The Feasibility of a Monetary Union in MERCOSUR

Moises Numa[1]
Babson College

Abstract

Based on the progress of the European Union (EU) and the development of the European Monetary Union (EMU), many economists have studied the possibility of implementing a single monetary unit system in other regions of the world. When considering the countries in the region of Latin America, experts suggest they are currently not ready for a monetary union. This paper analyzes the feasibility of a currency union within MERCOSUR – a trade agreement between Argentina, Brazil, Paraguay and Uruguay – with a long-term perspective. In order to form a conclusion, the concept of a currency union in MERCOSUR was analyzed qualitatively and quantitatively. The existing Euro model was studied and frequently used as an example. In addition, the country profiles of all four members of MERCOSUR were conceptually compared and also analyzed with econometric models to test the current level of integration. The results suggest that these four countries are not ready for a currency union because their level of integration is not strong enough and there is too much volatility in their economies. To develop into an optimum currency area, several actions must first occur: Argentina, Brazil, Paraguay and Uruguay must increase their level of integration amongst each other, improve their economic performance, and lastly, all four countries must believe and act in such a way that shows they are unified under a single goal. Lastly, the Eurozone has proven that to have a sustainable currency union, there must be fiscal integration to absorb and smooth economic shocks. If the ultimate goal is a monetary union, then an economic union should also be taken into consideration.

1 Moises Numa graduated from Babson College in December 2010 with a B.S. in Business Management. This paper was originally written as a senior honors thesis under the guidance of his thesis adviser Kent Jones.

I. Introduction

Fundamentally every nation has the freedom to decide how they will manage their currency. Among the array of available options is the election of a fixed exchange rate as a means to prevent value fluctuation, and the election of a flexible exchange rate, under which the value of the currency is essentially determined by the markets. These alternatives forego the potential for integration and collaboration with other countries to create a competitive advantage. Unlike the aforementioned options, monetary unions allow neighboring countries to share the same currency. However, governments participating in a monetary union have a lack of autonomy regarding their monetary policies. Despite the disadvantages, monetary unions are appealing to countries who seek to increase trade, eliminate transaction costs, and increase foreign direct investments, among others.

The purpose of this paper is to assess the feasibility of a currency union in Latin America. It is divided into seven sections to critically analyze the potential implementation and success of the respective currency union. The first section serves as an introduction to monetary unions and outlines the rest of the paper. Section two provides an overview of a literature review written on this particular topic. Section three compares the advantages and disadvantages of monetary unions. Section four is a review of the monetary union in Europe from which general recommendations are drawn for policy makers who hope to pursue a monetary union. Section five presents a study of the MERCOSUR countries in order to conceptualize the structures of these four countries and the political and economic driving forces of their economy. Section six contains quantitative analysis which evaluates the degree to which Argentina, Brazil, Paraguay and Uruguay are integrated using four statistical models. The seventh and final section is the conclusion and offers recommendations that MERCOSUR could follow.

By analyzing, both quantitatively and qualitatively, the feasibility of a monetary union in Latin America, this paper concludes that MERCOSUR is not ready for a currency union. It also suggests steps that will increase the prospect of a single currency for the MERCOSUR countries which are drawn from all seven sections of the paper.

II. Literature Review

In the article, "A Theory of Optimum Currency Areas" Robert Mundell introduced the theory of a single currency. He also explained situations where groups of nations would benefit from such a currency union; hence, what he called an "Optimum Currency Area". Mundell suggested that if labor and capital "are mobile across national boundaries then a flexible exchange rate system

becomes unnecessary"[2]. He implies that only under these conditions would a monetary union make economic sense. Mundell's article and suggestions are important for this paper as they correspond to fiscal integration, which seems to be a necessity for a monetary union.

Also, due to the success of the EMU, many debates have come about of the potential benefits of a similar union in other "Optimal Currency Areas". This search has been a very popular one, especially trying to identify whether or not a monetary union would make sense in Latin America.

Similarly, Sebastian Edward analyzed the economic performance and shocks of Latin American countries in his article, "Monetary Unions, External Shocks and Economic Performance: A Latin American Perspective". The first part of Edward's results suggests that "belonging to a currency union has not lowered the probability of experiencing either a sudden stop or a current account reversal.[3]" The second half of his study emphasizes on some of the costs and potential risks of a monetary union by explaining "that the effects of external crises on GDP growth have tended to be more severe in currency union countries than in countries with a currency of their own."

Alternatively, Fernando Ferrari-Filho focuses on MERCOSUR in the article "Why does it not make Sense to Create a Monetary Union in Mercosur? A Keynesian Alternative Proposal". Ferrari-Filho analyzes the existing data to determine whether a currency union would be feasible among the countries of MERCOSUR. Ferrari-Filho concludes that a monetary union is still premature because "(i) the factor markets are not sufficiently unified, (ii) the volume of intra-regional trade among the MERCOSUR countries is still low and (iii) the macroeconomic variables of the MERCOSUR failed in addressing the convergence criteria."[4]

The purpose of this paper is to study the feasibility of a potential monetary union in Latin America – specifically in MERCOSUR. This paper contributes to the existing literature because it assesses the feasibility of a currency union in MERCOSUR quantitatively and qualitatively. By applying several econometric and statistic methodologies, examining the country profiles of the MERCOSUR members and studying the Euro model, this paper analyzes the proposed question in the long run.

III. Advantages and Disadvantages of a Currency Union

A currency union has both advantages and disadvantages. The advantages

2 Robert Mundell *A Theory of Optimum Currency Areas*, 1961.

3 Sebastian Edwards, *Monetary Unions, External Shocks and Economic Performance: A Latin American Perspective,2006*

4 Fernando Ferrari-Filho, *Why does it not make sense to create a monetary union in MERCOSUR? A Keynesian Alternative Proposal*, 2001

are numerous. One of the biggest benefits of a monetary union is the increase in trade. Reuven Glick and Andrew K. Rose estimate that "bilateral trade approximately doubles/halves as a pair of countries forms/dissolves a currency union" in their paper titled: "Does a Currency Union affect Trade? The Time Series Evidence"[5]. A currency union causes trade to increase for several reasons: transaction costs and tariffs are eliminated, price transparency increases, and free labor mobility encourages specialization and competition. Also, a successful currency union will lead to a more stabilized currency which increases the flow of investments into the bloc. Lastly, since the country risk is reduced, the value of the securities in that area would increase because of the reduction in investment risk. This increase in the markets would have a positive effect on the overall wealth of the nations.

The disadvantages of a currency union are not as plentiful, but can be very risky. The first cost of a monetary union is the introduction of a new currency into the markets. "The European Commission (1990) estimated that the elimination of currency conversion costs would amount to one-quarter to one-half of 1 percent of the Community GDP"[6]. The main risk to an individual country in a monetary union is the ceding of their monetary policy powers. By foregoing this mechanism, governments depend solely on the new established central bank. This bank pursues the best interest of the bloc as a whole, so policies that benefit the group can be detrimental to one of the countries. Also, another risk of a monetary union is the effect a crisis in one country can have on the entire union. For example, as the markets feared a possible default from Greece, contagion spread to other countries. As a matter of fact, the acronym PIIGS was created to reference Portugal, Ireland, Italy, Greece and Spain.

For these reasons, it is imperative that a currency union should be strictly composed of countries with very similar economies. By doing so, the members of the union will share business cycles, thus reducing the risks of asymmetric shocks. If the central bank policies help all member countries, then the risk of foregoing monetary policy is significantly reduced.

IV. European Monetary Union

In 1999 the European Monetary Union and the Euro currency were officially introduced in eleven countries. In 1951, the first step towards integration was taken with the commencement of the European Coal and Steel Community (ECSC)[7]. A key moment that led to the creation of the Euro was the Maastricht Treaty, which was officially signed on February 7, 1992. This treaty set

5 Reuven Glick and Andrew K. Rose, *Does a Currency Union Affect Trade? The Time Series Evidence*, 2001

6 George Tavlas, *Benefits and Costs of Entering the Eurozone*. Cato Journal, 89-106, 2004.

7 http://www.german-way.com/euro-timeline.html

the timetable for the implementation of the Euro and clarified the criteria to evaluate the admission of countries into the EMU as follows:

1. Inflation cannot be 1.5% higher than the inflation of the top three EU countries within the last twelve months
2. Countries cannot have government budget deficit higher than 3% of GDP
3. Countries must not have a government debt ratio of more than 60% of GDP
4. Average nominal long-term interest rates that do not exceed 2% points of the top three member states
5. Exchange rate has to be normal compared to that of the Exchange Rate Mechanism (ERM) and without severe tensions for two years[8]

The criterion set forth in the Maastricht Treaty was supposed to create a very exclusive group of nations based on what appeared to be very selective admission criterion. However, Mundell's suggestions of what constitutes an optimum currency area are circumstances that advance fiscal integration, yet none of the Maastricht Treaty criteria does the same. While the criterion set in 1999 is a guideline that encourages member countries to have a certain level of discipline, the suggestions offered by Mundell would help smooth out shocks caused by differences in business cycles among the member countries.

Although the Maastricht Treaty omitted Mundell's suggestions, the Euro seemed to be holding up very strongly. Until the recent global financial crisis, the Euro was perceived by many to be a great success. The currency was very stable and consistently traded at a higher value than the American dollar. Also, the paper "Has the Euro Increased Trade" by Maurice Bun and Franc Klaassen shows the significant impact the Euro has had on trade by estimating "a total cumulative increase in intra-EMU exports of 3.9% in 1999, 6.9% in 2000, 9.6% in 2001 and 37.8% in the long run".[9]

However, as a result of the economic crisis, many of the issues of the currency union started to show. Greece, for example, was unable to contain their debts to the levels specified by the Maastricht Treaty and unemployed Spaniards found it difficult to migrate around the Eurozone to balance their staggering high unemployment rates.

8 Eduard Hochreiter and Helmut Wagner, *The Road to the Euro: Exchange Rate Arrangements in European Transition Economies*, Sage Publications.

9 Maurice Bun and Franc Klaassen, *Has the Euro Increased Trade*, 2002. (Bun and Klaassen 2002)

In the article "Currency Substitution and European Monetary Union" Nikiforos Laopodis, analyzed whether the net benefits for Greece, Spain and Portugal of substituting their currency for the Euro made sense. Laopodis used an "error-correction model through the application of the two-step estimator of co-integrated systems". He concluded that due to the high inflation rates and the low degree of financial market liberalization in these countries, the net benefit of joining the EMU did not outweigh the costs of substituting their currency. The results question the impulse of Greece, Spain and Portugal for joining the Euro and of the motivation for stronger countries to accept weaker members.[10]

In the essay "Greek Monetary Economics in Retrospect: The Adventures of the Drachma", Sophia Lazaretou describes, chronologically, important moments of the Greek economy and the steps Greece needed to take to join the Euro. According to Lazaretou, in 1990, the Greek economy was suffering from instability. However, during the 1990's the Greek government took actions to improve its economy and their image to meet the Maastricht criteria and gain admittance into the EMU. For example, inflation was more than halved leveling at around 3.5%. Greece also joined the Exchange Rate Mechanism (ERM) of the European Monetary System to demonstrate the country's stability.

Lazaretou shows Greece was able to implement strict strategies to earn a spot in the EMU. However, she does not prove that their acceptance was the best route for either party. Before admitting a country into an almost irreversible union, a certain time frame should be in place to gauge their long-term stability. This might have given the EMU a clearer picture of how Greece's policies would shape out in later years, and potentially prevent the contagion created from the Greek debt crisis. This goes without mentioning the rumor that the Greek government manipulated their books in order to present themselves as worthy of joining the EMU.

Given the fragility of some of the European countries, the EMU faced a difficult decision: whether to bail out these struggling countries or allow them to ask for external lending. Greece needed a package of around €40-€50 billion[11]. However, as German Finance Minister, Wolfgang Schaeuble said, "Monetary Union is unprepared for extremely severe situations of the type we are now seeing"[12].

