Economic Growth, Financial and Trade Globalization in the Philippines: A Vector Autoregressive Analysis

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August 2014

ECONOMIC GROWTH, FINANCIAL AND TRADE GLOBALIZATION IN THE PHILIPPINES: A VECTOR AUTOREGRESSIVE ANALYSIS

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Abstract

This study was conducted to examine the relationship among Economic Growth, Financial and trade Globalization in the Philippines from 1980 to 2011. The study used the Vector Autoregressive VAR (1) model and Granger Causality test. It was found out that the current value of GDP is positively affected by the previous value of itself and trade openness. The estimation results suggested that growth in trade volumes accelerate economic growth. However, financial openness has no significant effect on the current value of GDP. This implies that the level of openness of the Philippine economy is not sufficient to obtain the potential benefits of financial globalization in enhancing economic growth.

INTRODUCTION

Financial globalization refers to the integration of all financial markets in the world. There are three major forces that have contributed importantly to the process of financial globalization and these are the (i) liberalization of capital movements and deregulation of financial services, (ii) the opening of markets to trade and investment spurring the growth of international competition and (iii) the important role played by information and communication technologies (ICT) in the economy (www.oecd.com).

In general, the concept of financial globalization is the creation of global money market, global financial market and global financial system that entails an intensification of financial capital flows and expansion in degree of openness of national financial markets (Hetes, 2011). Financial globalization according to Prasad *et al.*, (2003) is the rising of global linkages through cross-border financial capital flows, while Arestis and Basu (2003) defined financial globalization as a free movement of finance across the national boundaries without facing any restrictions. Meanwhile, Lane and Ferretti (2007) suggest that financial globalization can be measured by the growth rate of financial openness which is defined as the ratio of the sum of external assets and liabilities as a share of GDP. External assets include FDI assets while foreign liabilities include external debt.

Prasad *et al.*, (2004) established empirical evidence about the benefits of financial globalization on economic growth. They believed that financial globalization raises the growth rate in developing countries through a number of channels. This directly affect the determinants of economic growth which are the augmentation of domestic savings, reduction in the cost of capital, transfer of technology from advanced to developing countries and development of domestic financial sectors. Indirect channels include an increase in production specialization due to better risk management and improvements in both macroeconomic policies and institutions. Although financial globalization has several potential benefits, it also has possible risks. After countries liberalized their financial systems and became integrated with world financial markets it is now prone to external shocks that may result in financial crises and contagion. It is when a country becomes dependent on foreign capital and then a sudden shift of foreign capital flows can create financing difficulties, economic downturns and international financial markets imperfections (Schmukler, 2004). Proven by Schmukler *et al.,* (2010), analyzes the correlation between the growth collapse and economic integration and has found that middle-income economies suffered collapses comparable to those in high-income economies.

On the other hand, trade globalization represents the proportion of all world production of imports and exports that crosses the boundaries between countries. Briefly, trade globalization is measured as the proportion of country's total volume of trade as a share of gross domestic product (www.wikipedia.com). Hence, trade openness is used as a measure of trade globalization. Trade openness helps to improve economic performance by increasing competition and by giving domestic firms access to the best foreign technology that helps to raise domestic productivity (Sakyi, *et al.*, 2012).

Trade theory stated that a country engage in trade specializes in the production of goods in which it has a comparative advantage and this would lower the opportunity costs prior to trade than the other. Thus, country exports goods in which it has a comparative advantage, which is usually assumed to be derived from either exogenous technological differences or different factor endowments. Hence, according to conventional trade theory, international trade is associated with a reallocation of resources within the national borders determined by exogenous differences across countries. This reallocation of resources generates efficiency gains that lead to an increase in the level of aggregate national income (Ha Le, 2000).

These theories provide some idea to understand those successful economic development stories of an opened-economy. Conversely, empirical evidence reports negative relationship of trade openness and growth before and after World War II, a negative correlation was usually observed (Kai-Wang 2012). Overall, the mechanism that links trade openness and economic growth is still unclear.

A rapidly growing literature on financial and trade globalization is addressing possible benefits and costs. Therefore, it is becoming increasingly more important to construct such a measure of the effect of financial and trade globalization on economic growth especially for a developing country. Thus, this study is conceptualized to look into how financial and trade globalization characterized by financial openness and trade openness may affect the economic growth of the Philippines.

Rationale of the Study

Financial and trade globalization has been one of the most controversial topics in the world that resulted in debates among policy makers, economists and businessmen about its potential perils or benefits to the economy and society as a whole. Financial and trade globalization is like a double-edged sword that can create winners and losers in the global market. It may cause advantage or disadvantage to the economy since it enhances competition among market players.

According to Arestis and Basu (2003) the recent wave of financial globalization since the mid-1980s has been marked by a surge in capital flows among industrial countries and developing countries. While these capital flows have been associated with high growth rates in some developing countries, a number of countries have experienced episodic collapses in growth rates and significant financial crises over the same period, crises that result into a serious toll in terms of macroeconomic and social costs.

