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THE IMPACT OF TRADE LIBERALIZATION ON DEMAND AND PRICE VOLATILITY IN PAKISTAN: CO INTEGRATION APPROACH FOR COMPENSATION HYPOTHESIS

Hira Mujahid

Applied Economics Research Center, University of Karachi, Karachi, Pakistan

Shaista Alam

Applied Economics Research Center, University of Karachi, Karachi, Pakistan

ABSTRACT

The important modification of the compensation hypothesis rests on the principle; increased trade openness increase the domestic economic volatility. The economic theory recommend increase of international trade require integration into huge, even markets, and involve risk diversification, in fact it may support rather than reduce stability. By the same indication, however, economic theory also suggests that smaller economies should familiar with greater levels of volatility than larger economies, this study quantify the relationship proposed in case of Pakistan containing dataset since 1966-2009. The verification presented here suggests that the level of domestic economic volatility is not only because of international trade integration, there are some other factors too; however trade integration may have eased rather than emphasizing on creating domestic economic volatility.

Keywords: Volatility, Trade openness, Compensation hypothesis, Demand, Price.

JEL Classification: F43, E31

1. INTRODUCTION

Cameron (1978) began with compensation hypothesis which explained "the trade openness put forward greater economic volatility" also drive greater economic insecurity (Ruggie, 1982; Rodrik, 1997). Globalization increases the international integration, as well as symbol of welfare development and the political climate on national state (Down, 2007). On the other hand globalization acquires negative implication among politicians, media and sometimes among business community. As it disturbed global market forces for all kinds of political and economic problems hence globalization turn out to be reason of unlikable labor market conditions.

In liberal economy the possibility of international jolt can improved through both explicit and implicit insurance Rodrik (1997). Since then it is one of the debatable issues which explain the

effect of global economic integration on state welfare. At the same time there are numerous discussions on global trade integration, which increase the economic volatility Karras (2006),Liberati (2006),Alesina and Waciarg (1998), Rodrik (1998), Allen (1995). On the other hand, little concentration has been paid to the behavior in which such integration might decrease volatility (Down, 2007).

Cameron (1978) explained the international exposure arise the risk from domestic demand to the global demand, as the import penetration and export dependence transmit shocks to the home country. In addition large domestic volatility is not only because of trade openness, there are some other factors too. In case of Pakistan there has been little endeavor to estimate the effect of trade integration on economic volatility, whether economic volatility actually increases with greater trade openness or not. Therefore this study bridges the gap between trade liberalization, country size, inflation GDP per capita, volatility of price and domestic demand in case of Pakistan.

In table 1 the comparison of demand volatility among SAARC country; domestic demand volatility is the standard deviation of GDP per capita of purchasing power parity is illustrated. In 1980 Bangladesh has the lowest demand volatility means that the deviation of GDP per capita with respect to PPP is smallest compare to the rest of SAARC countries whereas Sri Lanka has the greatest deviation of GDP in 1980. In 1990 demand volatility of India is 39.59 which is lowest compare to the rest countries. Since 2000 the globalization increases so the demand volatility shot periodically and in 2010 Sri Lanka's economy has more fluctuation then rest of the countries.

Table- 1. Demand Volatility of SAARC countries

Countries	1980	1990	2000	2010
Pakistan	58.68986	47.37615	24.74874	61.51829
Bangladesh	24.04163	16.26346	35.35534	96.16652
Sri Lanka	77.07464	67.88225	43.84062	363.4529
India	39.59798	14.14214	60.10408	195.8686

Note: Standard deviation of GDP per capita PPP, real GDP Data: Penn World Tables

This study discusses economic theory effect that greater trade integration subject in greater economic volatility as economic theory exhibit economic volatility is the role of country size, intensity of market and trade openness which bring risk diversification. The purpose of this study is to find the significance of compensation hypothesis in case of Pakistan. The sections ordered in this chapter as follows: Section II present review of evidences. Section III represents the data sources and explanations, and methodology. Section IV discusses the empirical findings and Section V presents conclusion.

