MONTHLY ECONOMIC BULLETIN
MAY 2011

RELATIONSHIP BETWEEN OUTPUT AND EMPLOYMENT IN VENEZUELA: AN ANALYSIS WITH RECENT DATA

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1. INTRODUCTION

Modern macroeconomic traditions usually establish a short-run link between developments in the labor market and events related to the goods market. To state, for instance, that a higher demand for aggregate goods and services generates more jobs, is to say, in a way, that given certain structural relationships in the operation of markets (for raw materials and final products), decisions by each firm would determine the performance of employment (and unemployment) in the labor market. Specifically, in a situation of imperfect competition in the market for goods and services, with price being a strategic decision variable, the behavior of the components of aggregate demand will be a datum that firms use for production decisions which, at the same time, will determine the "optimum" employment demand as a function of the cost of inputs (mainly labor) and the technological relationship between labor and production.

The formal relation between employment and aggregate demand *Z*, may be established as follows.

Firms try to maximize profits by means of an optimization program, where the price they charge (under imperfect competition) depends on the company's output *q*, and on the vector ***Z***, of variables which compose aggregate demand. That is,

$$P = P(q, Z) \qquad (1)$$

If short-term costs are strictly labor,[1] and nominal wages are given (or are a datum for companies), the specific function for company profits will be

$$\Pi = P(q, Z)q - Wl \qquad (2)$$

where $q = f(l)$ is a function of production depending, in this case, positively on the labor force ($f_1 > 0$) with decreasing marginal productivity ($f_{11} < 0$), common characteristics of short-term production functions with "good" behavior. The *q* variable may be specified as

$$q = l^{\alpha}, \qquad \alpha > 0 \qquad (3)$$

where α represents the inverse of the employment elasticity with respect to output changes. If the key decision variable is the firm's level of employment (given the stock of capital and *Z*), the first order condition for a maximum will be[2]

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[1] Adding the cost of other inputs to the problem will only complicate the solution without essentially changing results.
[2] See the Appendix for the mathematical calculation of this first order condition.

$$f_1\left[1+\frac{1}{e}\right]=\frac{W}{P(q,Z)} \qquad (4)$$

where e = (dq/dP)/(P/q) is the price elasticity of the demand for goods. In formula (4), if the firm faces a higher aggregate demand ***Z***, it will establish higher prices, and the right hand term will decrease. In order to preserve the identity (and the first order condition for a maximum), the firm will hire more workers, and a positive relationship between ***Z*** and *l* may be established.[3]

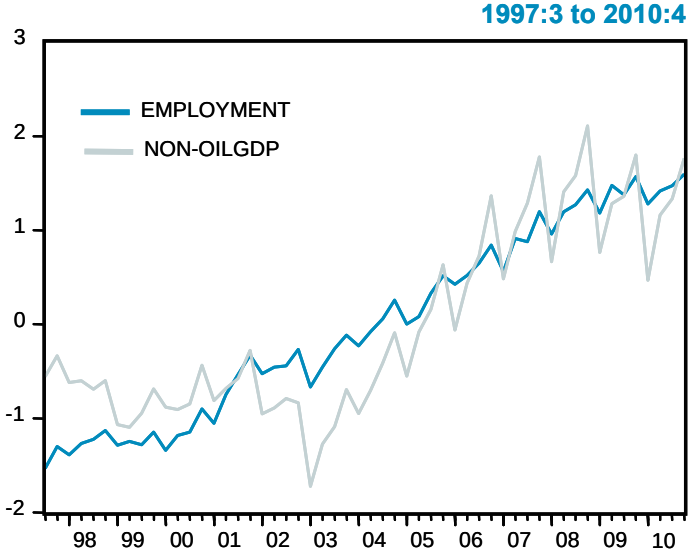
This close relationship between the individual demands perceived by firms in the market for goods and services, and the optimal level of employment each one separately requires, within a context of equilibrium, (***Z*** = *Y*). At the aggregate level, it may be expressed as a relationship between the total production of goods and services in the economy and the volume of jobs created.

In this brief paper, we will study whether recent aggregate economic series in the Venezuelan economy support the existence of this statistical relationship between output and employment, and how changes in production affect changes in employment. The production dimension we have chosen for this study of the relationship between output and employment is the non oil sector of the economy. On the other hand, if there is a simple function that relates non-oil production and total employment, we will then try to determine to what extent changes in the production goods and services affect changes in the level of employment of the economy. Finally, once an econometric relationship has been established between non-oil GDP and employment, a simple consistency exercise will allow us to assess the model's figures for real non-oil GDP and the deviation with respect to the recent figures published by the Central Bank; we will be using INE's employment statistical data for the first quarter of the current year.

2. The behavior of Real non-oil GDP and Employment

A simple statistical analysis of the quarterly economic series of total real GDP, published and recently updated by the BCV, and of the number of people employed (according to the INE) for the period between the third quarter of 1997 and the fourth quarter of 2010 (54 quarters in all), shows that the correlation coefficient between these variables is 0.84. When considering real non-oil GDP instead of the economy's total real GDP, the correlation goes to 0.88; but, when comparing movements of total employment with oil GDP, the correlation declines to 0.54.[4]

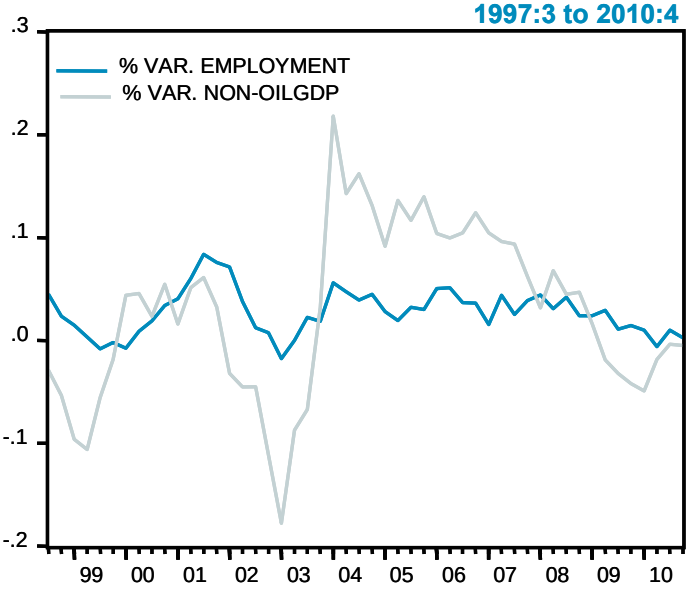
Figure 1
Non-oil GDP and Employment
1997:3 to 2010:4



The close correlation between real non-oil production (88% of total GDP) and total employment may be seen in Figure 1, where series have been normalized for comparison.[5] Both real non-oil GDP and employment show a deterministic tendency, as is common for macroeconomic series. On the other hand, Figure 1 also shows that both series have seasonal components with peaks during the fourth quarter and notable declines in the first quarter of each year. In order to detect cyclical changes and define expansive and recessive phases, inter-annual growth rates for both variables have been calculated and compared, using normalized values.[6] Figure 2 shows employment and non-oil GDP as growth rates for normalized series. The correlation for these variables is 0.52, but more importantly, to be noted is that: (a) production and

[3] Given the level of employment of each company, both P and q will be functions of l.
[4] INE reports quarterly employment statistics for a productive sector called "Hydrocarbons and Mines." Correlation between employment in the sector and oil GDP is surprisingly low (0.18).
[5] Normalization of a variable is done by subtracting the mean and dividing by the typical deviation.
[6] The year-on-year growth rate for these quarterly variables usually minimizes the seasonal behavior of the series, and is an approximation to cyclical behavior.

Figure 2
% Var. Non-oil Real GDP and Employment 1997:3 to 2010:4



employment series show similar cycles for the period under study, (b) both variables show the presence of two expansions and three recessions, and (c) the last recession came after a long expansive phase in the cycle. A clearer visualization of the marked cyclical co-movements of both variables is shown in Figures 3 and 4, with the cyclical components for each variable (calculated using Hodrick-Prescott's filter method) and the separation between the effective value of each variable and its lineal tendency.

