



Trade Liberalization And Output Volatility

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Abstract

There is an abundant literature in support of trade liberalization and economic growth. In last few decades we have seen increase in trade liberalization, however the vulnerability of countries prone to global crisis and have also enhanced. Country specific evidence suggests that due to trade integration financial crisis of 2008 have immensely impacted the demand growth with rise in unemployment rate. Mexico, India and South Africa also experience the decline in their output due to global crisis in 2007-08. Both countries have been following liberal economic policies for last one decade with a result of increased economic growth and foreign direct investment. Financial crisis of 2007-08 has impacted with intensity severely contracting GDP growth with increase in unemployment, poverty and inequality. The Objective of this paper is to determine the impact of trade liberalization on economic output volatility. The relationship is analyzed through OLS regression analysis. Auto Regressive Distributive Lag (ARDL) method is used to develop the econometric model. This is a time series analysis of 47 years of data from 1970 to 2017. Standard deviation in World's GDP is used as proxy for economic volatility which is considered as a dependent variable. Independent variables are world trade openness, foreign direct investment and broad money as % of world gdp. World trade (import and exports) as % of total gdp has been used as a proxy for trade openness, FDI is used to measure the capital flows and broad money M2 is used as a measure of financial deepening . The result indicates that there is a positive relationship among trade liberalization and output volatility. Capital Inflows reacts negatively whereas broad money increases the risk of economic volatility. The results are in consistent with the studies of (Kaminsky and Reinhart 1999), and (Glick and Hutchison, 1999).

Introduction.

International trade is a term used when countries exchange goods and services with each other. This exchange is called imports and exports. Countries tend to trade with each other in products and services which are in of high demand. International trade history goes way back to 16th and 17th century in the form of barter trade. This was replaced by mercantilism in the 17th century. The 19th century saw economic liberty with reduced custom duties and quantitative restrictions. Currencies become convertible into gold which was used then as a measure of exchange. Flow of labor and capital was un-restricted from one country to another.

During the First World War countries moved towards building walls around themselves with maritime controls. As the war ends countries went back to the dismantling of pre war measures which brought the world trade back to normalcy. The post war era brings economic recession with currency depreciations and changes in balance of world trade. This put pressure on the governments to build protective measures through custom duties and tariffs. These measures failed to lift pressure on economic conditions. Soon countries realized that trade restrictions remains to be futile, which give rise to trade liberalization. In May 1927 industrialized countries went for multilateral trade agreement which was later followed with General Agreement on Tariff and Trade in 1947. In 1930 world experienced first economic depression, disrupting all economics activities which led to rise in protectionism.

After the Second World War countries comprehend that protectionism may no longer serve the purpose of economic welfare therefore international trade policies needs to be amended. This thought leads all countries of agreeing to be guided by the international organizations and trade agreements in terms of international trade. Understanding of International trade has improved in today's world. Countries now have a better idea about the factors influencing trade in the context of global market..

World economy has grown rapidly in recent decades. This has been due to rising international trade. Rapid advancement in technology and reduction in trade barriers are the major reason for this enhancement. World trade has grown on an average of 6 percent per year over last 20 years, which is twice as fast as world output. This has raised living standards, reduced poverty and has increased income levels. Developing countries benefited the most and as a result their share in world trade has increased from a quarter in 1970's to one third in 2000s. Developing countries has developed competitive advantages in the manufacturing sectors only because of trade openness. In these countries people in the absolute poverty have been reduced by 120million from 1993 to 1998 (World Bank, 1998). Out ward oriented economies tends to grow faster than the inward looking economies (IMF, 1997). There is considerable evidence that countries which have opened

their economies like India, Vietnam and Uganda has grown faster with reduction in poverty (Dollar,2001). Countries with lower tariffs in 1980s have experienced faster growth in 1990s as compare to those who did not had lower tariffs in the 80s (Dollar, 2001).

