e. Japan, Canada and not with developing economies like Mexico. This has been established using the autoregressive distributed lag (ARDL) model on quarterly data from 1989 to 2004 (Baek J, Mulik K and Koo W , 2006).

Empirical research has confirmed the existence of J curve in Japan. This has been established based on quarterly data ranging from 1975:1 to 1996:4 through the co integration technique

(Gupta-Kapoor A and Ramakrishnan U, 1999). On studying the existence of the J curve in South Africa and Malawi, it was found that though both the economies exhibited impact of depreciation of currency on long term trade balance, the J curve was seen only in South Africa (Kamoto E, 2006).

Japan is found to have seen the existence of the evidence of the J-Curve in trade with Germany and Italy. Real depreciation of the yen has had favorable long-run effects in the cases of Canada, the United Kingdom, and the United States (Bahmani-Oskooee M and Goswami G, 2003). It has been found, using generalized impulse response functions on monthly and quarterly data from 1976 to 2000, that the Scandinavian countries—Belgium, Denmark, The Netherlands, Norway, and Sweden exhibit trends of J curve (Abdulnasser H and Scotthacker R, 2003). Based on data using both Johansen's and autoregressive distributed lag approach, it was found that Serbia also shows similar trends of presence of J curve. The results are relevant for policy making both in Serbia and in a number of other emerging Europe countries as they face major current account adjustments after BoP crises of 2009 (Petrović P and Gligorić M, 2009). Using bilateral quarterly data from 1990 to 2006, for Korea with ten major trading partners, it was found that a depreciation of the won leads to a long-run improvement in Korea's bilateral trade balance and the short run J-curve is present weakly in Korea's bilateral trade with the UK, Germany and China (Sim S and Chang B,).

Wijeweera A and Dollery B (2012) found, using co integration and error correction modeling based on quarterly data from 1988 to 2011, in Australia the services sector exhibited the J-curve effect however the goods sector response had an opposite trend with a positive response in the short run, but a weak negative response in the long run. Using co integration on quarterly data over 1973 to 1997 to study the existence of the J curve in bilateral trade of Thailand with its major trading partners, it was found that the J-Curve is witnessed at least in the cases of U.S. and Japan (Bahmani-Oskooee M and Kantipong T, 2001).

In case of China's trade with G7 countries it was found that real depreciation eventually improves the trade balance with some countries without the negative short-run response which characteristics the J-Curve (Jaleel Ahmad and Jing Yang, 2002 & 2007). A study to investigate the presence of the J curve in South African trade with the other BRIC nations found not only no improvement in the Balance of trade due to currency depreciation in the long run but also no evidence of the J curve (Moodley S, 2010). In case of Sri Lanka, the ADRL tests conducted on quarterly data from 1998 to 2006 show that the trade balance between Sri Lanka and its trading partners does not reveal the J-curve and also the trade balance does not respond to exchange rate depreciation (Perera, 2009).

Using quarterly data over the period 1997 to 2010, there was little evidence found of the presence the J curve in trade of Slovakia with its trading partners except with Hungary and partially with Czech Republic (Šimáková J, 2012). Also research on data from Bangladesh does not support the presence of the J curve but confirm the positive impact on trade balance of currency depreciation (Khatoon R and Rahman M, 2009) and similar situation is also found in Pakistan (Awan R, Shahbaz M and Javed K, 2012).

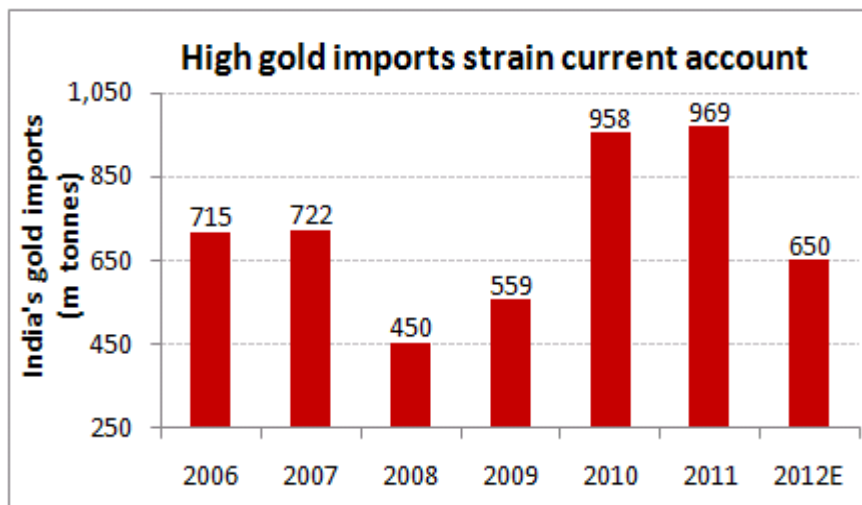
India's Current Account Deficit

In the July –September quarter of 2012, India's balance of payments became negative once more as an insufficient foreign capital inflow was unable to cover the glaring current account deficit. The crude oil imports of India during 2011-2012 reflect the inelastic demand.

