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## Impact of Monetary Policy, Fiscal Policy, and Currency Depreciation on Output: The Case of Venezuela\*

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This study applies the IS-LM model and the GARCH (Engle, 2001) process to find possible relationships between real GDP for Venezuela and selected macroeconomic variables. Based on an annual sample during 1959-2001, more real M2, more government deficit spending, real depreciation of the Bolivar, a higher expected inflation rate, and higher world oil price would help raise real GDP. **JEL: E5, F4.**

### Introduction

Venezuela has unique economic structures and has experienced economic problems similar to countries in the same region. According to the *Wall Street Journal* (December 6, 2002), petroleum output accounted for approximately 30% of GDP, 80% of exports, and 50% of central government revenues. It was the largest oil supplier to the U.S. and the world's third largest oil producer, turning out an average of 3.1 million barrels per day. In recent years, Venezuela experienced relatively high inflation rates, the depreciation of the Bolivar, and slow economic growth.

According to the *International Financial Statistics* (IFS) published by the International Monetary Fund, its inflation rate reached a high of 99.88% in 1996 and has since declined to 22.43% in 2002. The high inflation rate was mainly attributable to rapid growth of the money supply reaching a high of 68.89% in 1994.

The Venezuelan currency also suffered substantial depreciation from an exchange rate of 176.84 Bolivars per U.S. dollar in 1995 to 1160.95 in 2002. The central bank initially pursued a fixed exchange rate regime and allowed the Bolivar to vary within a tightly controlled band. In an

attempt to reduce inflationary pressure and keep the Bolivar from depreciating, the central bank raised the interest rate as high as 45% and spent billions of dollars worth of its international reserves without much success. Since February 2003, the central bank has adopted a floating exchange rate regime in order to stimulate exports, ease the pressure on limited international reserves, and allow the over-valued Bolivar to be determined by market forces.

Economic stagnation is also a concern because real GDP in 2001 was less than the 1997 level. There was a recessionary gap as evidenced by the double-digit unemployment rate. The high interest rate policy was pursued in the late 1980s in order to support the exchange rate, attract international investors and also contain inflation. However, the high cost of borrowing hurt household and business spending severely. These developments suggest that a further study of the interrelationships among these macroeconomic variables is needed in order to provide the Venezuelan government with some insight into conducting its macroeconomic policy.

This paper attempts to determine whether, and how, real GDP in Venezuela would respond to a change in real M2, government deficit spending, the depreciation of the Bolivar, the inflation rate, and world oil prices. The paper applies the IS-LM model and the well-known GARCH process in empirical work so that error variance would be specified appropriately.

### **Literature Survey**

Several recent studies examined the related subjects for Venezuela. Vaez-Zadeh (1989) showed that the availability of oil resources in Venezuela creates a statistically

significant confidence effect on expected future income that would impact household and firm spending behaviours and that oil price changes have a more significant impact on the demand for money, inflation, and the balance of payments when the confidence effect is considered. Garcia-Herrero (1997) studied the banking crises and lessons for three countries including Venezuela and discovered several different scenarios. Those countries that responded to banking crises quickly with comprehensive and consistent policy would have smaller negative impacts. Countries with a high degree of dollarization and a large share of foreign and government banks had a stable bank deposit at least temporarily. The largest impact was found when both banking crises and macroeconomic problems occurred together. Soydemir (2002) found that an increase in the U.S. Treasury bill rate has a slow and different impact on the stock market in Venezuela, Mexico, Colombia, Brazil, and Argentina and does not have any impact on Chile's stock market. He indicated that the macroeconomic stability of these countries may be affected by external factors such as monetary policy in the U.S.