The contagion effects caused by the Greek crisis have had negative consequences on some of the other EMU countries. Spain and Portugal were the first victims after their ratings were downgraded as Standard & Poor's cut

10 Nikiforos Laopodis, Currency Substitution and European Monetary Union, Ekonomia, 2001.

11 Elisa Parisi-Capone and Arun Motianey, *Is a European Monetary Fund a Useful Complement to the IMF?, 2010.*

12 http://www.roubini.com/critical-issues/48728.php

Greek debt to junk status[13]. The downgrade of Spain's rating triggered a sell-off of Italian government bonds. In addition, Spain's high unemployment rate rose above 20%. Santiago Carbo, an economics professor at the University of Granada stated, "Most of the 20 percent is structural, it's here to stay".[14]

The consequences of reversing the Euro suggest it is best for the union to stay together. Reversing the Euro to the Drachma, for example, would probably cause Greece to continue suffering. A devaluation of their hypothetical independent currency would increase their debt and the costs of exports. Simultaneously, Greece would lose the credibility the EMU once provided. Concurrently, the markets would expect currency depreciations, which would increase currency-risk and reduce FDI. In addition, the cost of currency transactions with the EMU would be a factor again, thus further reducing trade and investments[15]. Lastly, reintroducing the Drachma would be expensive and local banks would suffer, as most people would withdraw their money further impacting the already weak banking system[16].

In conclusion, given the recent volatility of the EMU, the structure of any future currency union, should be diligently analyzed. The European model can provide insight into finding ways to select the appropriate countries, set the best criteria, and create a back-up plan.

Country selection should account that admittance into a currency union is almost irreversible. Initially, the EMU seemed to be very selective; however, this was not the case. During the decade of the 1990's many countries did not meet the requirements set by the Maastricht Treaty. For example, the debt conditions in 1997 in "Belgium, Greece, and Italy were well above the 60% limit… Denmark, Austria, Germany, Ireland, Portugal, Spain, Sweden and the Netherlands were closer to meeting the goals but still above the limit". As of 1996, only Luxembourg qualified to be admitted into the EMU. Also, between 1997 and 1998, Greece was well over the inflation rate, deficit as a percentage of GDP, debt as percentage of GDP and long-term interest rate criteria.[17]

Hindsight pinpoints the European crisis to some struggling countries who were, in all probability, not the best fit for the union. To learn from the EMU, policy makers should carefully consider whether a smaller group of countries, with very similar traits, would be the most beneficial. In addition, the criteria set to determine eligibility of a nation should be tested for a longer period of time and perhaps be audited. This would force countries who want to join to

13 Wall Street Journal: *Spain Downgrade Spurs Contagion Fear*
14 The New York Times: Europe Now Moving Swiftly on Greek Rescue Plan
15 Financial Times, *Greece will fix itself from inside the eurozone*, 2010.
16 The Economist, *The Future of the Euro: Don't do it, 2010.*
17 John Edmunds and John Marthinsen, *Wealth by Association: Global Prosperity Through Market Unification*, 2003.

find sustainable ways to integrate for the long-run rather than focusing on the short-term fix.

In addition, the admissions criteria should not be based on one country's economy (i.e. low inflation in Germany and the EMU), but rather on a mixture of similarities amongst the member countries. The optimum currency area criteria, outlined by Mundell, should also be a factor to determine which countries should join. This is important because since the adjustment mechanism of monetary policy will be ceded, there should be other alternatives for countries to smooth the shocks of the different economies. George Tavlas, the Director General of the Bank of Greece, suggests that a good method to do this is to have fiscal integration, such as labor mobility. This would "provide fiscal transfers from low-unemployment regions to high unemployment regions" which would help mitigate some of the shocks various countries may face.[18]

Lastly, the EMU was in a sense of urgency as Greece suffered from the high possibility of default. This had very negative consequences on the Euro currency and the Eurozone. This problem could have been resolved before it escalated to this degree by an emergency fund. To solve this problem, a "safety net based on centralized fiscal transfers" should be in place[19]. This concept is controversial in the EU as some countries do not want the burden of supporting the weaker countries. However, only after a group of countries are willing to set aside their short term interests to pursue the long term goals of the group will a currency union succeed.

The Federal Minister of Finance in Germany, Wolfgang Schaeuble, proposed a way to fund the potential European Monetary Fund. He suggests, "Monetary penalties imposed on Stability Pact breaches." He explained that by "imposing a 1% fine on excessive debt and excessive deficit to all members since the start of the EMU, the [European Monetary Fund] would have accumulated 120 billion Euros [by] 2009"[20]. Having a similar fund for future monetary unions will provide member countries easier access to capital in case of an emergency. This fund would threaten members from diverging outside the criteria while also discouraging unfitted countries to attempt to join.

V. MERCOSUR

MERCOSUR, or Southern Common Market, is a trade agreement between Argentina, Brazil, Paraguay and Uruguay. Although it was officially introduced in 1991 under the Treaty of Asuncion, its origins go back to the 1980s when Argentina and Brazil came together to form the "Argentina-Brazil

18 George Tavlas
19 Kent Jones
20 Elisa Parisi-Capone and Arun Motianey, *Is a European Monetary Fund a Useful Complement to the IMF?, 2010.*

Integration and Economics Cooperation Program or PICE"[21]. This original program also proposed a common currency called "Gaucho" as an end goal. MERCOSUR was created to augment internal trade and the bloc's negotiating power. Advocates praise its success. In 2006 Brazil's deputy UN envoy, Piragibe Tarragô, suggested that "poverty reduction within MERCOSUR countries 'has been remarkable'"[22]. However, others argue that MERCOSUR is becoming too politicized. For example, Riordan Roett told the Council on Hemispheric Affairs that "'Mercosur is no longer about trade… The new joiners don't have much to trade; they are opposed to free trade it seems. The organization is more and more political.'"[23]

Currently, all four countries are leaning towards a leftist political party with elected presidents. This can prove to be beneficial if they pursue a monetary union because the political figures seem to have the same general ideas. Normally, though, these countries have a corrupt political and judicial system which can create obstacles and great delays in the progress towards a currency union. In addition, disagreements amongst the four countries can be a signal of the poor level of integration, which are becoming prevalent. For example, Bolivia provides natural gas for both Argentina and Brazil, but it does not have enough natural gas to support the demand of both nations. After discussions between the three countries, Brazil "refuse[d] to share Bolivian natural gas"[24]. In addition, Uruguay's interest in the continuity of MERCOSUR is debatable as they are discussing trade agreements with other countries without including its counterparts, which goes against the MERCOSUR agreement. Both of these examples raise a red flag in the level of integration of these four countries to pursue the next steps toward a monetary union.

The economies of the MERCOSUR countries seem to be strongly driven by their exports and agriculture. In addition, Brazil and Argentina both have strong tourism. The fact that exports and tourism are drivers for the MERCOSUR economies should give confidence to policy makers of the possibility of a currency union for this group. If monetary policy is ceded, all four economies would benefit from currency depreciation in order to promote exports and encourage tourism by increasing foreign purchasing power, for example.

Although the late 1990's and early 2000's was a very difficult time period for Latin American countries, it proved the level of influence one MERCOSUR country can have on the others. When Brazil went through its currency crisis, both Argentina and Uruguay were also affected. During the 1980's, the Argentinean currency was pegged to the dollar to stabilize hyperinflation.

21 http://www.allied-co.com/ri/ri/003030125.html
22 http://www.cfr.org/publication/12762/mercosur.html
23 Joanna Klonsky and Stephanie Hanson, *Mercosur: South America's Fractious Trade Bloc*, 2009.
24 http://www.nytimes.com/2008/02/25/business/worldbusiness/25iht-energy.1.10354521.html?_r=2

However, the dollar appreciated in the 1990's, which forced the exchange rate in Argentina to increase as well. Concurrently, Brazil faced a currency crisis, so their exchange rate was depreciated, making Brazilian exports more affordable. As a result, the Argentinean exports became less attractive, driving the already struggling economy to an economic crisis. As the Brazilian Real and the Argentinean Peso were depreciated, the exports of Paraguay and Uruguay decreased which eventually led to a financial crisis in Uruguay.

The goal of a currency union is such that when one country is going through difficult times, the shocks can be absorbed and balanced by its member countries. However, MERCOSUR is not a monetary union yet, so it would be unfair to expect them to perform like such at this early stage. Nevertheless, the volatility experienced by these countries during the last two decades and the current vulnerability of Argentina, Paraguay and Uruguay causes one to question the sustainability of a sound monetary union in MERCOSUR.

VI. Methodologies and Results

To quantitatively test the level of integration between the MERCOSUR countries, three econometric models were used: Ordinary Least Square regression, Granger Causality and Vector Autoregression (VAR). These econometric models will help gauge the relation amongst the four MERCOSUR countries. The last model is based on descriptive statistics to measure their level of trade amongst each other.

The variables used for the first three models are macroeconomic indicators that affect monetary policy: inflation, exchange rate and budget surplus/deficit as a percentage of GDP. The last model is based on a potential benefit of a currency union: increase in trade. The selected variables used are: imports, exports and GDP.

Ordinary Least Square Regression and results

The OLS model can estimate the dependent variable based on other independent variables. It helps approximate the value of the dependent variable based on changes of one of the independent variables, while the other independent variables are held fixed. The strength of the model can be confirmed through different tests. For example, the R-Square is a representation of what percentage of the dependent variable is explained by the independent variables. There is no specific requirement of how high an r-square must be, but generally the higher the better. However, if irrelevant variables are added or omitted from the model it may bias the results and/or create multicollinearity. Models with low r-squared can be helpful at determining the relationship between an independent variable and the dependent variable.

Ideally, the model should be as simple as possible, so only relevant variables are included, which is determined through a hypothesis test. After dropping a variable, the strength of the model can be verified by comparing the full-model with the simple model by the probability of the variables, the adjusted r-squared and AIC and SIC numbers. The OLS equation is the following:

$$Y_i = b_0 + b_1 X_i + e_i$$ [25]

The OLS is used in this paper to better understand how closely related the economy of all these countries are to each other. For example, the first regression of exhibit 2 is an equation where the dependent variable is the inflation of Argentina and the independent variables are the inflation of Brazil, Paraguay and Uruguay plus a constant variable. This regression has an adjusted r-squared of .365, and AIC value of 15.47 and SIC value of 15.65. The equation is the following:

InfArg = (-219.430)C + (0.358)InfBrz + (14.263)InfPar + (3.524)InfUru

The only variable that is significant at 10% is the inflation of Brazil because it has a p-value of .0357. The inflations of Paraguay and Uruguay have a p-value of .546 and .590, respectively, so they are insignificant. Given the high p-value (higher than .1), these two variables are dropped from the equation to test if a simpler model would yield better results.

The simpler model has an adjusted r-squared of .328 and AIC and SIC values of 15.47 and 15.56, respectively. While these numbers did not improve (except for SIC), the significance of the inflation of Brazil for the model did. The p-value of the inflation of Brazil decreased to .0003 which suggests a certain level of relationship between the inflation of Argentina and the inflation of Brazil. The simplified equation is:

InfArg = (67.632)C + (0.546)InfBrz

Based on the results from the OLS Regression model, the following conclusions can be made which can be further analyzed in Exhibit 2:

Inflation: There seems to be a relationship between the inflation of Argentina and Brazil as well as the inflation of Paraguay and Uruguay. All four full-models were simplified to only have one independent variable.

Exchange Rate: There appears to be correlations between the exchange rates of all four countries, so all full-models were kept. How-

25 Yunwei Gai

ever, these results need to be analyzed carefully because there could be multicollinearity between the variables given the nature of the macroeconomic indicator used. All exchange rates were based on the dollar, so outside factors such as the strength of the dollar could have influenced the model.

Budget Surplus/Deficit as a % of GDP: The results when Argentina and Brazil were the dependent variables imply that their respective budgets are correlated by the budget of the other three countries. However, when Uruguay was the dependent variable, Paraguay was insignificant, so a simpler model was used after dropping Paraguay. When Paraguay was the dependent variable, Uruguay was dropped, and then Brazil became insignificant in the second model so it was also dropped, leaving the budget of Paraguay to be explained only by the budget of Argentina.

Granger Causality

One of the major limitations of the OLS model is that it can only determine whether there is correlation between two variables. It cannot pinpoint which variable is causing the relationship. As a result, other econometric models are also used to complement the OLS findings.

Correlation does not imply causation. Like previously explained, the OLS model only helps determine correlations between variables, but Granger Causality determines the direction of these relationships. The Granger causality test is a statistical hypothesis test to determine the cause and effect of two variables. The information the Granger test yields helps determine which variable is the effect of a change in the other variable. This is important for this paper because it is not only imperative to understand that there is a relationship between two variables, but also what the direction of that relationship is. The results are in Exhibit 3, and the conclusions are the following[26]:

Inflation: Based on the Granger Test using Lag 1 and Lag 2, done on inflation of the four countries, it appears that the inflation of Argentina "Granger Causes" the inflation of the other three countries, but not the other way around. It can be concluded from this that the inflation of Argentina influences the inflation of Brazil, Paraguay and Uruguay. These results raise a red flag given the volatility of Argentina's inflation in the past three decades.