Figure 3
Cyclical Component of the Level of Employment and Non-oil Real (Hodrick-Prescott Filter)

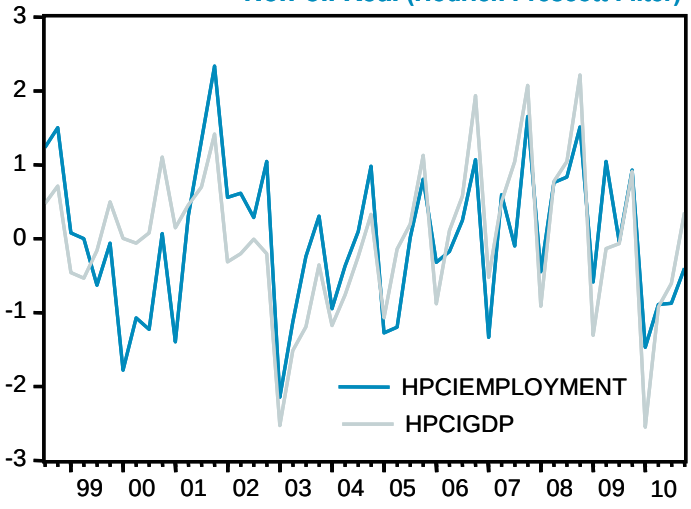
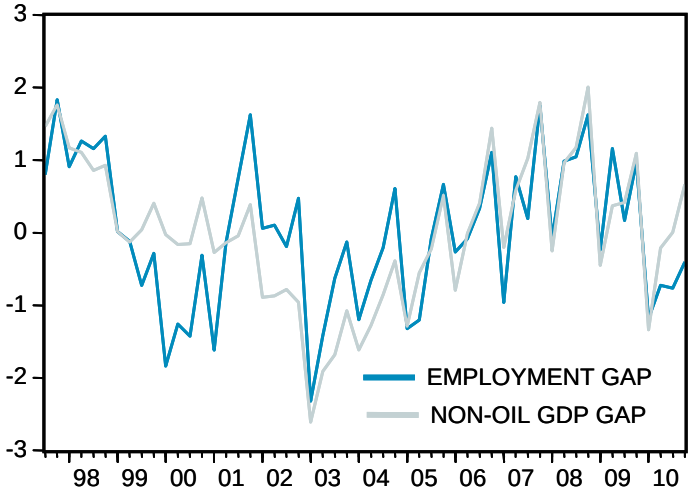


Figure 4
Employment Gap and Non-oil Real GDP Gap Normalized Variables



For the period under study (1997:3 to 2010:4), and returning to the series in levels, employment reached its peak during the fourth quarter of 2010 (12,146,932 jobs), while real non-oil GDP reached it during the fourth quarter of 2008. Even with the effect of the recession during the second quarter of 2009, the year-on-year variation rate for employment was negative only during the second quarter of 2010, while real non-oil GDP declined for 7 consecutive quarters (between the second quarter of 2009 and the fourth quarter of 2010). To be noted is that during the last recession, and according to figures recently updated by the BCV, real non-oil GDP reached its lowest point during the first quarter of 2010 to levels only seen 15 quarters before. In fact, in comparison with the peak reached during the fourth quarter of 2008, the first quarter 2010 GDP declined by 22%. This large decline in real non-oil GDP during the first quarter of 2010 had not been reported in earlier statistical data published by the BCV, and will be an important factor for GDP growth estimates (for the first quarter of this year), which we will show in the last section of this paper.

3. The Relationship between Real non-oil GDP and Employment

Let us now consider that an increase in production requires more jobs, that is, we will hypothesize that production determines jobs demand and that the labor market is demand-driven. This hypothesis will include real wages in the relationship between employment and GDP (see, for

Table 1

Unit Root Test

Variable	Augmented Dickey-Fuller Test (critical values)	Phillips-Perron Test (critical values - including intercept and but excluding trend)*
LnNon-oil real GDP (in levels)	-1,31 (-2,92)*	-1,44 (-2,91)
LnNon-oil real GDP (differences)	-1,84 (-1,61)**	-14,56 (-2,91)
Lnemployment (in levels)	0,88 (-2,92)*	-0,58 (-2,91)
Lnemployment (differences)	-2,76 (-2,60)***	-20,47 (-2,91)
Non-oil Real GDP (in levels)	-1,42 (-2,92)*	-1,48 (-2,91)
Non-oil Real GDP (differences)	-1,62 (-1,61)**	-13,69 (-2,91)
Employment (in levels)	-0,43 (-2,92)*	-0,14 (-2,91)
Employment (differences)	-2,70 (-2,60)***	-23,61 (-2,91)

t statistic. Crtitical value at the 5% significance in paranthesis

*Critical Value at the 5% significance level

**No intercept and no Trend. The null is rejected at 10% significance level

***Intercept included and no trend. The null is rejected at 10% significance level

example, Fajnzylber and Maloney, 2001). Two things should be noted here: (a) Attempts to include real wages into the hypotheses as determinants of employment failed.[7] The real wage was not a significant variable[8] in any of the short- or long-term specifications used in this paper. (b) When we state that employment is being driven by GDP, we assume that there is a reduced equation where output picks up all the variables that directly or indirectly affect job generation.

In order to verify if there is a long-term relationship between employment and GDP, we will first verify if the quarterly employment and real non-oil GDP logarithmic series have a unit root.[9] Results of tests for unit roots are shown in Table 1. The Augmented Dickey-Fuller test (ADF) which estimates a regression with intercept indicates that the logarithmic series of both real non-oil GDP and employment are not stationary, that is, they are not I(0). The same result is obtained with the Phillips-Perron test unambiguously shows that the series are I(1). Taking the series in levels (and not as their logarithmic transformations), these results are confirmed. The Phillips-Perron test indicates that both employment and real non-oil GDP variables are I(1), the ADF test being conclusive with a 10% significance.

Considering then that both employment and non-oil GDP are integrated first order variables, the next step is to determine if there is a long-run relationship between them. From a technical point of view, the question is to find if there is a stationary lineal combination between the two integrated variables. That being the case, then the long-run relationship exists and we say the series are co-integrated. Below, Table 2 shows the results for the co-integration tests based on the methodology developed by Johansen (1991), which starts with a maximum verisimilitude procedure for a finite order VAR (Vector Autoregression) model for the variables under study.[10]

Table 2

Johansen Cointegration Test

Cointegration Test (Trace)

Hipothesis on No. Of CE	Eigenvalue	Trace Statistic	Crtitical Value at 5%	Prob.**
r = 0 *	0.279223	20.36901	12.3209	0.0018
r ≤ 1	0.062264	3.342908	4.129906	0.08

Prueba de Traza indica 1 ecuación de cointegración al nivel 0.05.

* denota rechazo de la hipótesis al nivel de 0.05.

** valores-p de MacKinnon-Haug-Michelis (1999)

Cointegration Test (Max Eigenvalue)

Hipothesis on No. Of CE	Eigenvalue	Max-Eigenvalue	Crtitical Value at 5%	Prob.**
r = 0 *	0.279223	17.0261	11.2248	0.0043
r ≤ 1	0.062264	3.342908	4.129906	0.08

Max Eigenvalue Test indicates 1 cointegration Equation at the 0.05 level.

* denotes a null rejection at the 0.05 level.

** p-values of MacKinnon-Haug-Michelis (1999)

[7] Real salary was approximated using the series for the remunerations index published quarterly by the BCV and deflating the series based on the 2007 IPC (Consumer Price Index: *IPC – Índice de Precios al Consumidor*.)

[8] Felipe and McCombie (2009) show convincing arguments to explain why equations for labor demand which result in a negative relation between real wages and employment using data from national accounts are usually wrongly specified due to accounting misidentification.

[9] In this case we would confirm that the series under study are not stationary and that any relation we try to derivate from them is at risk of being fictitious or spurious.

[10] Using Engle and Granger's methodology, we confirm that residues of the regression for the logarithm of employment over the logarithm of the product are stationary. This indicates that the series are co-integrated. However, we show the results of Johansen's test as it provides a more credible version of the long-term relation.

Table 2 shows the conventional statistical tests of the Johansen method, in this particular case applied on VAR model of order 1 for the employment and real non-oil GDP logarithmic variables. Both tests, the Trace and the Maximum Eigen-value tests, show statistics that coincide in rejecting the null hypothesis of non co-integration, in favor of the hypothesis of at least one co-integration relation. Similar results are obtained when variables are taken without the logarithmic transformation.