Edward (1993) analyzed the exchange rate, inflation and disinflation for four Latin American countries, including Venezuela. He found that during the fixed exchange rate period, these countries observed the rule and pursued domestic credit policy by showing consideration for the constraints. However, after adopting a flexible exchange rate regime, these countries ignored these constraints and their economies resulted in losses of international reserves and higher inflation. Holmes (2002) tested whether the U.S. dollar exchange rate for 13 Latin America countries including Venezuela would have a nonlinear relationship based on the logistic and exponential smooth

transition models. He found that seven countries exhibit nonlinear exchange rate patterns with Venezuela and Colombia showing the steepest change between low and high exchange rates. Anoruo, Braha and Ahmad (2002) examined the purchasing power parity (PPP) hypothesis for 11 countries including Venezuela. Based on the generalized error correction model (ECM), he found that the PPP hypothesis is valid for these sample countries in the long run. He also showed that the PPP does not hold if the traditional unit root method is employed to test the hypothesis.

### The Model

Applying the IS-LM model (Gali, 1992; Dubey and Greanakoplos, 2000; Dohmen, 2002), we may express real output as

$$Y = f(\text{RM2}, \text{DEF}, \text{EXC}, \pi, \text{OIL})$$

Where,

- Y = real GDP for Venezuela,
- RM2 = real M2 money aggregate,
- DEF = real government deficit,
- EXC = the real exchange rate,
- $\pi$  = the expected inflation rate, and
- OIL = world crude oil price per barrel.

We expect that RM2 would affect real GDP positively because an increase in real quantity of money would shift the LM curve to the right, causing the equilibrium nominal interest rate to decline and equilibrium real output to rise. Several seminal articles examined the impact of monetary policy on the economy. Mishkin (1995) and Kuttner and Mosser (2002) indicated that monetary policy would affect the economy through several transmission mechanisms such as the interest rate channel, the exchange rate channel, Tobin's q theory, the wealth effect, the monetarist channel, and the credit

channels including the bank lending channel and the balance-sheet channel. Taylor (1995) emphasized the importance of the interest rate channel whereas Bernanke and Gertler (1995) stressed the significance of the credit channel. Recent research (Estrella, 2002; Boivin and Giannoni, 2002) indicated that the effect of the interest rate on real output has declined since the 1980s mainly due to financial innovation, better inventory management, securitization, monetary policy conduct, etc.

Whether an increase in government deficit spending would affect real output has been analyzed extensively. The conventional view is that in the short run, it would raise aggregate demand and output. However, the Ricardian equivalence hypothesis (Barro, 1989) suggests that deficit-financed government spending would have a neutral effect in the long run because taxpayers may figure out that a tax cut today will be matched by a tax increase in the future. Blanchard (1985) and Bernheim (1989) challenged the Ricardian equivalence hypothesis.

The response of real output to a change in EXC is unclear. Currency depreciation would bring some positive effects such as increased exports and decreased imports and negative impacts such as potential increase in import and domestic prices, decrease in real income and wealth, and outflows of capital. Edwards (1986) showed that the effect of currency depreciation is negative in the first period, positive in the second period, and neutral in the long term. Morley (1992) found that currency depreciation is contractionary because of a decline in investment spending. Upadhyaya (1999) revealed that currency depreciation has a negative impact in Pakistan and Thailand and is neutral in India, Malaysia, the Philippines, and Sri Lanka over the long run.

The impact of the expected inflation rate on output is ambiguous. On the one hand, the Fisher equation suggests that an increase in the expected inflation rate would reduce the real interest rate paid by borrowers. On the other hand, a rising inflation rate would cause inconvenience, tax distortions, inefficiency, the misallocation of resources, menu costs, and ‘shoe-leather’ costs, which would harm real output.

### Empirical Results

Because quarterly data for some of the variables are not available, the sample of annual data during 1959 – 2001 is chosen. Data for real GDP in 2002 were not available during the drafting stage of this paper. All the data were taken from the *International Financial Statistics* published by the International Monetary Fund. The real exchange rate is equal to the nominal exchange rate in terms of the Bolivars per U.S. dollar times the relative price levels in the U.S. and Venezuela. The lagged inflation rate is chosen as a proxy for the expected inflation rate. The variables Y, RM2, and DEF are expressed in billions of the Bolivar. OIL is measured in U.S. dollar per barrel.