2. REVIEW OF EVIDENCE

The empirical findings that compensation hypothesis for macroeconomic volatility is wide and it has absolutely not reached clear consensus. As regard literature respect to empirical compensation hypotheses testing for OECD countries done by Down (2007) which was initiated by Cameron (1978), and still is one of the center of concentration later numerous studies found Allen

(1995), Fiaschi and Lavezzi (2003), Loayza *et al.* (2007); Haddad *et al.* (2010), Giovanni and Levchenko (2010; 2008), Down (2007), Razin *et al.* (2002), found the impact of trade liberalization on increase in volatility.

Down (2007) has acknowledged the relationship of trade openness and macroeconomic volatility, for that he used cross sectional data on developed countries and gave details the size and depth of market depends on the macroeconomic volatility. The small countries are more volatile because of greater market amalgamation and openness. Cameron (1978) has documented that each and every country somehow relying on the international markets because of globalization. The degree dependency depends on the country size so that smaller countries depend more than the large country. However, for more open economies their domestic industries faces external shock, the more open economy the more risk bear Rodrik (1998). Cameron (1978) explained that it's easy for large countries government to generate more revenue with increase in tax on public good because non rivalry in nature. Government of small countries could get more revenue from trade openness. Cameron (1978) and Rodrik (1998) exhibited that inadequate performance of state distorts trade openness and government could use variety of policies to protect the exporters and domestic industries.

Giovanni and Levchenko (2010) acknowledged with help of cross sectional data there was positive relationship between trade openness and economic volatility. But free trade reduces the economic volatile in some countries. Also, discovered more volatility reveal when country is more trade openness, specialization increase trade openness. Allen (1995) showed 50 countries country size was negatively related with the volatility and positively related with investment with consumption and output. Fiaschi and Lavezzi (2003) outcome suggested negative relationship between growth rate of volatility with level of development which was captured as GDP per capita and economy size explained as total GDP.

Loayza *et al.* (2007) recommended that macroeconomic volatility is fundamental problem of developing countries which is indication of underdevelopment. These countries attain instability for the reason of external shocks, unstable macroeconomic policies, inflexible microeconomics and frail institutions. Moreover, proposed that macroeconomic volatility can control on three main bases; first by maintaining inflation and evade price inflexibility, second increase the ability to absorb shock through fiscal policies and save in good times and through administer the external shocks. At the overall level, Easterly *et al.* (2000) found for small economies term of trade is important driver for increase in macroeconomic volatility. Moreover they also argued that small economies typically experienced the high income volatility is due mainly to their trade openness and small role of that export concentration. The gains from trade openness and economic integration could achieve by economies of scale either in the production technologies Razin *et al.* (2002).

3. DATA & METHODOLOGY

This study test the expectation of the two macroeconomic principle for dataset of 1980-2009 against measures of price and demand volatility defined by Cameron (1978) as area under

discussion large economic fluctuations are the result of great amount of trade openness. Rodrik (1997) and Iversen (2001) employed the measure of volatility as standard deviation of a aggregate economic. Demand volatility is measured as the standard deviation of GDP per capita PPP (real GDP) and price volatility is captured by standard deviation of GDP deflator. However, the level of international trade integration is calculated as the import plus export as a percentage of GDP. The country size (LPOP) is measured as population size (in millions) to represent the market depth. Numerous studies has been found for the calculation of volatiles through standard deviation e.q. (Akhtar and SpenceH ilton, 1984a; Baum *et al.*, 2002; Mustafa and Nishat, 2004).