The long-run relationship between the logarithmic transformations of real non-oil GDP and employment are given by the following expression (standard errors in parenthesis):

$$LnEmployment = 9.7188 + 0.4163 LnNoGDP$$
$$(4,1631) \quad (0,2610)$$

This equilibrium equation clearly shows that elasticity as a result of long-run employment is less than one (0.41). This means that when non-oil GDP increases by 1%, total employment in the economy increases by only 0.41%.

When series are taken without the logarithmic transformation, results for co-integration tests are similar (not reported here) and the long-run relationship is expressed by the following equation:

$$Employment = 7787405 + 0.5966 NoGDP$$
$$(3124968) \quad (0.3584)$$

The existence of a long-run relationship between the variables suggests the possibility of finding a dynamic short-run relationship. In order to do that, a non-restricted autoregressive distributed lag model, better known as ADL, is a sufficiently general option for very diverse dynamic representations. In our particular case, the ADL model representation takes the form

$$LnEmployment = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} LnEmployment + \sum_{i=0}^{n} \alpha_{2i} LnNoGDP + v_t$$

Here, the logarithm of employment is calculated by its quarterly lag values (with *n* lags), the contemporary value for real non-oil GDP and its lag values, and by a stochastic disturbance term, v_t, assumed to have mean and covariance equal to zero and constant variance. In order to achieve a relevant explanatory model, it is common to use information criteria to find the number of optimum lags, then overestimate the number of parameters, and then carefully marginalize. There is no such thing as the best dynamic model (because criteria are very different) but a good model from this methodology is the one we present here:[11]

$$LnEmployment = \alpha_0 + \alpha_1 LnEmployment(t\text{-}1) + \alpha_{2,1} LnNoGDP + \alpha_{2,2} LnNoGDP(t\text{-}1)$$
0.4351 0.9482 0.2114 -0.1886
{1.87} {31.75} {11.52} {-9.19}

R^2=0.9914, EE=0.01, F Statistic=1894.28 Pro(F Statistic)=0

Here, ADL(1,1), the employment logarithm is explained by the one-quarter lag (which shows a certain stability) and by the contemporary and lagged (one quarter) value for *LnNoGDP*. *t* statistics are shown in parentheses to validate the significance of the variables. The sum of the partial regression coefficients for *LnNoGDP* and *LnNoGDP(t-l)* is positive, also indicating a positive dynamic relation between real non-oil product and employment. Diagnostic tests on the residues are shown in Table 3. The Lagrange multiplier test cannot reject the null hypothesis of an absence of serial correlation between the residues. Neither does the ARCH test of the square of residues reject the null hypothesis of homoscedastic residuals. On the other

Table 3
Diagnostic Tests on Residuals

LM Test of Serial Correlation:				
2 lags	F-statistic	2.025663	Probability	0.143263
2 lags	Obs*R-squared	4.205969	Probability	0.122091
3 lags	F-statistic	1.327501	Probability	0.276949
3 lags	Obs*R-squared	4.222931	Probability	0.238376
ARCH Test				
1 lags	F-statistic	0.232107	Probability	0.632068
1 lags	Obs*R-squared	0.240276	Probability	0.624007
2 lags	F-statistic	0.116452	Probability	0.890323
2 lags	Obs*R-squared	0.246267	Probability	0.884146
Jarque-Bera Test				
Jarque-Bera	0.0424	Probability	0.979	

[11] Over-parametrization resulted in 3 optimum lags. Then we eliminated non-significant estimators.

hand, the normality hypothesis for the distribution of residuals cannot be rejected, as shown by the Jarque-Bera statistic. As a consequence, the model residuals are not serially correlated, are not heteroscedastic, and have a normal distribution.

Table 4

Output Elasticity of Employment for 20 countries in Latin America (annual weighted average)

	Output Elasticity of Employment
1950-1959	0,4
1960-1969	0,4
1970-1979	0,7
1980-1989	2,6
1990-1997	0,6
Promedio	0,9

Source: CEPAL, Economic Survey of Latin America and the Caribbean. 2000.

An advantage of this specification for the logarithmic values is that we can extract the value for the elasticity as a result of short-run employment for the period under study. This elasticity shows a 0.21 value, a little less (as expected) than the long-run value obtained from the co-integration equation. To be noted is that these values of elasticity as a result of employment obtained for the Venezuelan economy in the short- and long-run are well below values obtained in other studies for Latin American countries. Kato (2004) finds an elasticity resulting from employment of 1.87 for the manufacturing sector in Mexico (for the 1995-2001 period). Navarro (2009), using panel data for six countries in the region, finds elasticity as a result of employment to be 0.34 and 0.43 for the short- and long-runs, respectively. ECLAC (2000) shows estimates for a group of 20 Latin American countries for 5 sub-periods, from 1950 to 1997 (see Table 4). The study shows great variability in results, and on average finds elasticity as a result of employment equal to 0.90, well over the estimate we found for the Venezuelan economy.

Table 5

Basic Labor Market Indicators

	Average Growth Rate of the Population	Average Growth of the Labor Force	Average Growth Rate of Employment	Average Growth Rate of the number of students enrolled older than 15
1998:3 to 2003:4	1.99	4.01	2.46	1.45
2004:1 to 2010:4	1.97	3.94	2.96	6.63

Source: Instituto Nacional de Estadísticas

This low elasticity of employment to changes in real production implies that the effort of production required by the Venezuelan economy in order to generate jobs is well above what other economies in the region must apply. The situation would not pose an imminent problem, except for the appearance of certain demographic patterns indicating the presence of pressures on job generation in the very short term. Table 5 shows some of the problem. Here we show average growth rates for the variables population, the labor force, employment and number of students over 15 years of age in Venezuela, and for two periods in our study (1998:3-2003:4 and 2004:1-2010:4).

It is clear that the labor force is growing faster than the general population. This is not an abnormal phenomenon in a developing economy, and by itself, it provokes a basic pressure on job generation. But, on the other hand, the average growth of students enrolled (over 15 years old) shows a pronounced jump during the 2004-2010 period to an average rate twice the rate of job creation. This growing population still in the educational sector and not yet part of the labor force, will very soon be moving into the labor market, and consequently will require significant and sustained growth rates of the non-oil sector of the economy, in order to avoid deterioration of the labor market performance.

A second point to be discussed about the low elasticity as a result of employment recently shown by the Venezuelan economy is the possibility of it being compatible with changes in the use of the work factor along the cycles. Even though employment declines during cyclical contractions as a consequence of reduced production, during recovery and due to the previous over-used of labor resources, labor might not necessarily growth as much as GDP. Therefore, the increase in output during the recovery would be achieved through an increase in productivity and not through an increase in hired personnel (McConnel, Brue and Macpherson, 2003).

A final, no less important comment is that the low elasticity as a result of employment also means that very slight positive variations in the level of employment from quarter to quarter should show correspondingly very high variations in real non-oil GDP.

The ADL model can also be specified without the functional transformation of variables through logarithms, and an analogous marginalization procedure would produce the following dynamic equation:

$Employment=\alpha_0+\alpha_1 Employment(t-1)+\alpha_{2,1} NoGDP+\alpha_{2,2} NoGDP(t-1)$

231539.8	0.9512	0.2400	-0.2097
{1.8522}	{32.01}	{11.17}	{-8.62}

R^2=0.9911, EE=115989, F Statistic=1894.28 Pro(F Statistic)=0

To be noted is that we again obtain an ADL(1,1) model, where all variables have a 5% level of significance. The diagnostic tests on the residues are shown on Table 6, and show, similarly to the logarithmic specifications, that the model residuals are not serially correlated, are not heteroscedastic and that they have a normal distribution.

Table 6
Diagnostic Tests on Residuals

LM Test of Serial Correlation:				
2 lags	F-statistic	2.191423	Probability	0.123048
2 lags	Obs*R-squared	4.520785	Probability	0.122091
3 lags	F-statistic	1.525393	Probability	0.220531
3 lags	Obs*R-squared	4.795488	Probability	0.1874
ARCH Test				
1 lags	F-statistic	0.447733	Probability	0.506491
1 lags	Obs*R-squared	0.46151	Probability	0.496919
2 lags	F-statistic	0.220016	Probability	0.803311
2 lags	Obs*R-squared	0.463286	Probability	0.793229
Jarque-Bera Test				
Jarque-Bera	0.9183	Probability	0.6318	

The diagram of residuals for both dynamic specifications (logarithms and levels) is shown in Figures 5 and 6. To be noted is that for each series, the model-fitted value for the employment variable closely follows the effective values. On the other hand, as indicated by the serial correlation test of the residuals, they show no pattern at all.

