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## Update on the Americas

# Cuban Monetary Policy: Response to the Global Crisis\*

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## Summary

This article analyzes the transmission mechanisms of the global crisis on variables that pertain to Cuban monetary policy. The analytical starting point are the results of estimating an econometric model known as a Structural Vector Autoregression (SVAR) model, which serves as the basis for evaluating the changes experienced by a specific group of indicators during the 2008–2009 period. Despite the impact that the global crisis had on the Cuban economy, monetary policy was able to keep inflation under control although it could not prevent exchange rate imbalances, adverse effects on the convertible peso, and a banking crisis without benefit of a lender of last resort. The most controversial decision in monetary terms is having followed a fixed exchange rate policy.

## Introduction

The global crisis had come to worsen the already weakened Cuban macroeconomy, which since 2008 already showed signs of decelerated growth and significant external and domestic imbalances. In 2008, the economy suffered an abrupt decline in the terms of trade along with the consequences of several hurricanes during the season whose costs were primarily in terms of housing and food production. As a result, GDP growth in 2008 fell to 4.1% compared to 7.3% in 2007, and 12.1% in 2006. Current imports increased some 43.3%, the international trade deficit in goods and services registered a high of US\$ 2.3 billion, and external debt rose to US\$ 20.5 billion

(152% in relation to exports). In addition, Cuba recorded its largest fiscal deficit of the decade. The principal effects of the global crisis on the Cuban macroeconomy began to be felt in 2009. That year saw a significant decrease in exports of goods and services, renewed decline in the terms of trade, and increased difficulty in obtaining external financing. Increased external restrictions on growth intensified deceleration of the GDP, which grew only 1.4% in 2009. The production of goods decreased 3.6% in 2009, but measurement of the Cuban GDP with a high peso in services (80%) prevented any negative entry.

The global crisis surprised Cuba, which had no reserves to carry out an extensive countercyclical policy. Instead, it had to make harsh adjustments in expenditures to recapture the macroeconomic balances that had deteriorated since 2008. In 2009, the fiscal deficit decreased and a surplus in the trade of goods and services was obtained, supported mainly by a severe adjustment in imports (-37.3%), a contraction in investments (-16%) and the control of tax expenditures (0.8%).

This article's objective is to examine Cuban monetary policy within this context. In particular, it seeks to determine the monetary transmission mechanisms of the global crisis and the monetary policy response to them. The results of a Structural Vector Autoregression (SVAR) model previously estimated by Vidal (2008) serve as a starting point. The study is organized in the following manner: Section 2 examines inflation; Section 3 presents

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some of the characteristics of Cuba's monetary policy; and Section 4 provides a summary of SVAR model specifications and data as well as the results concerning the monetary transmission mechanisms or channels in Cuba. With this as a basis, Section 5 then analyzes the monetary impacts during 2008–2009 starting from the changes observed in a group of applicable indicators. Section 6 expands upon the analysis to discuss the impact the global crisis has had on exchange policy and the Cuban banking system. Finally, Section 7 sets forth the conclusions related to the article's main objective.

### Inflation

Since the early 1990s, the Cuban family basket of goods was obtained almost entirely from state-run retail markets. In this environment, monetary imbalances were not reflected in prices, but rather in the accumulation of excess liquidity. Thus, monetary instability did not manifest itself in price increases, but instead, as suppressed inflation or forced savings. Therefore, as a basic monetary strategy, economic authorities undertook and monitored actions to control the liquidity variable in the hands of the population. It was a question of the money supply in the hands of the population not exceeding certain limits or proportions with respect to the output value. Several perspectives regarding the excess liquidity of the early 1990s are found in Carranza, Gutiérrez and Monreal (1995), González (1995), CEPAL (1997) and Hidalgo, Vidal and Tabares (2000).

As a part of the transformations that occurred in the 1990s, non-government markets whose prices were unregulated, basically agricultural markets, the self-employed, and informal markets were allowed to increase their presence in the economy. In addition, the non-banking financial institution known as Casas de Cambio S.A. (Cadeca) was established as a national

network of money exchange houses where individuals could buy and sell currencies. Under the new conditions in which the Cuban economy operated, now with greater similarities to a market economy, increases in the money supply no longer meant an accumulation of excess liquidity, but rather more inflation and additional purchases of foreign currency in the exchange market. Within this context, the Central Bank of Cuba has changed the way it designs and implements monetary policy. Monetary authority has gone from focusing on controlling liquidity in the hands of the population to a strategy whose final goals involve controlling inflation and Cadeca exchange market equilibrium.

Since 1989, Cuban inflation has gone through various stages. In the early 1990s, the informal market was hit with hyperinflation. The largest price increases in this market occurred in 1991 and 1993 when prices jumped over 150%, and over 200%, respectively. Inflation was a result of the economic crisis and its associated fiscal and monetary imbalances. Since 1990, GDP contracted 34.8% over four years. The average fiscal deficit from 1990 to 1993 was 24.9% of the GDP. The fiscal deficit was financed with a loan from the Central Bank (which at that time was Banco Nacional) to the national budget. Monetization of the fiscal deficit caused a 27.6% average annual rate increase in the money supply in the hands of the population. The Cuban peso exchange rate ended up being quoted in the informal market at 150 Cuban pesos per US dollar when before the crisis it had been quoted at 5 Cuban pesos per US dollar.

Since 1995, the Cuban National Statistics Office (ONE) [*Oficina Nacional de Estadística*] has calculated a Consumer Price Index (CPI) using the average prices in Cuban pesos found in three markets. The formal market registers the prices of goods and services the government offers to the population

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through regulated and unregulated channels, and this represents 40% of the total CPI. The other two markets, the agricultural and the informal, make up the remaining percentage of total CPI, each representing about 30%. This CPI calculation does not include prices in convertible peso markets.