26 Eviews Help: Granger Causality

Exchange Rate: Based on the Granger Test with 2 lags, the Brazilian Real and the Paraguayan Guarani seem to be the two currencies causing the changes in the other two exchange rates. Brazil affects Paraguay and Uruguay while Paraguay affects Argentina and Uruguay. When using 1 lag, there are a greater number of "Granger Causalities" where all the currencies are influencing at least one other exchange rate. These findings are questionable given Paraguay's small size and economy. However, the limitations of the Granger Causality methodology will be clarified in more detailed below, which can help explain these findings.

Budget Surplus/Deficit as a % of GDP: When running the test with 2 lags, Uruguay seems to be causing Argentina to change and Paraguay causing Uruguay to change. Similar results come up when running the test with one lag, except that the Argentinean budget causes the Paraguayan budget to change. So there seems to be a triangle between Argentina, Paraguay and Uruguay. Brazil's budget appears to be unaffected by any of these three variables according to the Granger Causality Test.

Similar to the OLS Model, the Granger Causality Test model also has limitations. The causations implied by the model might not be perfectly accurate. There are instances where there is a bidirectional Granger Causality between two variables which makes it difficult to interpret which one is causing the other. "The Granger test is designed to handle pairs of variables, and may produce misleading results when the true relationship involves three or more variables"[27].

For example, when analyzing the exchange rate of Uruguay and Brazil with 1 lag, both hypotheses can be rejected, thus concluding that the exchange rate of Uruguay affects the exchange rate of Brazil to change and vice versa. Based on the Granger model a relationship exists, but there could be external factors other than the Uruguayan Peso and the Brazilian Real that could be affecting the exchange rates. Since both variables are based on the value of the US Dollar, the results may be biased as the model does not take the dollar into account. Another example is the link between inflation and exchange rate through the theory of Purchasing Power of Parity. Although both of these indicators are studied in this paper, they are analyzed separately, so the Granger model does not capture the effects inflation has on exchange rate.

27 Eviews Help: Granger Causality

Vector Autoregression: Impulse Response Function and Variance Decomposition

Vector Autoregression (VAR) is an econometric model that includes all variables based on a lag. "All the variables in a VAR are treated symmetrically by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model"[28]. The impact of a change in one variable over the others can be measured through the structural analysis allowed by a VAR model. For this paper, the VAR model is mainly used to interpret the impulse response functions, and forecast error variance decompositions. These two components of the VAR model help gauge the change one variable has over the others.

The impulse response function within the VAR model helps estimate the path that a one time-shock to the independent variable creates on the dependent variable. This tool yields the change all the independent variables have over the dependent variables for the selected period of time. For example, the results on Exhibit 5, "Response of InfBrz to InfArg" suggest that if the inflation of Argentina changes, the Inflation of Brazil will also see a significant effect on their inflation. These results provide an additional means to better gauge the relationship between MERCOSUR[29].

The results of inflation seem to be consistent with the Granger Causality test. According to the results from the aforementioned test, the inflation of Argentina "Granger causes" the inflations of Brazil, Paraguay and Uruguay based on 1 and 2 lags. The Impulse Response of inflation also yields similar results. The first column of Exhibit 5 depicts the shocks a change in the Argentinean inflation would have on the other respective inflations. So for example, the graph titled "Response of INBRZ to INFARG" illustrates the changes the inflation of Brazil would go through if the inflation of Argentina changes. Based on these results, a change to the inflation of Argentina would cause the inflation of Brazil to experience great volatility as well. The inflation of Brazil would first sharply increase and then return to its base value at around time period 4, but then increase again and slowly decrease. These results suggest that a shock to the inflation of Argentina would cause the inflations of Brazil, Paraguay and Uruguay to change. The results are in Exhibit 5 and the conclusions are the following:

28 Eviews Help: Vector Autoregression
29 Eviews Help: Impulse Response Function

Impulse Response Function Results - Inflation:

Argentina	Changes in inflation of Brazil seem to influence the inflation of Brazil, Paraguay and Uruguay
Brazil	Variances in the inflation of Brazil, appear to have minor effects on the inflations of the rest of the MERCOSUR countries
Paraguay	Seems to influence the inflation of Brazil and Uruguay and slightly that of Argentina.
Uruguay	Variances in the inflation of Uruguay seems to influence the inflation of Brazil and Paraguay

Overall, a change in the Argentinean inflation would seem to have the greatest impact on the inflation of the other MERCOSUR countries. However a change in the inflation of the other three MERCOSUR countries has little to no effect on the inflation of Argentina.

Impulse Response Function Results - Exchange Rate:

Argentina	Variances in the Argentinean exchange rate appear to have minor effects on that of Uruguay
Brazil	A shock to the Brazilian Real seems to affect the exchange rate of Argentina, Paraguay and Uruguay
Paraguay	A shock to the Paraguayan Guarani seems to affect the exchange rate of the three other MERCOSUR members
Uruguay	A change in the exchange rate of Uruguay seems to have little or no effect on the rest of the exchange rates in MERCOSUR

Overall, a change in the Brazilian Real seems to have the greatest impact on the exchange rate of the other MERCOSUR countries. A shock to the Paraguayan Guarani also affects the exchange rates of the other three countries, but not as significantly as those shocks to the Brazilian Real.

Impulse Response Function Results - Budget Surplus/Deficit as a Percentage of GDP:

Argentina	Shocks in the budget of Argentina seem to affect those of Paraguay and Uruguay
Brazil	Shocks to the budget of Brazil seem to affect those of the other three countries
Paraguay	Changes to the budget of Paraguay do not seem to affect the other budgets
Uruguay	Changes to the budget of Uruguay do not seem to affect the other budgets

Overall, a change in the Argentinean surplus/deficit has the greatest impact on the other MERCOSUR countries, but Brazil also seems to be influencing this metric.

Even though the impulse response functions estimates the consequences of a change of a variable to another variable in the VAR, variance decomposition is an additional tool used because it "separates the variation of the variable into the component shocks to the VAR." The difference is that the variance decomposition yields information about "the relative importance of each random innovation in affecting the variables in the VAR."[30] In other words, variance decomposition explains how much of a change in a variable is due to its own shock and how much is due to the shocks of the other variables.

Similar results are seen for the Variance Decomposition in Exhibit 6 as they were in Exhibit 5 for Impulse Response. This model shows that a change in their own country's economic indicator causes a large percentage of the future changes of that country's indicator. For instance, Exhibit 6 under "Percent InfBrz variance due to InfBRz" implies that a large portion of Brazil's inflation is caused by a change in their inflation, especially in the first periods. Similar results are evident in the inflation of Argentina, Paraguay and Uruguay. The country whose inflation is most affected by their own inflation is Argentina, as the percentage of variance remains very high throughout the whole graph. However, after further analyzing the graphs of the other three countries, the percentage variance caused by their own inflation decreases after only a few years, which implies their inflation is affected by other factors, unlike the Argentinean inflation. Interestingly, the percentage variance of inflation for these

30 Eviews Help: Variance Decomposition/

three countries caused by the inflation in Argentina sharply rises around the same time. This suggests that the inflation of these countries is strongly influenced by the inflation of Argentina.

The results can be seen in Exhibit 6, and the conclusions are the following:

Variance Decomposition Results - Inflation:

Argentina	Not significantly affected by the inflation of the other countries
Brazil	Affected by variance in the inflation of Argentina after several periods
Paraguay	Affected by variance in the inflation of Argentina and Uruguay after several periods
Uruguay	Mainly affected by variances in the inflation of Argentina and slightly of that of Paraguay

Overall, a change in the Argentinean inflation seems to have the greatest impact on the inflation of the other MERCOSUR countries. Again, this is not a good sign for the performance of the MERCOSUR countries as the Argentinean inflation has not performed very well in the past few decades

Variance Decomposition Results - Exchange Rate:

Argentina	Affected mainly by the Brazilian Real, and slightly by the Paraguayan Guarani
Brazil	Not significantly affected by the exchange rate of the other countries
Paraguay	Affected by variances in the exchange rate of Argentina and Brazil
Uruguay	Affected by variances in the exchange rate of Argentina and Brazil. First by the Argentinean Peso and then by the Brazilian Real

Overall, a change in the Brazilian Real appears to have the greatest impact on the exchange rate of the other MERCOSUR countries followed by the Argentinean Peso.

Variance Decomposition Results - Budget Surplus/Deficit as a Percentage of GDP:

Argentina	Fluctuations in the Budget of Brazil affect that of Argentina after 5-7 periods
Brazil	Fluctuations in the Budget of Argentina affect that of Brazil after 4-6 periods
Paraguay	Fluctuations of the Budget of Argentina and slightly those of Brazil affect the Budget of Paraguay after about 2 periods
Uruguay	Fluctuations of the Budget of Argentina and slightly those of Brazil affect the Budget of Uruguay after about 2-3 periods

Overall, a change in the Argentinean surplus/deficit as a percentage of its GDP has the greatest impact on the other MERCOSUR countries, but Brazil also seems to be influencing this metric.

Descriptive Statistics

This model will help analyze the current level of trade between the MERCOSUR countries. The percentage a country exports and imports from and to each MERCOSUR country will determine the amount of total trade that is done between the four countries. In addition, the GDP as a percentage of exports and as a percentage of imports will help compare the trade levels of each country with the overall economy. The results are divided into four sections, each representing one of the MERCOSUR countries.

Argentina

The majority of exports and imports of Argentina either go to or come from Brazil. Over the past 30 years the percentage of Argentina's total exports and imports to Brazil is 16% and 22%, respectively. The total percentage of trade with Paraguay and Uruguay is not as significant as a total of Argentina's total trade. Similarly, the trade as a percentage of GDP is the largest with Brazil at an average of 2%. Imports as a percentage of GDP appears to be larger than the exports as a percentage of GDP as seen in Exhibit 7.

Brazil

In MERCOSUR, the majority of Brazil's trade comes from and goes to Argentina; however, it is not as significant as Argentina's percentage of total trade to Brazil. In addition, the amount of trade in Brazil with MERCOSUR as a percentage of GDP is also minimal at no more than 1% with any of the countries as can be seen in Exhibit 8. As a whole, the exports as a percentage

of GDP are greater than the imports as a percentage of GDP for Brazil.

Paraguay

In the 1980's and 1990's the majority of Paraguay's total exports went mainly to Brazil, but also to Argentina. However, in the last decade the percentage of exports to Argentina and Brazil slightly decreased, but the percentage that goes to Uruguay spiked up from 2% to 19% as can be seen in Exhibit 9. As a whole, the percentage of Paraguay's exports going to MERCOSUR increased in the past decade due to the increase in exports to Uruguay. However, the percentage of total Paraguayan imports from MERCOSUR countries remained stable over the past three decades: the majority coming from Brazil, then Argentina while Uruguay remained at a low 2%.

As a result, exports as a percentage of GDP are very similar. The majority of exports go to Argentina and Brazil, but the last decade saw a significant increase in exports to Uruguay. Overall, imports as a percentage of GDP was significantly higher than exports as a percentage of GDP for the past three decades with an average of 29% and 14%, respectively.

Uruguay

As can be expected from the previous results, the majority of exports from Uruguay to MERCOSUR countries went to Argentina and Brazil. Although exports increase from the 1980's to the1990's, they declined in the last decade. Similarly, Argentina and Brazil make up the majority of the imports to Uruguay, but as was seen in the previous results, the trade from Paraguay to Uruguay increased from 1% to 4% in the last decade, and as a matter of fact they went up to 7% in 2009. Overall, Uruguay imports more than they export measured by a percentage of GDP, but not by much as can be seen in Exhibit 10. The average for imports as a percentage of GDP for the past thirty years was 17% vs. 15% for that of exports.

In conclusion, the majority imports and exports go to or come from Argentina and Brazil. However, the level of trade of Argentina and Brazil with MERCOSUR is significantly less than that of Paraguay and Uruguay. This can be explained from the size difference of Argentina and Brazil with that of Paraguay and Uruguay.

VII. Conclusion

Since the inception of MERCOSUR, Argentina, Brazil, Paraguay and Uruguay, collectively, have gone through tremendous changes. Three of the countries recently underwent an economic crisis. Brazil has also completely turned around to become one of the most promising countries in the world.