Figure 5
Residuals of the ADL Model (1,1) Specification in Log Form

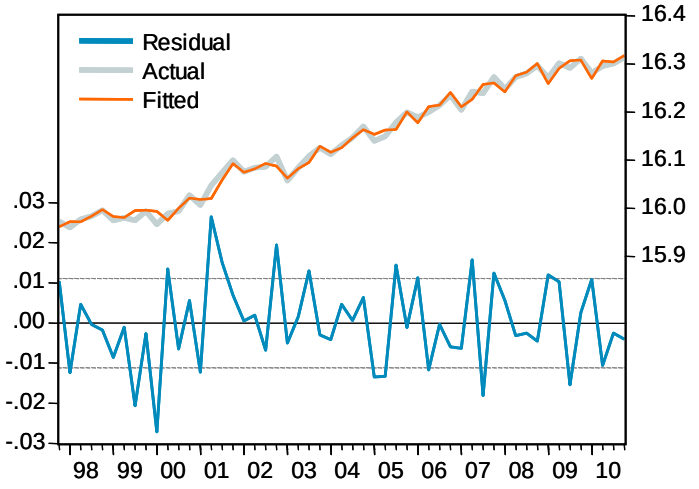
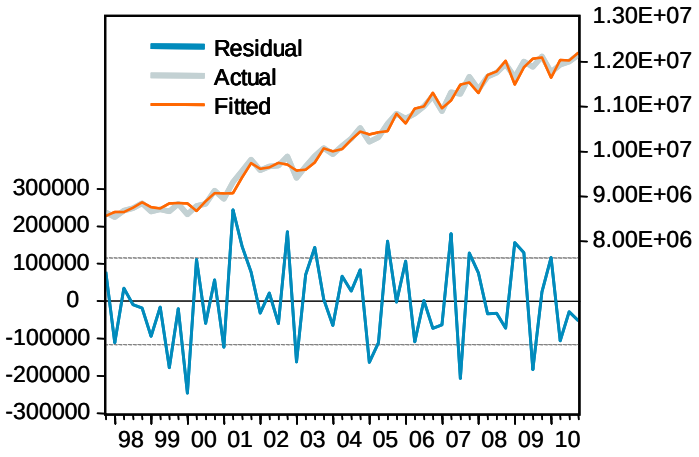


Figure 6
Residuals of the ADL Model (1,1) Specification in Levels

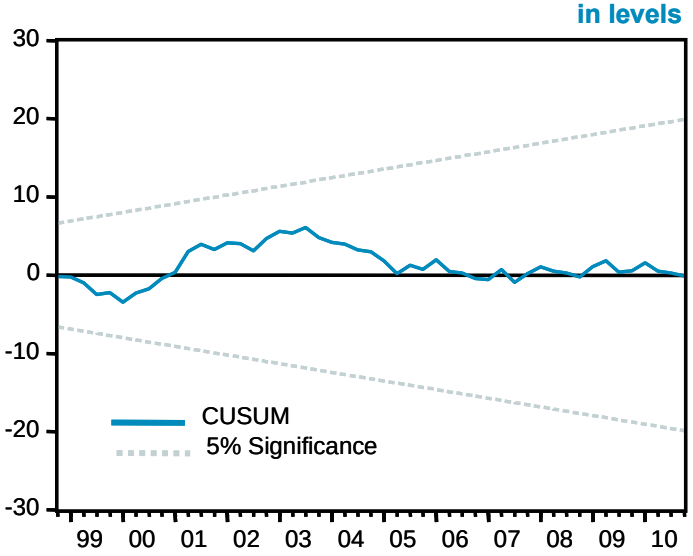


4. How much could the Real non-oil GDP have grown during the first quarter of 2011?

A practical and quite interesting exercise we can do with some of the dynamic ADL models presented here is to estimate the value of real non-oil GDP for the first quarter of 2011, and then compare it with the real value recently obtained and published by the Central Bank. Given that we assume that we have found a stable relationship between non-oil output and employment (for the period between the third quarter of 1997 and the fourth quarter of 2010), the estimated model would indicate that, with an effective value for the employment variable for the first quarter of this year, we could use the mathematical representation of the model to obtain a consistent value for the real non-oil GDP.

First, however, we should check the stability of the relations of the estimated ADL(1,1) models. For this test, we will use the ADL(1,1) model for the variables in levels, applying the CUSUM test for the cumulative addition of innovations or standardized recursive residuals. If the cumulative sum of recursive residuals stays within the confidence intervals, it means the model is stable. This test can be visualized in Figure 7, which shows that the cumulative sum of recursive residuals does not overcome the confidence intervals. This means that, if the sample size increases or declines the change will have no effect on the stability of the model components.

Figure 7
CUSUM Test for the ADL Model (1,1) in levels



Also, the recursive coefficients technique can be used to verify the degree of variation of each of the model coefficients when more data is added to the estimation.[12] The estimates for the recursive coefficients are shown in Figure 8, for the four coefficients. Given that the estimated coefficients show little variation when data is added, there are no practical indications of instability.

The confidence in the stability of the relationship between employment and real non-oil GDP now lets us estimate, from the mathematical representation of the model, the value of the real non-oil GDP for the first quarter of 2011 that corresponds to the employment value for the same quarter. The mathematical representation is shown in Table 7.

When we determine the variable *NoGDP*, we obtain

$$\text{No}GDP_t = \frac{\text{Employment}_t - 291539{,}82 - 0{,}9512*\text{Employment}_{t-1} + 0{,}2097\text{NoGDP}_{t-1}}{0{,}24}$$

Although the INE has not published figures of the number of employed for the first quarter of this year, monthly employment figures up to April are available. This number may be calculated for the quarter by taking an average value for the monthly series. In this case, the average employment for the first quarter of this year would be 11,964,094 jobs.

After substituting the value for employment in the equation, we find the following figures for non-oil GDP and for the growth of real non-oil GDP for the first quarter of 2011.

Real non-oil GDP (2011:1) = 9,960,613 thousands of Bs. Year-on-year real non-oil GDP growth rate (2011:1) = 10.7%

The next variant is then calculated, assuming the INE publishes its estimate on quarterly employment to coincide with the average quarterly employment variation between 2011:1 and 2010:1 (for the monthly series). This employment variation was, according to INE, of 162,880 more jobs in 2011:1 than in 2010:1. Accordingly, the number of jobs for the first quarter would then be 11,926,148, so that real non-oil GDP and real non-oil GDP growth during the first quarter of 2011 would be:

Real non-oil GDP (2011:1) = 9,770,881 thousands of Bs. Year-on-year real non-oil GDP growth rate (2011:1) = 9.9%

Table 7

Estimated Equation:

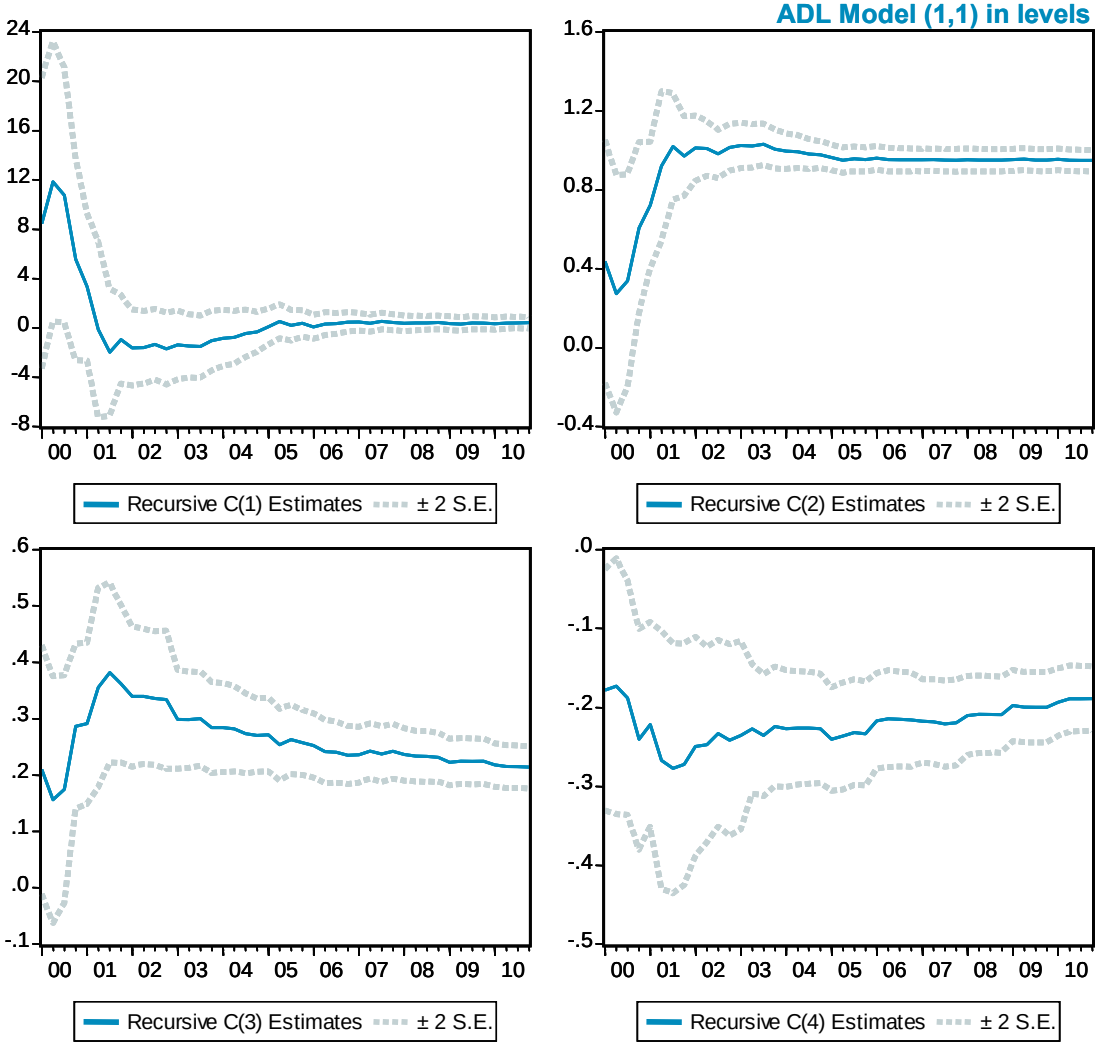
Employment = C(1) + C(2)**Employment*(-1) + C(3)*Nogdp + C(4)*Nogdp(-1)

Substituted Coeficients:

Employment = 291539.8297 + 0.9512605635**Employment*(-1) + 0.2400498286*Nogdp - 0.2097915503*Nogdp(-1)

[12] This test evaluates long-run stability of each estimated coefficient over time. Confidence intervals are designed for each parameter, with two standard deviations, positive and negative. If the estimated recursive coefficient overcomes those intervals over time, long-run instability and little significance of individual exogeneity will be taken as evidence.

Figure 8
Recursive Coeficients Estimates
ADL Model (1,1) in levels



These figures for real non-oil GDP growth are estimates, but they still corroborate that the Venezuelan economy was facing a significant rebound during the first quarter of 2011. To be noted is that the estimated growth figures are well above the figure recently published by the BCV for the first quarter of the year (5.2%). How to explain this high rate of growth?

One explanation, of course, is the low elasticity as a result of employment we have found in the econometric estimates. For not very large employment changes (when compared with the historic average), but still positive and well above the average during the recession (as seems to be reported for the first quarter of the year), real non-oil GDP should significantly rise. Let's consider the effect of the employment variation figures we are using for both scenarios: (a) 200,826 more jobs during the first quarter of 2011 with respect to the first quarter of 2010, and (b) 162,280 more jobs in 2011:1 than in 2010:1. These figures of job creation are well over those recorded by the INE during the seven previous recessive quarters (some 118,737). The estimate model indicates that these employment figures are only consistent with significant increases in real non-oil GDP.

A second reason, perhaps less important than the first, is linked to corrected statistical figures of real GDP (both oil and non-oil) recently published by the Central Bank with the presentation of GDP growth values for the first quarter of this year. These corrections are not large, but consistently lower than the previous values. According to these adjustments, the value of real non-oil GDP for the first quarter of 2010 was 9,373,510 thousands of Bs. instead of 9,572,000 thousands of Bs. for a 2 percentage point difference. This placed the real non-oil GDP for the first quarter of 2010 at the lowest level for the last 19 quarters. It is evident that in a comparison with a recession floor as the one for 2010:1, any increase in real non-oil GDP for 2011:1 will show a significant relative variation.

5. Conclusions

An analysis of the quarterly series of global employment and real non-oil GDP for the last 14 years shows not only a high correlation between these variables but also clear signs of a stable and positive relationship. However, judging by the value of elasticity as a result of employment

for the short- and long-runs, and when comparing with other countries in the region, the Venezuelan economy requires significant changes in real output in order to have an impact on employment. The recent notable increase in working-age student population in Venezuela suggests that the economy will soon experience intense pressure for generating jobs and, therefore, will shortly need very high growth rates for the non-oil sector in order to meet these requirements.

A numerical consistency exercise with a dynamic logarithmic specification of the relationship between product and employment shows that, given the job generation suggested by figures from the INE for the first quarter of this year, the real non-oil GDP should have shown a strong increase, as reported by the BCV statistics. It seems also clear that real non-oil GDP growth for the first quarter of this year (in the Venezuelan economy) is linked to the low short-run elasticity of employment (to changes in output) and to the statistical effect that appears in the point-to-point comparison (with respect to the lowest GDP level registered during the last recession).

APPENDIX

If $q = l^{\alpha}$, the profit equation for firms would be

$$\Pi = P(q,Z)l^{\alpha} - Wl$$

The differential of Π with respect to l results in the following first order condition for a maximum

$$\frac{d\Pi}{dl} = \frac{dP}{dq}\alpha l^{\alpha-1}l^{\alpha} + \alpha l^{\alpha-1}P - W = 0$$

which then becomes

$$\frac{d\Pi}{dl} = \alpha l^{\alpha-1}\left[\frac{dP}{dq}l^{\alpha} + P\right] = W$$

Dividing both sides by price, P,

$$\frac{d\Pi}{dl} = \alpha l^{\alpha-1}\left[\frac{dP}{dq}\frac{q}{P} + 1\right] = \frac{W}{P(q,Z)}$$

If $e = (dq/dP)/(P/q)$ is the price elasticity for the demand of goods, we have expression 4 in the text

$$\frac{d\Pi}{dl} = \alpha l^{\alpha-1}\left[\frac{1}{e} + 1\right] = \frac{W}{P(q,Z)}\blacksquare$$

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NEW LEGISLATION IN THE ECONOMIC AND SECTORIAL FIELD
MONTH OF MAY 2011

OFFICIAL GAZETTE N°	DATE	SUMMARY
39,664	05/02/11	Resolution establishing selling prices paid to producers of White and Yellow Corn, Paddy Rice and Soy.
39,664	05/02/11	Resolution setting nation-wide maximum fees for intercity public transportation.
39,664	05/02/11	Resolution adjusting nation-wide maximum fees for suburban public transportation.
39,664	05/02/11	Resolution establishing at 12% the minimum percentage of the gross annual lending portfolio which mortgage banks must provide from their own funds for the acquisition and construction of main homes under the Great Venezuela Housing Mission.
39,675	05/17/11	Decree N° 8,223, for the Partial Reform of the Organic Regulations of the Planning and Finance Ministry.
39,676	05/18/11	Decree N° 8,204, eliminating and liquidating the Fund for Endogenous Development.
39,678	05/20/11	Norms regulating the Compensation of Obligations of Banking Institutions and Associated Legal Persons or Companies, in the process of Liquidation of said Fund.
39,685	05/31/11	Resolution establishing fees for services rendered by Metro de Caracas Corporation as operator of the Caracas subway and of the Metrobús system.

Source: Official Gazette of the Bolivarian Republic of Venezuela

This bulletin has been prepared by the Economic Research Management, by Mercantil C.A., (Banco Universal), coordinated by Francisco Vivancos Cabello.
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The opinions expressed in this bulletin are responsibility of the authors and do not necessarily express the opinion of the institution.