Iyoko and Eboreime (2006) characterized financial globalization as an intensification of cross-border trade and capital flows which eventually result an increase in economic growth. Proven by Rincon (2007), he examined the effects of financial globalization on growth and macroeconomic volatility. Also, Sarbapriya (2012) empirically investigated the long-run and causal relationship between financial globalization and economic growth. The findings show that financial globalization spurs growth.

Despite of these positive relationships, financial globalization has negative impacts that brought fear particularly to the developing countries around the world. It has possible costs like concentration of capital flows in certain groups of countries, inflation pressures, real exchange rate appreciation and external imbalances contagion (Agenor, 2003). Empirical worked by Grilli and Ferretti (1995) and Edison et al. (2002) confirmed that there is no positive impact between financial openness and growth.

On the other hand, trade openness in theory helps to accelerate growth. Grossman and Helpman (1991) found a positive relationship of trade openness and economic growth; and concluded that countries that are more open have a greater ability to adapt to leading technologies of the rest of the world. Chang et *al.,* (2005) point out that openness promotes the efficient allocation of resources through comparative advantage that will lead to technological progress and encourages competition in domestic and international markets. However, reverse results exist on the findings of Amadou (2013). In the West African Economic and Monetary Union (WAEMU) countries, the results indicates that trade openness doesn't spurs economic growth.

Empirical literatures about financial and trade globalization have brought potential benefits to economic growth among developing countries. The findings however, are still inconclusive. Furthermore, there is no study yet have been conducted in the Philippines to tackle about the relationship between economic growth, financial and trade globalization. Thus, this study ventures to conceptualize and to identify the relationship of economic growth, financial and trade globalization**.**

Objective of the Study

The general objective of this study is to investigate the relationship between economic growth, financial and trade globalization in the Philippines. Specifically, this study aims to:

1. present the trend of trade openness and financial openness; and the economic growth rate from 1980-2011, and
2. to provide empirical evidence on the relationship among economic growth, financial and trade globalization .

METHODOLOGY

Theoretical Framework

The term financial globalization refers to the process by which financial markets of various countries of the globe are integrated as one. It is also defined as a free movement of finance across national boundaries without facing any restrictions (Arestis *et al.*, 2003). In theory, financial globalization affects economic welfare through various channels by enabling capital flow from capital-abundant to capital-scarce countries and thereby improving the global allocation of resources, by facilitating organizational and technological cross-country spillovers, by imposing macroeconomic discipline on governments, and by allowing enhanced international risk sharing and subsequent specialization.

Growth theory states that financial openness helps to accelerate growth in low-income countries by raising domestic savings and giving access to global capital flows (Fisher, 2003 and Summers, 2000). Financial openness is defined as the situation where existing administrative and market based restrictions on capital movement across borders have been removed (Le, 2000).

With respect to trade openness and economic growth, a growth theory implies that there is a positive relationship between openness and economic growth rate in the long run. In the traditional models of international trade, openness to trade from an autarkic situation increases the value of the total production in the economy. In other words, openness improves the allocative efficiency of the economy. In the Ricardian model, as trade becomes more open the country that specializes in the production of the good will have labor productivity advantage than of the other countries, not specializing it, since they are to produce products easier for them to manufacture, but are somehow difficult for those other countries. In the Hecksher-Ohlin model, the country exports the good which uses its abundant factor more intensively. As the economy opens, there is a shift in resources toward the sector that draw upon the abundant factor, and thus, the value of total production increases (Lopez, 2005). On the other hand, Heckscher-Ohlin theorem resides in the link between endowment patterns and outputs for a single economy exemplified by the Rybczynski theorem. An extension of this theorem allows the comparison of the transformation two economies with similar technologies. In the context of fixed price H-O model related to the theorem of Rybczynski, an exogenous increase in the stock of capital, for instance, leads to an increase of the output of goods intensive

in capital and a decrease of labor intensive ones. If the country concerned has relatively more capital than the rest of the world, the increase in capital stock leads to more exchanges. Conversely, if the country is abundantly endowed with labor, the increase in the capital stock causes a decrease in trade.

Conceptual Framework

The conceptual framework as illustrated in Figure 1, shows the possible relationship of financial and trade globalization represented by the following; financial openness and trade openness and its effect to economic growth represented by the real gross domestic product (GDP).
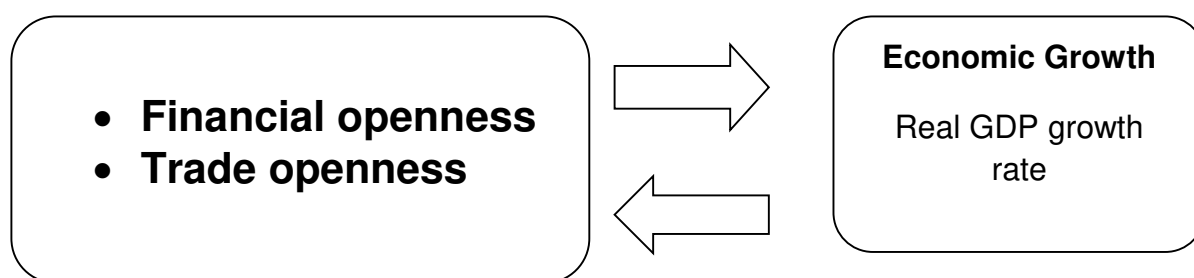

Figure 1. The possible relationship of financial globalization and economic growth.