For our model volatilities are calculated as:

$$\text{LSDG} = \text{Ln}\left[\sqrt{\frac{1}{n-1}\sum_{k=1}^{n}(X_{it}-\bar{X}_1)^2}\right]$$

Where X represents GDP per capita, real GDP or GDP deflator and $\bar{X}_1$ represents averages of GDP per capita, real GDP or GDP deflator of considered year. The study investigates the compensation hypotheses proposed by Cameron (1978) in case of Pakistan considering demand and price volatilities. For this purpose the following models be estimated with the methodology of unit root test & co integration approach.

$$\text{LSDG} = \rho_0 + \rho_1 \text{ LPOP} + \rho_2 \text{ LO} + \rho_3 \text{ LGDP}_{t-1} + U_1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

$$\text{LSTDP} = \pi_0 + \pi_1 \text{ LPOP} + \pi_2 \text{ LO} + \pi_3 \text{ LGDF}_{t-1} + U_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

This study follows the co integration test the reason of popularity of this technique it gives the background of short run and long run relationships of variables. The co integrated variable must have VECM representation, Engle and Granger (1987) it also provides the problem of spurious correlation. For short run analysis VECM represents as:

In case of demand volatility:

$$\Delta \text{ LSDG} = \chi_0[\gamma_1 \text{LPOP}_{t-i} - \gamma_2 \text{LO}_{t-i} - \gamma_3 \text{GDP}_{t-i} - \gamma_6] + e_1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

$$\Delta \text{LPOP} = \chi_1[\gamma_4 \text{LO}_{t-i} - \gamma_5 \text{GDP}_{t-i} - \gamma_6 \text{LSDG}_{t-i} - \gamma_7] + e_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

$$\Delta \text{LO} = \chi 2[\gamma_8 \text{LPOPO}_{t-i} - \gamma_9 \text{GR}_{t-i} - \gamma_{10} \text{LSDG}_{t-i} - \gamma_{11}] + e_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

In case of price volatility:

$$\Delta \text{ LSTDP} = \theta_0[\rho_1 \text{LPOP}_{t-i} - \rho_2 \text{LO}_{t-i} - \rho\gamma_3 \text{GDF}_{t-i} - \rho_4] + e_5 \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (6)$$

$$\Delta \text{LO} = \theta_1[\rho_5 \text{LPOP}_{t-i} - \rho_6 \text{GDF}_{t-i} - \rho_7 \text{LSTDP}_{t-i} - \rho_8] + e_6 \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (7)$$

$$\Delta \text{LPOP} = \theta 2[\rho_9 \text{LO}_{t-i} - \rho_{10} \text{LGDF}_{t-i} - \rho_{11} \text{LSTDP}_{t-i} - \rho_{12}] + e_7 \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (8)$$

4. EMPIRICAL FINDINGS

Table 2 presents the unit root test of all six variables which indicates that each series is stationary at first difference with intercept and trend (for that null hypothesis; series is non stationary) Table 3 & 4 indicate the co integration results of demand volatility and price volatility respectively, results are judged by Trace and Max Eigen statistic and the hypothesis: there is no co integration exist among variables. The lag selection is based on VAR lag selection with value of Akaike information criteria. The test statistics of trace and max for demand volatility are greater than the critical values at 5 percent suggesting there is co integration exist among four variables.

The normalized equation depicts that country size and GDP has negative n and significant effect on demand volatility. As one million increases in country size the demand volatility decreased by 1.5 million, similarly as one percent increase in the lag of GDP deflator demand volatility of Pakistan decreased by 3.7% in long run. However, trade openness has significant and positive relationship with demand volatility, as one percent increase trade openness in long run demand volatility of Pakistan increased by 9.89%.

Table-2. Unit root test (ADF Approach)

	Intercept		**Intercept & trend**	
	Level	**First Difference**	**Level**	**First Difference**
LGDP	-1.780	-5.855*	-1.721	-5.947*
LGDF	-1.780	-5.855*	-1.721	-5.947*
LO	-1.444	-6.900*	-3.039	-6.781*
LPOP	-1.988	-4.670*	0.744	-5.043*
LSDG	-2.320	-3.818*	-2.275	-3.761**
LSTDP	-2.027	-4.0149*	-2.216	-3.685**

Note: critical values for intercepts are -3.59, -2.93, -2.60 significant level is 1%, 5% , 10% respectively. And critical values for intercept and trends are 4.18,-3.51, -3.18 (significant level is 1%, 5% , 10% respectively, where *,**and *** represents the level of significance at 1%, 5% and 10% respectively.