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Legal Deposit: 83-0181. Vol 33, N° 05

ECONOMIC INDICATORS	2008	2009	2010	Jan-11	Feb-11	Mar-11	Apr-11	May-11	% Change Accumulated	% Change 12 Months
EXTERNAL SECTOR										
Volume of Production of Crude (thousands of barrels)	2,353	2,181	2,187	2,210	2,210	2,220	2,230	2,240	2.3%	2.8%
Price West Texas Intermediate (WTI) (US$/bl)	99.9	55.3	58.8	89.7	89.4	102.6	109.7	101.9	14.4%	36.1%
Venezuelan Oil Basket Price (US$/bl)	86.5	57.0	72.7	85.4	87.8	99.5	107.4	102.0	23.1%	52.9%
OPEC Price (US$/bl)	94.4	55.0	58.2	92.5	99.6	109.7	117.5	110.4	24.9%	47.0%
Non Traditional Exports (Million of US$)	5,426	2,380	2,486	295	253	256			23.1%	48.0%
Imports [1/] (Million of US$)	45,128	36,908	30,745	2,197	2,071	3,072	2,424		3.3%	(4.8)%
Gross International Reserves (Million of US$)	42,299	35,000	29,500	29,557	26,968	26,861	26,910	28,882	(2.1)%	5.9%
Priority Imports Exchange Rate (Bs./US$)		2.15	2.60	2.60	2.60	2.60	2.60	2.60	0.0%	0.0%
Non-Priority Imports "Oil Dollar" Exchange Rate (Bs./US$)	2.15	2.15	4.30	4.30	4.30	4.30	4.30	4.30	0.0%	0.0%
REAL SECTOR				Index 1997 = 100						
Sales Volume Index	216.6	192.7	178.7	184.8	188.0	205.4			(15.3)%	16.2%
Wholesale	143.3	122.1	130.8	118.5	139.1	156.9			11.2 %	20.2 %
Detail	265.7	239.8	210.8	229.3	220.8	237.9			(23.4)%	14.5%
Automotive Vehicles	189.8	127.4	85.2	77.5	79.4	86.1			2.9%	(9.1)%
Parts, Pieces & Accessories of Automotive Vehicles	171.7	149.5	149.0	170.1	158.2	166.6			16.5%	9.4%
Fuels for Automotive Vehicles	128.9	180.7	169.8	160.2	162.2	163.7			0.3%	(4.5)%
Foods, Beverages & Tobacco in Non-Specialized Storehouses	337.0	324.2	267.9	241.4	238.1	255.0			(22.6)%	(17.5)%
Other Products in Non-Specialized Storehouses	159.1	247.7	184.7	141.4	153.7	184.0			(26.4)%	(1.6)%
Foods, Beverages & Tobacco in Specialized Storehouses	248.7	217.4	185.5	222.1	214.7	228.7			(11.1)%	57.0%
Pharmaceutical & Medicinal Products, Cosmetic & Toiletries	401.7	409.3	316.0	397.6	369.1	417.4			(4.0)%	32.3%
Textile Products, Apparel, Footwear & Leather's Articles	490.8	394.4	367.7	577.7	527.5	607.1			(30.5)%	116.4%
Articles & Equipment of Domestic Use	608.1	490.7	441.6	448.1	298.2	300.8			(56.0)%	(16.5)%
Articles of Ironworks, Paintings & Products of Glass	107.2	99.8	83.2	84.4	94.5	101.6			10.6%	26.0%
Other Products in Specialized Storehouses	85.8	90.0	113.8	119.7	139.8	133.8			(31.9)%	59.4 %
Volume Index of Private Manufacturing Industry	125.6	110.7	108.1	89.9	107.9	119.6			29.1 %	8.9 %
MONETARY AGGREGATES				Million of Bs.						
Liquidity (M2)	194,275	235,401	292,016	295,953	296,301	308,150	312,908	317.583 *****/	8.8%	31.4%
Currency & Demand Deposits (M1)	124,036	155,269	217,350	220,410	219,391	231,440	234,275	237.952*****/	9.5%	41.6%
Monetary Base	83,787	98,903	126,218	127.125 */	118.339 **/	127.182 ***/	124.525 ****/	127.226*****/	0.8%	26.1%
Net International Reserves	89,048	74,544	75,571							
Net National Treasury Agency	(9,474)	(3,488)								
PDVSA	(351)	(6,091)								
Other Net Public Sector Accounts	2,624	919								
Financial Sector	161	3								
Credit Instruments Placed by BCV	(23,041)	(7,563)								
Capital & Other Net Accounts	17,477	38,354								
MONETARY MARKET				Million of Bs.						
Awarded Repos	795	12,637	35,274	3,251	3,437	2,433	3,596	2,813	5.9 %	(14.2)%
Awarded CDs	179,520	170,804	79,600	4,961	4,753	6,744	4,035	5,906	(16.1)%	1.2%
Awarded Repos+CDs (Average Weekly)	3,468	3,481	2,364	2,053	2,048	2,185	2,120	1,982	(11.9)%	(13.0)%
Purchases DPN (Average Weekly)	586	461	681	641	451	405	386	269	20.3%	0.8%
Outstanding Repos	-	2,653	2,770	3,426	3,719	2,447	3,677	3,131	13.0%	(1.4)%
Outstanding CDs	22,715	7,584	8,450	7,244	6,646	7,256	6,259	6,907	(18.3)%	(19.8)%
Average Effective Returns Repos	6.50	6.27	6.08	6.1	6.1	6.0	6.2	6.1	0.4	2.3
Average Effective Returns CDs	12.34	8.97	6.43	6.3	6.3	6.3	6.3	6.4	(1.3)	4.5
COMMERCIAL & UNIVERSAL BANKS				Million of Bs.						
Credit Portfolio	128,243	139,067	177,624	176,585	178,784	183,068	187,019	191,005	7.5 %	34.8 %
Investments	59,049	59,445	84,015	99,299	106,528	121,116	110,943	117,252	39.6 %	86.1 %
Total Deposits	175,984	184,977	253,275	267,982	266,926	278,426	281,860	285,497	12.7 %	47.2 %
Demand Deposits	106,763	115,498	180,900	192,045	190,861	201,650	203,901	206,934	14.4 %	61.4 %
Saving Deposits	45,777	47,996	62,553	65,234	64,694	66,020	67,123	67,549	8.0 %	38.5 %
Term Deposits	23,444	21,483	9,823	10,704	11,371	10,755	10,835	11,014	12.1%	(35.4)%
INTEREST RATES		Annual Percentage				Percentage				
Overnight (Min - Max)	0,01-56,0	0,01-38,0	0,1-20,0	2,0-14,0	0,1-14,5	0,3-14,0	0,3-14,0	0,2-13,0	-	-
Overnight (Average)	10.15	9.30	5.36	12.41	10.69	10.28	9.52	8.13	(397)	750
Loans (6 Main Banks)	22.77	20.61	17.99	17.53	17.85	17.13	17.69	18.17	28	24
90 Days Deposits (6 Main Banks)	16.55	15.57	14.73	15.04	14.89	14.86	15.04	15.10	10	23
Libor 90 Days	2.79	0.65	0.34	0.30	0.31	0.30	0.27	0.25	(5)	(28)
CENTRAL GOVERNMENT[2/]				Million of Bs.						
Ordinary Revenues	166,098	151,525	162,341							
Oil Ordinary Revenues	82,432	53,231	60,492							
Tax Income	17,834	12,944	8,375							
Royalties	60,298	35,987	42,055							
Dividends	4,300	4,300	4,300							
Non-Oil Ordinary Revenues	83,666	98,295	101,849							
Net Seniat	73,168	80,011	100,842							
Gasoline and Derivaties	1,174	756	1,007							
Others	9,324	17,527	-							
Ordinary Expenses	174,133	187,135	212,751							
Financial Surplus or Deficit	(8,034)	(35,609)	(50,410)							
Efective Placements of DPN+Treasury Bills	4,053	28,301	52,542	4,196	8,624	7,227	4,099	7,319	45.7%	91.7%
Net Borrowing Bonds DPN	(5,790)	14,557	31,134	3,217	5,771	4,145	(301)	4,280	32.3%	(137.7)%
Net Borrowing Treasury Bills	(90)	2,314	1,356	(289)	1,008	874	1,134	553	1.2 %	(350.0)%
Public Debt Securities Average Effective Yields										
60-360 Days		9.84								
361-1080 Days	15.52	12.59	14.10							
1081-1800 Days	16.58	12.62	15.72	17.03	16.74	16.65	17.25	17.18	(42)	101
1801-2520 Days		11.87	16.82	17.45	17.10	17.27			(1,849)	(1,514)
2521-3240 Days		8.48	14.79							(1,516)
3241-5760 Days			16.05							(1,657)
Treasury Bills Average Yield										
60-80 Days										
81-110 Days	11.52	10.39	8.38	8.11	7.32	7.00	6.89	7.16	(92)	(55)
111-150 Days										
151-180 Days		9.69								
181-269 Days		11.12	8.76		6.27	6.89	6.68	6.27	627	(223)
PRICE INDEX (CARACAS)		% Change Dec-Dec				% Change Monthly				
Consumer	31.9	26.9	27.4	3.6	2.2	1.6	1.3	2.9	12.1%	24.8 %
Foods & Non Alcoholic Beverages	46.7	20.4	34.4	4.6	(0.2)	1.1	0.9	3.2	9.9 %	20.4 %
Alcoholic Beverages & Tobaccos	28.3	47.7	48.5	2.6	2.5	1.0	3.0	2.3	12.0 %	39.9 %
Apparel & Footwear	18.8	22.1	18.6	1.6	1.6	1.2	1.2	2.0	7.9 %	19.8 %
House Rent	7.0	16.1	11.6	2.4	1.3	0.3	0.1	0.1	4.3 %	10.7 %
Household Services (excluding Phone Services)	5.5	3.9	4.4	3.1	1.1	0.3	0.3	(0.1)	4.7 %	6.5 %
Home Equipment	34.7	39.2	28.7	0.8	4.8	4.7	1.6	3.8	16.6 %	30.2 %
Health	26.9	34.3	25.0	7.9	4.2	1.3	2.1	1.6	18.1 %	30.9 %
Transport	29.9	30.5	26.5	2.5	5.2	1.6	1.2	6.1	17.6 %	28.2 %
Communications	7.3	9.4	6.8	0.2	0.2	0.4	0.3	0.9	2.1 %	5.3 %
Culture	25.1	26.9	28.7	2.6	1.6	2.7	1.4	1.1	9.7 %	24.2 %
Educational Services	28.5	29.4	24.7	3.0	0.0	0.5	0.0	4.5	8.2 %	27.0 %
Restaurants & Hotels	49.6	33.6	31.7	3.2	3.1	2.3	2.0	2.8	14.1 %	32.0 %
Miscellaneous Goods & Services	37.8	50.7	30.8	5.9	4.7	2.2	2.5	2.6	19.1 %	39.4 %
Core Inflation [3/]	33.8	34.6	29.3	3.3	3.9	2.9	1.8	2.3	14.9 %	31.6 %
Private Manufacturing Production	25.2	26.5	22.0	1.8	3.1	2.2	1.9	1.6	11.1 %	18.8 %
Wholesale	32.4	24.8	26.8	2.9	0.7	1.2	0.9	1.7	7.7 %	19.8 %
National	36.7	22.2	28.8	2.7	0.7	1.4	1.0	1.8	7.6 %	19.4 %
Imported	17.1	35.7	19.3	4.1	0.9	0.6	0.6	1.7	8.0 %	17.2 %
Construction Materials (Wholesales)	23.3	18.7	18.9	2.1	1.6	1.1	0.7	(0.6)	4.9%	11.9 %
LABOR MARKET		Second Half Percentage				Percentage				
Unemployment Rate	6.9	7.7	8.5	10.4	8.8	8.6	8.1		154	(14)
Activity Rate	65.2	65.0	64.7	65.1	63.8	64.0	64.5		(119)	(32)
Formal Occupation	56.6	56.0	56.1	57.0	55.9	57.4	42.3		(1,410)	(1,445)
Public Sector Occupation	18.1	19.7	19.2	19.5	19.1	20.4	19.6		18	(6)