Measuring Financial Openness

The study used de facto (quantitative) measure in determining financial openness instead of de jure (legal) measure following Chanda (2005) and Prasad *et al.,* (2003). The difference between the de facto and de jure measure of financial openness is that de facto measure (constructed by Lane and Milesi-Ferretti, 2006), is the sum of external asset and liabilities divided by the GDP. In other words, it sums the amount of money entering and leaving in the country relative to the economy size. The de jure measures (constructed by Lane and Milesi-Ferretti, 2006) take the policies or restrictions designed to the financial system of the country (Baltagi et al., 2008).
In particular, this study used FDI as the external asset and external debts as the external liabilities. This indicator provides a best picture of an opened economy and a best measure of country's history of financial globalization suggested by Lane and Milesi-Ferretti,(2006).

The Variables
1. Real GDP growth rate
   Annual percentage growth rate of GDP at market prices. It is an inflation-adjusted measure that reflects the value of all goods and services produced in a given year expressed in base year prices. Referred to as a constant price level and provide a more accurate figure (www.investopedia.com).
2. Financial openness
   Financial openness is measured as the sum of FDI inflow and external debts divided by GDP (Lane and Melise-Ferreti, 2007).
3. Trade Openness
   The *trade-to-GDP ratio* is used to measure the importance of international transactions relative to domestic transactions. This indicator is calculated for each country as the simple average of total trade (*i.e.* the sum of exports and imports of goods and services) relative to GDP.

Data Sources

The data of various indicators for financial globalization which is financial openness (FDI and External debts as a ratio of GDP) is obtained from World bank. Also, real GDP growth rate and trade openness are taken from the same source. This study will utilize the annual secondary data over the period from 1980 to 2011.

Statistical method

Time series analyses specifically the Vector Autoregressive Analysis (VAR) and Granger Causality test are the main tool used in this study to give empirical evidence of the effect of financial and trade globalization on economic growth rate. A brief discussion on the background and requirements of the methodology employed are presented.

Time Series Analysis

Time series analysis is used when observations are made repeatedly over 20 or more time periods. It is primarily concerned with the past behaviour of a variance in order to predict its future behaviour.

There are two main goals of time series analysis: first, identifying the nature of the phenomenon represented by the sequence of observations and the second is forecasting (predicting future values of the time series variable) (Reinert, 2010).

Test for Stationarity

It is suggested that when dealing with time series data it is necessary to test the stationarity. Regressing a time series can obtain a very high R^2 which implies an insignificant relationship among the variables. This situation reflects the problem of spurious regression between totally unrelated variables generated by a non-stationary process. Therefore, prior to VAR and implementing the Granger Causality test, econometric methodology needs to examine the stationarity of each individual time series data.

A stochastic time series Y_t is said to be weakly stationary or covariance stationary, if and only if:

(a) $E(Y_t) = \mu$ (Y_t has a constant mean);

(b) $Var(Y_t) = \sigma^2 = y_0$ (Y_t has a constant variance);

(c) $Cov(Y_t, Y_{t-k}) = y_k$ for all k   (the covariance between any two of the terms of the series is a function only of the distance between them).

The first and second assumptions simply imply that the mean and variances are constant over time. The third requirement implies that the covariance between observations in the series is a function of how far apart they are in time and not the time at which they occur. In other words, stationarity occurs in a time series when the mean, variance and autocorrelation structures do not change over time (www.statsoft.com).

Unit Root Test

Some of the time series data exhibits a trending behaviour or nonstationarity. If this exists in the estimation, then some form of trend removal is required (Danao, 2002). To determine whether the data is stationary or not, it is important to conduct a standard unit root test. The Augmented Dickey-Fuller test (ADF) is used in testing for the presence of unit root and is applied to the data series:

$$\Delta Y_t = \gamma Y_{t-1} + \varepsilon_t == \gamma Y_{t-1} + \varepsilon_t \quad \text{(random walk)} \qquad (1)$$
$$\Delta Y_t = \sigma_0 + \sigma_2 + \gamma Y_{t-1} + \varepsilon_t \quad \text{(random walk with a drift)} \quad (2)$$
$$\Delta Y_t = \sigma_0 + \sigma_2 + \gamma Y_{t-1} + \varepsilon_t \quad \text{(mixed process)} \qquad (3)$$

The error term is assumed to be independent and identically distributed. Dickey and Fuller (1981) proposed the ADF test in order to handle the autoregressive process in the variables (Dickey and Fuller, 1979). If the ADF will indicate the occurrence of a unit root, then the series is non-stationary. In case of non-stationary, then proceed to differencing until it will arrive at a stationary series.

