Original Paper

Building Econometric Model for Inflation and Unemployment Rate in Viet Nam and Myanmar

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Abstract

After the global economic crisis 2007-2011, Viet Nam and Myanmar economies experienced indirect and direct impacts on their economic, finance and banking system, and especially on unemployment rate. Although some economists have done researches on the relationship among macro economic factors such as: Consumer Price Index (CPI), inflation, GDP…, this paper aims to consider the interaction between macro economic factors such as Viet Nam inflation, US inflation and Viet Nam and Myanmar unemployment rates in the context Viet Nam and Myanmar economics receive impacts from global economic crisis. This is one main objective of this research paper. And the below chart shows us the fluctuation of Viet nam unemployment rate comparing to fluctuations of inflation in the US and in Viet Nam.

Keywords

inflation, unemployment rate

1. Introduction

Viet Nam and Myanmar economy have become active and growing recently and they are affected by both internal and external factors such as global economic crisis. Hence, the US economy has certain impacts on both economies. Therefore, unemployment rate in Viet Nam and Myanmar are also affected by external factors such as the recession from US economy, or the USA inflation.

In this research, we will consider unemployment rate in Viet Nam and Myanmar, are affected by two variables (inflation in Myanmar or Viet Nam, and inflation in the USA):

Y (unemployment rate in Viet Nam or Myanmar) = f (x1, x2) = ax1 + bx2 + k

Note: x1: inflation in Viet Nam or Myanmar, x2: inflation in the USA

In following sections, this paper will present research issues, research methods, research results,

discussion and policy sugestion.

2. Research Issues

Because US economy has impacts on Viet Nam and Myanmar economy, especially during the global economic crisis 2007-2011, this paper will find out:

Research issue 1: estimate the relationship between unemployment rate in Viet Nam and inflation in Viet Nam and in USA.

Research issue 2: estimate the relationship between unemployment rate in Myanmar and inflation in Myanmar and in USA.

3. Research on Viet Nam and Myanmar Unemployment Rates and GDP per Capita

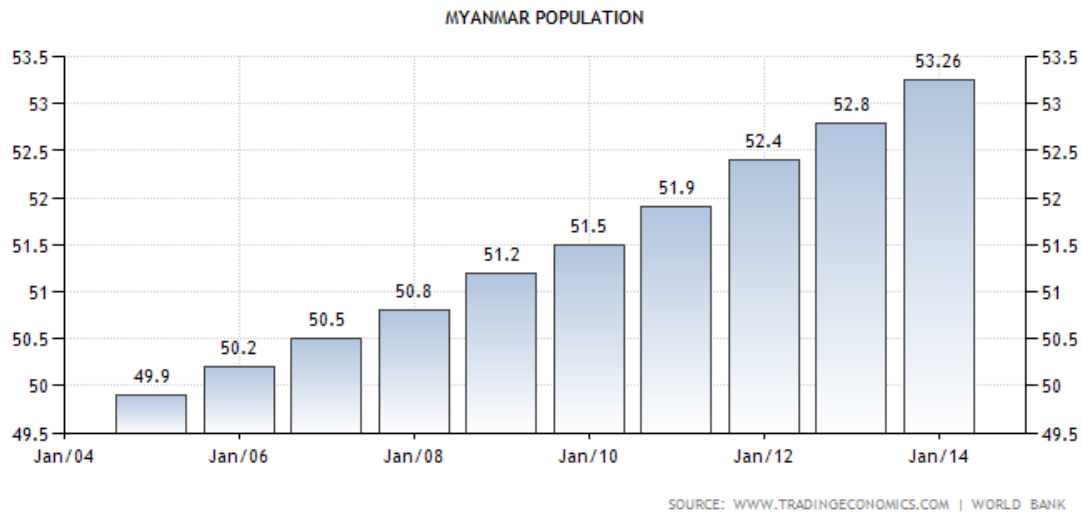The population in Myanmar is 53.3 million people in 2013:

Figure 1. Population in Myanmar

VIETNAM POPULATION

Millions of People

SOURCE: WWW.TRADINGECONOMICS.COM | GENERAL STATISTICS OFFICE OF VIETNAM

Figure 2. GDP per Capita in Myanmar until 2011 Is 824.19 USD: Chart 3 – GDP per Capita in Myanmar

