International Journal of Applied Research 2016; 2(7): 103-106

ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2016; 2(7): 103-106
www.allresearchjournal.com
Received: 17-06-2016
Accepted: 18-07-2016

Dr. P Chellasamy
Associate Professor,
School of Commerce,
Bharathiar University,
Coimbatore, Tamil Nadu,
India

Anu KM
PhD Research Scholar,
School of Commerce,
Bharathiar University,
Coimbatore, Tamil Nadu,
India

Correspondence
Dr. P Chellasamy
Associate Professor,
School of Commerce,
Bharathiar University,
Coimbatore, Tamil Nadu,
India

Impact of derivative trading on real economic activity of India

Dr. P Chellasamy and Anu KM

Abstract
The study determines the impact of derivative trading on real economic activity of India. Quarterly time series data for the period from 2000 (2) to 2016 (1) was sourced from RBI Hand book of Indian Economy. Result from the decomposition analysis and impulse response function provide support that derivatives markets do not have a significant impact on the level of real economic activity for the Indian economy. Further it is found that Interest rate exposure is not the most important factor promoting derivatives trading, and therefore there is little empirical evidence that derivatives have any significant impact on the effectiveness of monetary policy itself. The fact that derivatives markets do not have any definitive impact on the macro economy means that derivatives should not be seen as a threat to macroeconomic stability or systemic stability

Keywords: Derivatives, economic growth, variance decomposition, impulse response

Introduction
The single largest innovation in global financial markets in response to financial deregulation and financial innovation over the past two decades has been the emergence and spectacular growth of derivatives markets. There has been a striking growth in the invention and the use of new financial instruments such as swaps, financial futures and options. These instruments have increased the ability of the users to cope with fluctuations in exchange rates, interest rates and security prices. Futures and options have increased the opportunity for hedging and arbitrage between cash and derivative markets; and thus made these markets interdependent nationally and internationally. Also it means that market participants are now better equipped to insulate themselves from changes in interest rates thus reducing the impact of monetary policy as a tool for regulating or stimulating aggregate demand.
Theoretically, the presence of derivatives markets speeds up the transmission mechanism of monetary policy to the real economy by reducing market imperfections. Research shows that information is more rapidly incorporated into the prices of underlying securities in the presence of derivatives because of the link between the derivatives markets and the underlying markets. If this is the case then it is likely that derivatives trading will reduce the impact of monetary policy on real output.

Review of earlier studies
Juraj Lazový & Juraj Sipko (2014) [1], investigated the impact of financial derivatives on the real economy. They used correlation analysis and Granger causality tests. OTC derivatives measured by notional amounts outstanding reduce economic growth and increase unemployment, exchange traded derivatives (amounts outstanding) increase unemployment as well. On the other hand, both groups have a positive impact on reducing inflation. Tests of results confirmed the positive correlation and causality between economic growth and falling unemployment rate, respectively between economic growth and rising inflation. The conclusions are valid for the group of high income countries for the period 1986-2012. The result according to which the size of the OTC derivatives market in notional (notional amounts outstanding) and market value (gross market values) negatively correlated with each other.
Ruchi Gupta (2004) [2] assessed the impact of derivatives trading on the real macro economy of United States using a Vector Autoregressive and Structural Autoregressive methodology. He also examined the impulse responses due to monetary policy shocks for interest rates,

output and inflation in the presence of derivatives markets trading in order to investigate the relationship between derivatives trading and the real economy. The study found that the impact of derivative on the real economy is still not strongly definitive. Nevertheless, the results from this study tend to support the proposition that the impact of any interest rate shock on the overall economy starts earlier than would otherwise occur in the absence of derivatives markets Peter Haiss and Bernhard Sammer (2010) [3], examined the impact of derivatives markets on asset management and the economy through three transmission channels: volume channel, the efficiency channel, and the risk channel and tested whether the growing importance of derivatives changed the financial sectors′ ability to support economic growth in the United States for the period from Q1 1990 to Q3 2008. Production function approach was employed to investigate if the variables were robustly correlated with economic growth as measured by the GDP. It was found that there exist only a weak correlation of the financial sector and derivatives in particular, with economic growth. The study suggests that derivatives markets are capable to foster economic performance via the described channels and development.