Differencing

Differencing means getting the changes between the time periods to transform it into stationary. The number of times that must be done to obtain stationarity series is called the order of integration. If the data series are found to be integrated after differencing p times (i.e., series become stationary after differencing p times), then the series is integrated of order p (Saundres *et al.*, 2001). Differencing is a process frequently employed to detrend the data and control autocorrelation by subtracting each datum in a series from its predecessor (www.stat.ucla.edu). If all the data are stationary after differencing, employment of VAR analysis will be applicable.

Lag Length determination

A critical element in the specification of Vector Autoregressive models the determination of its lag length. The lag length specified using an explicit statistical criterion such as the Akaike Information criterion (AIC) and Schwarz Beyesian Criterion (SBC).

AIC main idea is to select the model that minimizes the negative likelihood penalized by the numbers of parameters while SBC is one of the widely used information criteria (Schwarz, 1978). Both AIC and SBC have the main aim of identifying good models. In this case, we will choose the model which has the lowest AIC and SBC value (Enders, 1995). The AIC and SBC are given below:

$$\text{AIC} = T\log |\Sigma| + 2N$$
$$\text{SBC} = T\log |\Sigma| + N\log (T) \tag{4}$$

where:

$|\Sigma|$ = the determinants of the variance/covariance matrix of the residuals;

N = total number of the parameters estimated in all equation; and

T = the number of the usable observations.

Vector Autoregressive (VAR) Analysis

Vector Autoregressive (VAR) model is one of the most successful, flexible and easy to use model for the analysis of multivariate time series. It is an econometric model used to capture the evolution and the interdependencies between multiple time series generalizing the univariate Autoregressive (AR) models (www.wikipedia.com). This describes the evolution of a set of k variables over the same sample period (t= 1, 2 ..T) as a linear function of only their past evolution (Watson, 1994). Basically, VAR (p) is an AR model with at least two time series having (p) as the number of lags and is expressed by Aktar (2009) as:

$$Y_t = A_0 + A_1 Y_{t-1} + .. + A_p Y_{t-p} + \varepsilon_t \qquad (5)$$

where:

Y_t = is an (nx1) vector containing each of the variables in VAR

A_0 = is an (nx1) vector of intercept items

A_1 = is a (nx1) matrix (for every i=1 .... P), and

ε_t = is a (nx1) vector of error terms satisfying the foregoing equation

With the following assumptions:

1) $E(\varepsilon_t) = 0$; the error has mean 0,
2) $E(\varepsilon_t \varepsilon_{t-k}) = \Omega$; the contemporaneous covariance matrix of error terms is Ω (a n xn positive definite matrix), and
3) $E(\varepsilon_t \varepsilon_{t-k}) = 0$; for any non-zero k, there is no correlation across time. In particular there is no serial correlation in individual error terms.

The multivariate VAR model for the degree of the financial globalization indicators as a ratio of GDP (TOpen, FDI inflow, FSDI, ExtD) and economic growth (GDP) is illustrated in matrix form below

$$
\begin{pmatrix} GDP_t \\ FOpen_t \\ TOpen_t \end{pmatrix} = \begin{pmatrix} C_1 \\ C_2 \\ C_3 \end{pmatrix} + \begin{pmatrix} A^1_{1,1} & A^1_{1,2} & A^1_{1,3} \\ A^1_{2,1} & A^1_{2,2} & A^1_{2,3} \\ A^1_{3,1} & A^1_{3,2} & A^1_{3,3} \end{pmatrix} \begin{pmatrix} GDP_{t-1} \\ FOpen_{t-1} \\ TOpen_{t-1} \end{pmatrix} + ... +
$$

$$
\begin{pmatrix} A^p_{1,1} & A^p_{1,2} & A^p_{1,3} \\ A^p_{2,1} & A^p_{2,2} & A^p_{2,3} \\ A^p_{3,1} & A^p_{3,2} & A^p_{3,3} \end{pmatrix} \begin{pmatrix} GDP_{t-p} \\ FOpen_{t-p} \\ TOpen_{t-p} \end{pmatrix} \begin{pmatrix} \varepsilon_{1-t} \\ \varepsilon_{2-t} \\ \varepsilon_{3-t} \end{pmatrix}
$$

where:

t = time subscript,

GDP_t = real GDP observed over time period t,

FOpen$_t$ = financial openness observed time period t,

TOpen$_t$ = trade openness observed over time period t,
A$_{i,j}$ = coefficents of the matrices associated to the VAR, the
          super scripts denote the order of the matrix,
C$_1$ C$_2$ and C$_3$ = constraints
ε$_t$ = the error terms

In dealing with the time series data, it is important to know whether changes in one variable will have an impact on the changes of other variables. Hence, this study process proceeds to undertake Granger Causality Test.

Granger Causality Test

Causality is a kind of statistical feedback concept which is widely used in the building of forecasting models. Historically, Granger, (1969) and Sim, (1972) were the ones who formalized the application of causality in economics. The standard Granger causality test (Granger, 1988) seeks to determine whether past values of a variable helps to predict changes in another variable. The definition states that in the conditional distribution, the lagged values of Y add no information to explanation of movements of X beyond that provided by the lagged values of X itself (Green, 2003). Granger causality technique measures the information given by one variable in explaining the latest value of another variable. In addition, it also says that variable Y is Granger caused by variable X if variable X assists in predicting the value of variable Y. If this is the case, it means that the values of variable X are statistically significant in explaining variable Y.