MYANMAR GDP PER CAPITA

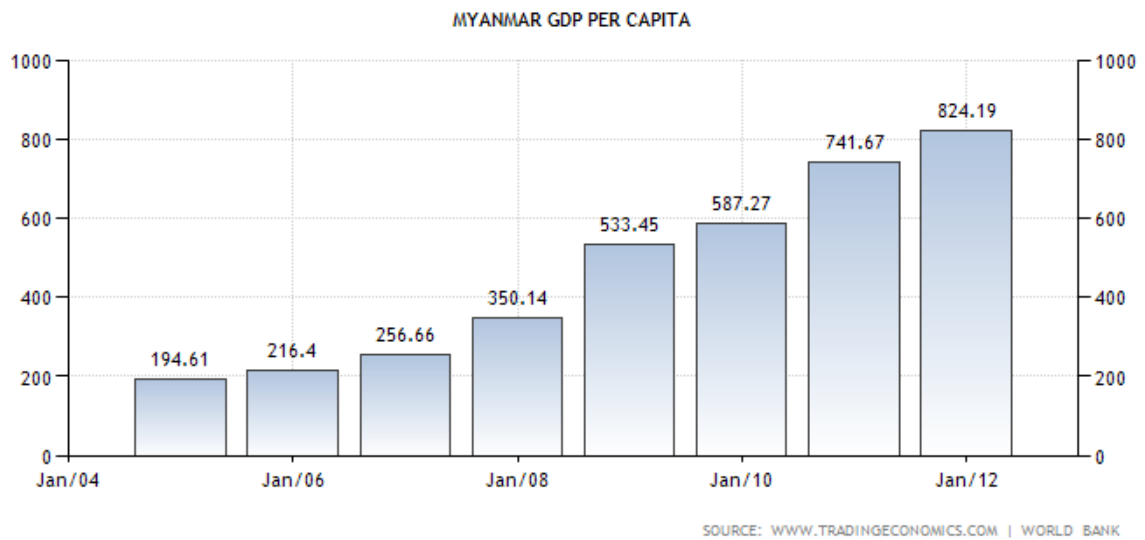SOURCE: WWW.TRADINGECONOMICS.COM | WORLD BANK

Figure 3. GDP per Capita in Viet Nam in 2011 Is 946.8 USD: Chart 4 – GDP per Capita in Viet Nam

Figure 4. Comparing to GDP per Capita in Singapore Is 36102 USD in 2011: Chart 5 – GDP per Capita in Singapore
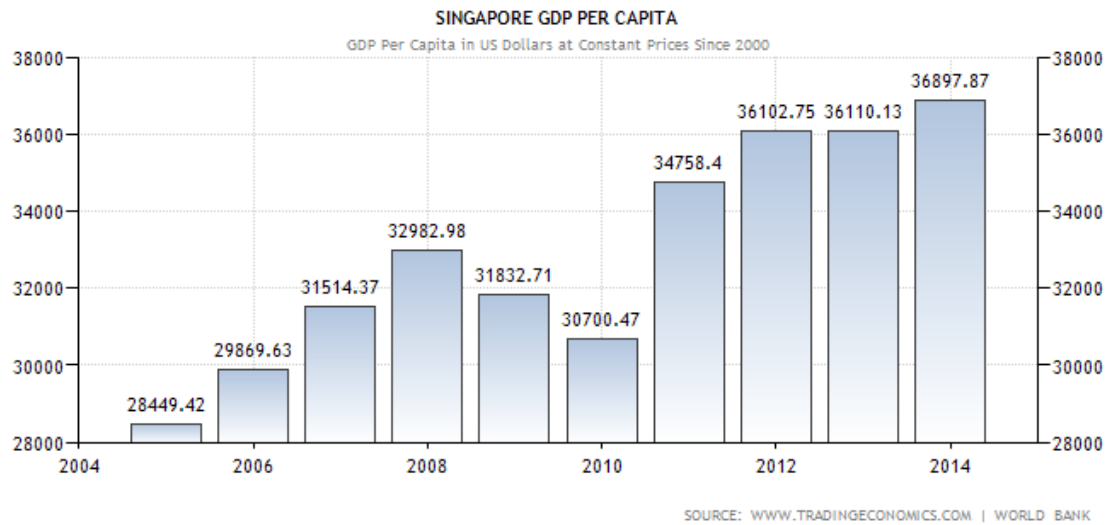