Statement of the problem

Movements in financial asset prices are potentially important for understanding how the economy behaves. The phenomenal growth in the turnover of derivative instruments has made them an important financial sector. This market is relatively new and is growing fast. Derivatives are a step closer towards complete markets. They lower the transaction costs, and thus it is possible to say that their prices provide more accurate information about the nature of monetary shocks. This information help agents to differentiate between real and nominal disturbances thereby reducing any potential real effects of monetary policy. A reduction of the real effects of monetary policy is likely to reduce the powers of the Central Bank, as there will be a limited role for it to influence real output. Hence the researcher has framed the question:

- ✓ Whether there is any impact of derivative trading on real economic activity?

Data and Methodology

The aim of this paper is to analyse the impact of derivatives markets, on the monetary policy transmission mechanism and thus on the real economy. The empirical methodology builds upon that of Geriach and Smets (1995) [3] and Gall (1992) [4], which in turn are based on Blanchard and Quah (1989) [5]. The model is comprised of four variables, measured quarterly: real gross domestic product (y), price level (p). Bank Rate (r) and a proxy for derivative market size (d). The proxy for derivative market size is the transactions volume of all the equity derivative contracts on the National Stock Exchange of India. The VAR model has been estimated using quarterly data over the period 2000(2) to 2016(1).

Results and Discussion

The data sets of the variables Derivatives Trading (LDER), Gross Domestic Product (LGDP), Bank rate (RATE) and Consumer Price Index (LCPI) were tested for stationarity using Augmented Dickey Fuller tests. The result is presented in table 1

Unit Root Test

Table 1: Stationarity Tests of Variables Adf Unit Root Test

Variable	Level		First difference	
	t-statistics	P value	t-statistics	P value
LDER	-4.427150	0.0042		
LGDP	-2.052031	0.9773	-5.937531	0.0430
RATE	-2.555419	0.3016	-5.780987	0.0000
LCPI	-1.455374	0.8945	-6.33958	0.0000

Source: compiled and calculated from dbrie.org

Table 1 exhibits unit root test for the variables gross domestic product (LGDP), derivative trading (LDER), Bank rate (RATE) and Consumer Price Index (LCPI). The result reveals that derivative trading is stationary at level whereas GDP, Bank rate and CPI became stationary when their first difference was taken.

Variance decomposition Result

The forecast error variance decomposition (FEVD) is one of the tools of innovation accounting analysis used to trace out the impact of shocks (innovations) in the VAR system. FEVD is used to ascertain the importance of interactions among economic variables in the system. The variance decomposition divides the forecast error variance of a given variable according to the causal strength of the innovation effects of the variable on itself and on other variables in the VAR model (Hakkio and Morris, 1984) [6]. As Sims (1980) [7] pointed out, the magnitude of the forecast error variance provides an estimate of the Granger causal strength of the innovating variables on other variables in the VAR model. Variance decompositions for 10 period ahead forecasts were calculated to capture the full dynamics of the impact of Derivatives markets (Lvolume) on real gross domestic product (DLGDP) and the results are reported in Tables 2.