The biggest contributor to India’s import bill is the crude oil imports. Gold imports are a close second. The above table show the trend in crude oil imports According to the Reserve Bank of India, in the July – September quarter 2012, the current account deficit increased to \$22.3 billion, or 5.4% of gross domestic product. The previous record was \$21.7 billion, in the January-March quarter of 2012. According to the Centre for Monitoring Indian Economy (CMIE), the trade deficit is expected to reach \$211.13 billion in 2013-14. While exports are expected to rise by 3.8% the imports are expected to rise further by 4.7%.

DATA AND METHODOLOGY

The monthly data selected for analysis is from the period April 2010 to July 2012. The selected variables are Indian exchange rate in terms of US dollar, exports, imports and trade balance. Pearson correlation between exchange rate and imports in the particular period is positive and statistically significant. This explains the inelastic nature of our imports with respect to the volatility in the value of the rupee. The price inelasticity in imports can especially be attributed to the demand for oil and currently, gold. Gold being a hedge for inflation attracts the savings of Indians.



Source: Equitymaster.com

Fig 2. India’s gold imports

Correlations

		exrate	imports
exrate	Pearson Correlation	1	.634**
	Sig. (2-tailed)		.000
	N	27	27
imports	Pearson Correlation	.634**	1
	Sig. (2-tailed)	.000	
	N	27	27

Note: **. Correlation is significant at the 0.01 level (2-tailed)

The Pearson correlation between exchange rate and trade balance is a negative though not strongly. This means that when the exchange rate weakens, i.e. more rupees to a dollar, the trade deficit does not show signs of declining.

Correlations

		exrate	tradebal
exrate	Pearson Correlation	1	-.459*
	Sig. (2-tailed)		.016
	N	27	27
tradebal	Pearson Correlation	-.459*	1
	Sig. (2-tailed)	.016	
	N	27	27

Note: *. Correlation is significant at the 0.05 level (2-tailed).

The relation between exports and exchange rate is also statistically significant and positive. This explains that as the rupee weakens to more rupees to a dollar, exports also rise.

Correlations

		exrate	exports
exrate	Pearson Correlation	1	.496**
	Sig. (2-tailed)		.009
	N	27	27
exports	Pearson Correlation	.496**	1
	Sig. (2-tailed)	.009	
	N	27	27

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Indian exports are price sensitive to an extent. They do show signs to reacting to changes in exchange rate wherein exports boom at times when the rupee to dollar is weak.

In India the trade balance is reacting as norm to changes in exchange rate. In the past two years the Indian rupee has depreciated close to 16 percent. With its impact on exports positively and on imports negatively, the trade balance should have reacted positively and the deficit should have reduced. The following graphs show the impact on trade balance in India of depreciation of the rupee.