Table- 3. Johenson Co integration for Demand volatility

Hypothesis	**Trace**	**Critical Value**	**Hypothesis**	**Max-Eigen**	**Critical Value**
H0	Statistic		H0	Statistic	
r=0	124.322	47.856	r=0	60.904	27.584
r≤1	63.418	29.797	r≤1	42.704	21.131
r≤2	20.713	15.494	r≤2	16.617	14.264
r≤3	4.095	3.841	r≤3	4.095	3.841
Variables		**LPOP**	**LO**	**LGDP(-1)**	
Coefficients		-1.584*	9.897*	-3.760*	
Standard -Error		0.576	1.160	0.641	
t-statistic		-2.751	8.527	-5.860	

Note: Trace test & Max-Eigenvalue test indicates 4 Cointegrating eqn(s) at the 0.05 level. * represents significant at 1%

Table- 4. Johenson Co integration for Price volatility

Null Hypothesis	Trace Statistic	Critical Value	Null Hypothesis	Max-Eigen Statistic	Critical Value
r=0	55.160	47.8561	r=0	24.833	27.584
r≤1	30.326	29.7971	r≤1	16.501	21.131
r≤2	13.825	15.4947	r≤2	10.732	14.264
r≤3	3.092	3.8415	r≤3	3.092	3.841
Variables	**LPOP**		**LO**	**LGDF(-1)**	
Coefficients	0.887*		-1.154*	-0.586*	
Standard -Error	0.185		0.306	0.218	
t-statistic	4.783		- 3.769	- 2.687	

Note: Trace test indicates 2 co integrating equation(s) & Max-Eigen-value test indicates no co integrating at the 0.05 level.* represents significant at 1%.

For price volatility in table 4 trace test exhibits there are 2 co integrating equations whereas Max-Eigen value test exhibits that there is no co integrating equation exist at the 0.05 critical level. Although, the study consider Trace statistic results most, the normalized co integrating equation depicts that trade openness and PPP converted GDP per capita have significant and negative effect on price volatility in Pakistan. As one percent trade openness increases 1.15% price volatility decreases. However one percent increase in inflation reduces 0.58% of price volatility in long run. On the other hand, country size has positive and significant effect on price volatility as one million increases in country size cause increase in price volatility by 0.88% in long run.

The short run casual relationship demand- price volatility through vector error correction model is exhibited in Table 5 & 7 respectively. In table 5 the values of ECM suggested the speed of adjustment, as large values depicted the high percentage of disequilibrium so the speed of adjustment is fast vice versa. The coefficient of ECM of demand volatility is negative and significant at 1 % level of significance, implies that demand volatility diverge from equilibrium by 0.95% in short run due to the disturbance in system. However the trade openness coefficient has positive and significant sign; implies that due to any change in system the trade openness diverge from equilibrium by 0.19% in short run. Similarly in table 8 depicted that coefficient of price volatility has negative sign and significant impact in short run implies that 0.13 percent disturbance appears in short run due to change in system. However, the PPP converted GDP per capita coefficient of error correction has significant and negative effect in short run means the speed of adjustment in short run is 0.20%.

In order to analyze the short run causal relationship between demand volatility, trade openness, country size and GDP deflator for each equation in VECM the study applied bi-directional Granger causality test. However, results of Wald test (table 5.6) demonstrated that country size and trade openness has significant effect on demand volatility and GDP, also demand volatility and lag of GDP has significant effect on trade openness. Yet, results of Wald test (table 5.8) for price volatility depicted that country size, openness has significant effect in short run on price volatility,

trade openness has significant short run effect on country size. The price volatility has significant short run effect on trade openness and GDP deflator, unidirectional causal relationship with lag of GDP deflator. On the other hand, the short run bi-directional causal relationship between price volatility, trade openness, country size and PPP converted GDP.