It is important to point out that when the currency crisis struck Brazil, both Argentina and Uruguay followed suit. For better or for worse, this is indicative of the influence one economy can have on others. Also, Uruguay and Paraguay, the smaller economies in the group, heavily depend on exports from both of their main trading partners - Argentina and Brazil. This is another sign of the similarities amongst the MERCOSUR members.

However, similarly to previous studies this paper also suggests that Latin America is not economically and politically ready for a currency union. Also, based on the limited level of integration between MERCOSUR countries, and the struggles experienced in the EMU, the feasibility of a monetary union in MERCOSUR is unrealistic. If MERCOSUR were to introduce the "Gaucho" (the name Brazil and Argentina originally gave to their potential currency) today, the union would be made up of four completely different countries. For example, Argentina is still trying to improve its global relationships from the economic crisis it suffered earlier in the early 2000's when the country defaulted on its loans. Brazil, on the other hand, has recuperated very well from its currency crisis and is positioned for tremendous growth. While Paraguay and Uruguay seem to depend on Argentina and Brazil, the results indicate Argentina and Brazil are not influenced much by these two.

Germany is one of the most powerful nations of the European Union, so after the debt crisis in Greece exploded, they saw the future of the Euro partially on their shoulders. Given the strong growth in Brazil, if MERCOSUR introduced a single currency, there would probably be great parallelism between Germany and Brazil. When the economy is prospering, the media would applaud the successful union, similarly to how the Euro was praised. However, as the cycles of the economies change, MERCOSUR would not be able to withstand itself as one bloc. Instead, each country would most likely pursue its own interests instead of the well-being of the "Gaucho". A country like Argentina would probably play the role of Greece and hold large amounts of debts that they cannot sustain. History would then repeat itself and Brazil would be forced to save the struggling "brothers".

As a result, MERCOSUR should not introduce a monetary union right now. If MERCOSUR were to implement this union, Brazil would probably be the economically dominant member. Consequently, the Brazilian government should cautiously consider whether a unification of currencies with the other three MERCOSUR countries can be mutually beneficial. Brazil's broad economy and strong current global position limits the potential benefits of a currency union, and as recently experienced in Europe, the costs can be tremendous. Likewise, Paraguay and Uruguay should also carefully analyze whether the costs involved are in fact worthwhile. As of right now, both countries have

strong trading relationships with Argentina and Brazil, so the potential increase in trade would probably not suffice the loss of independent monetary policy. Argentina should also slowly consider the possibility of a monetary union. They are in the process of overcoming the financial crisis that left the country deeply indebted. Argentina should first solve their financial difficulties before embarking into a complex and limiting agreement.

In "Wealth by Association: Global Prosperity through Market Unification", Edmunds and Marthinsen outline the steps a group of countries should follow to attain a successful currency union, economic union and/or political union. The initial steps are as follows: Preferential Trading Agreement, Free Trade Area, Customs Union, and Common Market. Only after a group has a successful common market should it pursue further integration. Edmunds and Marthinsen do not suggest any particular order for the next step, so the group should only pursue what is more aligned with their goals[31].

Since MERCOSUR is in the process of becoming a customs union, it should first focus on strengthening that union. The customs union between these four countries is a restricted one and it is not at the same stage as the customs union in Europe. As Dr. Jones, economics professor at Babson College explains, a customs union has a common external tariff which is controlled centrally and should only be considered complete after they have a voice in the World Trade Organization (WTO). MERCOSUR's customs union has limitations, so it does not apply equally to all products and services and a common external tariff is not in place yet. In addition, the vision for a currency union in MERCOSUR has gradually declined. Uruguay has pursued trade agreements with other countries in order to reduce their reliance on the rest of MERCOSUR. This goes against a customs union since all members must hold the same level of protectionism with nonmember countries. Until the goals of all members are not clear and similar, MERCOSUR cannot continue pursuing a monetary union.

Following the customs union, MERCOSUR should create a common market. The common market for MERCOSUR would be the equivalent to the European Common Market in Europe. The difference between this step and a customs union is that the common market opens the borders to labor and capital mobility. This would increase the competition to produce products/services with the highest level of efficiencies available for the group as a whole.

All these steps towards a monetary union are essential not only because they set a strong foundation, but also because they encourage integration which would facilitate the ultimate goal. Edmunds and Marthinsen explain that the

31 John Edmunds and John Marthinsen, *Wealth by Association: Global Prosperity Through Market Unification*, 2003.

next step can be any of three choices: monetary union, economic union, and political union. The difference between a common market and a monetary union is that the group would have to assign an authoritative body who would have total control of all monetary policy. Even though every country would cede its monetary policy tools, this central bank would be made up of representatives from each country. If the ultimate goal of this potential union would be to have a "gaucho," or in other words, a monetary union, careful consideration should be given to some of the deficiencies from the European model.

A monetary union should be accompanied by an economic union, where a supranational authority responsible of fiscal policy is included, similar to the system in the US. As a matter of fact, the United States had an economic union many years before having a currency union. The Federal Reserve Bank was created at the end of 1913, thus creating a central bank and a monetary union in the US. Europe, on the other hand, did it the other way around. They created a currency union without an economic union. As previously explained there is no formula for the best way to attain an optimum currency area, but the European crisis has made it clear that a monetary union is not feasible without a systematic way to promote fiscal union.

If a central fiscal authority is not in place to promote this level of integration, then strict guidelines should be set to attain disciplined fiscal policies between the member countries. Fiscal integration can provide the group with the necessary adjustments needed to overcome certain crisis such as the recent one seen in Greece.

In conclusion, the findings from this paper support the results found from the previous literature reviews: a currency union in Latin America would not make sense right now. There are numerous reasons for why this would be a disadvantageous union for MERCOSUR to pursue right now. For example, the economies in MERCOSUR are too different, so the policies each of them takes might be completely diverse. Also, the level of unity is not quite there yet, while some countries influence others in some aspects, they are not integrated enough for such a drastic transformation. Uniting two countries that are not completely aligned with each other economically under one currency can prove to cause problems as those seen in Europe.

Until a set of countries can prove that they are in it together, then a currency union should be avoided. This should go beyond one country bailing out the other – merely on the idea of avoiding contagion throughout the rest of the group. Instead, this level of "brotherhood" should be demonstrated before the unification of currencies. Although the EMU has taken many steps to encourage such integration, there is still a great deal of work ahead of them, which should be a cautionary flag to policy makers in Latin America and the rest of

world.

The EMU confirmed they are loyal to each other. However, signs suggest otherwise. For example, how is it possible that France can trade with Ireland without transactions costs, while someone in Italy has to pay roaming charges for calling Greece? "Each country has its own service providers that enjoy monopoly types of rents in sectors such as telecommunications, electricity and banking"[32]. These examples of deficiencies and lack of "brotherhood" in Europe could be resolved with the proper measures of fiscal integration.

George Tavlas, the Director General of the Bank of Greece and the Alternate to the Bank of Greece's Governor on the Governing Council of the European Central Bank identifies nine criteria for selecting members of a currency union: "similarity of inflation rates, degree of factor mobility; openness and size of the economy; degree of commodity diversification; price and wage flexibility; degree of goods market integration; fiscal integration; the need for real exchange rate variability; and political factors"[33]. Based on Dr. Tavlas' criteria, MERCOSUR is not remotely ready. The level of light integration in Latin America and the idea of sharing a currency is a formula for disaster.

MERCOSUR will not be ready for such a radical move until several things happen. Firstly, these countries need to become more integrated. Based on the results from this paper, members of MERCOSUR are not economically integrated enough to mitigate some of the risks of ceding monetary independence. Secondly, all MERCOSUR members need to increase their economic performance in the long-run because convergence alone will not suffice. If all four countries become economically healthier, then the benefits of integrating into a currency union would become more apparent. Lastly, all MERCOSUR members must believe and act in such a way that proves they are all in it together. This point is an important one because there are no formulas to determine when countries form an optimum currency area, so there is no data that can indicate when MERCOSUR will be ready. As a result, MERCOSUR should analyze the Euro and other currency unions. Lastly, once all member countries are economically and politically suited for a monetary union, they should determine if a political union would make more sense before a currency union, and develop strategies to avoid a crisis similar to the one in Europe.

Despite the fact that the results suggest that a currency union in Latin America would not make sense, if the right measures are taken, in the long term it is a possibility. The benefits of a currency union can be very rewarding, as long as the risks are carefully mitigated. If MERCOSUR follows the right steps similar to the aforementioned, then one day they will be ready for a

32 Walter Molano, *Europe: Forging a Union, 2010.*

33 Dwight Venner, *Challenges to Central Banking From Globalized Financial Systems*, 2002.

monetary union. After all, the development of the European Monetary Union lasted about half of a century. In addition, data shows Europe was not ready for a currency union, but they decided to pursue the Euro due to the political benefits, which has never been analyzed for Latin American countries. Also, by incorporating a "gaucho", MERCOSUR could stabilize their currencies and avoid similar currency crises as experienced in the late 1990's.

Exhibits

Exhibit 1: General Statistics of MERCOSUR countries (2009)[34]

	Argentina	Brazil	Paraguay	Uruguay
Capital	Buenos Aires	Brasilia	Asuncion	Montevideo
Official Language	Spanish	Portuguese	Spanish and Guarani	Spanish
Population	41 million	201 million	6.4 million	3.5 million
Size	2,780,400 sq km	8,514,877 sq km	406,752 sq km	176,215 sq km
Government Type	Republic	Federal Republic	Constitutional Republic	Constitutional Republic
Borders (neighbors)	Bolivia, Brazil, Chile, Paraguay, Uruguay	Argentina, Bolivia, Colombia, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela	Argentina, Bolivia and Brazil	Argentina and Brazil
GDP	$568.2 billion	$2.01 trillion	$28.63 billion	$43.98 Billion
Inflation	7.70%	4.90%	2.60%	7.10%
Exchange Rate	3.76 Argentine Peso per USD	2.03 Reals per USD	4,967 Guarani (PYG) per USD	23.017 Uruguayan pesos (UYU) per USD
Imports	$37.14 Billion	$127.7 Billion	$6.917 Billion	$6.664 billion
Exports	$55.67 Billion	$ 153 Billion	$5.784 Billion	$6.389 billion
Unemployment	8.7%	8.1%	7.9%	7.6%

Exhibit 2: Ordinary Least Square Regression (OLS) Results:

InfArg = C + InfBrz + InfPar + InfUru

Dependent Variable: INFARG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-219.4298	198.1862	-1.107190	0.2773
INFBRZ	0.357591	0.162313	2.203093	0.0357
INFPAR	14.26273	23.35409	0.610717	0.5461
INFURU	3.523832	6.472007	0.544473	0.5903

R-squared	0.424711	Akaike info criterion	15.46921
Adjusted R-squared	0.365198	Schwarz criterion	15.65061

InfArg = C + InfBrz

Dependent Variable: INFARG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	67.63235	105.4889	0.641132	0.5261
INFBRZ	0.546334	0.133893	4.080389	0.0003

R-squared	0.349417	Akaike info criterion	15.47100
Adjusted R-squared	0.328431	Schwarz criterion	15.56170

34 https://www.cia.gov/library/publications/the-world-factbook/

InfBrz = C + InfArg + InfPar + InfUru

Dependent Variable: INFBRZ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-186.1702	211.4355	-0.880506	0.3858
INFARG	0.400934	0.181987	2.203093	0.0357
INFPAR	20.05227	24.60735	0.814889	0.4218
INFURU	3.525724	6.856773	0.514196	0.6110

R-squared	0.449008	Akaike info criterion	15.58362
Adjusted R-squared	0.392009	Schwarz criterion	15.76502

InfBrz = C + InfArg

Dependent Variable: INFBRZ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	193.2019	109.5242	1.764012	0.0876
INFARG	0.639567	0.156742	4.080389	0.0003

R-squared	0.349417	Akaike info criterion	15.62856
Adjusted R-squared	0.328431	Schwarz criterion	15.71926

InfPar = C + InfArg + InfBrz + InfUru

Dependent Variable: INFPAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.518271	1.226917	4.497674	0.0001
INFARG	0.000890	0.001458	0.610717	0.5461
INFBRZ	0.001116	0.001370	0.814889	0.4218
INFURU	0.222355	0.030601	7.266247	0.0000

R-squared	0.791944	Akaike info criterion	5.787595
Adjusted R-squared	0.770420	Schwarz criterion	5.968989

InfPar = C + InfUru

Dependent Variable: INFPAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.151526	1.185874	4.344077	0.0001
INFURU	0.247594	0.023642	10.47259	0.0000