Notes: */ As of 01/28/11, **/ As of 02/25/11, */ As of 03/25/11, ****/ As of 04/29/11, *****/ As of 05/27/11.**

1/ Data from trade are from the National Institute of Statistics. Imports do not include oil the oil sector.

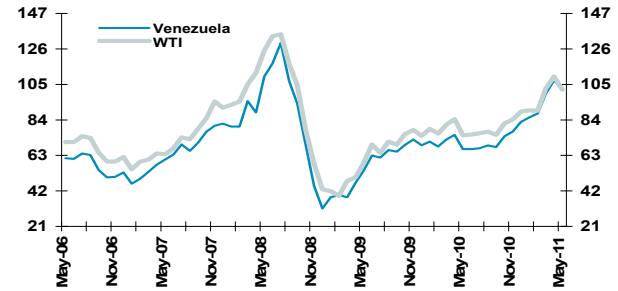
2/ Data from the Central Bank of Venezuela.

3/ Core Inflation: Excludes from the Consumer Price Index those goods subject to seasonal factors and price controls.

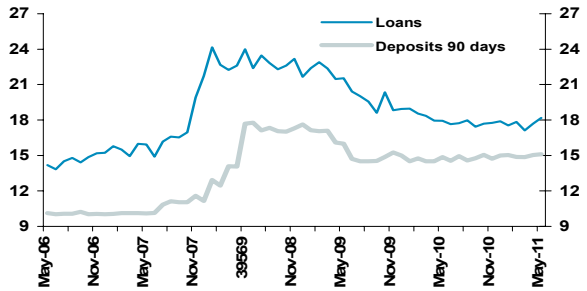
Source: National Treasury Office, Central Bank of Venezuela, Reuters, National Statistics Institute, Bloomberg and Own Calculations

Economic Indicators

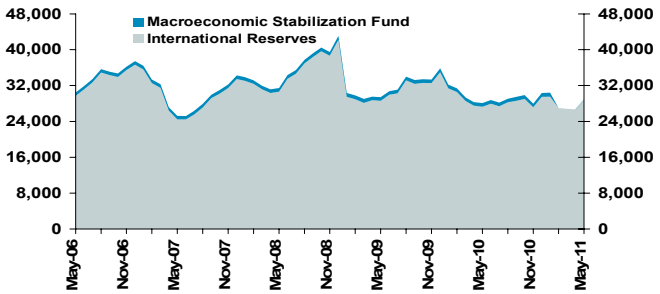
Oil Price
(US$/b)



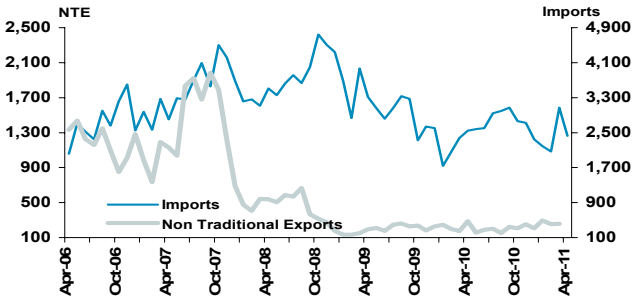
Interest Rates. 6 Main Banks
%



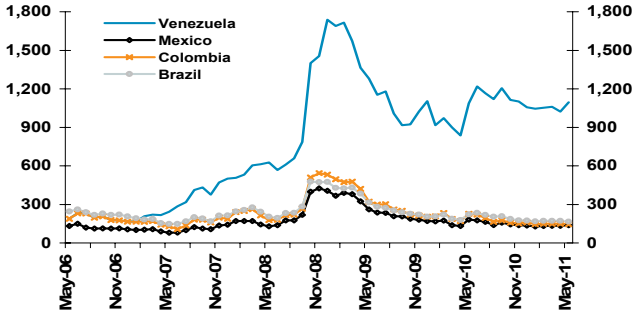
International Reserves and Macroeconomic Stabilization Fund (Million of US$)



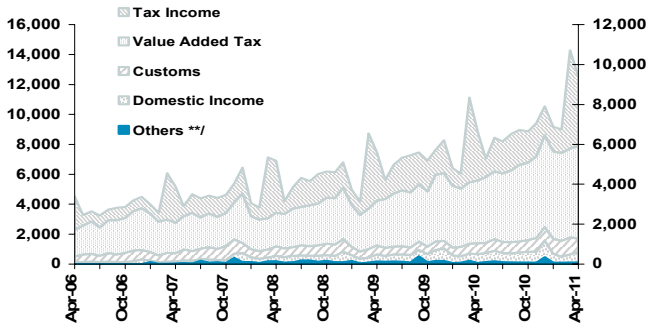
Non Traditional Exports (NTE) & Imports (MMUS$)



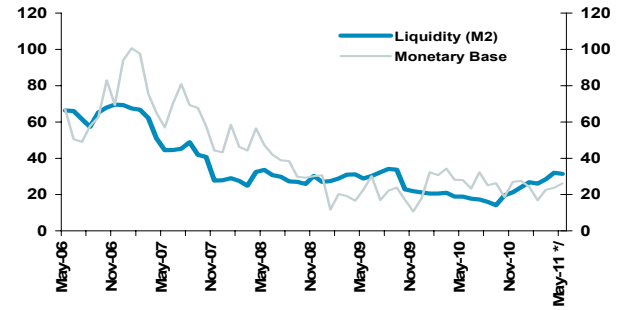
Sovereign Spreads.Diferencials EMBI+
Basic Points



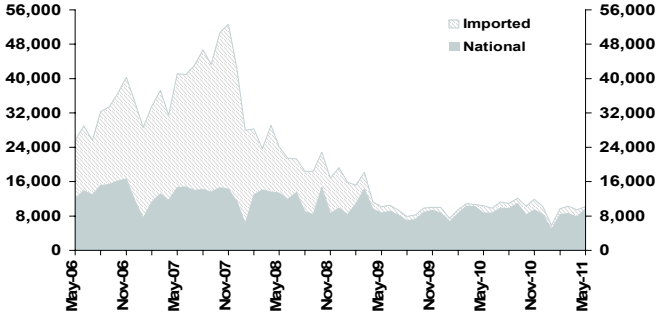
Domestic Taxes
Million of Bs.