Granger Causality test is a useful tool to investigate the effect of financial and trade globalization indicators in forecasting the economic growth rate in the Philippines. The test involves F-test to examine whether or not lagged information on a variable x provides any statistically significant information about a variable y in the presence of lagged y. In this study A ij (L) represents the coefficients of lagged values of a variable j on variable I, variable j does not granger cause variable I if all coefficients of the polynomial Aij (L) can be set equal to zero. It simply implies no causality but only just a forecasting ability. Using granger causality in this study requires checking significance of α_{ij} coeffecients.

Estimation Procedure

SHAZAM version 11.0 and Eviews package version 5.0 software is used for all computations of the parameters. SHAZAM version 11.0 is an integrated, comprehensive and completed package designed primarily for econometric and statistical analyses that can execute complex and simple estimations. On the other hand, EViews package version 5.0 provides sophisticated data analysis, regressional forecasting tool. Descriptive and graphical representations were presented using Microsoft Excel.

RESULTS AND DISCUSSION

This chapter presents the results and discussion of the study. It includes the presentation of trends of real GDP growth rate, trade openness and the constructed financial openness (sum of external debts and FDI/GDP) using descriptive method with graphical presentation on the trends of the said variables. It presents the underlying causes of the trends of the aforementioned variables, the result of stationarity tests, lag length determination, results of vector autoregressive (VAR) estimation and the granger causality test were presented.

Trend of Philippines' Real GDP growth rate

Figure 2 presents the trend of Philippines' economic growth rates from 1980 to 2011 and it follows a fluctuating trend. In the early 1980s, the country was beleaguered by economic and political instability. During the period of the martial law and the brutal assassination of former Senator Aquino in 1983 corresponded to a decreased in growth rate of GDP by -7.31%. In year 1986, Corazon Aquino was elected as a president, focused on privatization and reduction in unemployment, encourage small businesses, and develop neglected rural areas, GDP growth rate started to increased and reached 6.75% in 1988. But a downturn takes place in 1989 due to crisis and a large amount of foreign debt remained a serious problem. In the Ramos administration, the growth rate went from -0.5% in 1991 to 5.85% in 1996 due to the reason that state intervention in the economy was reduced and the Philippines moved closer to industrialization. However, due to its membership in ASEAN, Philippine was greatly affected by the Asian crisis that severely lowers the GDP growth rate to -0.58% in 1998. The economy was able to recover in 2000 with a growth rate of 4.41%. This growth was continued, however in year 2008-2009, it declined extremely to 1.15% due to global financial crisis.
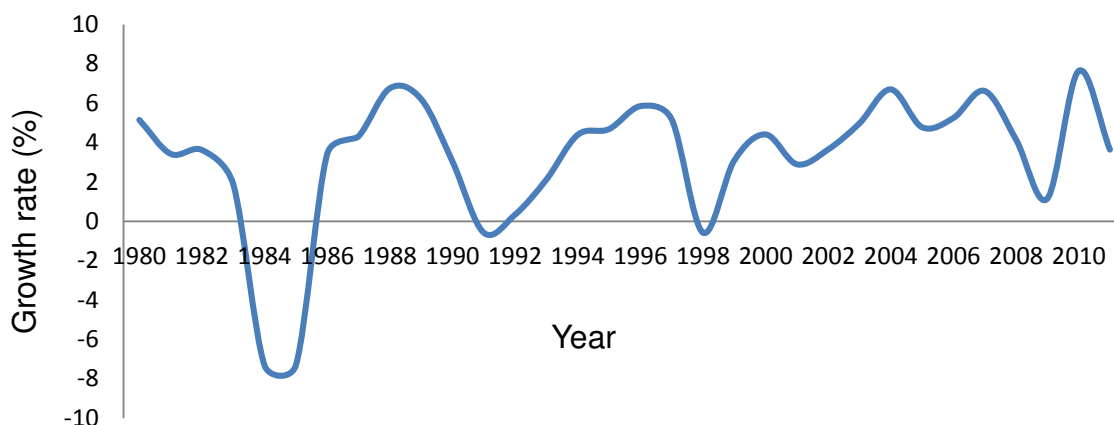
Figure 2. Philippines' Real Gross Domestic Product growth rate, 1980-2011.
Source: World Bank Database website

Trend of Trade Openness in the Philippines

Since 1980's, the Philippines has opened its economy to foreign markets, and established a network of free trade agreements with several countries. In terms of financial openness, it enables a way to obtain funds from other countries and also invest its funds to other countries (www.enotes.com). The United States then was one of the Philippines' top trading partners. According to the US Department of Commerce in 2010, trade between the Philippines and US amounted to US$ 15.4 billion in 2010. The country does not have a growing manufacturing sector, producing goods such as semiconductors and electronic microcircuits, finished electrical machinery and garments. Like, India, the Philippines is also benefiting from outsourcing of IT operations from developed countries (www.qfinance.com).