After the triple-digit inflation of the early 1990s, monetary policy has managed to maintain a single-digit inflation rate since 1995. During the current decade, inflation in Cuban pesos has remained low (see Figure 1). In 2008, the CPI in Cuban pesos fell 0.1%. In 2009, it again fell 3.3% while the CPI in convertible pesos grew 1.4% (CPI data associated with convertible peso markets was publicly presented for the first time in 2009). Inflation has been kept under control despite the impact of global crisis and deterioration of the macroeconomic conditions.

Two things are particularly noteworthy in the inflation information presented in Figure 1: inflation volatility and deflation. The variability in inflation reveals that monetary policy has not defined a clear objective regarding inflation, but rather, follows a discretionary strategy that corrects past imbalances. Although the Central Bank is increasingly concerned about inflation, the definition of an inflation goal is an ongoing issue for Cuban monetary policy. It pursues a low inflation rate, but is not overly concerned about deflation. In fact, some sectors take a positive view of occasional price reductions because they increase the real value of wages and retirement benefits. Deflation in Cuba does not have as high a cost as in market economies, although there are some harmful effects, which mainly take the form of disincentives to the agricultural sector.<sup>2</sup>

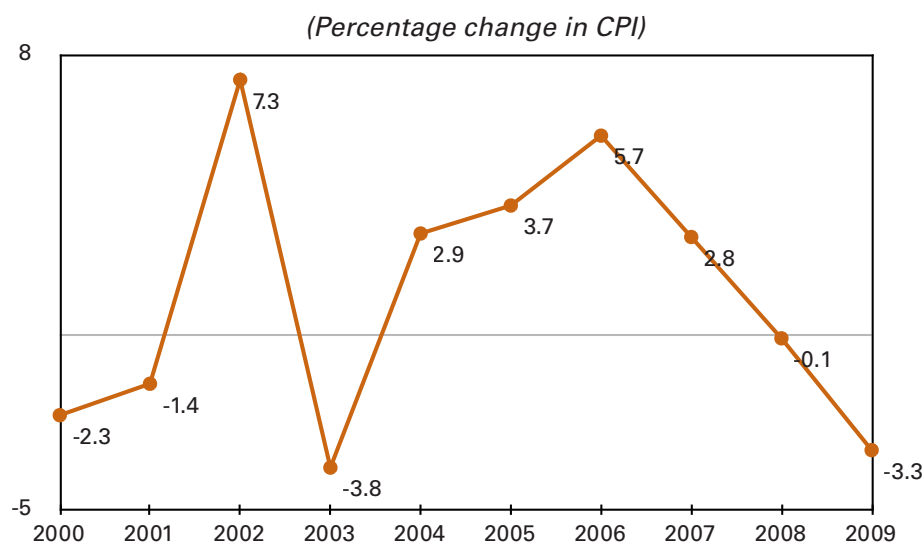
### Other characteristics of Cuban monetary policy

Cuban monetary policy does not consider GDP stability as one of its final goals. Several particularities of the Cuban economy limit the effects that money supply and monetary policy tools may have on output. First and foremost is management of the state-run business sector. Production by most companies in Cuba follows a central plan. Planning and centralization guide company expenditures and control the allocation of resources. Companies do not have full autonomy in determining their activity based solely on price information.

Secondly, it must be remembered that for the business sector, there is no exchange market for the Cuban peso. Legal entities cannot purchase foreign exchange with Cuban pesos for purposes of importing; they are forbidden from using the Cadeca exchange market. Thus, one of the main functions of the plan is to centrally allocate foreign exchange. A company's level of production therefore does not depend solely on demand for its good and services, and its prices, but also on the availability of foreign exchange allocated by the plan.

Also at play is the issue of market segmentation between the business sector and the population. Individuals and companies do not have access to the same product, exchange and financial markets. Although there are some communicating vessels, regulations prevent the free flow of money between these segments. That is why monetary analysis in Cuba generally refers to the "population sector" and the "business sector." This is a distinction that is not normally made in market economies, but in Cuba, both paths need to be analyzed separately. As a result, segmented monetary policy is also referred to.

**Figure 1: Cuban peso Inflation, 2000–2009**



Source: Central Bank of Cuba (2008) and ONE (2008, 2009a and 2009b)



In summary, planning and centralization have been the tools used primarily to regulate demand in the business and product sector. In practice, monetary policy tools have been more directed towards monetary equilibrium in the population sector.

Open market transactions do not occur in Cuba. There is no public debt market, nor has the Central Bank of Cuba issued its own securities for monetary adjustment. The fiscal deficit is monetized by the Central Bank, which is why fiscal imbalances have a direct and immediate impact on currency stability. Use of the discount rate and legal reserves as monetary policy tools has been almost nonexistent.<sup>3</sup>

In order to maintain price stability and exchange market equilibrium, the Central Bank has used direct control of exchange rates and interest rates as tools, and has conducted transactions to sell dollars to the Ministry of Domestic Trade (Mincin) [*Ministerio de Comercio Interior*] in an effort to promote the supply of consumer products in domestic currency and help maintain the balance between the supply and demand for goods and services. The Central Bank also takes part in coordinating the various economic policies and decisions that affect monetary equilibriums.

The Monetary Policy Committee, which is made up entirely of directors from the Central Bank of Cuba, establishes and implements monetary policy. Coordination of the various policies and institutions involved in currency stability falls to GASFI, the Domestic Finance Stabilization Analysis Group. GASFI members are directors from the Ministry of Economics and Planning, the Ministry of Finance and Prices, Mincin, and the Central Bank.