Background:

Global tradeliberalization has potential benefits for developing countries. The evidence suggests that economies have experience improvement in per capita income and standards of living, however this relationship is not always found to be strong or robust. There has been a strong debate among economist that trade liberalization creates more economic vulnerability to global crisis. Due to economic integration, today countries are more exposed to external shocks. Whenever there is an occurrence of global crisis, countries experience decrease in global demand, reduction in investment and remittances. This also impacts social indicators like unemployment and poverty, which tends to increase due to external shocks. Country like Mexico has a related case. After abandoning its decade long import substitution policy, Mexico adopted outward growth model based on exports. This led to a liberal medium size economy with un -restricted movement of goods and services. Regional integration in the form multilateral and bilateral agreements remains to be the core of trade policy initiatives. However the effect of these policy reforms in GDP growth, productivity and employment remains dormant. Furthermore financial crisis of 2007-08 has impacted with intensity severely contracting GDP growth with increase in unemployment, poverty and inequality (Puyana,2010). India and South Africa also experience the decline in their output due to global crisis in 2007-08. Both countries have been following liberal economic policies for last one decade with a result of increased economic growth and foreign direct investment. India's exports accounts for 23% of its GDP where as South Africa's exports accounts for 35% of its GDP (World Bank WDI 2008). Financial crisis impacted both the countries. In India net flows in portfolio equity market turned from positive \$35billion in 2007 to negative \$15billion in 2008. In South Africa the impact was much smaller net equity flows fell from positive \$8.7billion to negative \$4.7billion from 2007 to 2008. Moreover South Africa entered in to recession in 2008 after 16 years as its average growth from 2001 to 2007 was 5%. India also suffered decline in growth as its average growth of 9% from 1990 to 2007-08 fell to 6.7%(Chandrasekhar, 2010).

Nowadays there is an intense discussion among scholars and researchers about the impact of trade liberalization on economic volatility as the evidence of reduction in output has been witnessed by the world after financial crisis of 2008. Many scholars of 1990s and 2000s have argued in favor of trade liberalization and lot of literature is available that has documented negative relationship between growth and economic volatility (Ramey and

Ramey 1995). The objective of this paper is to study the impact of trade liberalization on countries output volatility.

Research Problem:

There is an abundant literature in support of trade liberalization and economic growth. In last few decades we have seen increase in trade liberalization, however the vulnerability of countries prone to global crisis and have also enhanced. Country specific evidence suggests that due to trade integration financial crisis of 2008 have immensely impacted the demand growth with rise in unemployment rate. Mexico, India and South Africa also experience the decline in their output due to global crisis in 2007-08. Both countries have been following liberal economic policies for last one decade with a result of increased economic growth and foreign direct investment. Financial crisis of 2007-08 has impacted with intensity severely contracting GDP growth with increase in unemployment, poverty and inequality. This research will help in understanding the relationship between trade liberalization and countries susceptibility to economic volatility.

Research Objectives:

The Objective of this paper is to determine the impact of trade liberalization on economic volatility. This will help us to understand the relationship because economic volatility may lead to global crisis.

Research Question:

What is the impact of trade liberalization on economic output volatility?

Research Design:

The research design of this paper is quantitative empirical in nature. The relationship is analyzed through regression analysis. Auto Regressive Distributive Lag (ARDL) method is used to develop the econometric model. This is a time series analysis of 47 years of data from 1970 to 2017. Standard deviation in World's GDP is used as proxy for economic volatility which is considered as a dependent variable. Independent variables are world trade openness, foreign direct investment and broad money as % of world gdp. World trade (import and exports) as % of total gdp has been used as a proxy for trade openness, FDI is used to measure the capital flows and broad money M2 is used as a measure of financial deepening .

Literature Review:

Kose and Yi (2003) states that trade specialization and different shocks effects the relationship between trade integration and volatility. Trade openness association with inter industry specialization across countries could give rise to output volatility (Krugmen,

1993). There would be a decline in output volatility if there is an intra industry trade specialization across countries (Razin and Rose 1994). Monetary and fiscal policy shocks are used to further extend the model to understand its relationship (Sutherland 1996) , (Senay 1998). As per the results nature of shocks effects the relationship between financial integration and economic volatility and consumption. As the monetary policy shocks are introduced in the model the output volatility increases whereas the introduction of fiscal policy shocks decreases the output volatility.