Figure 3 shows the trend of the Philippines trade openness from 1980 to 2011. As shown, the trade openness series generally follows an upward trend during the 18 year period, from 52.04 in 1980 to 108.25 in 1997. However, in the late 1997 marked the beginning of the financial crisis that resulted to decline slightly up to 99 and then down to 95 in 1999 as a consequence also of cheaper exports (garments and semiconductors) in the international market. However, the experienced was short-lived when exports and imports followed a declining trend. Total exports contracted more than the total imports starting mid-2000. In year 2011, trade openness hit 67.
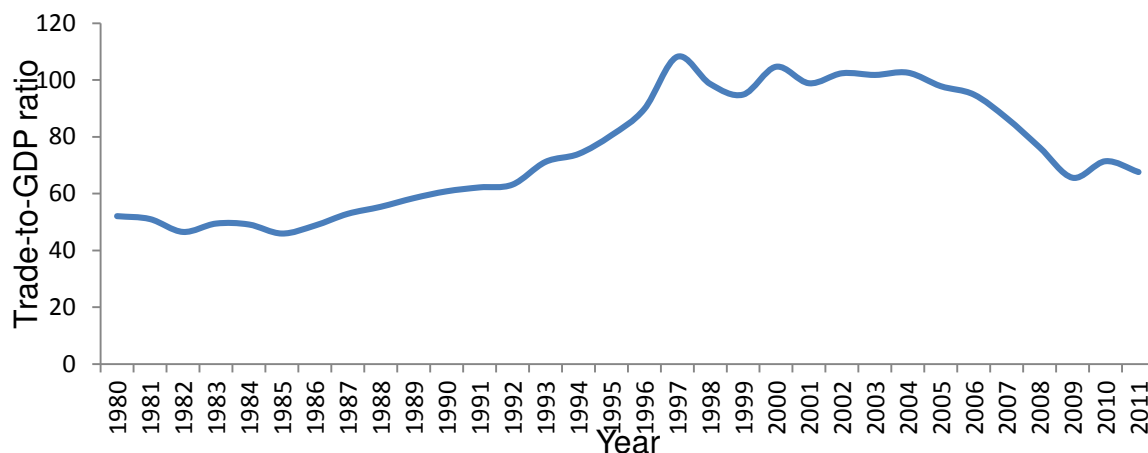
Figure 3. Philippines' Trade Openness, 1980-2011.
Source: World Bank Database website

Trend of Financial Openness in the Philippines

The study used de facto measure in determining financial openness instead of de jure measure following Chanda (2005) and Prasad *et al.*, (2003). The de facto measure of financial openness (constructed by Lane and Milesi-Ferretti, 2006), is the sum of external asset and liabilities divided by the GDP. In particular, this study used FDI as the external asset and external debts as a external liabilities. This indicator provides a best picture of an opened economy and a best measure of country's history of financial globalization suggested by Lane and Milesi-Ferretti,(2006).

Figure 4 shows the trend Philippines' financial openness, 1980-2011. As shown, it follows an extremely erratic movement. The trend clearly reflects the different impact of economic history of the country. In year 1980 to 1985, during Marcos administration, financial openness is low because of the existence of monopolies and the martial law consequences that reduced investment and leads to extensive borrowing.
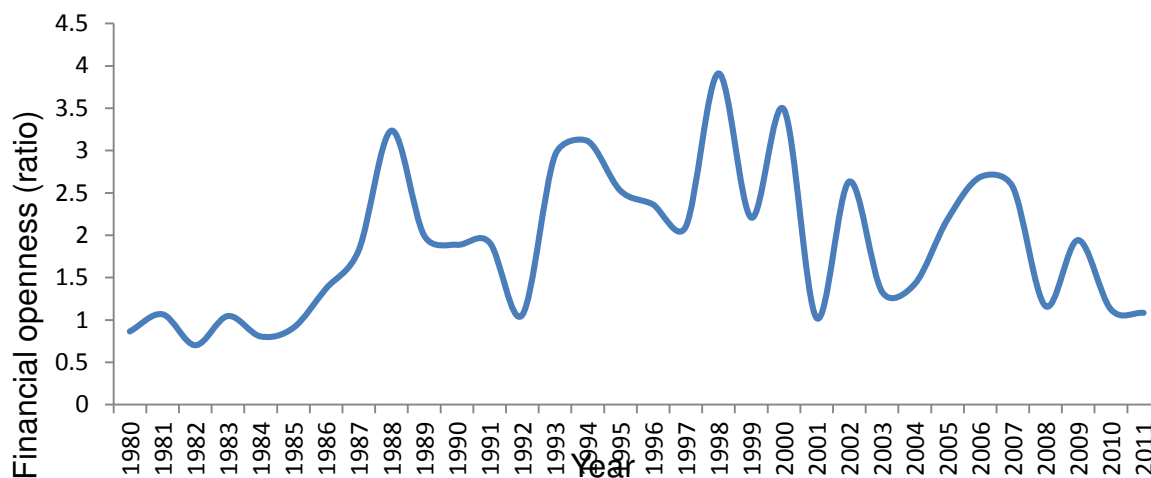
Figure 4. Philippines' Financial Openness, 1980-2011.
     Source: Authors' Calculation

In 1998, finally financial openness reached the value of 3.23 wherein unemployment was reduced and GDP growth rate increased. However, 1992 recorded a downturn of financial openness. Financial openness reached it's peaked in year 1998 with the value of 3.91 in which foreign direct investment increased by 17. Conversely, a highest percentage decrease happened in 2001 with the value of 1.02 as a result of a decreased in foreign direct investment from US$2,240B to US$195M. In 2011, financial openness drop to 1.08 because of a continuous increase in external debts and a decline in GDP growth rate from 7.63 to 3.63.