Table- 5. Vector Error Correction For Demand Volatility.

Error Correction:	D(LSDG)	D(LPOP)	D(LO)	D(LGDP(-1))
ECM	-0.956*	-0.002	0.193*	0.014
D(LSDG(-1))	0.352	-0.001	-0.227*	-0.006
D(LSDG(-2))	0.396	-0.005	-0.140*	-0.007
D(LSDG(-3))	0.378	-0.005	-0.061	-0.037
D(LPOP (-1))	-1.936	0.165	2.414	-0.514
D(LPOP (-2))	-12.759	0.143	0.299	-0.651
D(LPOP (-3))	-8.193	0.158	1.919	0.647
D(LO (-1))	-0.137	-0.005	-0.156	-0.003
D(LO (-2))	0.976	-0.015	-0.099	-0.060
D(LO (-3))	0.446	-0.003	-0.111	-0.049
D(LGDP (-2))	-0.979	0.024	1.829*	0.165
D(LGDP (-3))	-1.045	-0.021	-0.123	0.215
D(LGDP (-4))	-4.134*	0.021	-0.200	0.052
C	0.714	0.013	-0.126	0.027
R-squared	0.489	0.240	0.606	0.243
Adj. R-squared	0.223	-0.155	0.401	-0.152

Note: * representing significant values

Table- 6. Wald test for Demand Volatility:

	DEPENDENT VARIABLES (P VALUES)			
INDEPENDENT VARIABLES	LSDG	LOG(POP)	LOG(O)	LOG(GDP(-1))
LSDG	0.380	0.567	0.008*	0.237
LOG(POP)	0.039**	0.582	0.532	0.0715***
LOG(O)	0.039**	0.771	0.0650	0.0647**
LOG(GDP(-1))	0.152	0.878	0.002*	0.524

Note: *significant at 0.01, ** significant at 0.05 & ***significant at 0.10 level of significance.

Table- 7. Vector Error Correction For Price Volatility:

Error Correction:	D(LSTDP)	D(LPOP)	D(LO)	D(LGDF (-1))
ECM	-1.348	-0.014	0.345	-0.204
D(LSTDP(-1))	-0.304	0.004	-0.195	0.121*
D(LSTDP(-2))	0.168*	-0.001	0.092*	0.011
D(LSTDP(-3))	0.170*	-0.004	0.117*	-0.009
D(LPOP(-1))	-0.903	0.241	0.196	-0.377
D(LPOP(-2))	-0.695	0.060	-2.161	-0.855
D(LPOP(-3))	2.296	0.180	-0.200	0.625
D(LO(-1))	-0.517	-0.002	0.128	-0.108
D(LO(-2))	-0.414	-0.008	-0.055	-0.055
D(LO(-3))	-0.390	-0.006	-0.100	-0.085
D(LGDF(-2))	0.457	0.040	0.578	0.277
D(LGDF (-3))	-0.963	-0.035	-0.073	0.051
D(LGDF (-4))	-1.227	0.020	-0.254	-0.169
C	0.064	0.013	0.061	0.039
R-squared	0.981	0.142	0.806	0.428
Adj. R-squared	0.971	-0.303	0.705	0.131

Note: * representing significant values

Table-8. Wald test for Price Volatility:

	DEPENDENT VARIABLES (P VALUES)			
INDEPENDENT VARIABLES	LSTDP	LOG(POP)	LOG(O)	LOG(GDF(-1))
LSTDP	0.000*	0.974	0*	0.016**
LOG(POP)	0.090***	0.386	0.034	0.494
LOG(O)	0.017**	0.096***	0.347	0.275
LOG(GDF(-1))	0.282	0.8072	0.471	0.408

Note: *significant at 0.01, ** significant at 0.05 & ***significant at 0.10 level of significance.