Structure characteristics of developing countries affect the relationship between trade openness and economic volatility. Limited diversification in imports and exports make countries prone to demand shocks. (Kose 2002) explored the relationship among terms of trade shocks and volatility. (Senhadji 1998) studies the impact of foreign demand shocks on economy. (Aghion, Banerjee, and Piketty 1999) and (Caballero and Krishnamurthy 2001) developed models to estimate the linkage between low financial sector development and high output volatility. (Head 1995) and (Crucini 1997) proposed that productivity volatility in large economies impacts the business cycle of small open economies.(Kose and Prasad 2002) estimated that for small states which are open economies, shocks in terms of trade and foreign aid flow impacts significantly. (Kaminsky and Reinhart 1999), and (Glick and Hutchison, 1999) found that trade liberalization programs have caused numerous crisis. This is due to loss of access to financial markets and volatility in output and consumption (à la Calvo, 1998). However (Arellano and Mendoza 2002) studied that output and consumption volatility did not get affected by sudden stops due to borrowing constraints.

(Buch, Dopke, and Pierdzioch 2002) studied the relationship between financial openness and volatility of output. Empirical evidence suggested no significant relationship among the variables. (Gavin and Hausmann 1996) explored the determinants of economic volatility in developing countries. The results suggested link between capital flows and output volatility. (O'Donnell 2001) studied the impact of financial integration on output volatility in OECD countries. Results indicated that higher integration leads to lower volatility. His results also suggested that countries with more developed financial sectors are able to reduce output volatility through financial integration. (Bekaert, Harvey, and Lundblad 2002) used equity market liberalization and output and consumption volatility to develop relationship among the variables.

Methodology:

Auto Regressive Distributive Lag (ARDL) method is used to develop the econometric model. This is a time series analysis of 47 years of data from 1970 to 2017. Standard deviation in World's GDP is used as proxy for economic volatility which is considered as a

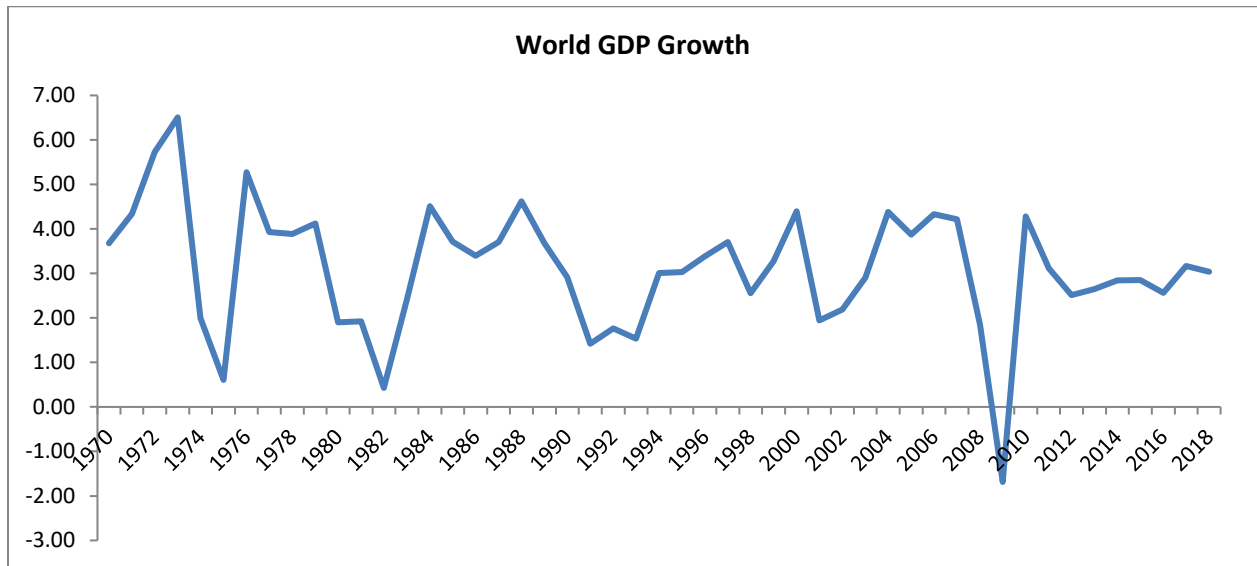
dependent variable. Independent variables are world trade openness, foreign direct investment and broad money as % of world gdp. World trade (import and exports) as % of total gdp has been used as a proxy for trade openness, FDI is used to measure the capital flows and broad money M2 is used as a measure of financial deepening