Table 1 presents the regression results. Figures in the parenthesis are z-statistics. As shown, the right-hand side variables as a whole can explain 74% of the variation in real GDP. All the coefficients are significant at the 1% level. Real GDP is positively associated with real M2, government deficit spending, the real exchange rate, the expected inflation rate, and world oil prices. If RM2 rises by 1, Y will increase by 0.36. An increase in government deficit spending by 1 will raise real GDP by 2.13 due to the multiplier effect. If the real exchange rate rises by 1, which means a real depreciation of 1, real GDP is expected to rise by 15.40.

An increase in the expected inflation rate by 1 percentage point will result in an increase in real GDP by 28.12. For every dollar increase in world crude oil price per barrel, real GDP will rise by 80.18. In the variance equation, both coefficients are significant at the 1% level, suggesting that the GARCH (1,1) process is appropriate.

**Table 1: GARCH Regression**

	Coefficient	z-Statistic
C	3726.34	16.07
RM2	0.36	5.26
DEF	2.13	8.92
EXC	15.40	39.56
$\pi$	28.12	13.04
OIL	80.18	34.51
R <sup>2</sup>	0.74	
Variance Eq.		
ARCH(1)	0.77	4.62
GARCH(1)	-0.65	-3.09

There are several policy implications. The significant positive impact of real M2 suggests that an expansionary monetary policy can be pursued to stimulate the economy. However, the relatively small coefficient of 0.36 suggests that the impact of real M2 money on output is not as large as we would expect. Although the real depreciation of the Bolivar is expansionary, it should be gradual and smooth in order to reduce large fluctuations that would be harmful to some of the sectors in the economy. Even though an increase in the expected inflation rate would reduce the level of the real interest rate and stimulate investment activities, the government should pay attention to the costs of inflation and pursue price stability so that the value of the Bolivar can be maintained.

## Summary and Conclusions

This study has applied the IS-LM framework and the GARCH model to examine how major macroeconomic variables would affect real output. Real output has a significant positive relationship with real M2, government deficit spending, the real depreciation of the Bolivar, the expected inflation rate, and world oil prices. The significance of the GARCH (1,1) model suggests that error variance is a function of past squared error and past error variance. If the OLS method is employed, misleading conclusions may be drawn.

The above findings do not necessarily suggest that the government can pursue deficit spending or currency depreciation without any constraints. When government debt continues to rise, it may raise the interest rate and crowd out other expenditures. Substantial currency depreciation would fuel inflation.

Areas for future research exist. Different definitions of the quantity of money may be considered to determine which money aggregate would have a better relationship with real output. We may consider the interest rate as a monetary policy instrument. The VAR model may be considered to estimate the parameters in a simultaneous system.

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## Book Review

Chang, Ha-Joon (Ed), (2003). *Rethinking Development Economics*. Anthem Press: London. PP 544. ISBN 1-84331-110-0.

Chang, Ha-Joon (2003). *Globalization, Economic Development and the Role of the State*. Zed Books: London. PP 355. ISBN 1-84277-143-4.

*“Decisions were made on the basis of what seemed a curious blend of ideology and bad economics ...Ideology guided policy prescription and countries were expected to follow the IMF guidelines without debate.”*

Joseph Stiglitz 2002.

When the former chief economist at the World Bank came out and attacked what he saw as the dogmatic and ideologically driven policies of the IMF, a crack appeared in what had been dubbed by some commentators as the ‘Washington Consensus’. The neo-liberal orthodoxy which had been shared by the US government, the IMF, and WB for 20 years was now being questioned from within. In these two books edited or written by Ha-Joon Chang, it is as though the heterodox (those outside the orthodox consensus) are now trying to drive a wedge into that crack and prise it further apart.

