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Sanjoy Kumar Saha [α], Mst. Nilufar Easmin [σ] & Partho Sarathi Laskar [ρ]

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I. Introduction

The difference between countries occurs because they have difference preferences. Some countries prefer less inflation than others and when it comes to join the monetary union, some countries to bear more costs than others. Hence, the launch of the common currency between the countries members of integration should be done after fulfilling the convergence criteria as no country is immune to some of the static and dynamic effects of the creation of a single currency covering a certain number of member nations of the monetary integration. Before looking at the implications of the inflation differentials among the countries for our concern, we have first to analyze these inflation differentials.

Looking at the fluctuation of the cyclical component of real GDP in Mexico about its trend, we observe persistency of deviations from trend. That is, if at a certain point in time you observe a deviation above/ below the trend, the deviation for the next period is more likely to also be observed above/below the trend. There is no frequency in the amplitude of the fluctuations across time. Some periods are characterized by small deviations above the trend and larger deviations below (1990-1995 for example) and others are, at the contrary, characterized by large deviations above the trend and smaller deviations below (1986-1990 for example). Overall, we observe almost the same number of deviations above the trend than below although deviations below the trend seem to be, on average, of larger amplitude.

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II. Background Study of Monetary Integration

a) Before 1980 till early 80s

During the presidencies of Luis Echeverria (1970-76) and José-Lopez Portillo (1976-82), an increase of the role of the State in the economy has been observed in Mexico. Huge government spending was sustained by revenues obtained from the exports of "brand new" oil discovered in the 70s in the Mexican subsoil. At this time, Mexican economy was mainly driven by the oil and petrochemicals sectors. The economy was highly protected with very high tariff (mainly for foodstuff).The export-led growth period will stop in mid-1981 when the country faced falling oil prices, higher world interest rates, rising inflation, a chronically overvalued peso and a deteriorating balance of payment that led to massive capital flight.

b) Crisis of the early 80s and recovery

In the first period (1980-1985), the frequency of fluctuations is lower than for the rest of the entire observed period. That is, we observe less turning points for this first period, the fluctuations are less choppy. A peak is observed in the last quarter of 1981 with amplitude of more than 6 % above the trend, probably due to the driving oil export sector. In the early 80s the country has experienced a debt crisis. The large deviation above the trend starting in the second part of 1982 is supposed to be related to this crisis of which starting point had been the Mexican government default on scheduled debt repayments. After having nationalized the banking industry, the government decided to implement austerity measures that remained the groundwork for the recovery. A trough at 4 % below the trend in the mid-1983 is observed. The economy has been less volatile between the end of 1983 and 1986, partly due to huge efforts for stabilization by government. On the other hand, the government interventionism has led to a loss of credibility of Mexican political authorities. International investors were scared

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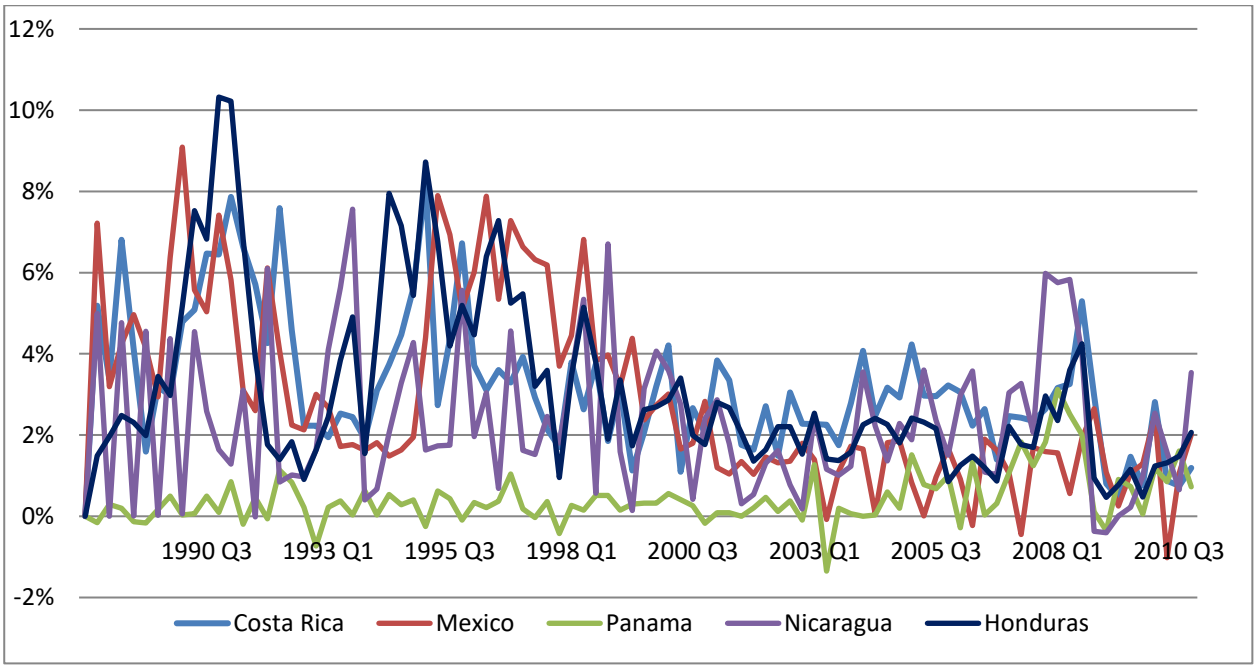
away by the high inflation and instable economic environment. The stabilization policy has generated high social costs characterized by a plummet of disposable income and employment.