R-squared	0.779634	Akaike info criterion	5.723863
Adjusted R-squared	0.772525	Schwarz criterion	5.814560

InfUru = C + InfArg + InfBrz + InfPar

Dependent Variable: INFURU

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.400283	5.688150	-0.949392	0.3503
INFARG	0.002872	0.005274	0.544473	0.5903
INFBRZ	0.002563	0.004984	0.514196	0.6110
INFPAR	2.902876	0.399501	7.266247	0.0000

R-squared	0.786424	Akaike info criterion	8.356775
Adjusted R-squared	0.764330	Schwarz criterion	8.538170

InfUru = C + InfPar

Dependent Variable: INFURU

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.407344	5.196367	-1.425485	0.1640
INFPAR	3.148837	0.300674	10.47259	0.0000

R-squared	0.779634	Akaike info criterion	8.266860
Adjusted R-squared	0.772525	Schwarz criterion	8.357557

ExcArg = C + ExcBrz + ExcPar + ExcUru

Dependent Variable: EXCARG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.065291	0.097096	-0.672433	0.5066
EXCBRZ	-0.852374	0.186107	-4.580030	0.0001
EXCPAR	0.000370	0.000150	2.475020	0.0194
EXCURU	0.127871	0.029908	4.275489	0.0002

R-squared	0.947074	Akaike info criterion	0.530210
Adjusted R-squared	0.941598	Schwarz criterion	0.711605

ExcArg = C + ExcBrz + ExcUru

Dependent Variable: EXCARG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.104075	0.074536	1.396302	0.1729
EXCBRZ	-0.655447	0.182047	-3.600429	0.0011
EXCURU	0.186437	0.019792	9.419993	0.0000

R-squared	0.935894	Akaike info criterion	0.661242
Adjusted R-squared	0.931620	Schwarz criterion	0.797288

ExcBrz = C + ExcArg + ExcPar + ExcUru

Dependent Variable: EXCBRZ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.114465	0.071271	-1.606051	0.1191
EXCARG	-0.492424	0.107515	-4.580030	0.0001
EXCPAR	0.000382	0.000103	3.701703	0.0009
EXCURU	0.080766	0.024850	3.250110	0.0029

R-squared	0.960179	Akaike info criterion	-0.018475
Adjusted R-squared	0.956060	Schwarz criterion	0.162920

ExcPar = C + ExcArg + ExcBrz + ExcUru

Dependent Variable: EXCPAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	408.4417	80.18400	5.093805	0.0000
EXCARG	471.0475	190.3207	2.475020	0.0194
EXCBRZ	840.6565	227.0999	3.701703	0.0009
EXCURU	70.36947	41.04491	1.714451	0.0971

R-squared	0.978008	Akaike info criterion	14.58657
Adjusted R-squared	0.975733	Schwarz criterion	14.76796

ExcUru = C + ExcArg + ExcBrz + ExcPar

Dependent Variable: EXCURU

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.786605	0.452839	-1.737052	0.0930
EXCARG	3.023600	0.707194	4.275489	0.0002
EXCBRZ	3.305782	1.017129	3.250110	0.0029
EXCPAR	0.001308	0.000763	1.714451	0.0971

R-squared	0.980736	Akaike info criterion	3.693393
Adjusted R-squared	0.978743	Schwarz criterion	3.874788

BudArg = C + BudBrz + BudPar + BudUru

Dependent Variable: BUDARG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.021243	0.005580	-3.806981	0.0014
BUDBRZ	0.731925	0.242994	3.012115	0.0078
BUDPAR	0.401380	0.147424	2.722626	0.0145
BUDURU	0.380903	0.167402	2.275382	0.0361

R-squared	0.475983	Akaike info criterion	-5.752884
Adjusted R-squared	0.383510	Schwarz criterion	-5.553927

BudBrz = C + BudArg + BudPar + BudUru

Dependent Variable: BUDBRZ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017505	0.004410	3.969716	0.0010
BUDARG	0.475432	0.157840	3.012115	0.0078
BUDPAR	-0.242897	0.129626	-1.873835	0.0782
BUDURU	-0.428442	0.113793	-3.765084	0.0015

R-squared	0.556373	Akaike info criterion	-6.184338
Adjusted R-squared	0.478086	Schwarz criterion	-5.985382

BudPar = C + BudArg + BudBrz + BudUru

Dependent Variable: BUDPAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036539	0.005494	6.650801	0.0000
BUDARG	0.756492	0.277854	2.722626	0.0145
BUDBRZ	-0.704772	0.376112	-1.873835	0.0782
BUDURU	-0.293349	0.252665	-1.161016	0.2617

R-squared	0.320046	Akaike info criterion	-5.119102
Adjusted R-squared	0.200055	Schwarz criterion	-4.920145

BudPar = C + BudArg + BudBrz

Dependent Variable: BUDPAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.033643	0.004942	6.807336	0.0000
BUDARG	0.622428	0.255155	2.439417	0.0253
BUDBRZ	-0.424637	0.291292	-1.457769	0.1621

R-squared	0.266132	Akaike info criterion	-5.138035
Adjusted R-squared	0.184591	Schwarz criterion	-4.988817

BudPar = C + BudArg

Dependent Variable: BUDPAR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.027722	0.003724	7.443574	0.0000
BUDARG	0.588724	0.187950	3.132351	0.0047

R-squared	0.299029	Akaike info criterion	-5.215945
Adjusted R-squared	0.268552	Schwarz criterion	-5.118435

BudUru = C + BudArg + BudBrz + BudPar

Dependent Variable: BUDURU

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.018297	0.008551	2.139733	0.0472
BUDARG	0.612892	0.269358	2.275382	0.0361
BUDBRZ	-1.061302	0.281880	-3.765084	0.0015
BUDPAR	-0.250440	0.215708	-1.161016	0.2617

R-squared	0.469277	Akaike info criterion	-5.277242
Adjusted R-squared	0.375620	Schwarz criterion	-5.078285

BudUru = C + BudArg + BudBrz

Dependent Variable: BUDURU

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009872	0.004566	2.161768	0.0444
BUDARG	0.457010	0.235756	1.938484	0.0684
BUDBRZ	-0.954956	0.269147	-3.548085	0.0023

R-squared	0.427195	Akaike info criterion	-5.296175
Adjusted R-squared	0.363550	Schwarz criterion	-5.146957

Exhibit 3: Granger Causality Results:

Inflation; 2 Lags:

Null Hypothesis:	Obs	F-Statistic	Prob.
INFBRZ does not Granger Cause INFARG	31	0.13348	0.8756
INFARG does not Granger Cause INFBRZ		4.19381	0.0264
INFPAR does not Granger Cause INFARG	31	1.47671	0.2469
INFARG does not Granger Cause INFPAR		4.50935	0.0208
INFURU does not Granger Cause INFARG	31	1.65851	0.2099
INFARG does not Granger Cause INFURU		8.25805	0.0017
INFPAR does not Granger Cause INFBRZ	31	1.90685	0.1688
INFBRZ does not Granger Cause INFPAR		0.73445	0.4895
INFURU does not Granger Cause INFBRZ	31	3.34556	0.0509
INFBRZ does not Granger Cause INFURU		1.96482	0.1604
INFURU does not Granger Cause INFPAR	31	6.54418	0.0050
INFPAR does not Granger Cause INFURU		1.71882	0.1990

Inflation; 1 Lag:

Null Hypothesis:	Obs	F-Statistic	Prob.
INFBRZ does not Granger Cause INFARG	32	0.68040	0.4162
INFARG does not Granger Cause INFBRZ		3.51470	0.0709
INFPAR does not Granger Cause INFARG	32	0.01894	0.8915
INFARG does not Granger Cause INFPAR		6.21866	0.0186
INFURU does not Granger Cause INFARG	32	0.03827	0.8463
INFARG does not Granger Cause INFURU		13.5733	0.0009
INFPAR does not Granger Cause INFBRZ	32	0.44858	0.5083
INFBRZ does not Granger Cause INFPAR		0.06760	0.7967
INFURU does not Granger Cause INFBRZ	32	2.71903	0.1100
INFBRZ does not Granger Cause INFURU		0.44838	0.5084
INFURU does not Granger Cause INFPAR	32	3.87284	0.0587
INFPAR does not Granger Cause INFURU		0.10253	0.7511

Exchange Rate; 2 Lags:

Null Hypothesis:	Obs	F-Statistic	Prob.
EXCBRZ does not Granger Cause EXCARG	31	1.94512	0.1632
EXCARG does not Granger Cause EXCBRZ		0.07203	0.9307
EXCPAR does not Granger Cause EXCARG	31	3.37251	0.0499
EXCARG does not Granger Cause EXCPAR		1.80433	0.1846
EXCURU does not Granger Cause EXCARG	31	1.20222	0.3167
EXCARG does not Granger Cause EXCURU		2.08799	0.1442
EXCPAR does not Granger Cause EXCBRZ	31	0.76958	0.4735
EXCBRZ does not Granger Cause EXCPAR		3.68410	0.0390
EXCURU does not Granger Cause EXCBRZ	31	0.70399	0.5038
EXCBRZ does not Granger Cause EXCURU		8.67079	0.0013
EXCURU does not Granger Cause EXCPAR	31	0.29445	0.7474
EXCPAR does not Granger Cause EXCURU		8.90699	0.0011

Exchange Rate; 1 Lag:

Null Hypothesis:	Obs	F-Statistic	Prob.
EXCBRZ does not Granger Cause EXCARG	32	3.99490	0.0551
EXCARG does not Granger Cause EXCBRZ		1.96446	0.1716
EXCPAR does not Granger Cause EXCARG	32	6.95344	0.0133
EXCARG does not Granger Cause EXCPAR		5.52192	0.0258
EXCURU does not Granger Cause EXCARG	32	1.98935	0.1690
EXCARG does not Granger Cause EXCURU		0.25147	0.6198
EXCPAR does not Granger Cause EXCBRZ	32	0.63873	0.4307
EXCBRZ does not Granger Cause EXCPAR		7.58433	0.0101
EXCURU does not Granger Cause EXCBRZ	32	7.17021	0.0121
EXCBRZ does not Granger Cause EXCURU		25.3029	2.E-05
EXCURU does not Granger Cause EXCPAR	32	4.76722	0.0372
EXCPAR does not Granger Cause EXCURU		20.4330	0.0001

Budget Surplus/Deficit as a % of GDP; 2 Lags:

Null Hypothesis:	Obs	F-Statistic	Prob.
BUDBRZ does not Granger Cause BUDARG	19	1.01026	0.3892
BUDARG does not Granger Cause BUDBRZ		0.53393	0.5978
BUDPAR does not Granger Cause BUDARG	23	0.82385	0.4546
BUDARG does not Granger Cause BUDPAR		2.14317	0.1463
BUDURU does not Granger Cause BUDARG	23	2.97668	0.0764
BUDARG does not Granger Cause BUDURU		0.47173	0.6314
BUDPAR does not Granger Cause BUDBRZ	19	0.24459	0.7863
BUDBRZ does not Granger Cause BUDPAR		0.56664	0.5799
BUDURU does not Granger Cause BUDBRZ	19	1.50998	0.2548
BUDBRZ does not Granger Cause BUDURU		0.33096	0.7237
BUDURU does not Granger Cause BUDPAR	31	0.11879	0.8885
BUDPAR does not Granger Cause BUDURU		3.13850	0.0601

Budget Surplus/Deficit as a % of GDP; 1 Lag:

Null Hypothesis:	Obs	F-Statistic	Prob.
BUDBRZ does not Granger Cause BUDARG	20	2.48468	0.1334
BUDARG does not Granger Cause BUDBRZ		0.51600	0.4823
BUDPAR does not Granger Cause BUDARG	24	0.01693	0.8977
BUDARG does not Granger Cause BUDPAR		3.39545	0.0795
BUDURU does not Granger Cause BUDARG	24	5.23945	0.0325
BUDARG does not Granger Cause BUDURU		0.02622	0.8729
BUDPAR does not Granger Cause BUDBRZ	20	0.53295	0.4753
BUDBRZ does not Granger Cause BUDPAR		0.14060	0.7123
BUDURU does not Granger Cause BUDBRZ	20	2.32045	0.1461
BUDBRZ does not Granger Cause BUDURU		1.00807	0.3294
BUDURU does not Granger Cause BUDPAR	32	0.06277	0.8039
BUDPAR does not Granger Cause BUDURU		6.75652	0.0145