Figure 5. Comparing to GDP per Capita in Malaysia Is 6531 USD in 2011: Chart 6 – GDP per Capita in Malaysia
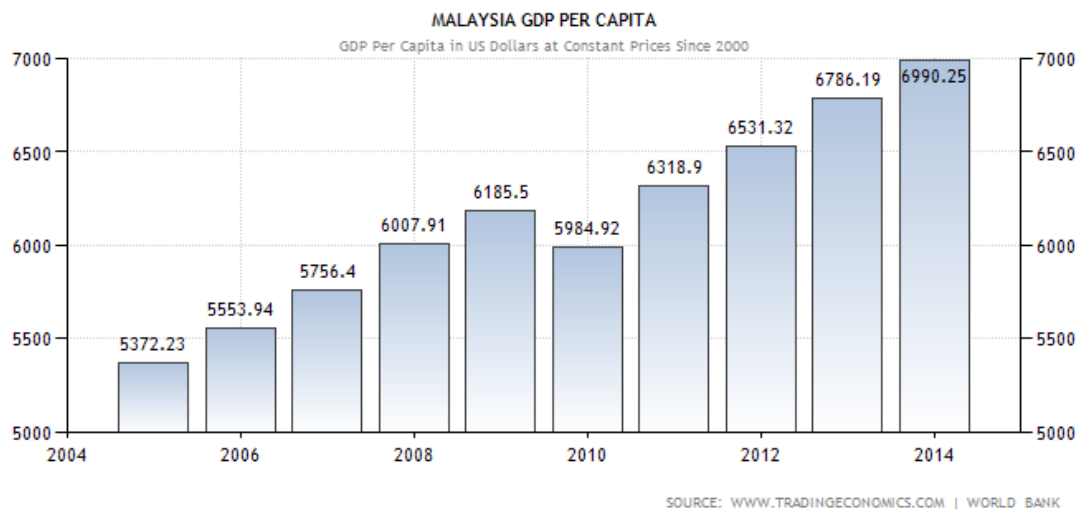
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Figure 6. Malaysia GDP per Capital

We see that both Viet Nam and Myanmar GDP per capita are much lower than GDP per capita in Singapore and Malaysia. In 2013, unemployment rate increases slightly compared to the rate in 2012 (1,9% compared to 1,81%) but Viet Nam is still among the countries with the lowest unemployment rates across the globe.

In Myanmar, unemployment rate in 2013 is 4.02%, increasing slightly from 4% in 2012 (see more in the below chart 9).

4. Conceptual Theories

The Philips curve shows us the relationship between inflation and unemployment rate. When unemployment is high, wages increases slowly and inflation decreases. When unemployment is low, wages rose rapidly and inflation increases.

The curve states that inflation and unemployment have a stable and inverse relationship. If economy is growing, inflation increases and more jobs (or less unemployment) are created.

The below chart shows us the Phillips curve during 1961-1969 (source: www.econlib.org)
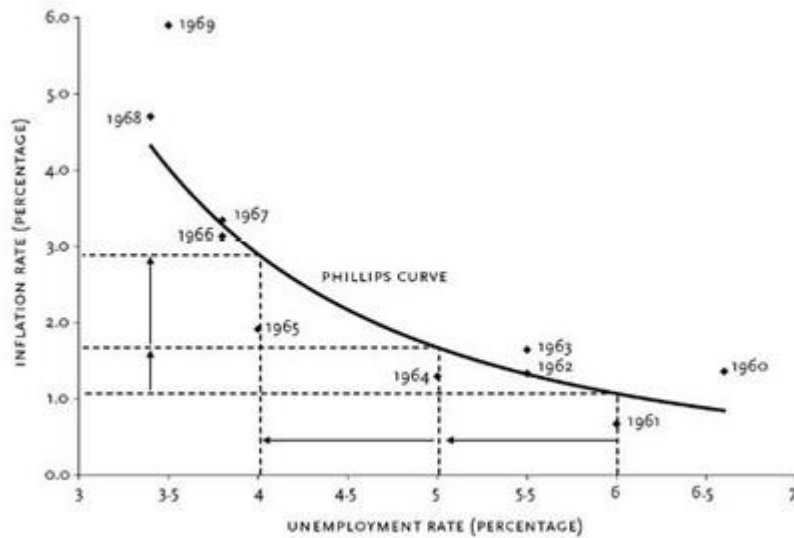
Figure 7. Chart 7 – Phillips Curve