Cuban monetary policy is also characterized by a dual currency regime. In 2003 and 2004, the convertible peso replaced the US dollar as means of payment. Since then, two types of domestic currency have been in circulation: the Cuban peso (CUP) and the convertible peso (CUC). Individuals and companies have deposits in local currency in the eight state-run Cuban commercial banks, but bank accounts in dollars and other foreign currencies continue to exist. Monetary statistics related to the convertible peso are scarce and there is little transparency in the management of monetary policy activities related to this currency. Back in 1994, when the convertible peso was first issued, the monetary policy objective was to maintain a currency board to back US dollar convertibility and parity. However, the currency board has not operated since 2003–2004 and there are apparently no sources and uses of the reserve money in this currency and its backing in international reserves.

## SVAR Model and monetary transmission mechanisms

Presented below are the principal results of the Structural Vector Autoregression (SVAR) model estimated by Vidal (2008), which supports subsequent analysis of the monetary transmission mechanisms of the global crisis. The SVAR model helps understand the sources of pressures on final monetary policy objectives: inflation and Cadeca exchange market equilibrium. No monetary statistics in convertible pesos are included due to unavailability of data. Generally speaking, Vector Autoregression models (VAR) estimate relationships over time among variables linked to monetary policy without the need to impose theoretical restrictions *a priori*. This is very helpful in the Cuban case in light of the peculiarities noted earlier in Cuban markets.<sup>4</sup> In terms of the segmentations explained earlier in this article, the estimates are found in the population sector, in other words, in the relationships closest to inflation and the Cadeca exchange market. Table 1 provides the definition and source of the data used in the model. These are the variables that the Central Bank of Cuba pays the most attention to when monitoring and making decisions about current monetary policy strategy. The series has a monthly frequency and covers the period of January 1996 to December 2004. All variables except interest rates are in logarithms. The TRAMO-SEATS program was used to make seasonal adjustments to all data except exchange rates and interest rates. The variables follow a non-stationary path; nevertheless, the VAR estimation was run with variables in levels to retain the information about long-term relationships.

The VAR model may be summarized in matrix form:

$$AX_t = C(L)x_{t-1} + u_t$$

where  $X$  is a vector with all the variables described. Matrix  $A$  is formed by the coefficients  $a_{ij}$  that capture the contemporaneous relationships between the variables.  $C(L)$  is a polynomial in the lag operator that contains the coefficients that relate to each variable with its own lags as well as the lags of each other variable. Using the LR (Likelihood Ratio) test, 4 lags were included. The  $u_t$  represent the shocks associated with each variable (structural shocks) and they are assumed to be uncorrelated white noise residues ( $E(u_t u_t')$  is assumed to be a diagonal matrix).

Granger causality tests were initially run to test each variable's capacity to explain the rest of the variables in the pattern.<sup>5</sup> Thus, it was determined that interest rates do not Granger cause the rest of the variables in the pattern. Supported by this result and knowing the particular characteristics interest rates have in the Cuban case, it was decided not to include them in the final



**Table 1: Data**

Variable	Definition	Source*
Unregulated Prices (P)	Simple average CPI for the agricultural market and the informal market. Both add up to approximately 60% of the total CPI in Cuban pesos.	ONE
Regulated Prices (PR)	CPI for the formal market. Represents approximately 40% of the total CPI in Cuban pesos.	ONE
Wage payments (SAL)	Nominal wages paid by companies in Cuban pesos. It is not the average wage, but rather the monthly amount disbursed by companies as wages during the month.	BCC
Retail merchandise circulation (CMM)	Nominal value of the sales of consumer goods and services in Cuban pesos to the public by state-run companies, most of which belong to Mincin.	BCC
Monetary Aggregate (M)	Uses the monthly aggregate Mo. Calculates the amount of money in Cuban pesos in the hands of the public.	BCC
Exchange Market Balance (CAM)	Difference between the purchase and sale of other currencies in exchange for the Cuban peso in the network of exchange houses (Cadeca). The currencies most often exchanged by the public for Cuban pesos are: US dollars, convertible pesos and EUROS. A positive balance in this variable indicates that the population supplied a larger quantity of these currencies than they purchased in Cuban pesos during the month.	BCC
Cuban peso exchange rate in Cadeca (TC)	Cuban peso exchange rate with respect to the US dollar and convertible peso. The same exchange rate has been in effect since March 2005: 1 convertible peso is equal to 1 US dollar.	BCC
Interest Rate (TI)	Uses the interest rate in Cuban pesos on 1 year fixed term deposits.	BCC

\*Source: ONE: National Statistics Office. BCC: Central Bank of Cuba

estimation of the model, and thus produce a gain in degrees of freedom. It is in some measure surprising not to have interest rates in a monetary VAR. Remember however that these are the interest rates on fixed term deposits, which are also relatively new to the Cuban financial system, and there have been only four modifications to interest rates during the sample period used for the estimations. Clearly this is a result that must be considered carefully, and it is expected that interest rates will become more important as the population comes to understand and utilize fixed term deposits.<sup>6</sup>

Finally, the SVAR was estimated with the remaining seven variables. The reduced-form VAR (without the contemporaneous relationships) was estimated and the restrictions required to identify the system and recover the structural parameters were defined. A structural identification was used, in other words, the SVAR variant (Sims 1986 and Bernanke 1986) with the following restrictions in the matrix  $A$ : where each row defines the contemporaneous effect on P, PR, SAL, CMM, M, CAM and TC, in this order.