Stationary Test

Before proceeding to Vector Autoregression (VAR) analysis, the stationarity of the series is important and must be done first. This is initially tested using correlogram of autocorrelation functions (ACF) and partial autocorrelation functions (PACF). Appendices A, B and C show the ACF and sample PACF of financial openness and trade openness; and real GDP growth rate. A correlogram is a commonly used tool for checking randomness in a data set.

In time series analysis, the shape of correlogram helps to distinguish whether the time series is stationary or not. The visual inspection of the sample autocorrelation plots of the real GDP growth rate, financial openness and trade openness. GDP growth rate is stationary in level since the plots gradually die out but not with financial openness and trade openness. However, it is difficult to distinguish the

stationarity of the series by just looking at the correlogram alone. In order to test formally the stationarity of the series, the ADF test is applied.

Table 1 presents the results of the test for the presence of unit roots where values are tested at 10% level of significance. The real GDP growth rate is found to be stationary at random walk, random walk with drift and mixed process. Financial openness and trade openness do not show stationarity. Therefore, the first differencing for the variable was conducted.

Table 1. Augmented Dickey Fuller test results.

Variable	Random Walk	Random Walk w/ Drift	Mixed Process
GDP	2.2953^*	3.2599^*	3.6913^*
Trade Open.	0.10896^{ns}	1.1469^{ns}	0.067884^{ns}
Financial Open.	0.65044^{ns}	0.65044^{ns}	1.8357^{ns}

* significant at 10% level
^{ns} not significant at 10% level

Differencing

Since financial openness and trade openness have unit roots which mean that these variables are non-stationary. Thus, it has to undergo smoothing process of differencing. Table 2 shows the first differencing of trade openness and financial openness. After first differenced, the variables became stationary.

Table 2. Augmented Dickey Fuller test results after differencing $I(1)$.

Variable	Random Walk	Random Walk w/ Drift	Mixed Process
Trade Open.	1.8139^*	1.7859^{ns}	2.2792^{ns}
Financial Open.	2.6427^*	2.5741^*	3.5132^*

* significant at 10% level
^{ns} not significant at 10% level

VAR analysis was used in this study since the level of integration of the three series do not qualified for cointegration analysis.

Lag Length Determination

A critical element in the specification of VAR models is the determination of the lag length. Inappropriate lag selection could yield to inconsistent results as the accuracy of forecasts from VAR models differs significantly for alternative lag length.

As shown in Table 3, most of the Criterion (Akaike Information Criterion and Schwarz Information Criterion) all chooses lag 1. Models building VAR depends on the selection of the appropriate variables and lag length, which could be specified using AIC and SIC. Lag length selection is done using Eviews package version 5.0. The results of the lag length selection indicates that the variables of economic growth and financial globalization in the past 1 year affect the current values of real GDP growth rate, financial openness and trade openness.

Table 3. VAR Lag Order Selection Criteria.

Lag	LR	AIC	SC
0	NA	14.92078	15.06594
1	26.82710*	14.39367	14.97433*
2	15.14933	14.28865*	15.30480
3	9.749709	14.37160	15.82325
4	7.835371	14.46118	16.34833
5	4.621686	14.69132	17.01396

* Indicates lag order of the criterion
LR: Sequential modified LR test statistics (each test at 5% level)
AIC: Akaike Information Criterion
SC: Schwarz Information Criterion

Vector Autoregressive (VAR) Estimation

A VAR model is a simultaneous system of equations that examines the economic inter-relationships of variables which provide a statistical representation of the variables past interactions. Within this framework, all variables are treated symmetrically without any distinctions as to which variables are exogenous and endogenous.

The study examined the relationship among economic growth, financial and trade globalization. Table 4 shows the results of VAR estimation and the standard error of the variables with a lag order of 1.