In 1968, Milton Friedman stated that the Phillips curve will be applicable in short run and that in the long run, inflationary policies will not decrease unemployment.

5. Research Method

In this research, analytical method is used with data from the economy such as inflation and unemployment rate. Beside, econometric method is used with the software Eview. It will give us results to suggest policies for businesses and authorities.

Econometric model is established as in the introduction part. Unemployment rate in Viet Nam or Myanmar is a function with 2 variables:

Y (unemployment rate in Viet Nam or Myanmar) = f (x1, x2) = ax1 + bx2 + k

Not : x : inflation in Viet Nam or Myanmar, x2: inflation in the USA

6. Overview of Data Analysis

The below chart 8 shows us that inflation in VN has a positive correlation with inflation in the US:
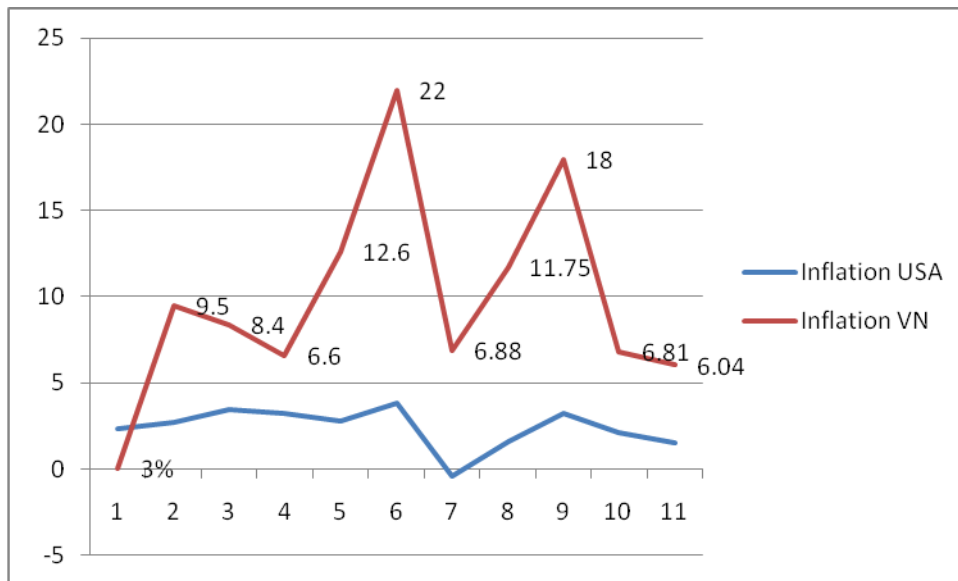
Figure 8. Inflation in Viet Nam and in the US