Most of the restrictions are found in rows two, three and seven. They represent the contemporaneous impact the pattern variables have on regulated prices, wages, and the exchange rate. These are the three variables largely determined by the economic authorities. Setting the coefficients to zero assumes that regulated prices, wages and the exchange rate take at least one period to react to shocks in the remaining

$$A = \begin{bmatrix} 1 & -a_{12} & -a_{13} & -a_{14} & -a_{15} & -a_{16} & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ -a_{41} & -a_{42} & -a_{43} & 1 & 0 & -a_{46} & -a_{47} \\ -a_{51} & -a_{52} & -a_{53} & -a_{54} & 1 & -a_{56} & -a_{57} \\ -a_{61} & -a_{62} & -a_{63} & -a_{64} & 0 & 1 & -a_{67} \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$



variables.<sup>7</sup> The contemporaneous impact of the monetary aggregate on retail merchandise circulation and the exchange market (coefficients  $a_{45}$  and  $a_{65}$ ) is also set to zero because by accounting identity, they are sources of liquidity growth during the month. Since convertible pesos are not included in the CPI, the contemporaneous effect of the exchange rate on unregulated prices is also assumed to be zero (coefficient  $a_{17}$ ). Thus, there are 21 restrictions that cause the system to be exactly identified.<sup>8</sup>

Figure 2 summarizes the evidence found in the SVAR model regarding monetary transmission mechanisms on inflation and the Cadeca exchange market. Taken into consideration are the mechanisms that may be empirically sustained by the significant inflation impulse response functions and, according to the results of the variance decomposition, by shocks that explain the over 10% variance of unregulated prices and the exchange market (see Vidal 2008). The interest rate does not appear to be Granger caused. Each net effect is associated with a possible channel through which to operate either by domestic demand, cost, or the supply and demand of convertible pesos and foreign currency exchanged for Cuban pesos in Cadeca.

Note that the monetary aggregate, the retail merchandise circulation and regulated prices are the variables that have a significant impact on unregulated prices. They exert pressure on inflation through the mechanisms of domestic demand and the cost channel. The Central Bank can influence this mechanism and contribute to price stability by selling dollars to Mincin.

With regard to the other final goal of monetary policy, it was determined that the exchange rate, wages and external shocks have a significant impact on exchange market equilibrium in the hands of the population, in other words, in Cadeca. An increase in wages translates into an increase in the demand for convertible pesos and foreign currency, thus exerting pressure on market equilibrium. The diagram also includes external shocks, which reflect the fact that the Central Bank should continue to monitor tourism, remittances and other sources of foreign currency and convertible pesos in Cadeca.

There was no evidence that the Central Bank is able to influence the Cadeca foreign exchange market by selling dollars to Mincin. Nor did exchange rate transfers at unregulated prices prove to be significant in the SVAR estimations. However, be aware that the sample does not include the period 1990–1994 where greater evidence of this transmission mechanism is revealed. Hernández, Chuairé and Rosales (2004) do find an exchange rate transfer at significant prices when taking these years into account.

## Monetary Impacts in 2008–2009

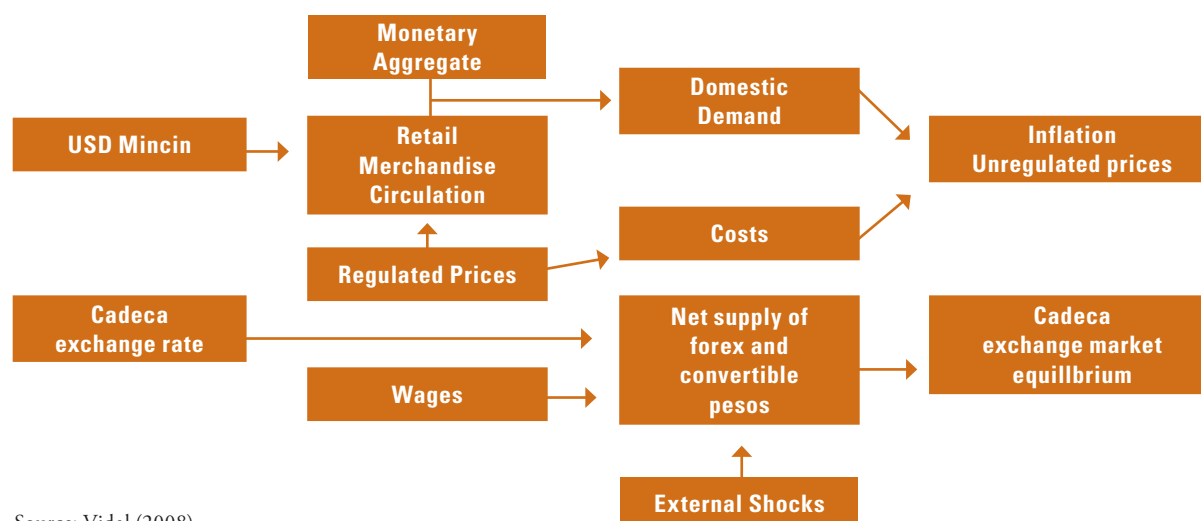
Monthly data are unavailable to simulate, in the SVAR model, the monetary effects of the various shocks that occurred in 2008–2009. Available information only allows analysis of the annual change in some of the variables that pertain to monetary policy, according to the transmission mechanisms that were significant in the SVAR model. In order to assess the pressures on the final goal of low inflation, Figure 3 shows the annual change in retail merchandise circulation and money supply in the hands of the population. Figure 3 also shows the annual change in wages and the Cuban peso exchange rate in order to evaluate the pressures on the Cadeca exchange market equilibrium.<sup>9</sup>

Figure 3 shows that the retail merchandise circulation decreased in both 2008 (–2.8%) and 2009 (–3.2%), thus generating inflationary pressures. In other words, the sharp deceleration of the GDP in these years along with worsening macroeconomic conditions limited the ability of the government and the Central Bank to continue to increase the supply of goods and services to the public. A decrease in state-run store sales (retail merchandise circulation) tends to increase demand in non-state-run markets and push unregulated prices upward.

On the other hand, there was a significant increase in the money supply in 2008 (16.8%), which corresponded to monetization of the decade's largest fiscal deficit (6.7% as a share of GDP due mainly to the subsidy required to absorb the increase in international food prices and the budget expenditures to cover the costs of the hurricanes). However, in 2009 the monetary aggregate fell (–0.1%) in a year in which, despite reduction of the fiscal deficit, it recorded its second highest level of the decade (4.8% as a share of GDP). In other words then, 2008 inflationary pressures were generated by the domestic demand channel because of the decrease in retail merchandise circulation and the increase in the money supply. In 2009, the retail merchandise circulation decreased again, but inflationary pressures were somewhat mitigated due to the contraction of the monetary aggregate.