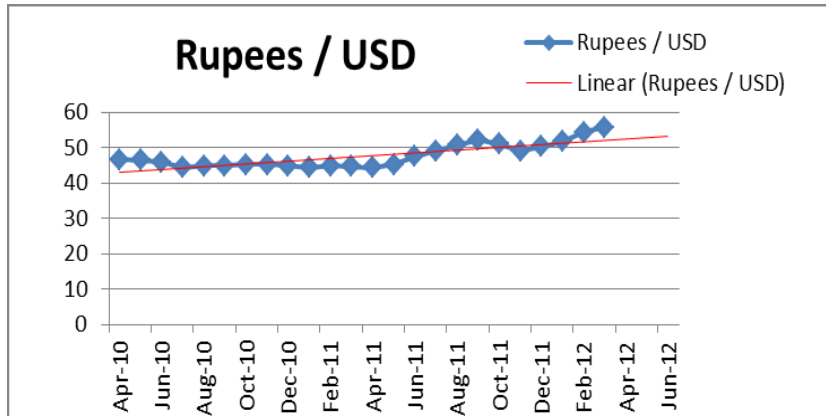


Fig 3. India’s exchange rates

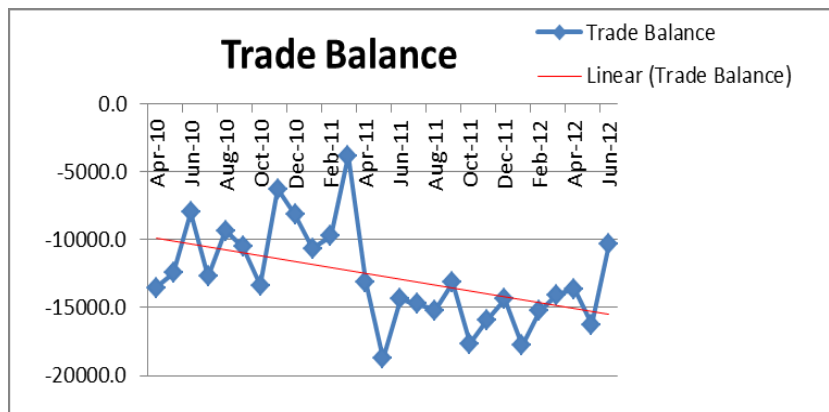


Fig. 4. India’s trade balance

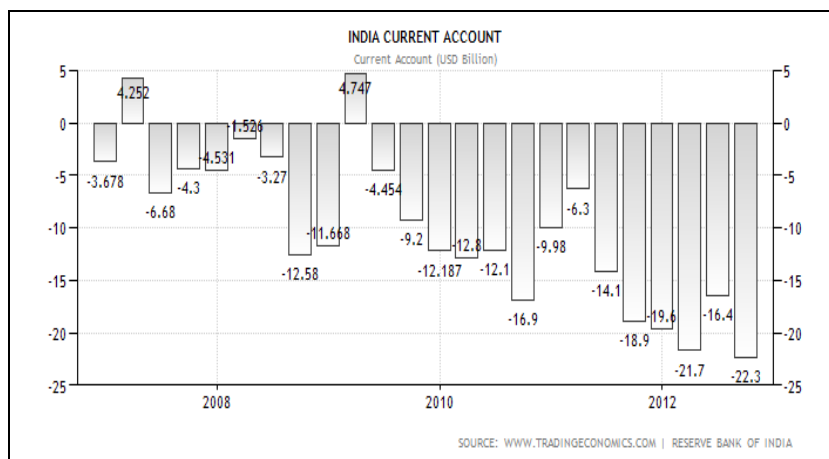


Fig 5. India’s current account

The above graphs show the trend of depreciating rupee has led to an increase in the trade deficit and this shows that India is exhibiting signs of the J curve. The trade balance is the difference of exports and imports of goods. The increasing trade deficit can be attributed to imports that increased in the same period despite the weakening rupee. Exports have

increased in the same period but the imports have had a telling impact on the trade balance to deepen the deficit further. India could not capitalize on the depreciating rupee to improve its trade balance.

Current Scenario

The current account deficit at a high of 5.4 percent of GDP compounded by slowdown of growth, fiscal consolidation and persistent high inflation, does not portray a healthy picture for India. India's current account particularly remains vulnerable to developments in the trade account. Over the years, current account derived some resilience from surplus generated by invisibles, particularly software exports and private transfers, but trade deficit continues to dictate the overall trend in the current account. While oil has been a major component of India's imports, the sharp increase in demand for gold has put an additional pressure.

Composition of Current Account Balance (Percent of GDP)						Trend in Net Invisibles (Per cent of GDP)					
Period	1970s	1980s	1990s	2000 -09	2009 -12		1950 -80	1980 -90	1990 -00	2000 -09	2009 -12
Oil TB	-1.2	-1.7	-2	-3.5	-4.5	Services (Net)	0.3	0.4	0.3	2.1	3
Non- Oil TB	0.4	-0.9	0.6	-0.8	-3.9	Software (Net)	-	-	-	2.3	3.3
Non- oil CAB	1.1	-0.1	0.8	3.3	1.3	Other Services (Net)	0.3	0.4	0.3	-0.2	-0.3
CAB	-0.1	-1.8	-1.3	-0.3	-3.3	Private Transfers (Net)	0.4	1.1	2.2	3.2	3.5
Note: TB: Trade Balance, CAB: Current Account Balance, (-): Implies deficit						Total Invisibles (Net)	0.7	1.4	1.6	4.6	5.6

Source: Mohanty D, 2012

The current account deficit needs to be financed by external borrowings and/or investments. In normal times external finance may not be a problem. The deficit on current account of an economy is sustainable till capital flows in a domestic economy. In the case of India, the euro zone sovereign debt crisis, the slowdown in advanced economies and the weakening of the Indian economy have contributed to worsening health of balance of payment in general and current account in particular. Though there was some improvement in the current account during 2010-11 due to a strong pick-up in exports mainly led by diversification of trade in terms of composition as well as direction, it did not sustain. The inflows again came under pressure during 2011-12 as slowdown in advanced economies spilled over to emerging and developing economies compounded by sharp increase in oil and gold imports.

CONCLUSION AND POLICY IMPLICATION

The J curve is indeed evident in India. The weakening rupee and the worsening trade balance will however be visible for a short period. As the Government pushes the long awaited reforms, capital inflows will increase and the rupee appreciation will take place. From a

policy perspective, the existence of a j curve is very significant. The impact of exchange rates on trade quantities will determine whether long run monetary or fiscal policy should be taken to stabilize the value of the currency. In the absence of a j curve, it is preferable to accommodate a currency depreciation to stimulate net exports.

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