Exhibit 4: Vector AutoRegression (VAR) Results:

Inflation:

	INFARG	INFBRZ	INFPAR	INFURU
INFARG(-1)	0.633287	0.601355	0.004193	0.015643
	(0.27133)	(0.22288)	(0.00212)	(0.00530)
	[2.33405]	[2.69816]	[1.97522]	[2.94909]
INFARG(-2)	-0.592773	-0.604111	-0.005466	-0.008931
	(0.25957)	(0.21322)	(0.00203)	(0.00507)
	[-2.28366]	[-2.83326]	[-2.69174]	[-1.75997]
INFBRZ(-1)	-0.074626	0.256591	-0.000241	-0.001609
	(0.25842)	(0.21227)	(0.00202)	(0.00505)
	[-0.28878]	[1.20878]	[-0.11902]	[-0.31855]
INFBRZ(-2)	-0.027395	0.040437	-0.001838	-0.001748
	(0.23379)	(0.19205)	(0.00183)	(0.00457)
	[-0.11718]	[0.21056]	[-1.00501]	[-0.38247]
INFPAR(-1)	-8.684123	-29.73294	-0.271120	-0.519320
	(40.5471)	(33.3067)	(0.31722)	(0.79269)
	[-0.21417]	[-0.89270]	[-0.85467]	[-0.65513]
INFPAR(-2)	14.20738	-4.322090	-0.345093	-0.883668
	(31.5276)	(25.8979)	(0.24666)	(0.61636)
	[0.45063]	[-0.16689]	[-1.39907]	[-1.43368]
INFURU(-1)	11.82439	5.864121	0.436535	1.154371
	(19.6734)	(16.1604)	(0.15392)	(0.38461)
	[0.60104]	[0.36287]	[2.83619]	[3.00138]
INFURU(-2)	-3.509952	14.62800	-0.031084	0.074667
	(14.8536)	(12.2012)	(0.11621)	(0.29039)
	[-0.23630]	[1.19889]	[-0.26749]	[0.25713]
C	-113.5015	-47.41507	9.832837	10.80199
	(308.881)	(253.725)	(2.41655)	(6.03861)
	[-0.36746]	[-0.18688]	[4.06896]	[1.78882]

Exchange Rate:

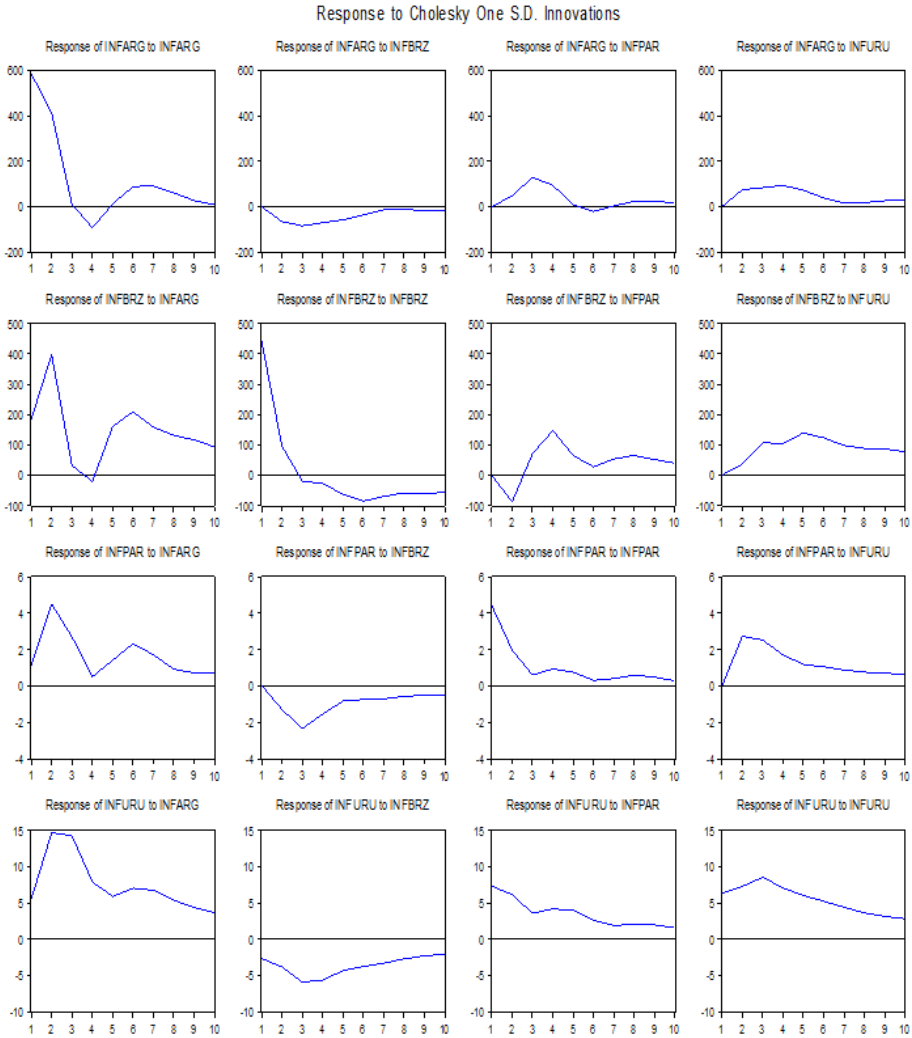
	EXCARG	EXCBRZ	EXCPAR	EXCURU
EXCARG(-1)	0.737889	0.096551	226.9742	3.395779
	(0.31837)	(0.18738)	(308.299)	(1.01456)
	[2.31774]	[0.51526]	[0.73621]	[3.34704]
EXCARG(-2)	0.063967	0.350677	-86.39022	1.245687
	(0.35718)	(0.21023)	(345.888)	(1.13826)
	[0.17909]	[1.66807]	[-0.24976]	[1.09438]
EXCBRZ(-1)	0.656503	1.515278	1236.450	5.959683
	(0.42373)	(0.24940)	(410.327)	(1.35032)
	[1.54936]	[6.07581]	[3.01333]	[4.41354]
EXCBRZ(-2)	-0.238472	-0.076509	-219.6467	1.024924
	(0.66749)	(0.39287)	(646.385)	(2.12715)
	[-0.35727]	[-0.19474]	[-0.33981]	[0.48183]
EXCPAR(-1)	0.000198	0.000328	0.929309	0.001750
	(0.00031)	(0.00018)	(0.29605)	(0.00097)
	[0.64782]	[1.82490]	[3.13907]	[1.79663]
EXCPAR(-2)	0.000349	-0.000310	0.179086	-0.001361
	(0.00042)	(0.00024)	(0.40224)	(0.00132)
	[0.83963]	[-1.26917]	[0.44522]	[-1.02813]
EXCURU(-1)	-0.183990	-0.130466	-182.5817	-0.389528
	(0.10371)	(0.06104)	(100.428)	(0.33049)
	[-1.77413]	[-2.13740]	[-1.81804]	[-1.17863]
EXCURU(-2)	0.051898	0.027819	31.17408	0.045941
	(0.06451)	(0.03797)	(62.4720)	(0.20559)
	[0.80447]	[0.73265]	[0.49901]	[0.22346]
C	-0.112731	0.022151	135.0129	-0.076967
	(0.13527)	(0.07962)	(130.991)	(0.43107)
	[-0.83339]	[0.27823]	[1.03070]	[-0.17855]

Budget Surplus/Deficit as a % of GDP:

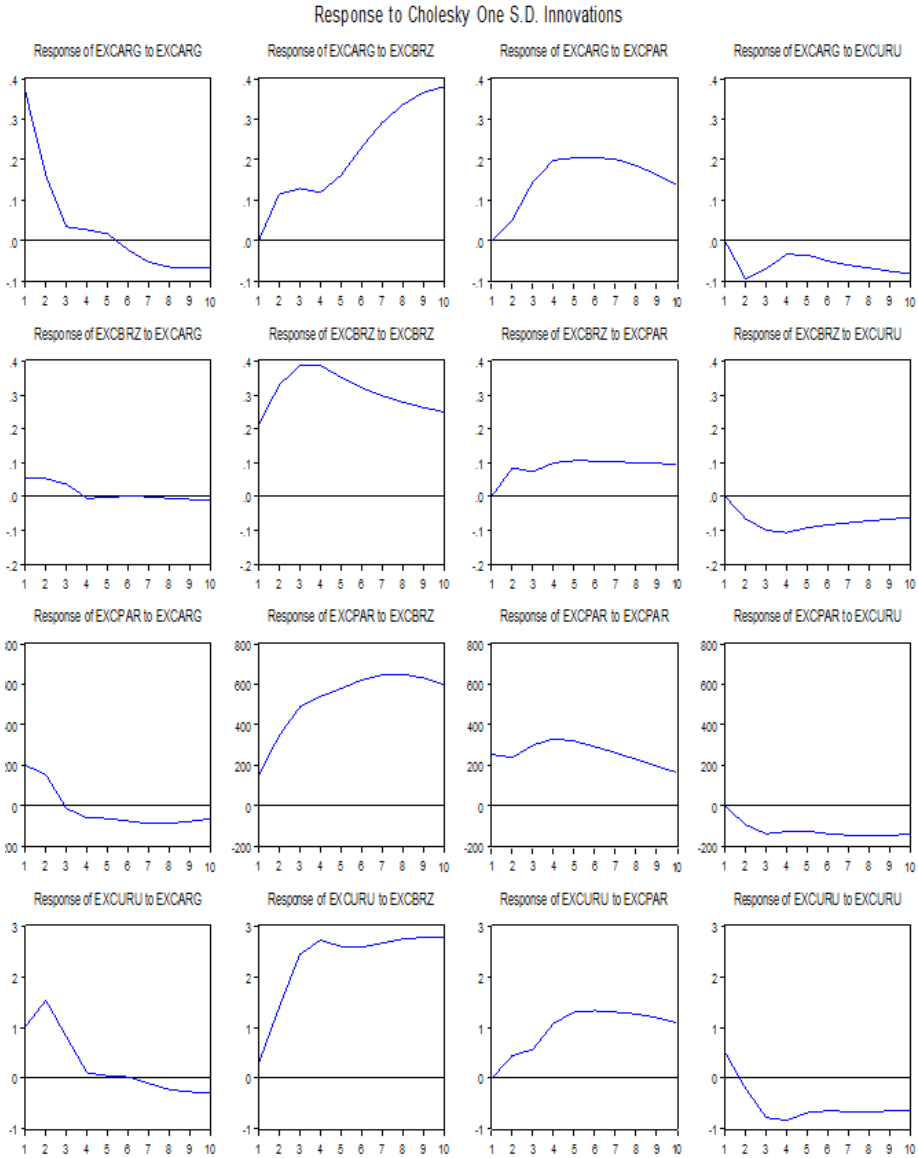
	BUDARG	BUDBRZ	BUDPAR	BUDURU
BUDARG(-1)	0.815043	-0.224593	0.996768	0.419981
	(0.37563)	(0.44429)	(0.33731)	(0.39527)
	[2.16983]	[-0.50551]	[2.95504]	[1.06251]
BUDARG(-2)	0.210799	0.359042	0.107877	0.286542
	(0.37404)	(0.44241)	(0.33588)	(0.39360)
	[0.56358]	[0.81156]	[0.32117]	[0.72800]
BUDBRZ(-1)	0.027619	0.248364	-0.436927	-0.271497
	(0.29114)	(0.34436)	(0.26144)	(0.30637)
	[0.09487]	[0.72123]	[-1.67122]	[-0.88619]
BUDBRZ(-2)	-0.192485	0.104719	-0.426805	-0.599743
	(0.37316)	(0.44138)	(0.33510)	(0.39268)
	[-0.51582]	[0.23726]	[-1.27367]	[-1.52731]
BUDPAR(-1)	-0.053996	-0.178926	-0.299070	-0.395830
	(0.34912)	(0.41294)	(0.31351)	(0.36738)
	[-0.15466]	[-0.43330]	[-0.95395]	[-1.07745]
BUDPAR(-2)	-0.077681	-0.074603	-0.258912	0.178737
	(0.17896)	(0.21167)	(0.16070)	(0.18831)
	[-0.43408]	[-0.35245]	[-1.61114]	[0.94914]
BUDURU(-1)	-0.141515	-0.031341	-0.224481	0.553821
	(0.25078)	(0.29662)	(0.22520)	(0.26389)
	[-0.56431]	[-0.10566]	[-0.99682]	[2.09867]
BUDURU(-2)	-0.188179	-0.346875	-0.142413	-0.370804
	(0.26259)	(0.31059)	(0.23580)	(0.27632)
	[-0.71664]	[-1.11683]	[-0.60395]	[-1.34194]
C	0.005790	0.013978	0.050380	0.014188
	(0.01375)	(0.01626)	(0.01234)	(0.01447)
	[0.42119]	[0.85965]	[4.08108]	[0.98081]