It is useful to mention the transmission mechanism of costs on inflation even though the data are unavailable. In 2008, fuel prices at state-run gas stations rose over 50% in response to the international increase in the price of oil, which exerts pressure on agricultural market prices because of its importance to the cost of transportation and agricultural production. However, neither this pressure nor the others mentioned in the domestic demand mechanism were confined to the agricultural market because the government declared a freeze on food prices in 2008.

With regard to the Cadeca exchange market, Figure 3 indicates that there is not much pressure through the wage channel because its growth fell to 1.7% in 2008

**Figure 2: Monetary transmission mechanisms in the population sector***(See table 1 for definition of the variables)*

Source: Vidal (2008)

and to 2.9% in 2009, compared to the increases of 16.2% in 2005 and 17.3% in 2006. Given the macroeconomic improvements that have occurred since 2004 and the increased growth in the GDP, the government began to increase minimum wages and salary scales in most companies and state-run institutions. As economic growth slowed, wage increases became concentrated in some economic sectors. In 2009, the government of Raúl Castro implemented reform intended to introduce flexibility in determining wages in those companies that are allowed to independently decide what to pay their workers based on individual performance. Up to now this reform has caused no significant increase in the average wage.

The Cadeca exchange rate is not a factor in 2008–2009 because it is a fixed rate. From the time the exchange houses were established in 1995 up to 2005, the Cuban peso Cadeca exchange rate followed a managed float regime whereby the Central Bank intervened and prevented short-term volatility while adjusting the exchange rate with regard to permanent imbalances. However, as noted in Figure 3, it became a fixed exchange rate regime beginning in 2005.

In order to conclude the analysis of the exchange market, Figure 4 provides a summary of some of its most pertinent external indicators: tourism, total exports of goods and services, and terms of trade. These variables more or less directly contribute to the supply of foreign exchange that reaches this market. Figure 2 had previously pointed out that external shocks also influence the Cadeca exchange market.

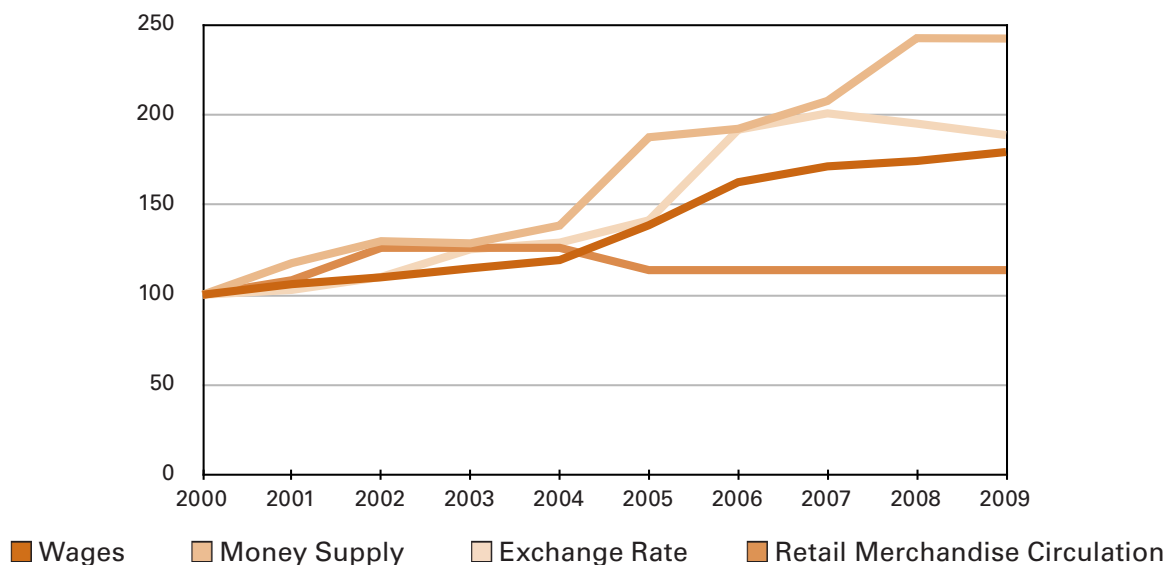
Figure 4 notes that in 2009, current exports of goods and services fell 16.6% after having increased for six consecutive years based on the export of professional services, mainly in the form of the marketing of medical services

in Venezuela. The global crisis and, in particular, its effect on Venezuelan GDP, negatively affected the demand for Cuban exports. The adverse effects of the global crisis in tourist hubs like Europe and Canada has had a negative impact on the export of tourism services whose revenues fell by 11.1% in 2009 (Figure 4). The terms of trade have also led to a smaller net supply of foreign currency in the exchange market; it fell 31.6% in 2008 and 5.8% in 2009 (Figure 4). This change is basically explained by the collapse in the price of nickel, Cuba's leading export, along with the international increase in the price of oil and food, principal import items.

Due to the unavailability of data, not included in the analysis are remittances, which are also an important source of foreign currency in the Cadeca exchange market (several sources estimate them to be about US\$1 billion per year). Remittances have been impacted in two different ways. On the one hand, they have been helped by the flexibility measures introduced by the Barack Obama administration, but on the other hand, they have been hindered by the recession and increased unemployment in the United States. If both events cancel each other out, their significance during the 2008–2009 period may be minimal.

In short, the Cadeca exchange market has been subject to deficit pressures from external shocks mainly associated with the global crisis. The exchange rate has not been devalued by the Central Bank to correct the foreign currency supply deficit. Therefore, it may be assumed that the Cadeca market has been in disequilibrium from at least 2008 when it began to feel the effect of the external shocks. In order to sustain the exchange rate value and cover the foreign currency deficit, the Central Bank was forced to intervene in the exchange market by using international reserves.