Table 2: Variance Decomposition of LDER

Period	S.E.	LDER	DLCPI	DLGDP	DRATE
1	0.194970	100.0000	0.000000	0.000000	0.000000
2	0.266928	98.58468	0.077358	0.016153	1.321810
3	0.314327	98.45421	0.055810	0.014833	1.475152
4	0.350081	98.37774	0.045953	0.015147	1.561158
5	0.377973	98.32881	0.039625	0.014791	1.616778
6	0.400201	98.29680	0.035447	0.013746	1.654006
7	0.418239	98.27553	0.032462	0.013140	1.678868
8	0.433049	98.25986	0.030294	0.012781	1.697070
9	0.445300	98.24795	0.028667	0.012479	1.710907
10	0.455495	98.23880	0.027410	0.012239	1.721554

The result reported in Table 3 provides evidence of the causal relationship between derivatives turnover and other real variables in the economy. As expected the most important explanation of innovations in derivative volume is its own past values (accounting for about 98%) over different forecast horizons. Again the relationship between derivatives volume and real GDP is very small (less than 1%) further supporting the proposition that derivatives markets do not have an important impact on real economic activity. Economic theory suggests an innovation in price level explains over 2% of the forecast error variance of derivatives volume while the bank rate accounts for only 1.7% of the of the forecast error variance of derivatives volume. Thus the relationship between bank rate and derivatives trading is not very high, suggesting that interest

rate exposure is not the only factor encouraging derivatives trading; it is possible that traders have been using derivatives more for speculative rather than hedging purposes. On examining the results from the variance decomposition tables it is important to pay attention to values of the components of the forecast errors over the entire forecast horizon. Results in Tables.3 shows that the proportions of each component (of forecast error variance) remain more or less constant.

Summarizing the decomposition analysis it can be said that derivatives markets do not have a significant impact on the level of real economic activity for the Indian economy. Interest rate exposure is not the most important factor promoting derivatives trading, and therefore there is little empirical evidence that derivatives have any significant impact on the effectiveness of monetary policy itself.

Impulse Response function

The impulse response function (IRF), shows how one variable responds over time to a single innovation in itself or in another variable. In a VAR system consisting of four endogenous variables (RDGP, Lvolume, bank rate. Price) a reaction/ response of one variable to an exogenous shock may involve a number of other variables as well. An exogenous shock in a variable has effects on other variables if there is a casual relationship between the "shocked" and the remaining variables. Therefore, from the estimated model the effect of an exogenous shock or innovation in one of the variables on all other variables can be measured. This process is called the impulse response analysis or the multiplier analysis.

The graphical illustration of an impulse response function can provide an intuitive insight into the dynamic relationship between two variables, as it portrays the response of one variable to an unanticipated shock in the other variable over a certain time horizon.

The impulse response function of VAR analyses dynamic effects of the system when the model receives the impulse. In VAR model there are four variables so it is possible to work the response between these variables. In order to exhibit the response function clearer, charts has been plotted.