Below is an ARDL model that is used to test the hypothesis.

$$Y_t = a + \beta_1 X_t + \beta_2 X_{t-1} + \beta_3 Y_{t-1} + \varepsilon_{yt} \dots \dots \dots (1)$$

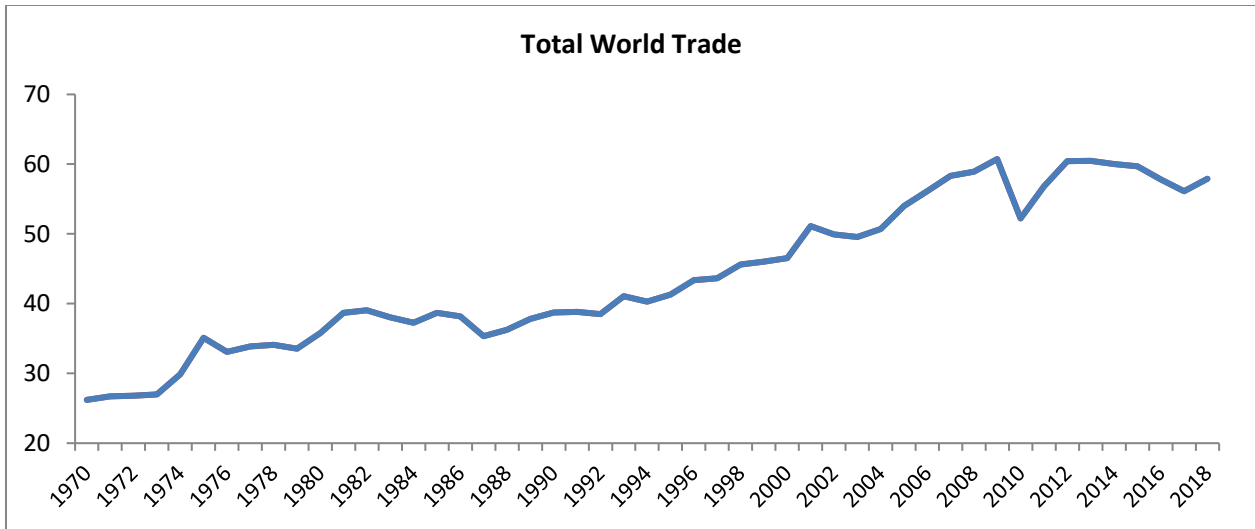
Graphical Representation:

World GDP Growth Rate:



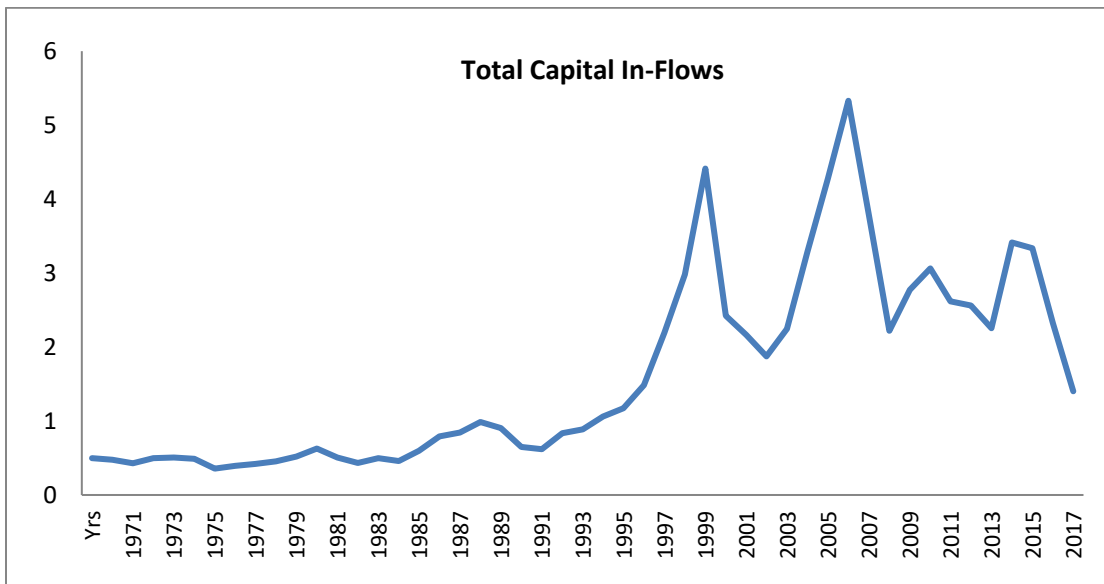
Source: World Bank Data

Total World Trade as % of World GDP



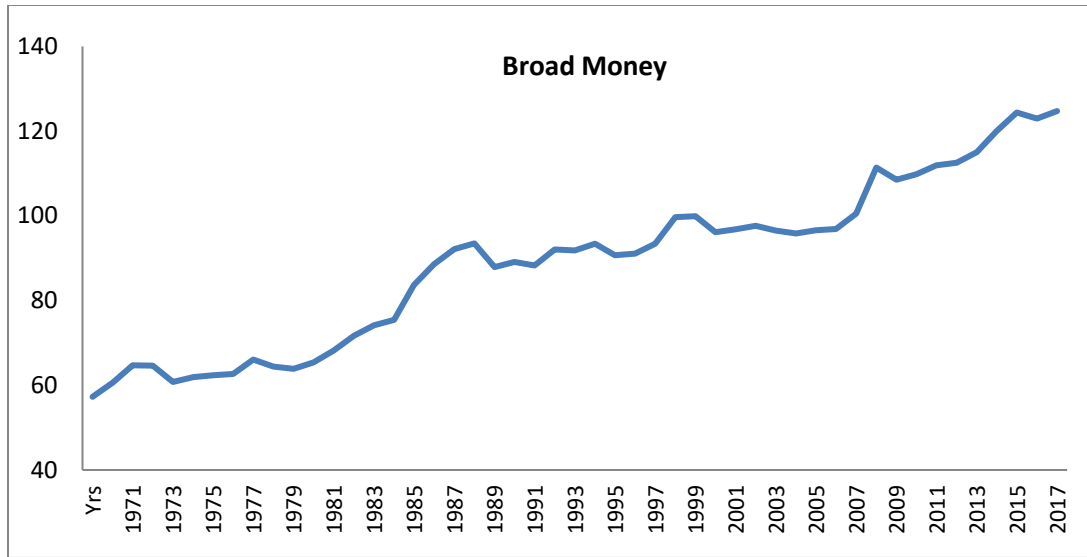
Source: World Bank Data

Total World Capital In-flows as % of World GDP



Source: World Bank Data

Broad Money (M2) as % of World GDP



Source: World Bank Data

Model Estimation:

Model is estimated by running OLS regression through Auto regressive Distributed Lag ARDL technique. The ARDL equation is given as:

$$Y_t = a + \beta_1 X_t + \beta_1 X_{t-1} + \beta_3 Y_{t-1} + \epsilon_{yt} \text{ ----- Eq (3)}$$