**Figure 3: Monetary Policy Indicators, 2000–2009**

Source: Author, on the basis of ONE (2009a y 2009b)

The sale of foreign currency in the exchange market leads to a sterilization of the money supply in domestic currency, which goes along with the reduction of the monetary aggregate pointed out in 2009 (-0.1%).

Having reached this point, it is now in large measure understandable why inflation did not increase in 2008–2009 despite the impact of the global crisis and the deterioration of macroeconomic balances. In 2008, there were real inflationary pressures from both domestic demand as well as cost channels, but these largely cancelled each other out as a result of price freezes in the agricultural market. The fixed rate exchange policy has also counteracted inflationary pressures; it prevented a possible transfer to final prices and led to a sterilization of the money supply in 2009. With its fixed exchange policy, the Central Bank made progress towards its final goal of low inflation, but failed to achieve the final goal of Cadeca exchange market equilibrium.

### Convertible pesos and the banking crisis

The fixed rate exchange policy may be questioned not only because it failed to counteract the Cadeca disequilibrium, but also because it failed to contribute to external equilibrium and prevent the Cuban banking crisis. The key mistake was perhaps having expanded the fixed rate exchange policy to the convertible peso. Besides maintaining the fixed Cuban peso exchange rate, the Central Bank had kept the convertible peso exchange rate value at 1.08 USD x 1 CUC despite the balance of payments disequilibrium.

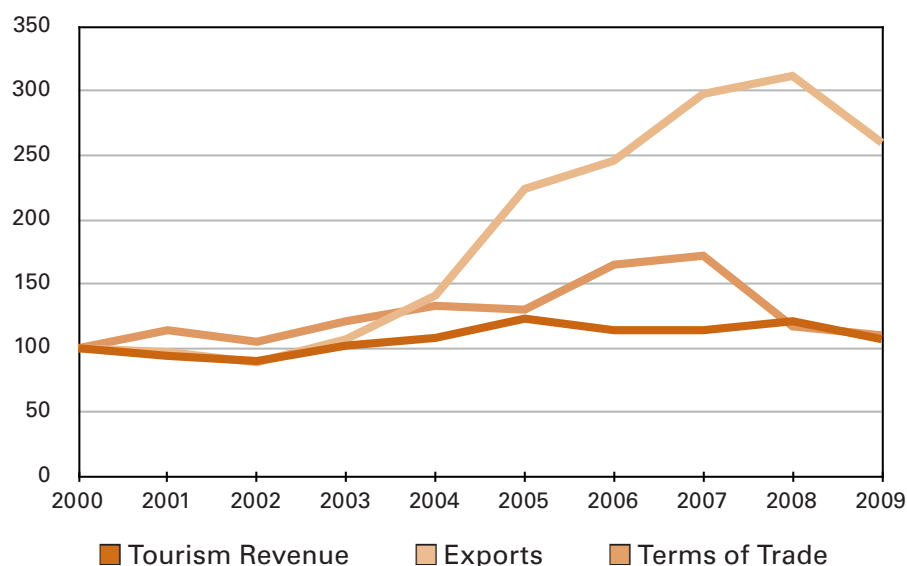
To some extent, the decision to maintain a fixed Cuban peso Cadeca exchange rate may be understood

to be more related to the population sector and have a direct effect on the purchasing power of those earning low wages. However, the convertible peso exchange rate more closely linked to foreign trade is a potential tool for external equilibrium adjustment that has been available to economic policy since the 2003–2004 de-dollarization. The convertible peso was introduced in 1994 at fixed parity to the dollar and backed by a currency board. As a result of the 2005 balance of payments surplus, the convertible peso was revalued by 8%. However, the inverse adjustment was not made in response to the deficit. A devaluation of the convertible peso (for example, 1.10 CUC x 1 USD) would favor import substitution, promote exports and benefit competitiveness in tourism.

The network of state-run convertible peso stores that operate at a high margin may have used the margin to buffer the inflationary effects of the convertible peso devaluation. Interest rates on fixed term deposits may have increased and widened the differential in favor of domestic currencies in an effort to back up bank savings in local currencies as well as help lower demand for foreign exchange and reduce the pressure on inflation (although there is no evidence of the significance of this mechanism). Together with inflation, another risk factor would have been associated with companies with earnings in convertible pesos that face foreign currency debt. Nevertheless, the possible implications on some of these debts have never been greater than the current banking crisis.

The fixed exchange rate policy did not contribute to balance of payments and exchange market equilibrium and in fact combined with previous economic policy decisions to trigger a crisis in the Cuban banks. The deterioration of macroeconomic conditions and



**Figure 4: Pertinent external exchange market indicators, 2000–2009**

Source: Author, on the basis of ONE (2008, 2009a y 2009b)

the global crisis on this occasion have come to have a severe impact on Cuban banks because they have been exposed to centralization of the national revenue in foreign exchange in the government's so-called *Cuenta Única*<sup>10</sup>, which meant that financial risk was concentrated in a single economic agent, in this case, the central government. Another determinant of the banking crisis has been the de-dollarization of the economy and the break-up of the currency board that backed the convertible peso, with no regulation concerning the issuance of this currency taking its place. Monetization of the fiscal deficit in Cuban pesos is defined in the annual budget and deficit approved by the National Assembly, but there is no such limit on the convertible peso and even less transparency in the statistics reported and the decisions made regarding the de-dollarization.<sup>11</sup> In this way, with the worsening macroeconomic scenario and the global crisis, the indebted government saw how badly affected its finances were and thus seemed to promote unlimited printing of convertible pesos, causing this currency to be issued in excess. All of this had a direct repercussion on the balance sheets of banks, which were prevented from making international payments from their clients' bank deposits.