c) 1986-1994

Starting form 1986, fluctuations became choppier. From 1986 till 1990 the real GDP had been mainly under its trend with maximum amplitude of more than 6 percent. Stabilization is observed between 1987 and 1988 (the amplitude of deviations became smaller). In 1986, Mexico abandoned import substitution and liberalized its trade by joining the General Agreement on Tariffs and Trade (GATT) but this strategy has been proved disappointing in terms of increasing exports and Foreign Direct Investment (FDI). This period is also characterized by political changes. The president Salinas undertook a long-term development plan in 1989 for the deregulation of the economy through the privatization of state enterprises, liberalization of foreign investment laws, deregulation of the financial service sector and reductions in tariff and nontariff barriers. Its objective was to reduce the external debt of Mexico through incentives for foreign investments. The strategy seem to have led to good results as, between 1990 and 1994, we observe a real GDP mainly above its trend with a peak in the last quarter of 1994 with amplitude of more than 6 percent.

III. Business Cycle and Domestic Indicators



Graph 1: Comparison of inflation changes among countries

Source: Calculations based on IMF data

The figure here above indicates the volatility of the inflation rates during two decades 1990-2010 for five countries Costa Rica, Mexico, Panama, Nicaragua and Honduras.

In general, the recent inflation level has decreased except for the year 2008 when the World was facing the global financial and economic crisis. Costa Rica experienced an average inflation rate of 3.16% representing 3.81% in the first decade, and 2.45% in the second decade. Hence, a decrease in the average inflation rate by 1.36%. In Mexico, the average inflation rate was 2.76% for the two decades from 1990 to 2010. However, during the first decade, the average inflation rate was 4.22% whereas in the second it has reduced to 1.65%. This indicates a decrease by 2.57% from the first to the second decade. As for Panama, the average inflation rate was 0.46% during the two decades 1990-2010. However, there was a small decrease by 0.41% in the average inflation rate from 0.27% during the first decade to 0.68% for the second. In Nicaragua, the average inflation rate was 2.33% for the two decades from 1990 to 2010. However, during the first decade, the average inflation rate was 2.60 % whereas in the second it has reduced to 2.03% and thus a decrease by 0.57%. The data for Honduras indicate that the average inflation rate was 3.16% during the two decades 1990-2010. The first decade, the average inflation rate was 4.37% and it has decreased to 1.83% during the second decade by 2.54%.

The figure above indicates also that countries with initially higher inflation rates during the year 1990, Mexico with 9.09% in the first quarter and Honduras with