The below Figure 9 shows us that unemployment rate in Myanmar is higher than that in Viet Nam during the period 2003-2013.
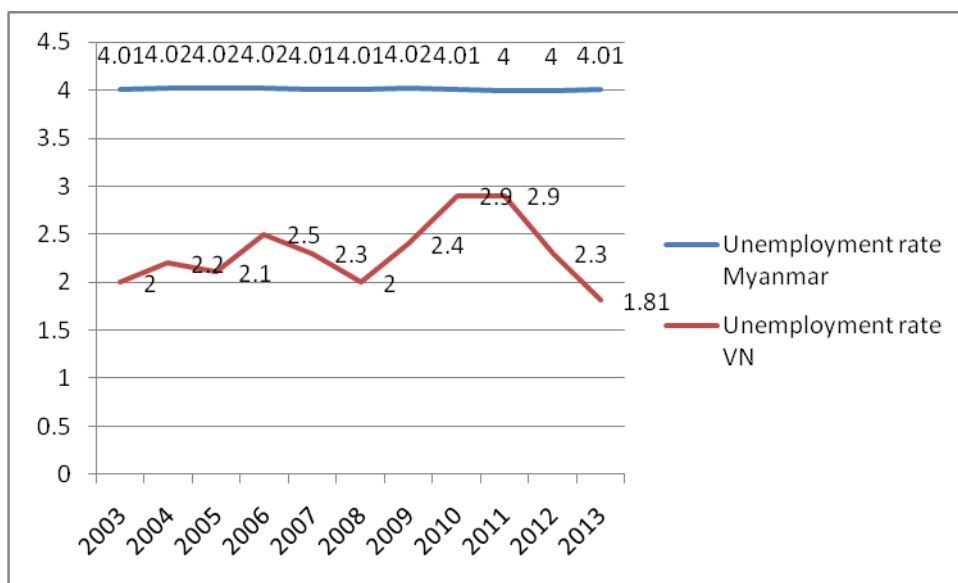
Figure 9. Unemployment Rates in Viet Nam and in Myanmar

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And the Figure 10 below shows us that unemployment rate in Viet Nam has a positive correlation with inflation in Viet Nam and in the US. From 2003 to 2008, unemployment rate in Viet Nam is lower than inflation in the US. From 2009 to 2010, unemployment rate in Viet Nam is higher than inflation in the US.
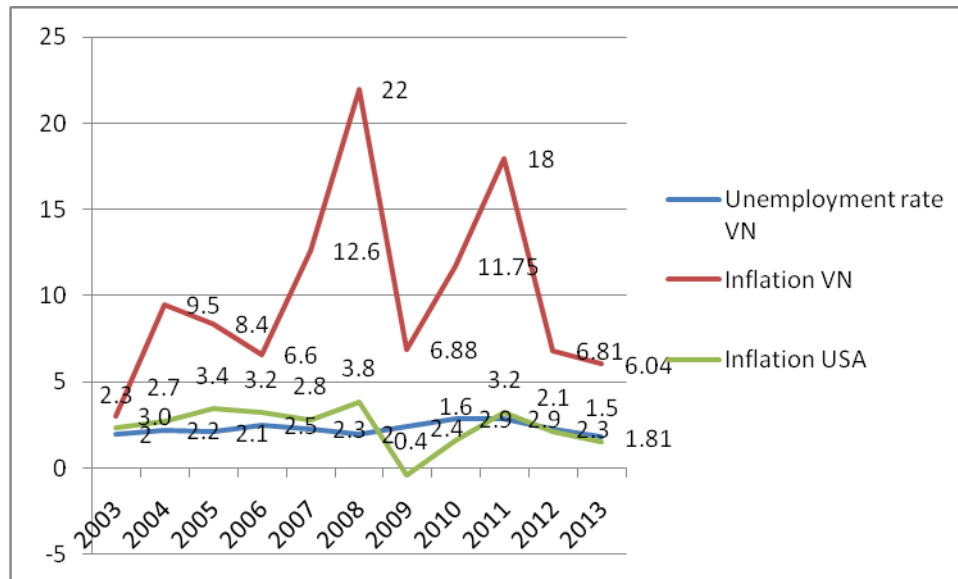
Figure 10. Unemployment Rate in Viet Nam, Inflation in VN and in the US

This research sample uses data (unemployment, inflation) during 11 years from 2003 to 2013. The global crisis starting from 2007 has impacts on Viet Nam and Myanmar economy. Therefore, we could assume unemployment rate in Viet Nam or Myanmar as a function depending on inflation in the US. Now, we see in the below chart 11, inflation in Myanmar has a positive correlation with inflation in the US. From 2005 to 2009, inflation in Myanmar is higher than (or equal to) that in Viet Nam. But from 2010 to 2013, inflation in Myanmar is lower than that in Viet Nam. Both inflation in Myanmar and in Viet Nam is higher than that in the US.