The above model can be revised as:

$$Y_t = a + \beta_1 X_t + \beta_1 X_{t-1} + \beta_2 X_{2t} + \beta_2 X_{2t-1} + \beta_3 X_{3t} + \beta_3 X_{3t-1} + \beta_4 Y_{t-1} + \epsilon_{yt} \text{ ----- Eq (4)}$$

Substituting the variables in the Equation (4)

$$\text{Output Volatility}_t = a + \beta_1 \text{ Total Trade} + \beta_1 \text{ Total Trade}_{t-1} + \beta_2 \text{ Capital Inflows} + \beta_2 \text{ Capital Inflows}_{t-1} + \beta_3 \text{ Broad Money} + \beta_3 \text{ Broad Money}_{t-1} + \beta_4 \text{ Output Volatility}_{t-1} + \epsilon_{yt} \text{ -----Eq (5)}$$

Results Estimation:

	Coefficients	Standard Error	t Stat	P-value	Multiple R	Adjusted R Square	R Square
Intercept	0.85006				0.982	0.965	0.959

		0.007	118.335	0.000*
Broad Money	0.00084	0.000	7.414	0.000*
Capital Inflows	-0.00327	0.002	(2.163)	0.036*
Total Trade	0.00183	0.000	6.614	0.000 *
Output Volatility (-1)	0.49095	0.558	0.880	0.384
Total Trade(-1)	-0.00006	0.000	(0.123)	0.902
Capital Inflows(- 1)	0.00443	0.002	2.540	0.015 *
Broad Money(-1)	-0.00085	0.000	(2.688)	0.010*

*Significant Level @ 5%

Substituting the estimates in the equation (5). We get the final model.

$$\text{Output Volatility}_t = a + 0.00183 \times \text{Total Trade} + (0.00006) \times \text{Total Trade}_{t-1} + (0.00327) \times \text{Capital Inflows} + 0.00443 \times \text{Capital Inflows}_{t-1} + 0.00084 \times \text{Broad Money} + -(0.00085) \times \text{Broad Money}_{t-1} + 0.49095 \times \text{Output Volatility}_{t-1}$$

Results Interpretation:

Total Trade as % of world GDP which is a proxy of trade liberalization shows a positive relationship with economic output volatility which is used as standard deviation of economic output. The results suggest that increase in trade liberalization may lead to economic output volatility and make countries prone to crisis. Statistically one percent increase in total trade will give rise to output volatility by 0.18%. The results are significant at 5% significance level.

Capital Inflows as % of world GDP shows a negative relationship with economic output volatility. This proves that a higher inflow reduces countries vulnerability to external shocks. One percent increase in capital inflows will reduce volatility by 0.3%. The results are significant at 5% significance level.

Broad Money shows the financial deepening. The results suggest that increase in financial integration may impact output volatility positively. Higher financial integration results in higher probability of global crisis. Statistically one percent increase in broad money will increase output volatility by 0.1%. Results are significant at 5% significance level.

The lag variable estimates of output volatility and total trade are insignificant. However lags of capital inflows and broad money have significant estimates. This shows that capital inflows and broad money are related with its previous years.

Conclusion:

Assessing the benefits and costs associated with globalization requires a clear understanding of the impact of international integration on macroeconomic volatility. This paper has attempted to shed light on the effects of trade liberalization on economic volatility. In our empirical work, we have found that the trade liberalization increases the risk of external shocks. This results in increase vulnerability of countries to global crisis. Our findings also indicate that financial openness, as measured by gross capital flows as a ratio to GDP, reduces the economic volatility. Financial integration also increases risk of shocks which makes countries more vulnerable. This is evident from the positive relationship among broad money and economic output volatility.

Financial crisis of 2007-08 had affected lot of countries around the globe. Countries faced volatility in consumption and income with increase in poverty and unemployment. The impact was most severed in more open economies. This kind of crisis can be avoided in future if countries make more stern regulations for financial markets and make their trade more diversified rather than specialized. Countries should make agreements on bilateral and regional basis rather on globalized basis. This will help countries to diversify their risk of dependency.

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