Exchange Rate Volatility and its Impact on Trade Performance in Australia: Empirical Evidence from Aggregate, Sectoral and Bilateral Trade Data Levels

by

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Abstract

As an important macro variable, the exchange rate has a significant influence on the whole economy. This study focuses on the impact of exchange rate volatility on trade performance in Australia given the evidence from the Autoregressive Distributed Lag (ARDL) bounds testing approach at aggregate, sectoral and bilateral trade data levels.

Despite the considerable amount of research that has been undertaken to analyse the impact of exchange rate volatility on trade performance, studies of the impact of exchange rate volatility on trade performance have reported many conflicting results since the results are significantly influenced both by the authors' modelling strategies, for example, the choices of sampling period, model specification, measurements of exchange rate volatility and countries considered, and by the contexts of their investigations. Some studies demonstrate that there are negative relationships between exchange rate volatility and trade performance whereas other studies show positive relationships. Some empirical literature suggests that exchange rate volatilities may have both positive and negative impacts on trade flows, while other studies show that there is no significant relationship between exchange rate volatility and trade flows.

This study intends to explore new and previously unused quarterly data ranging from 1983 to 2007 and apply the ARDL bounds testing approach to estimate the effects of exchange rate volatility on Australia's trade performance. This study makes a contribution to current research in various ways. First, this study develops two sets of nominal and real exchange rate volatility, applying the most commonly used measurements generated from moving average standard deviation (MSD) and the GARCH models for each nominal and real exchange rate. Secondly, it is based on a substantially longer period of quarterly data than previous studies. In addition, this study empirically investigates the impact of exchange rate volatility on the export and import flows of Australia from aggregate, sectoral and bilateral trade data levels, which can deal with the aggregation bias and deepen the analysis step by step and ensure the results are more reliable and robust.

The empirical results from this study suggest that the impact of exchange rate volatility on trade differs among the three different trade data levels, and can have either positive or negative impacts on trade flows. For aggregate, sectoral and bilateral levels, volatility has a statistically significant positive impact on trade flows in 2, 1 and 9 equations respectively, and it has statistically significant negative impact on trade flows in 0, 8 and 4 equations respectively. This indicates that exchange rate volatility has statistically significant negative impact on trade flows in more cases at sectoral trade data level, and it has statistically significant positive impact on trade flows in more cases at aggregate and bilateral trade data levels.

Our results also indicate that Australia's exports are more sensitive than imports to exchange rate volatility since there are more export equations than import equations (15 vs 9) in which exchange rate volatility has a statistically significant impact on trade flows. Empirical results show that exchange rate volatility has a significant positive impact on the export sector Resources and an insignificant positive impact on the export sector Rural Goods. For the export sector Manufactures, exchange rate volatility has a significant negative impact. For all three import sectors, exchange rate volatility has an insignificant impact with a positive sign on Capital imports and negative signs on Consumption and Intermediate imports.

Moreover, the empirical results show that there is little overall difference between the results produced with GARCH-type volatility measures and those with MSD-type volatility measures. As well, there is little difference between the results produced with the volatility measures derived from the real exchange rate and the nominal exchange rate. In addition, GDP generally has a positive impact on trade flows at all three trade data levels, whereas Relative Price can have positive, negative or even no impact on trade flows. All in all, the findings from this study suggest that policymakers should pay more attention to the relative exchange rate policy and trade issues.

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List of Abbreviations

ABS	Australia Bureau of Statistics
ADF	Augmented Dicky Fuller tests
AIC	Akaike Information Criterion
AR	Autoregressive
ARCH	Autoregressive Conditional Heteroskedasticity
ARDL	Autoregressive Distributed Lag
ARMA	Autoregressive Moving Average
ASEAN	Association of South East Asian Nations
BLUE	Best Linear Unbiased Estimator
CPI	Consumer Price Index
CUSUM	Cumulative sum of recursive residuals
CUSUMQ	CUSUM of squares
DCC	Dynamic Conditional Correlation
DFGLS	Dickey-Fuller Test with GLS detrending
DOLS	Dynamic Ordinary Least Squares
EBA	Extreme Bound Analysis
ECM	Error Correction Model
EMU	European Monetary Union
ERS	Elliot, Rothenberg and Stock point optimal test
ESTAR	Exponential Smooth Transition Autoregressive Model
FGLS	Feasible Generalized Least Squares
FMOLS	Fully Modified Ordinary Least Squares
FTA	Free Trade Agreement
GARCH	Generalized Autoregressive Conditional Heteroskedasticity
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GMM	Generalized Method of Moments
G2SLS	Generalized two Stage Least Squares
IMF	International Monetary Fund

IPS	Im, Pesaran and Shin test
IV	Instrumental Variable
KPSS	Kwiatkowski, Phillips, Schmidt and Shin test
LLC	Levin, Lin and Chu test
LM	Lagrange Multiplier
MSD	Moving Standard Deviation
NEER	Nominal Effective Exchange Rate
NER	Nominal Exchange Rate
NP	Ng and Perron (NP) tests
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PP	Phillips-Perron test
PPML-IV	Poisson pseudo-maximum likelihood-Instrumental Varialbe
RBA	Reserve Bank of Australia
RC	Random Coefficient
RECM	Restricted Error Correction Model
REER	Real Effective Exchange Rate
RER	Real Exchange Rate
SBIC	Schwarz's Bayesian Information Criteria
SDR	Special Drawing Rights
SIC	Schwarz Information Criterion
SUR	Seemingly Unrelated Regression
TOT	Terms of Trade
TWI	Trade Weighted Index
UECM	Unrestricted Error Correction Model
UK	United Kingdom
US	United States
VAR	Vector Autoregression
VDR	Variable Deposit Requirements
VECM	Vector Error Correction Model
WLS	Weighted Least Squares

WTO World Trade Organisation

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