This study consider F statistics for significance of lagged endogenous variables however the results in table 9 suggest that the country size Granger cause demand volatility in short run also trade openness Granger cause to demand volatility. GDP deflator has bi-directional causal relationship with demand volatility but trade openness has uni-directional causal relationship with country size. The country size has uni-directional causal relationship with lag of GDP deflator but trade openness has GDP per capita presented in table 10 where country size has bi-directional casual relationship with price volatility however trade openness has uni-directional relationship with price volatility. Moreover, the country size has bi-directional relationship with trade openness and PPP converted GDP per capita Grangers cause to country size also trade openness Granger cause to PPP converted GDP per capita.

Table- 9. Granger Causality for Demand volatility

Null Hypothesis:	F-Statistic	Probability	Decision
LPOP does not Granger Cause LSDG	0.453	0.638	Do not Reject
LSDG does not Granger Cause LPOP	3.044	0.059***	Rejected
LO does not Granger Cause LSDG	0.567	0.572	Do not Reject
LSDG does not Granger Cause LO	2.869	0.069*	Rejected
LGDP(-1) does not Granger Cause LSDG	1.267	0.293	Do not Reject
LSDG does not Granger Cause GDP(-1)	0.064	0.937	Do not Reject
LO does not Granger Cause LPOP	0.385	0.683	Do not Reject
LPOP does not Granger Cause LO	2.738	0.078*	Rejected
LGDP(-1) does not Granger Cause LPOP	2.899	0.068*	Rejected
LPOP does not Granger Cause LGDP(-1)	0.436	0.649	Do not Reject
LGDP(-1) does not Granger Cause LOG(O)	9.863	0.000	Rejected
LO does not Granger Cause LGDP(-1)	0.361	0.699	Do not Reject

Note: *, ** & ***significant at 1%, 5% and 10% level of significance.

Table- 10. Granger Causality for Price volatility

Null Hypothesis:	F-Statistic	Probability	Decision
LPOP does not Granger Cause LSTDP	1.154	0.341	Do not Reject
LSTDP does not Granger Cause LPOP	0.292	0.830	Do not Reject
LO does not Granger Cause LSTDP	0.071	0.974	Do not Reject
LSTDP does not Granger Cause LO	4.548	0.008*	Rejected
LGDF(-1) does not Granger Cause LSTDP	2.674	0.063***	Rejected
LSTDP does not Granger Cause LGDF (-1)	3.367	0.030**	Rejected
LO does not Granger Cause LPOP	0.323	0.808	Do not reject
LPOP does not Granger Cause LO	1.982	0.135	Do not reject
LGDF (-1) does not Granger Cause LPOP	2.336	0.091**	Reject
LPOP does not Granger Cause LGDF(-1)	0.703	0.556	Reject
LGDF (-1) does not Granger Cause LO	7.304	0.000*	Reject
LO does not Granger Cause LGDF (-1)	0.215	0.884	Do not reject

Note: *, ** & ***significant at 1%, 5% and 10% level of significance.

5. CONCLUSION

The purpose of this study is to find the empirical relationship between trade openness and demand- price volatilities and for that used JJ co integration technique for long run relationship and vector error correction for short run relationship. The reason of economic volatilities is not solely trade openness but there are some other factors. For this purposes this study incorporates the effect of population and lags of demand- price volatilities. The results suggest that in Pakistan the trade openness has positive and significant effect in long run on demand volatility implies that the higher degree of trade openness cause greater demand volatility and the verification of compensation hypothesis. Similarly the speed of adjustment of trade openness has significant and

negative impact on demand volatility in short run. But the country size and GDP has negative has significant effect on demand volatility in long run only. On the other hand trade openness has significant and negative effect on price volatility; means that greater the degree of trade openness lower the fluctuations appear in prices due to globalization and highly competitive markets. Moreover, country size has positive effect on price volatility in long run which implies high population creates more fluctuation in prices due the gap of demand-supply for more goods and services. However, in short run trade openness and country size has significant effect on demand-price volatility. The results of granger causality represents that country size Granger causes demand volatility and trade openness Granger causes to demand volatility. In addition, country size has bi-directional casual relationship with price volatility but trade openness has uni-directional relationship with price volatility.