Exhibit 5: Impulse Response Results

Inflation:



Exchange Rate:



Budget Surplus/Deficit as a % of GDP

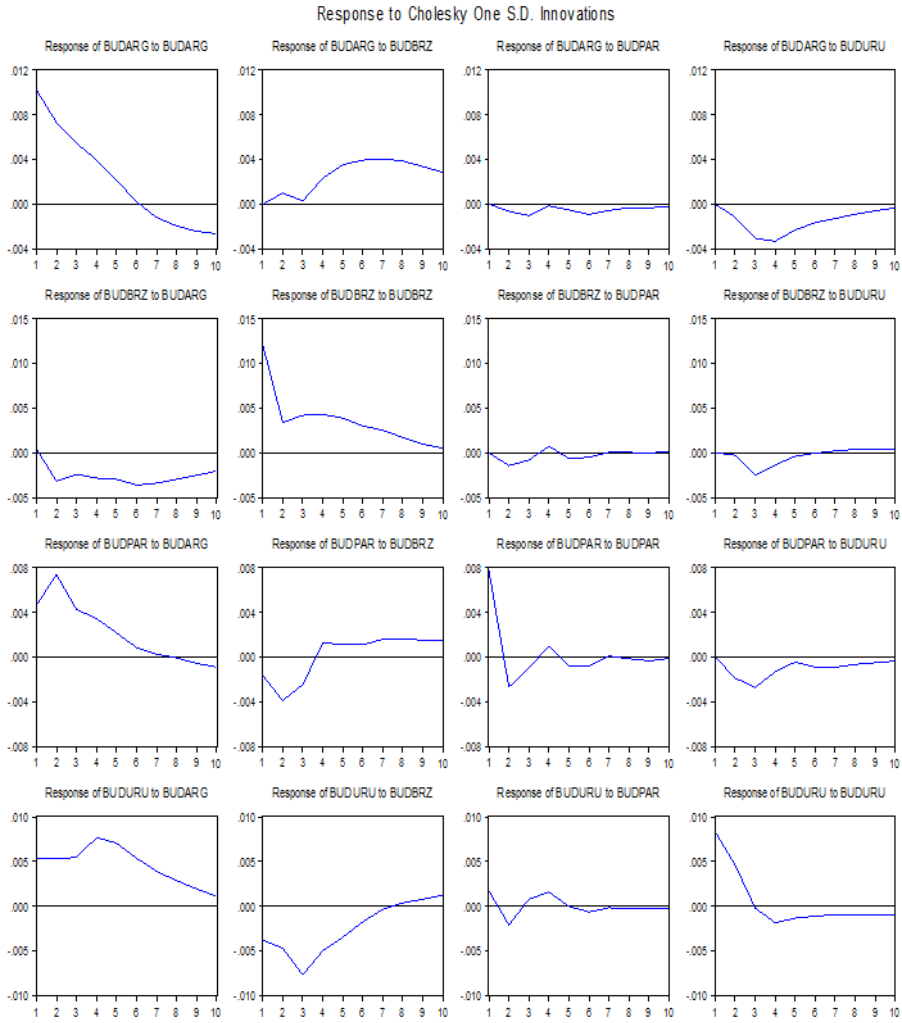
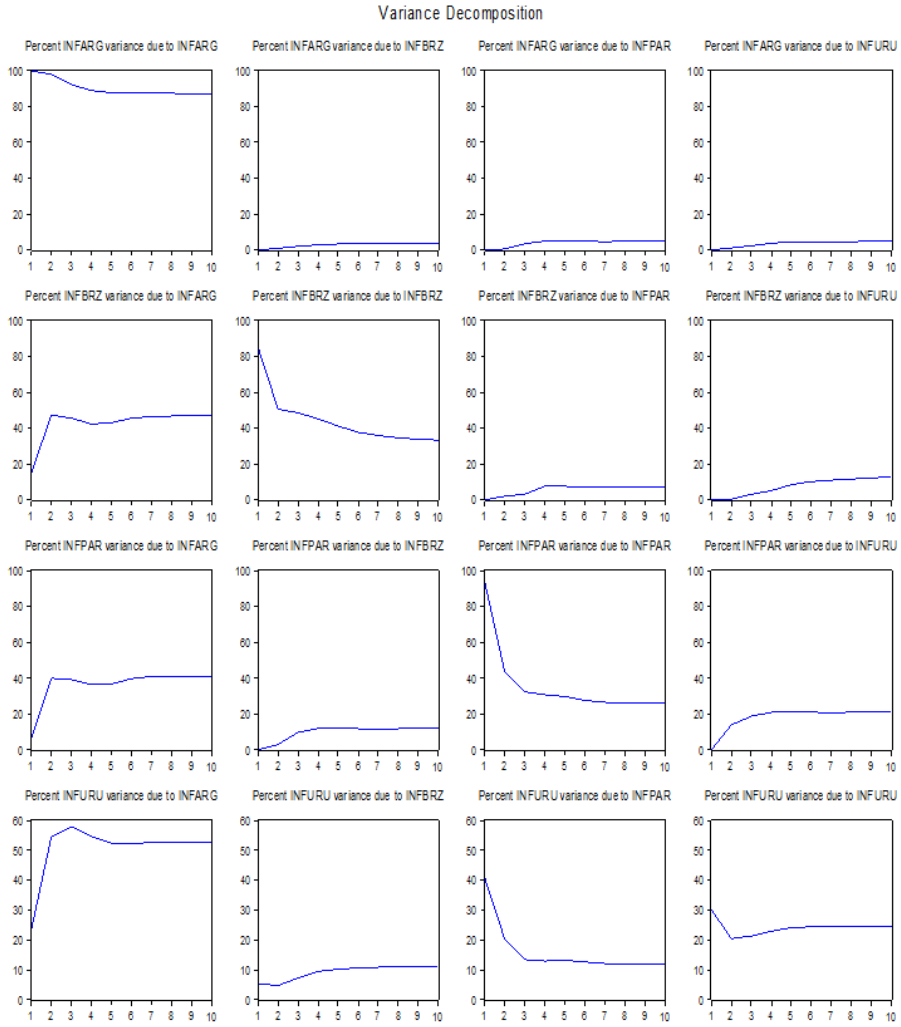
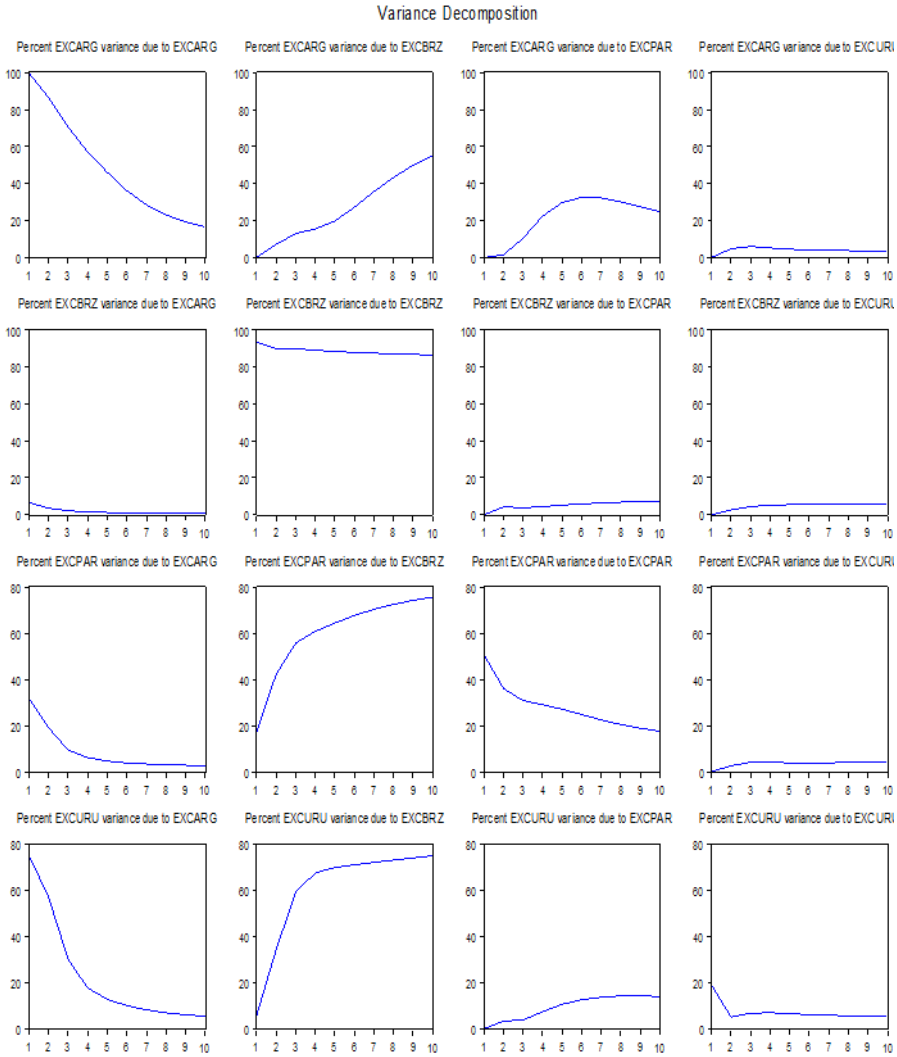


Exhibit 6: Variance Decomposition

Inflation:



Exchange Rate:



Budget Surplus/Deficit as a % of GDP:

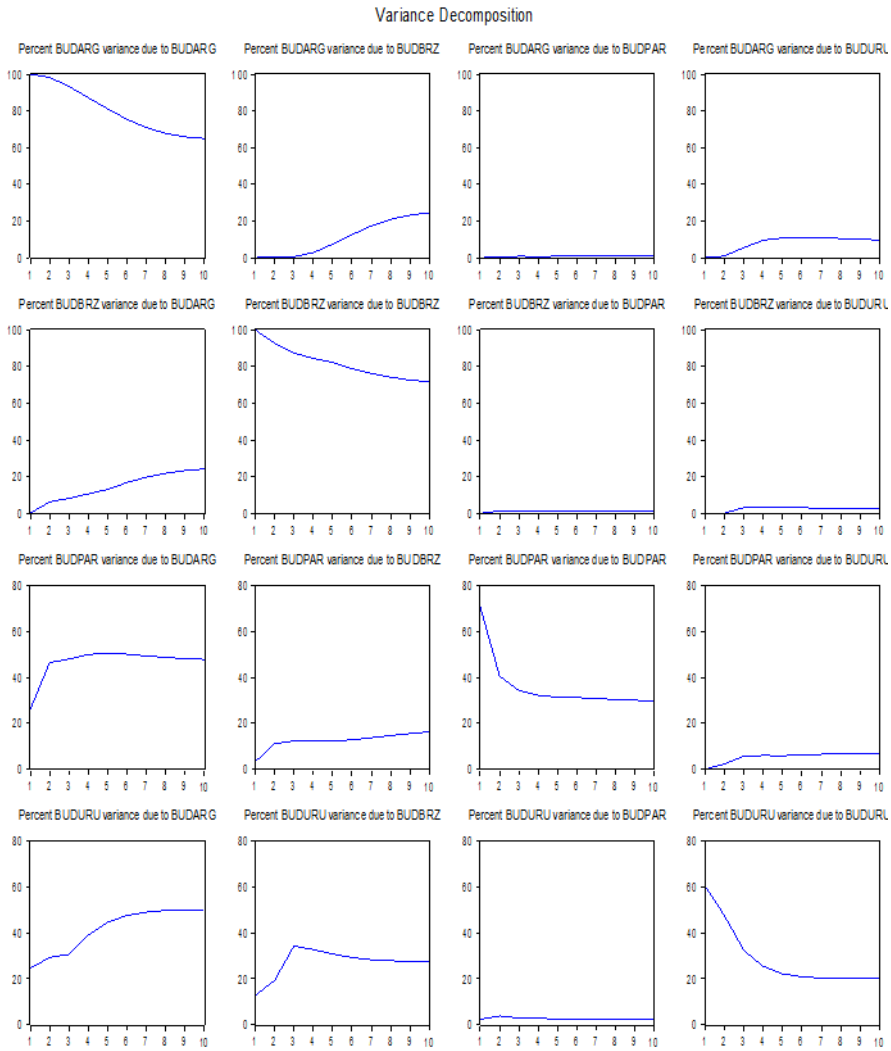


Exhibit 7: Average of Trade between Argentina and MERCOSUR[35]