In doing so they are self-consciously trying to create more space within academia for the discussion of heterodox views. Just as Stiglitz complained about the absence of open and frank discussion on the terrain of international financial institutions, so Chang argues that in the universities the dominance of neo-liberal orthodoxy has been so complete that all heterodox views are simply

castigated as bad economics. The result of this has been the increasing rejection of development economics as a specific and legitimate branch within the discipline of economics in favour of a ‘one size fits all’ approach to teaching and research within the discipline. (See my review of Chang’s *Kicking Away the Ladder* in BNE Issue No. 56). Even where courses and research continued to be carried out, it was now recast as ‘development studies’ rather than development economics.

Thus *Rethinking Development Economics* is a collection which attempts to re-establish the legitimacy of development economics in academia. It is compiled from papers delivered in 2000 and 2001 at the Cambridge Advanced Programme on Rethinking Development Economics, a forum for discussion hosted by the Development Studies Committee of the University of Cambridge. Each contribution combines a theoretical critique of an aspect of the orthodox together with an attempt to assemble the signposts for a new theoretical framework in which to approach the problems of the developing world.

The collection is thus organised around themes: development experiences in Asia, Latin America, Africa and (adding to the brief of development economics) the Transition Economies; structural and sectoral issues including new growth theory and agriculture; trade, industry and technology including the increasingly important issue of intellectual property rights; financial markets and corporate governance; and poverty and inequality. The final section is concerned with institutions and government, and it is here that the heterodox finds greatest cohesion. For whilst the contributors come from various methodological and ideological backgrounds – Institutional, Structuralist, Post-

Keynesian and Marxist amongst others – they share a common critique of neo-liberal orthodoxy in that it has an ideological rather than scientific hostility to the state playing any significant role in fostering development.

What appears to unite the different strands of the heterodox is a questioning of the easy separation between the state and the market that characterises neo-liberal orthodoxy. To use a philosophical parallel, for neo-liberalism the market is like the ‘state of nature’ in the political philosophy of Hobbes and Locke. The ‘state of nature’ does not correspond to any actual historical stage that prefigures the rise of the state, but is merely a theoretical device through which these philosophers ‘deduce’ what society must have been like prior to the state. Having asserted what society would be like without the state they are then free to arrive at their various conclusions as to the role the state has to play.

So to neo-liberalism, through a process of abstract deduction, paints a picture of what the perfect market should look like, and then draws conclusions about the role of the state from these assumptions. Stiglitz fundamentally shares this approach, but differs on the extent of and nature of state intervention from a Keynesian perspective of ‘market failure’ in much the same way as Hobbes and Locke differed over the exact nature of their political social contract.

For the heterodox the ‘perfect market’ has no more material or historical reality than the ‘state of nature’. For them the market has never come into being and has never existed in abstract and independently of the state, and so the very premise of the orthodox view is historically and theoretically false. Within the orthodox is the suggestion that the state at the very least

arises with the market and interacts with it, and possibly pre-dates it and plays a major role in shaping it.

In his book *Globalisation, Economic Development and the State* Chang takes up this theme further. Consisting of a number of essays that ‘are some of the results of my attempt to construct a theoretical alternative to neo-liberalism’; Chang offers us an ‘institutional political economy approach’. The scope is ambitious, ranging from state institutions and structural change through state industrial policy, state regulation, the state and globalisation, to intellectual property rights. Whilst historical in approach it does not limit itself to empirical case studies but attempts to draw more generalised lessons. It is here that it could be most easily criticised, for (like *Rethinking...*) it is more a work in progress containing many illuminating insights than a finished internally coherent theory.

Yet for all that, these books deserve to win respect for their ideas within academia. Today’s economists may feel uncomfortable about straying into the terrain of political economy, yet they are increasingly doing so in practice. After all, how long now have the orthodox been repeating well worn panacea about greater transparency, political democracy, accountability and rolling back corruption in order to place market failure at the door of political failure by the developing world. Surely faced with the failure of market reform in many transitional economies, and the manifest complexity of the China of ‘one country, two systems’, it is now time not merely to rethink development economics but in doing so rethink the relationship between the market and the state.

**Richard Palsler**

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