Regardless of empirical association between trade openness, country size and economic volatilities there are still extensive way to understand, what this link is actually means. From some core assumptions of economic theories if the study makes step forward and might benefit from more strong investigation, both theoretically and empirically. It has been proved that trade openness and economic volatility has modification of the compensation hypothesis, which is based on only a partial specification of the effect on domestic economic volatility

REFERENCES

Akhtar, M.A. and R. SpenceH ilton, 1984a. Exchange rate uncertainty and international trade: Some conceptual issues and new estimates for Germany and the United States, Research Paper No. 8403 (New York:Federal Reserve Bank of New York, May).

Alesina, A. and R. Waciarg, 1998. Openness, country size and the government. National Bureau of Economic Research, Working Paper No. 6024.

Allen, H.C., 1995. Country size, aggregate fluctuations, and international risk sharing. Canadian Journal of Economics, 28(4b): 1096-1119.

Baum, C.F., C. Mustafa and N. Ozkan, 2002. Exchange rate effects on the volume of trade flows: An empirical analysis employing high-frequency. Data. Boston College.

Cameron, D.R., 1978. The expansion of the public economy: A comparative analysis. The American Political Science Review, 72(4): 1243-1261.

Down, I., 2007. Trade openness, country size and economic volatility: The compensation hypothesis revisited. Business and Politics, 9(2): 1-22.

Easterly, W.R., Islam and J.E. Stiglitz, 2000. Shaken and stirred: Explaining growth volatility'. Discussion paper. The World Bank. Available from http://siteresources.worldbank.org/DEC/Resources/84797-1251813753820/6415739-1251814020192/easterly.pdf

Engle, R.F. and C.W.J. Granger, 1987. Cointegration and error correction representation, estimation and testing. Econometrica, 55(2): 251-276.

Fiaschi, D. and A.M. Lavezzi, 2003. Explaining growth volatility. [Online]. Available from http://users.ictp.it/~eee/seminar/Fiaschi%20-%207%20oct%202003%20-%20paper.pdf.

Giovanni, J.D. and A.A. Levchenko, 2010. Country size, international trade, and aggregate fluctuations in granular economies, NBER paper series, Working Paper No17335.

Giovanni, J.D. and A.A. Levchenko, 2008. Trade openness and volatility. IMF Working Paper WP/08/146.

Haddad, M.E., J.J. Lim and C. Saborowski, 2010. Trade openness reduces growth volatility when countries are well diversified. World Bank, Policy Research Working Paper No. 5222.

Iversen, T., 2001. The dynamics of welfare state expansion. In the new politics of the welfare state, edited by Paul Pierson. Oxford, UK: Oxford University Press.

Karras, G., 2006. Trade openness, economic size, and macroeconomic volatility: Theory and empirical evidence. Journal of Economic Integration, 21(2): 254-272.

Liberati, P., 2006. Trade openness, financial openness and government size. Available from Http:// Www. Dauphine. Fr/ Globalisation/ Liberati. Pdf.

Loayza, N.V., R. Romain, L. Serve´n and J. Ventura, 2007. Macroeconomic volatility and welfare in developing countries: An introduction. The World Bank Economic Review, 21(3): 343–357.

Mustafa, K. and M. Nishat, 2004. Volatility of exchange rate and export growth in Pakistan: The structure and interdependence in regional markets. The Pakistan Development Review, 43(4 Part II): 813–828.

Razin, A., E. Sadka and T. Coury, 2002. Trade openness, investment instability and terms-of-trade volatility. National Bureau of Economic Research, Working Paper No. 9332.

Rodrik, D., 1997. Trade, social insurance and the limits to globalization. NBER Working Paper No. 5905. Available from www.nber.org/papers/w5905.

Rodrik, D., 1998. Why do more open economies have bigger governments? Journal of Political Economy, 106(5): 997-1032.

Ruggie, J.G., 1982. International regimes, transactions, and change: Embedded liberalism in the postwar economic order. International Organization, 36(2): 379-402.