Since early 2009, foreign payments and capital outflows from the Cuban banking system have all but stopped. Bank transfers that normally took just days to complete began to take several months. This was in response to the fact that deposits in convertible pesos had lost their backing and convertibility in Central Bank foreign currency while bank deposits that had been held in foreign currency were affected by the absence of liquidity in the commercial banks

themselves. Thus the exchange crisis and the banking crisis were linked together. CEPAL (2009) estimates non-payments by Cuban banks at somewhere between US\$ 600 million and US\$ 1 billion.

The fixed exchange rate policy became another factor that caused the banking crisis to the extent that it weakened the Central Bank and failed to help re-establish balance of payments and exchange equilibrium. Monetary policy intervention to maintain exchange rates involved a reduction in international reserves and left the Central Bank with less liquidity to back convertible peso convertibility and act as lender of last resort for the banking system.

Some of the consequences on the financial system are now irreversible; international confidence in Cuban banks is not easily re-established in the short and medium-term. The crisis of confidence itself complicates recovery of the banking system, since it creates a vicious cycle that eliminates incentives for new financial flows into the country while increasing the scarcity of foreign currency liquidity. The global crisis further complicates potential financing in international markets. Stabilization of the banking system requires an international lender of last resort, a factor that is difficult for Cuba because it is not a member of the major international or regional financial organizations. The consequences of the global crisis on Venezuela seem to have prevented it from playing this role for its main economic ally or since the recently established Banco del ALBA.

## Conclusions

On the basis of the empirical evidence available, the monetary transmission mechanisms of the global crisis in Cuba may be summarized as follows:



- There is an accelerated drop in GDP and a limited possibility that the government and the Central Bank can continue to promote the supply of state-run goods and services to the public (retail merchandise circulation) thus leading to an increase in non-state-run market demand and pressure on inflation.
- In 2009 there is a decrease in the fiscal deficit, but it remains high, allowing monetization to expand the money supply and thus generate inflationary pressures through the domestic demand channel.
- Due to the consequences the global crisis on Venezuela and other foreign partners, there is a reduction in exports and tourism revenue; in addition, the terms of trade continue to fall. By means of this transmission channel, the net supply of foreign exchange in the Cadeca exchange market contracts.
- The global crisis together with other negative external shocks and past economic policy errors acts to detonate an exchange and banking crisis. Banks and the convertible peso exchange regime were previously exposed to financial centralization and the absence of any transparent rules for issuing money, facts that magnified the impact of the 2008 shocks and the 2009 global crisis.
- The ability to obtain financing in the international market and the possibility of having a lender of last resort to solve the current financial crisis are limited.

The Cuban monetary policy response prevented the manifestation of these inflationary pressures by controlling the Cuban peso and convertible peso exchange rates and by conducting monetary sterilization in 2009 in addition to freezing prices in agricultural markets in 2008. However, it was unable to prevent exchange imbalances, adverse impacts on the convertibility of the convertible peso, and the banking crisis. The Central Bank backed the exchange rate value, but as a result, saw a weakening in its backing of convertible peso reserve money in international reserves as well as in its role as lender of last resort for the banking system. Devaluation of the convertible peso began to be seen as a better alternative to re-establishing balance of payments and exchange equilibrium. Its possible inflationary effects may have been compensated by other monetary policy actions.

The impossibility of having an international lender of last resort leads to the prediction that the current financial crisis will be resolved very slowly, and not without negative effect on the real economy. In the absence of economic reserves for a countercyclical expansion, the adjustment policy introduced in 2009 appears to be the most correct option since it restores macroeconomic balances, demonstrates monetary and financial stability, and thus contributes to long-term growth. However, in the short-term, the financial crisis and the contraction of expenditures will have a negative impact on economic growth. The shortage of local markets is already evident, due in part to the withdrawal of international investors from the Cuban market. Thus, the new challenge facing monetary policy is to overcome renewed inflationary pressures generated in this scenario.

## Notes

1. The author worked as a specialist at the Central Bank of Cuba (1999–2006) and is currently a professor at the Center for the Study of the Cuban Economy at the University of Havana. His main fields of research and study are Macroeconomics and Time Series Econometrics. In 2006, he earned a Certificate of Research Proficiency at the University of Oviedo in Spain. In 2007, he completed his Doctoral Degree in Economics at the University of Havana.
2. Vidal and Doimeadios (2003) analyze the determinants and costs of deflation in Cuba.
3. The reserve rate is 10% on demand deposits in Cuban pesos and 5.5% on deposits in foreign Exchange and convertible pesos.
4. Probably one of the most common uses for the VAR has been in the area of monetary policy. VAR systems have allowed empirical analysis of the monetary policy transmission mechanisms as well as formulation of predictions about inflation. Please refer to the studies by Gordon and Leeper (1994), Christiano, Eichenbaun and Evans (1996) and Bernanke and Mihov (1998), among many others. In Latin America, for example, Valdés (1997) and Mies, Morandé and Tapia (2002) analyze the case of Chile. Arreaza, Ayala and Fernández (2002) calculate a structural VAR for transmission mechanisms in Venezuela. Minella (2003) studies monetary policy in Brazil with a VAR calculated for three periods from 1975. Gaitán and Gonzáles (2006) use a non-linear VAR to analyze the changes in transmission mechanisms in Mexico. Since 2005, the Monetary Policy Committee of the Central Bank of Cuba has used a VAR very similar to the one presented in this study to make predictions for the following year regarding unregulated prices and individual exchange markets.
5. The tests to find out if a variable is Granger causal (block causality test) are useful to determine if the variable should be incorporated into the VAR (Enders 1995 and Doan 2000).