Figure 11. Inflation in Myanmar, Inflation in VN and in the US

Next we see unemployment rate in Myanmar in the below Figure 12. It shows us that, different from Việt Nam, from 2003 to 2013, unemployment rate in Myanmar is higher than inflation in USA.

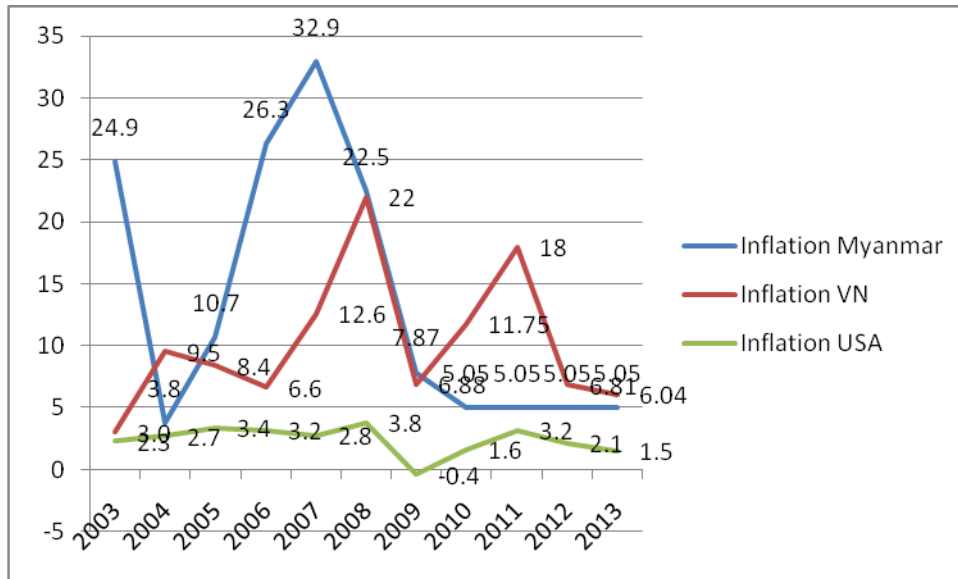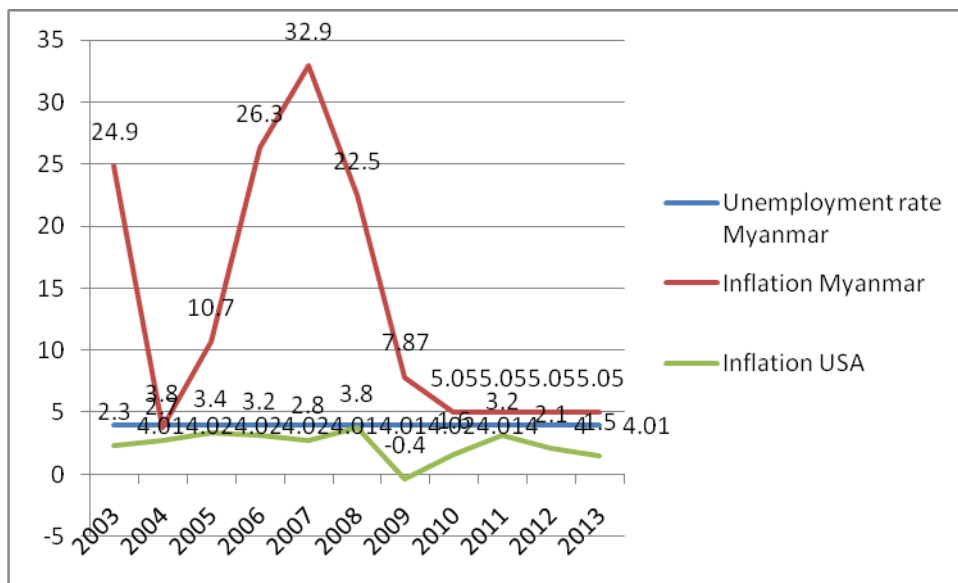

Figure 12. Unemployment Rate in Myanmar, Inflation in Myanmar and in the US

On the other hand, we could see statistical results with Eview in the below Figure 13 variables:

	SER03	SER02	SER01
Mean	13.56091	2.381818	4.011818
Median	7.870000	2.700000	4.010000
Maximum	32.90000	3.800000	4.020000
Minimum	3.800000	-0.400000	4.000000
Std. Dev.	10.81830	1.177980	0.007508
Skewness	0.651815	-1.129588	-0.282678
Kurtosis	1.769258	3.823287	1.973465
Jarque-Bera	1.473164	2.649934	0.629475
Probability	0.478747	0.265812	0.729980
Sum	149.1700	26.20000	44.13000
Sum Sq. Dev.	1170.356	13.87636	0.000564
Observations	11	11	11

Figure 13. Statistical Results for SER03 (Inflation in Myanmar), SER02 (Inflation in the US) and SER01 (Unemployment Uate in Myanmar)

The above Figure shows us standard deviation of SER03 (inflation in Myanmar) is the highest (10.8), Santander deviation of SER02 (inflation in the US) is the second highest (1.18) and standard deviation of unemployment rate in Myanmar is the lowest (0.007).

If we want to see correlation matrix of three above variabes, Eview generate the below result in Figure 14.

Correlation Matrix			
	SER03	SER02	SER01
SER03	1.000000	0.389730	0.140954
SER02	0.389730	1.000000	-0.131577
SER01	0.140954	-0.131577	1.000000

Figure 14. Correlation Matrix for SER03 (Inflation in Myanmar), SER02 (Inflation in the US) and SER01 (Unemployment Rate in Myanmar)

The above Figure 14 shows us that correlation between unemployment rate in Myanmar and inflation in Myanmar (0.14) is higher than that between unemployment rate in Myanmar and inflation in the US (-0.13). Unemployment rate in Myanmar has a negative correlation with inflating in the US and it has a positive correlation with inflation in Myanmar.

The below Figure 15 shows us that correlation between unemployment rate in Viet Nam and inflation in Viet Nam (0.28) is higher than that between unemployment rate in Viet Nam and inflation in the US (-0.07). Unemployment rate in Viet Nam has a negative correlation with inflatin in the US and it has a positive correlation with inflation in Viet Nam.

Correlation Matrix			
	SER04	SER02	SER05
SER04	1.000000	0.488188	0.285421
SER02	0.488188	1.000000	-0.071628
SER05	0.285421	-0.071628	1.000000

Figure 15. Correlation Matrix for SER04 (Inflation in Viet Nam), SER02 (Inflation in the US) and SER05 (Unemployment Rate in Viet Nam)

7. Regression Analysis

In this section, we will find out the relationship between macro economic factors such as inflation in Viet Nam or Myanmar, inflation in USA and unemployment rates in Viet Nam or Myanmar.

7.1 Scenario 1: Regression Model with 2 Variables: Unemployment Rate in Viet Nam and Inflation in Viet Nam

Note: unemployment rate in Viet Nam (SER05), inflation in Viet Nam (SER04), inflation in the US (SER02), inflation in Myanmar (SER03), unemployment rate in Myanmar (SER01)

Using Eview give us the below results:

```
Dependent Variable: SER05
Method: Least Squares
Date: 08/09/14   Time: 11:53
Sample: 2003 2013
Included observations: 11
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER04	0.017856	0.019986	0.893428	0.3949
C	2.128871	0.229341	9.282562	0.0000

R-squared	0.081465	Mean dependent var	2.310000
Adjusted R-squared	-0.020594	S.D. dependent var	0.351994
S.E. of regression	0.355600	Akaike info criterion	0.932947
Sum squared resid	1.138065	Schwarz criterion	1.005292
Log likelihood	-3.131210	F-statistic	0.798214
Durbin-Watson stat	1.346473	Prob(F-statistic)	0.394890

Figure 16. Regression Model with 2 Variables: Unemployment Rate in Viet Nam and Inflation in Viet Nam

Therefore, Unemployment_VN = 0.02 * Inflation_VN + 2.13 (7.1), R^2 = 0.08, SER = 0.4 (0.02) (0.23).

7.2 Scenario 2: Regresion Model with 3 Variables: Unemployment Rate in Viet Nam, Inflation in Viet Nam and Inflation in the US: Using Eview Give Us the Result:

```
Dependent Variable: SER05
Method: Least Squares
Date: 08/09/14   Time: 11:57
Sample: 2003 2013
Included observations: 11
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER04	0.026316	0.023505	1.119602	0.2954
SER02	-0.082765	0.112265	-0.737226	0.4820
C	2.240191	0.279657	8.010482	0.0000

R-squared	0.139899	Mean dependent var	2.310000
Adjusted R-squared	-0.075127	S.D. dependent var	0.351994
S.E. of regression	0.364977	Akaike info criterion	1.049036
Sum squared resid	1.065666	Schwarz criterion	1.157553
Log likelihood	-2.769697	F-statistic	0.650615
Durbin-Watson stat	1.386882	Prob(F-statistic)	0.547266

Figure 17. Regresion model with 3 Variables: Unemployment Rate in Viet Nam, Inflation in Viet Nam and Inflation in the US

Therefore, Unemploy_VN = 0.03 * Inflation_VN − 0.08*InflationUSA + 2.24 (7.2), $R^2 = 0.14$, SER = 0.36 (0.02) (0.11) (2.2).

Hence, unemployment rate in Viet Nam has a negative correlation with inflation in the US, but has a positive correlation with inflation in Viet Nam.

7.3 Scenario 3: Regression Model with 3 Variables: Unemployment Rate in Myanmar, Inflation in Myanmar and Inflation in the US: Using Eview Gives Us the Result:

```
Dependent Variable: SER01
Method: Least Squares
Date: 08/09/14   Time: 11:38
Sample: 2003 2013
Included observations: 11
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SER03	0.000157	0.000258	0.609241	0.5593
SER02	-0.001402	0.002371	-0.591104	0.5708
C	4.013023	0.005895	680.7051	0.0000

R-squared	0.060884	Mean dependent var	4.011818
Adjusted R-squared	-0.173894	S.D. dependent var	0.007508
S.E. of regression	0.008134	Akaike info criterion	-6.558482
Sum squared resid	0.000529	Schwarz criterion	-6.449965
Log likelihood	39.07165	F-statistic	0.259327
Durbin-Watson stat	1.090240	Prob(F-statistic)	0.777815

Figrue 18. Regression Model with 3 Variables: Unemploymnet Rate in Myanmar, Inflation in Myanmar and Inflation in the US

Hence, Unemloyment rate_Myanmar = -0.001 * InflationUSA + 0.0002 * InflationMyanmar + 4.01 (7.3), $R^2 = 0.06$, SER = 0.008 (0.0003) (0.002) (0.006)

We find out unemployment rate in Myanmar has a negative correlation with inflation in USA, but has a positive correlation with inflation in Myanmar (similar to employment rate in Viet Nam in scenario 2).

9. Limitation of the Model

Eview has advantages such as: analyzing data quickly, and good for econometric and statistics. On the other hand, Eview can not give the absolutely correct correlation between variables in the model. Therefore, in this model, Eview can only provide us with results for reference.

10. Discussion for Further Research

We can add one more factor into our regression model, for example, inflation in the UK. The reason is that both the US and UK economies create the global economic crisis with impacts on worldwide economies including Viet Nam and Myanmar.

11. Conclusion and Policy Suggestion

Because inflation in Viet Nam (or Myanmar) has a positive correlation with unemployment rates in Viet Nam (or Myanmar), the government and authorities of these countries might consider controlling inflation in order to reduce unemployment rates.

Macro economic policies need to consider impacts of macro factors such as inflation in their countries and outside factors such as inflation in the US.

Because inflation in the US has a negative correlation with unemployment rates in Viet Nam (or

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Myanmar), the government of Viet Nam and Myanmar need to implement macro policies if inflation in the US decreases (and therefore, unemployment will increase in Viet Nam or Myanmar).

The government and authorities in Viet Nam and Myanmar can issue policies which can protect their market economy and reduce negative impacts from the global recession.