Table 4. Estimates for the unrestricted VAR(1) model

	GDP	TO	FO
GDP(-1)	0.503588*	-0.601131*	-0.059413 ^{ns}
	(0.16666)	(0.34561)	(0.04551)
TO(-1)	0.157024*	0.155461 ^{ns}	0.024751^{ns}
	(0.08900)	(0.18458)	(0.02430)
FO(-1)	-0.340504^{ns}	-1.136469 ^{ns}	-0.623826*
	(0.55578)	(1.15257)	(0.15175)
C	1.509872	2.309517	0.172580
	(0.76439)	(1.58517)	(0.20871)
R-squared	0.314675	0.148213	0.414749
Adj. R-squared	0.235599	0.049930	0.347220
Sum sq. resids	245.8318	1057.216	18.32767
Log likelihood	-74.11991	-96.00111	-35.17637
Akaike AIC	5.207994	6.666740	2.611758
Schwarz SC	5.394820	6.853567	2.798585

The results revealed that the variation of the variables namely, trade openness (TO), financial openness (FO) and real GDP growth rate (GDP) is explained by the lagged values of the variables by about 4%, 35% and 24% respectively. Results revealed that the current value of GDP was significantly explained by its previous values. Also, the current value of GDP was significantly explained by the previous value of trade openness. This implies that GDP growth rate will increase by 0.16% for every unit increase of trade openness in the previous period. The opening of goods and services markets in the country is a precondition for growth. This result was supported by the study of Chatterji et al., (2013) which established a positive relationship of trade

openness and economic growth in India. However, the previous value of financial openness has no significant effect to the current value of GDP. This is explained by Ernst and Escudero, (2008) that despite of the accelerating financial globalization; less developed economies are not receiving their share of global savings. Savings continue to flow from less to more developed economies, in contrast with theoretical predictions. The presumption is that this may have to do with a lack of domestic financial market development with adverse effects on the rates of return necessary to attract international investors and to prevent capital outflows of excess savings. Meanwhile, the past value of GDP has a negative effect to the value of trade openness at the present year. This implies that trade openness is reduced by the increase in the previous value of GDP. This confirmed the context of a fixed-price Hicksher-Ohlin model. This model explained the flow of a capital stock that brought high technology and innovation is a risk to the growth of a labor-intensive economy. This would result to an increase in unemployment that would lead to a decrease in output.

Granger Causality Test

After performing the VAR analysis, the relationship of the variables between economic growth (real GDP growth rate), the computed financial openness and trade openness was examined by performing causality test. The results of granger causality test at a 10%significant level is presented in table 5.

Table 5. Results of the Granger Causality Test.

Null Hypothesis:	Obs	F-Statistic	Probability
TO does not Granger Cause GDP	30	2.93486	0.09815*
GDP does not Granger Cause TO		2.88812	0.10073[ns]
FO does not Granger Cause GDP	30	0.12043	0.73126[ns]
GDP does not Granger Cause FO		1.86240	0.18361[ns]
FO does not Granger Cause TO	30	0.77411	0.38671[ns]
TO does not Granger Cause FO		1.16714	0.28955[ns]

* significant at 10% level
[ns] not significant at 10% level

Consistent to the results of VAR analysis, the results of the Granger causality test verifies that trade openness helps in the prediction of economic growth in the Philippines. It was found out that trade openness has a unidirectional effect to GDP. This means that the past of values of trade openness helps to forecast the present value of GDP. However, financial openness does not granger cause GDP.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study examined the relationship between real gross domestic product growth rate, financial and trade globalization in the Philippines from 1980 to 2011. The graphical analysis shows that trade openness and financial openness greatly affects country's economic growth. It is observed that the graphical movement of trade openness, financial openness and economic growth are very fluctuating given the instantaneous impact of different domestic and global economic history.

Standard time series procedures are conducted first in order to examine the relationships of the variables. The trends of the time series are inspected and subjected to stationarity test using Shazam version 11.0, while Eviews package version 5.0, is used to check the linkage among the variables, to estimate the important parameters of the VAR equations and for the Granger causality test.

Overall, it is found out that trade openness helps spur economic growth, therefore the country should enhance and increase the driving factor that affects the volume and composition of exporting goods.

However, the results of the study also revealed that the Philippines is far behind to reap the benefits of financial globalization for a reason that the level of openness of a country is not fully sufficient to gain the potential benefits in enhancing economic growth. Indeed, the emphasis on strengthening financial regulation and governance is challenging in countries that are struggling with problems of development.

There are possible constraints presented that a country cannot directly acquire the benefits financial and trade openness. Among the constraint is the existence and continuous increase of external debts that preceded some of capital inflow. Second, the unanticipated capital flow that would cause a destabilizing effects to the global economy particularly within the country. Briefly, developing countries need foreign capital to grow, but foreign capital can be risky. Moreover, if an opened-economy does not pursue prudent macroeconomic policies and prudential regulation, as a

consequence it will be more vulnerable to risk and might also cause financial instability within the country.

RECOMMENDATIONS

As one of the developing country, the Philippine government and monetary authority must give high priority and prudent implementation of appropriate policies in order to cope with the global market activities. Policies that would consider some of the macroeconomic variables' performance that could affect the capital flows such as interest rate and exchange rate. Also, the government should focus more for the enhancement of domestic financial system. Moreover, an opened-economy requires global coordination in order to build a strong international financial system in order to prevent and manage financial crises or possible shocks.

Areas for further study

The following are some of the areas suggested for further research:
1. Examine the relationship of economic growth, financial and trade globalization using gross value of capital inflow and outflow and to include the measures of domestic financial development.

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