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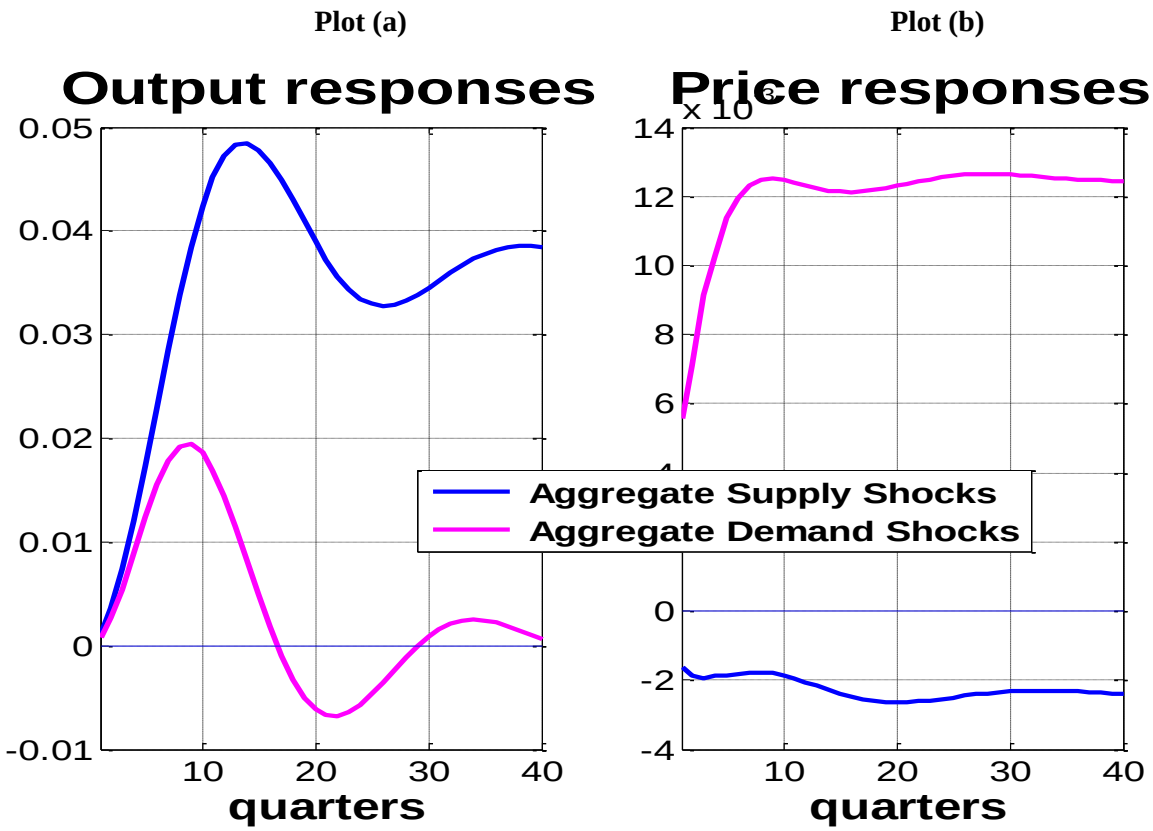
10.32% in the fourth quarter managed to reduce considerably the level of inflation as at the end of the year 2010, the rates were 2.01% and 2.06% respectively. Costa Rica has also reduced the inflation rate from 4.79% as at the beginning of 1990 to 1.19% at the end of 2010.

As persistent differences in inflation among members of a monetary union may, in fact, lead to disparities in real interest rates, given the common monetary policy, it is recommended to enter the monetary union with a lower inflation rate. These diversities may be exacerbated by cyclical considerations: a country where economic activity is relatively subdued is likely to have weak inflationary pressures and therefore experience a relatively high real interest rate; this in turn could add further to the divergence of inflation. A different view holds that, in the absence of exchange rate flexibility, inflation differentials are an adjustment mechanism: countries with higher productivity or lower wage growth than others would experience a depreciation of the real exchange rate and thus a gain in trade competitiveness.

Other factors being held constant, the inflation levels in these five countries indicate that they may constitute a monetary integration as there are no significant differences in their inflation rates as at the end of 2010. However, Panama with 0.73% inflation rate in the fourth quarter of 2010, should avoid zero inflation level by maintaining the positive measured inflation rate. The reasons are, among others that, there may be situations where a negative real interest rate is required to get the economy going. However, when the inflation rate is zero, negative interest rates are impossible as negative real interest rates would then require negative nominal interest rates. In addition to this, in light of nominal price rigidities, some inflation is needed to allow for a decline of relative prices and to provide the economy with the necessary flexibility to accommodate structural changes.

a) Panama



Source: Calculations based on IMF data

The figure above shows the output and price impulse response functions for Panama. The impulse response functions for output illustrated in plot (a) illustrate that aggregate demand shocks have only temporary effects on the level of output while supply shocks have permanent output effects. Positive aggregate demand shocks produce a rise in output initially, which then gradually returns to its baseline level. The plot indicates that it will require 40 quarters or 10 years for the aggregate demand to return to its baseline level after the occurrence of the shock. Whereas, the positive aggregate supply shocks do not return to their