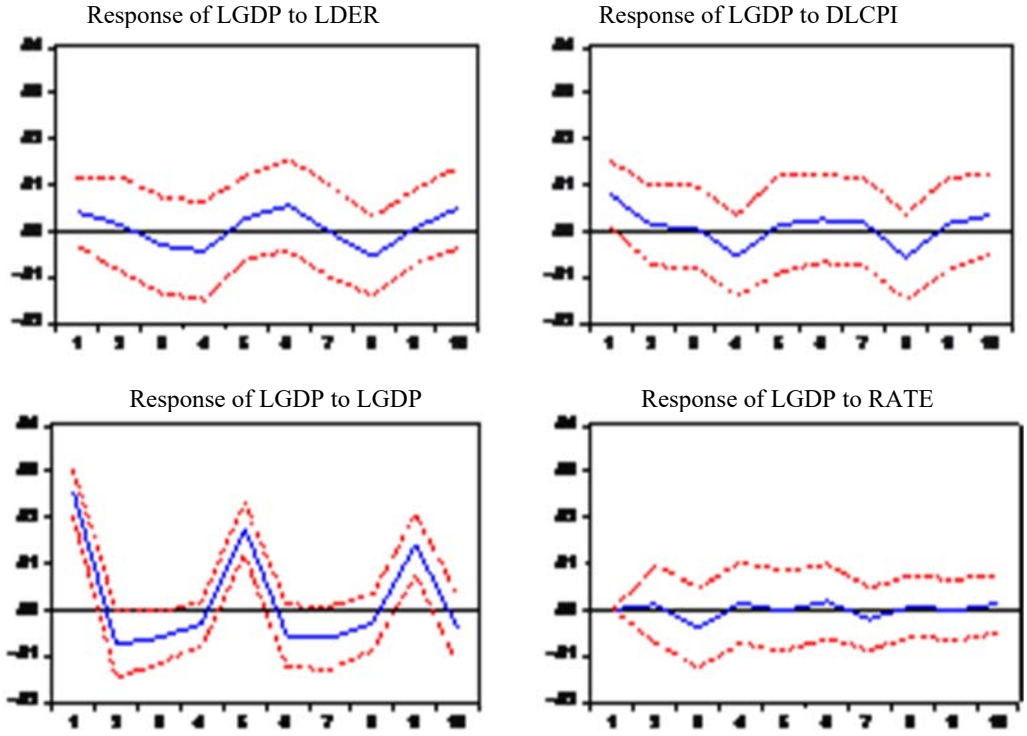

Chart 1: Impulse Response function of select variables

Chart 1 displays the impulse response; the X-axis of the graph represents the duration (quarters) of the response of one variable to one unit shock from another variable, while the Y-axis measures the level or the degree of the response. The maximum horizon period t = 10 quarters, and the measure of response is one standard deviation.

The graph represents the response of DLGDP to other variables such as DLCPI, LDER and DRATE. It can be inferred from the table that when standard deviation shock of derivatives trading is given to one of the innovations of current and future values of various endogenous variables, each variables shows a fluctuating response.

In the response of DLGDP to a one unit unexpected shock in price, the GDP is negative and the values return to equilibrium after a lag of 10 quarters. The impact is insignificant, as the values are very small. The response of DLGDP to an unexpected innovation in Bank rate is generally positive but again the values are very small An unexpected innovation in derivatives trading volume leads to an initial decline in DLGDP but a rapid increase later on, before moving towards equilibrium. The response is negative for only two quarters before finally turning positive for the remainder of the time frame. However, the positive increase is more than offset by the initial negative values. The important thing to note is the values are very small, further supporting the conclusion in the previous section regarding a weak relationship between economic growth and the derivatives markets.

Conclusion

The purpose of the study was to determine the impact of derivative trading on real economic activity of India. Result from the decomposition analysis and impulse response function provide support that derivatives markets do not have a significant impact on the level of real economic activity for the Indian economy. Further it is found that Interest rate exposure is not the most important factor promoting derivatives trading, and therefore there is little empirical evidence that derivatives have any significant impact on the effectiveness of monetary policy itself. The fact that derivatives markets do not have any definitive impact on the macro economy means that derivatives should not be seen as a threat to macroeconomic stability or systemic stability. Hence, policy makers should not view derivatives as a source of any potential systemic failures.

References

1. Juraj Lazový, Juraj Sipko. Impact of Financial Derivatives on the Real Economy International Journal of Management Excellence. 2014; 4(1):494-502.
2. Paulo Rodrigues, Claudia Schwarz, Norman Seeger. Does the Institutionalization of Derivatives Trading Spur Economic Growth, 2012. Retrieved From http://ssrn.com/abstract=2014805
3. Peter Haiss, Bernhard Sammer. The Impact of Derivatives Markets on Financial Integration, Risk, and Economic Growth the Bundesbank / Athenian Policy Forum 10th Biennial Conference on Regulatory Responses to the Financial Crisis, Frankfurt, DE, 2010.
4. Rao Muhammad Atif, Abida Jadoon, Khalid Zaman, Aisha Ismail, Rabia Seemab. Trade Liberalisation, Financial Development and Economic Growth: Evidence from Pakistan, Journal of international academic research. 2010; 10(2):30-37.