Percentage of Exports	1980-1989	1990-1999	2000-2009	1980-2009	2009
Brazil	8%	22%	19%	16%	20%
Paraguay	0%	0%	0%	0%	0%
Uruguay	2%	3%	2%	2%	3%
Total Exports	100%	100%	100%	100%	100%
Percentage of Imports	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Brazil	15%	21%	31%	22%	31%
Paraguay	1%	1%	2%	1%	2%
Uruguay	2%	2%	1%	2%	1%
Total Imports	100%	100%	100%	100%	100%
Exports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Brazil	1%	2%	4%	2%	4%
Paraguay	0%	0%	0%	0%	0%
Uruguay	0%	0%	0%	0%	1%
Total Exports	7%	8%	19%	11%	18%
Imports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Brazil	1%	2%	4%	2%	4%
Paraguay	0%	0%	0%	0%	0%
Uruguay	0%	0%	0%	0%	0%
Total Imports	5%	8%	13%	8%	13%

Exhibit 8: Average of Trade between Brazil and MERCOSUR

Percentage of Exports	1980-1989	1990-1999	2000-2009	1980-2009	2009
Argentina	3%	9%	8%	7%	8%
Paraguay	0%	0%	0%	0%	0%
Uruguay	1%	2%	1%	1%	1%
Total Exports	100%	100%	100%	100%	100%
Percentage of Imports	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	4%	11%	9%	8%	9%
Paraguay	1%	1%	1%	1%	0%
Uruguay	1%	2%	1%	1%	1%
Total Imports	100%	100%	100%	100%	100%
Exports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	0%	1%	1%	1%	1%
Paraguay	0%	0%	0%	0%	0%
Uruguay	0%	0%	0%	0%	0%
Total Exports	10%	7%	12%	10%	10%
Imports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	0%	1%	1%	1%	1%
Paraguay	0%	0%	0%	0%	0%
Uruguay	0%	0%	0%	0%	0%
Total Imports	7%	7%	9%	8%	8%

35 Euromonitor International

Exhibit 9: Average of Trade between Paraguay and MERCOSUR

Percentage of Exports	1980-1989	1990-1999	2000-2009	1980-2009	2009
Argentina	13%	13%	9%	12%	11%
Brazil	22%	33%	25%	27%	21%
Uruguay	2%	2%	19%	8%	17%
Total Exports	100%	100%	100%	100%	100%
Percentage of Imports	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	16%	16%	19%	17%	16%
Brazil	30%	25%	28%	28%	23%
Uruguay	2%	2%	2%	2%	1%
Total Imports	100%	100%	100%	100%	100%
Exports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	2%	5%	8%	5%	8%
Brazil	4%	8%	12%	8%	11%
Uruguay	0%	0%	1%	1%	1%
Total Exports	13%	31%	45%	29%	49%
Imports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	2%	5%	8%	5%	8%
Brazil	4%	8%	12%	8%	11%
Uruguay	0%	0%	1%	1%	1%
Total Imports	13%	31%	45%	29%	49%

Exhibit 10: Average of Trade between Uruguay and MERCOSUR

Percentage of Exports	1980-1989	1990-1999	2000-2009	1980-2009	2009
Argentina	9%	14%	9%	11%	5%
Brazil	17%	28%	18%	21%	20%
Paraguay	0%	0%	0%	0%	0%
Total Exports	100%	100%	100%	100%	100%
Percentage of Imports	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	12%	20%	22%	18%	20%
Brazil	20%	23%	19%	21%	16%
Paraguay	1%	1%	4%	2%	7%
Total Imports	100%	100%	100%	100%	100%
Exports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	1%	2%	1%	2%	1%
Brazil	3%	4%	3%	3%	3%
Paraguay	0%	0%	0%	0%	0%
Total Exports	16%	13%	18%	15%	17%
Imports as a % of GDP	**1980-1989**	**1990-1999**	**2000-2009**	**1980-2009**	**2009**
Argentina	2%	3%	5%	3%	4%
Brazil	3%	4%	4%	4%	3%
Paraguay	0%	0%	1%	0%	1%
Total Imports	15%	16%	21%	17%	20%

References

Allegret, Jean-Pierre, and Alain Sand-Zantman. "Monetary Integration Issues in Latin America: A Multivariate Assessment." *Panoeconomicus*, 2008: 279-308.

Arun, Motianey, and Elisa Parisi-Capone. *Is a European Monetary Fund a Useful Complement to the IMF?* March 22, 2010.

Back, Aaron. "The Wall Street Journal." *EU Barroso: Greek Rescue Package to be Finalized Very Soon*, April 30, 2010: 1.

Barrionuevo, Alexei. *The New York Times: Argentina seeks to avoid energy crisis, as Brazil refuses to share Bolivian natural gas*. February 25, 2008. http://www.nytimes.com/2008/02/25/business/worldbusiness/25iht-energy.1.10354521.html?_r=2 (accessed November 2010).

BBC News: Single Currency Pros and Cons. November 21, 1997. http://news.bbc.co.uk/2/hi/special_report/single_currency/25081.stm (accessed 03 15, 2010).

BBC: Argentina's Economic Crisis. February 12, 2003. http://news.bbc.co.uk/1/hi/business/1721061.stm (accessed November 2010).

Berg, Andrew, Eduardo Borensztein, and Paolo Mauro. "An evaluation of monetary regime options for Latin America." *North American Journal of*, 2002: 213-235.

Bruno, Kaitlin. *Global Envision: Brazil's Boom*. August 4, 2008. http://www.globalenvision.org/2008/08/04/brazils-boom (accessed November 20, 2010).

Castle, Landom, and Stephen Castle. *New York Times*. February 28, 2008. http://www.nytimes.com/2010/03/01/business/global/01union.html (accessed March 15, 2010).

Edmunds, John C, and John E Marthinsen. *Wealth by Association: Global Prosperity Through Market Unification*. Babson Park: Praeger, 2003.

Edwards, Sebastian. *Monetary Unions, External Shocks and Economic Performance: A Latin American Perspective*. National Bureau of Economic Research, 2006.

EIU. Greece. February 2010.

"EIU: Greece March Report." *European Intelligence Unit*. March 2010. (accessed March 2010).

Emsden, Christopher. "Euronomics: Spain Downgrade Spurs Contagion Fear, Italy Hit." *Wall Street Journal*, April 28, 2010: 1.

Euromonito: Country Profile: Uruguay. October 15, 2010. http://www.portal.euromonitor.com.ezproxy.babson.edu/Portal/DocumentView.aspx (accessed November 15, 2010).

"Euromonitor: Country Profile Argentina." *Euromonitor*. November 7, 2010. http://www.portal.euromonitor.com.ezproxy.babson.edu/Portal/ResultsList.aspx (accessed November 20, 2010).

"Euromonitor: Country Profile: Brazil." *Euromonitor*. November 5, 2010. http://www.portal.euromonitor.com.ezproxy.babson.edu/Portal/ResultsList.aspx (accessed November 20, 2010).

Euromonitor: Country Profile: Paraguay. October 15, 2010. http://www.portal.euromonitor.com.ezproxy.babson.edu/Portal/ResultsList.aspx (accessed November 20, 2010).

Euromonitor: Paraguay and Uruguay experience muted slowdowns. June 17, 2009. http://www.portal.euromonitor.com.ezproxy.babson.edu/Portal/DocumentView.aspx (accessed November 20, 2010).

Evangelist, Mike, and Valerie Sathe. "BRAZIL'S 1998-1999 CURRENCY CRISIS." 2006.

Eviews Help: Granger Causality. 2010. C:\Program Files\EViews6SV\Help Files\wwhelp\wwhimpl\js\html\wwhelp.htm (accessed November 2010).

Eviews Help: Impulse Response Function. C:\Program Files\EViews6SV\Help Files\wwhelp\wwhimpl\js\html\wwhelp.htm (accessed November 20, 2010).

Eviews Help: Variance Decomposition. C:\Program Files\EViews6SV\Help Files\wwhelp\wwhimpl\js\html\wwhelp.htm (accessed November 25, 2010).

Eviews Help: Vector AutoRegression. 2010. C:\Program Files\EViews6SV\Help Files\wwhelp\wwhimpl\js\html\wwhelp.htm (accessed November 20, 2010).

Ferrari-Filho, Fernando. "Why Does it Not Make Sense to Create a Monetary Union in Mercosur? A Keynesian Alternative Proposal." *Journal of Post Keynesian Economics*, 2002: 235-252.

Flippo, Hyde. *German-Way: Euro-Timeline*. 2010. http://www.german-way.com/euro-timeline.html (accessed April 27, 2010).

Gai, Yunwei. "Simple Regression Models and Diagnostics Part I." Babson Park, MA, February 2009.

Google Finance. April 30, 2010. http://www.google.com/finance?q=EURUSD (accessed April 30, 2010).

Hallwood, Paul, Ian Marsh, and Jörg Scheibe. "An assessment of the case for monetary union or official dollarization in five Latin American countries." *Emerging Markets Review*, 2006: 52–66.

Jones, Kent, interview by Moises Numa. *Honors Project Thesis* (April 2010). Babson College. Babson Park, MA.

Kiser, Sherry, and William C Gruben. *Brazil: The First Financial Crisis of 1999*. Southwest Economy, 1999.

Klonsky, Joanna, and Stephanie Hanson. *Council on Foreign Relations: Mercosur: South America's Fractious Trade Bloc*. August 2009. http://www.cfr.org/publication/12762/mercosur.html (accessed November 2010).

Kopits, George. "Central European EU Accession and Latin American Integration: Mutual Lessons in Macroeconomic Policy Design." *North American Journal of Economics and Finance*, 2002.

Laopodis, Nikiforos. "Currency Substitution and European Monetary Union." *Ekonomia*, 2001: 190-207.

Lazaretou, Sophia. "Greek Monetary Economics in Retrospect: The Adventures of the Drachma." *Economic Notes*, 2005: 331-370.

Mallet, Victor. "Roubini Global Economics: Overview of Solutions: Is a European Monetary Fund a Useful Complement to the IMF?" *Roubini Global Economics*. March 2010. http://www.roubini.com/critical-issues/48728.php (accessed April 2010).

Miles, William. "One Continent, One Currency? Varieties of Common Currency Experience in Europe and Latin America." 2006.

Molano, Walter. "Europe: Forging a Union." *Roubini Global Economics*, June 1, 2010.

Mundell, Robert. *A Theory of Optimum Currency Areas*. September 1961.

Parisi-Capone, Elisa. "Roubini Global Economics: Is a European Monetary Fund a Useful Complement to the IMF?" *Roubini Global Economics*. March 22, 2010. http://www.roubini.com/analysis/109795.php (accessed March 25, 2010).

Provopoulos, George. "Greece will fix itself from inside the eurozone." *Financial Times*, January 21, 2010: 1.

Ross, Andrew. "The New York Times: Europe Now Moving Swiftly on Greek Rescue Plan." *The New York Times*. April 29, 2010. http://dealbook.blogs.nytimes.com/2010/04/29/europe-now-moving-swiftly-on-greek-rescue-plan/?src=busln (accessed April 30, 2010).

Tavlas, George, email correspondance with Moises Numa. (April 6, 2010).

Tavlas, George S. "Benefits and Costs of Entering the Eurozone." *Cato Journal* (Cato Journal), 2004: 89-106.

The Economist. "The Future of the Euro: Don't do it." December 2, 2010.

The World Fact Book. 2010. https://www.cia.gov/library/publications/the-world-factbook/ (accessed December 2010).

Trading Economics: Euro Area Unemployment Rate. February 2010. http://www.tradingeconomics.com/Economics/Unemployment-rate.aspx?Symbol=ESP (accessed April 27, 2010).

Venner, Dwight. "Challenges to Central Banking From Globalized Financial Systems." 2002.

Wagner, Helmut, and Eduard Hochreiter. *The Road to the Euro: Exchange Rate Arrangements in European Transition Economies*. Vol. 579. Sage Publications, Inc.

Willis, Andrew. "EU Observer: Plans emerge for European monetary fund ." *EU Observer*. March 08, 2010. http://euobserver.com/9/29623 (accessed March 25, 2010).