6. At the end of 2004, 36% of the savings in Cuban pesos in the hands of the population was in fixed term deposits.
7. This assumption by economic authorities regarding controlled variables has been widely used for a variety of reasons. First is the delay in data collection by statistics departments, which makes it difficult for authorities to immediately explain the occurrence of shocks in the economy. On the other hand, institutions are believed to make prudent decisions and prefer to confirm the occurrence of shocks with new data before modifying economic policy conditions. This form of identification is quite justifiable with monthly frequency.
8. Refer to Enders (1995) and Doan (2000) for identification of the VAR systems.
9. No information is available regarding the actual breakdown of the CPI into regulated and unregulated prices. Wages are measured by using average wage per worker and the monetary aggregate is composed of savings and Cuban peso money supply in the hands of the population. Retail merchandise circulation in 2009 is estimated from the sales tax data in the 2009 government budget reported by ONE (2009a).
10. See Central Bank of Cuba (2004).
11. See Vidal (2010) for a more detailed explanation of the banking crisis.

## References

- Arreaza, Adriana, Ayala, Norka and Fernández, María (2002), "Mecanismos de transmisión de la política monetaria en Venezuela," VII encuentro de la Red de Investigadores de Bancos Centrales de las Américas, CEMLA, available at [http://www.cemla.org/pdf/red/RED\\_VII\\_VENEZUELA-Arreaza-Ayala-Fernandez.PDF](http://www.cemla.org/pdf/red/RED_VII_VENEZUELA-Arreaza-Ayala-Fernandez.PDF)
- Banco Central de Cuba (2004), Resolución 92/2004, Havana, [www.bc.gov.cu](http://www.bc.gov.cu)
- \_\_\_\_\_ (2008), Economic Report 2007, Havana.
- Bernanke, Ben (1986), "Alternative explanations of money-income correlation," *Carnegie Rochester Conference Series on Public Policy*, n.º 25, Pittsburgh, pp. 49–100.
- Bernanke, Ben and Mihov, Ilian (1998), "Measuring monetary policy," *Quarterly Journal of Economics*, vol. 113, n.º 3, Massachusetts, pp. 869–902.
- Carranza, Julio, Gutiérrez, Luis and Monreal, Pedro (1995), "La desmonetización de la economía cubana: una revisión de las alternativas," *Economía y Desarrollo*, vol. 118 n.º 2, La Habana, pp. 44–67.
- CEPAL (1997), "La economía cubana. Reformas estructurales y desempeño en los noventa," Fondo de Cultura Económica, México D. F. (2009), *Preliminary Overview of the Economies of Latin America and the Caribbean 2009*, Santiago de Chile, December.
- Christiano, Lawrence, Eichenbaum, Martin and Evans, Charles (1996), "The effects of monetary policy shocks: evidence from the flow of funds," *The Review of Economics and Statistics*, vol. 78, n.º 1, Massachusetts, pp. 16–34.
- Doan, Thomas (2000), *Rats version 5 user's guide*, Evanston, Estima.
- Enders, Walter (1995), *Applied econometric time series*, John Wiley & Sons, New York.
- Gaitán, Alejandro and Gonzáles, Jesús (2006), "Structural changes in the transmission mechanism of monetary policy in Mexico: a non-linear VAR approach," Banco de México, Documentos de Investigación, n.º 6, México D. F.
- Gordon, David and Leeper, Eric (1994), "The dynamic impacts of monetary policy: an exercise in tentative identification," *Journal of Political Economy*, vol. 102, n.º 6, Chicago, pp. 1228–1247.
- González, Alfredo (1995), "La economía cubana en 1994 y los escenarios para 1995," en *Economía y Reforma Económica en Cuba*, Varios Autores, Editorial Nueva Sociedad, Caracas, pp. 25–36.
- Hernández, Eduardo, Chuairrey, Anaís and Rosales, Susset (2004), "El traspaso del tipo de cambio a los precios: Una aproximación al caso de Cuba." Publicación electrónica del evento 42 Aniversario de los Estudios Económicos en la Facultad de Economía de la Universidad de la Habana.
- Hidalgo, Vilma, Vidal, Pavel and Tabares, Lourdes (2000), "Equilibrios monetarios y política económica," *Economía y Desarrollo*, vol. 127, n.º 2, La Habana, pp. 75–107.
- Mies, Verónica, Morandé, Felipe and Tapia, Matías (2002), "Política monetaria y mecanismos de transmisión: nuevos elementos para una vieja discusión," Banco Central de Chile, Working Paper n.º 181, Santiago de Chile.
- Minella, André (2003), "Monetary policy and inflation in Brazil (1975–2000): a VAR estimation," *Revista Brasileira de Economia*, vol. 57, n.º 3, Rio de Janeiro, pp. 605–635.
- Oficina Nacional de Estadísticas (ONE) (2008), *Serie de Cuentas Nacionales Años 1996–2007*, Havana, [www.one.cu](http://www.one.cu)
- \_\_\_\_\_ (2009a), *Panorama Económico y Social: Cuba 2009*, Havana, [www.one.cu](http://www.one.cu)
- \_\_\_\_\_ (2009b), *Anuario Estadístico de Cuba 2008*, Havana, [www.one.cu](http://www.one.cu)
- Sims, Christopher (1986), "Are forecasting models usable for policy analysis?" Federal Reserve Bank of Minneapolis, *Quarterly Review*, pp. 2–16.
- Valdés, Rodrigo (1997), "Transmisión de política monetaria en Chile," Banco Central de Chile, Documentos de Trabajo, n.º 16, Santiago de Chile.
- Vidal Pavel and Doimeadios, Yaima (2003), "Deflación vs. inflación en la economía cubana," *Economía y Desarrollo*, vol. 134, edición especial, La Habana, pp. 59–72.
- Vidal, Pavel (2008), "Monetary policy in Cuba. A structural VAR model estimation" *Revista Principios* 12, Madrid, September, pp. 85–102.
- Vidal, Pavel (2010), "Cuban Economic Policy under the Raul Castro Government" Institute of Developing Economies, Japan.



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