Monetary Aggregates
% Change Y o Y



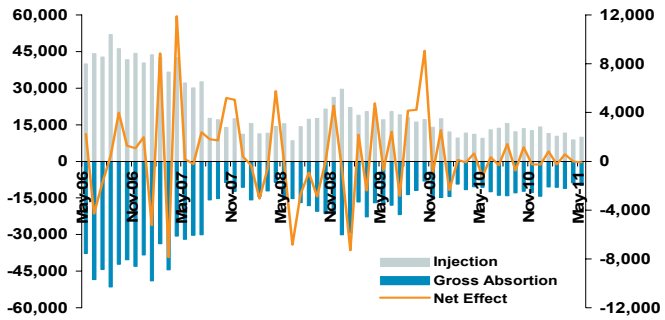
Sales of Vehicles
Units



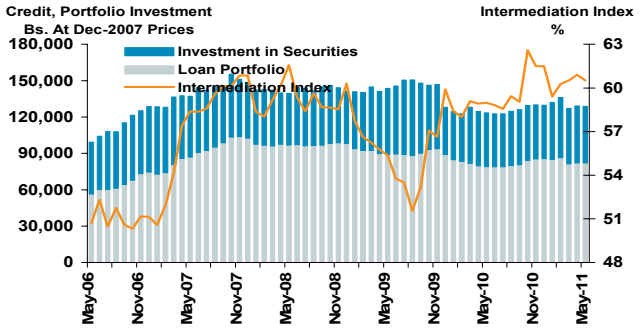
Notes: Y o Y: Change of the month with respect to the same month of the previous year. The Emerging Markets Bond Index Plus (EMBI+) tracks total returns for traded external debt instruments in the emerging markets. The instruments include external-currency-denominated Brady bonds, loans and Eurobonds, as well as U.S. dollar local markets instruments. Five Year Average Range: Average of the minimum and maximum values of the previos five years. */ As of 05/27/2011. **/ Includes collection of outstanding rights, fines, interest, repayments to the Treasury, the Comptroller's objections customs and internal taxes. It also includes collection by matches, which was repealed by Payment Suppression Act Law according to GO N° 38,480 dated 06.17.2006. Source: Central Bank of Venezuela, Reuters, Bloomberg, National Statistics Institute, Ministry of Energy & Oil, Cavenez, International Monetary Fund, OPSIS and Own Calculations

Economic Indicators

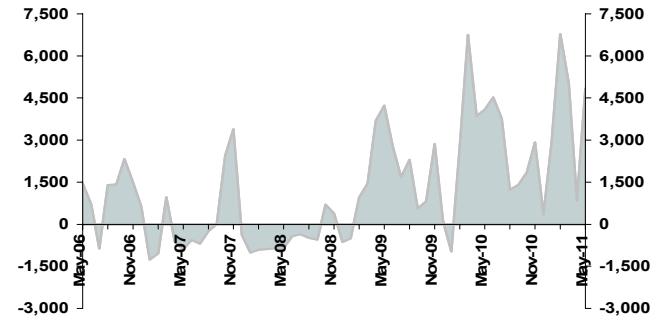
Open Market Operations
Repos+CD+Purchase Under Resale Agreement. Million of Bs.



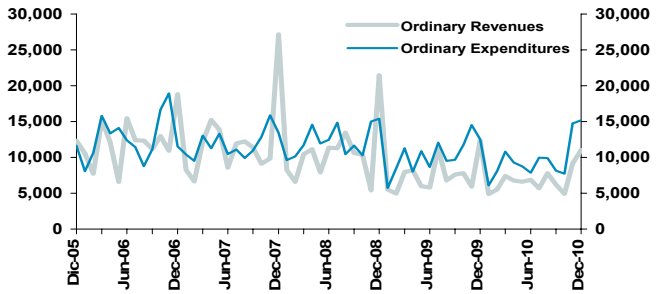
Commercial & Universal Banks



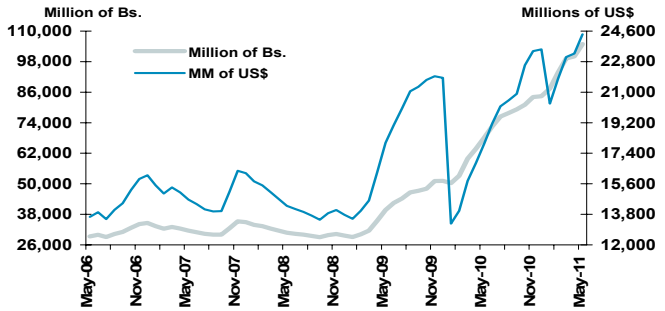
Net Domestic Borrowing[1/]
Million of Bs.



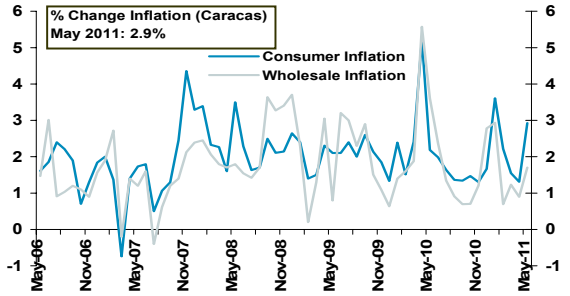
Central Government
Bs. At Dec-2007 Prices



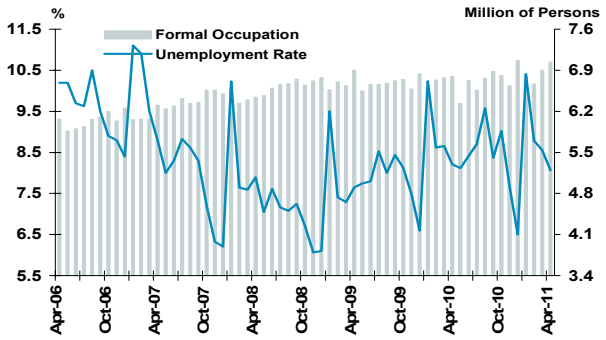
Domestic Debt Stock
DPN Bonds + Treasury Bills



Inflation (Caracas)
% Change M o M



Labor Market %
and Million of Persons



Real Sector and External Sector

% Change	2008	2009	2010	IQ2011
Total GDP	4.6%	-3.5%	-1.7%	4.5%
Oil GDP	2.9%	-7.4%	0.1%	-1.8%
Non-Oil GDP	4.8%	-2.1%	-1.8%	5.2%
Private Consumption	7.1%	-3.2%	-3.8%	3.7%
Investment	-3.3%	-8.2%	-0.8%	4.9%
(Millions US$)				
Trade Balance	45,656	19,153	35,390	11,140
Current Account	37,392	8,561	14,378	7,518
Capital Account	-24,820	-14,040	-18,799	-10,504
Balance of Payments	9,275	-10,262	-7,948	-3,743

Note: M o M: Change of the month with respect to the month previous, 1/ Net Domestic Borrowing is calculated as the difference between placements and maturities of short-term and long-term Treasury bonds. */ (S/S-2); **/ (Q/Q-$_4$).

Source: Central Bank of Venezuela, Balance sheets of Financial Institutions, National Institute of Statistics and Own Calculations