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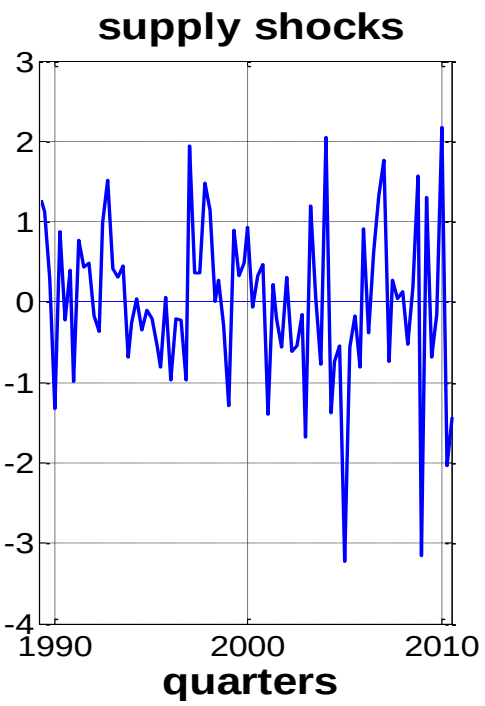
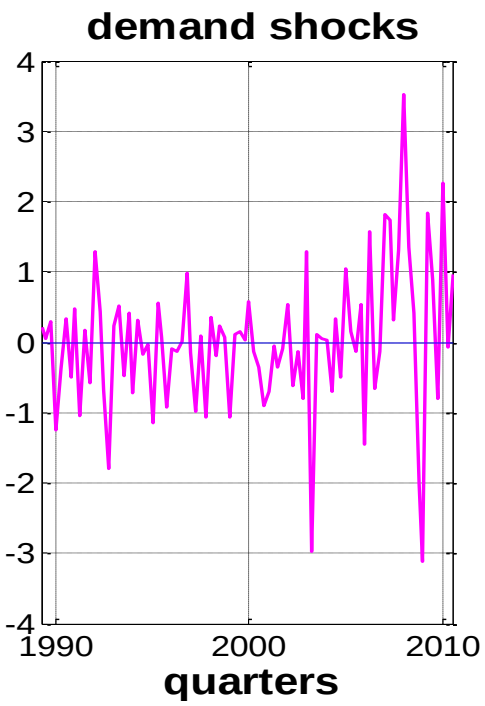
initial baseline levels but instead, they produce a steady rise in output to a new higher equilibrium level. The impulse response functions for prices illustrated in plot (b) indicates that while both aggregate supply and aggregate demand shocks have long run effects on the price level, demand shocks produce a gradual rise in prices over time up to 8 quarters (2 years) and thereafter they tend to stabilize at the same level over the time, while supply shocks produce a steady decline in prices, as predicted by the Aggregate Demand (AD)-Aggregate Supply (AS) framework.

b) Honduras

Plot (a)



Plot (b)



Source: Calculations based on IMF data

The figure above in plot (a) shows the fluctuation in supply shocks and in plot (b) shows the fluctuation in demand shocks of Panama over the period from 1990 to 2010.

Over the period from 2000 to 2003, the demand contraction caused a large increase in unemployment. The cause was a combination of capital flight and a non-accommodative policy response: the exchange rate was not allowed to fall, or could not fall because of dollarization. Strong aggregate demand was reflected in the inflation rate, which rose over 2003–2004 despite Panama's dollarization and leading to a negative demand shock. Over the period from 2003 to 2007, Panama experienced an output growth and unemployment fell rapidly. A confluence of increased Foreign Direct Investments (FDI) in fixed capital and improved investment productivity has helped to catalyze macroeconomic growth in Panama. Canal expansion and a housing boom have accelerated investment in fixed capital and, in turn, boosted gross fixed investment. Labor productivity has also been faring well and accelerating thus, positive supply although, in the year 2005, capital flight consistently caused a negative supply shock. The collapse in world trade and the global financial and economic crisis. There was then a contraction in exports and domestic demand, and in particular in investment leading to both supply and demand shocks over the period 2008-2009. FDI flows started to recover in the last quarter of 2009 and continued to trend upwards in 2010, leading to positive supply and demand shocks.

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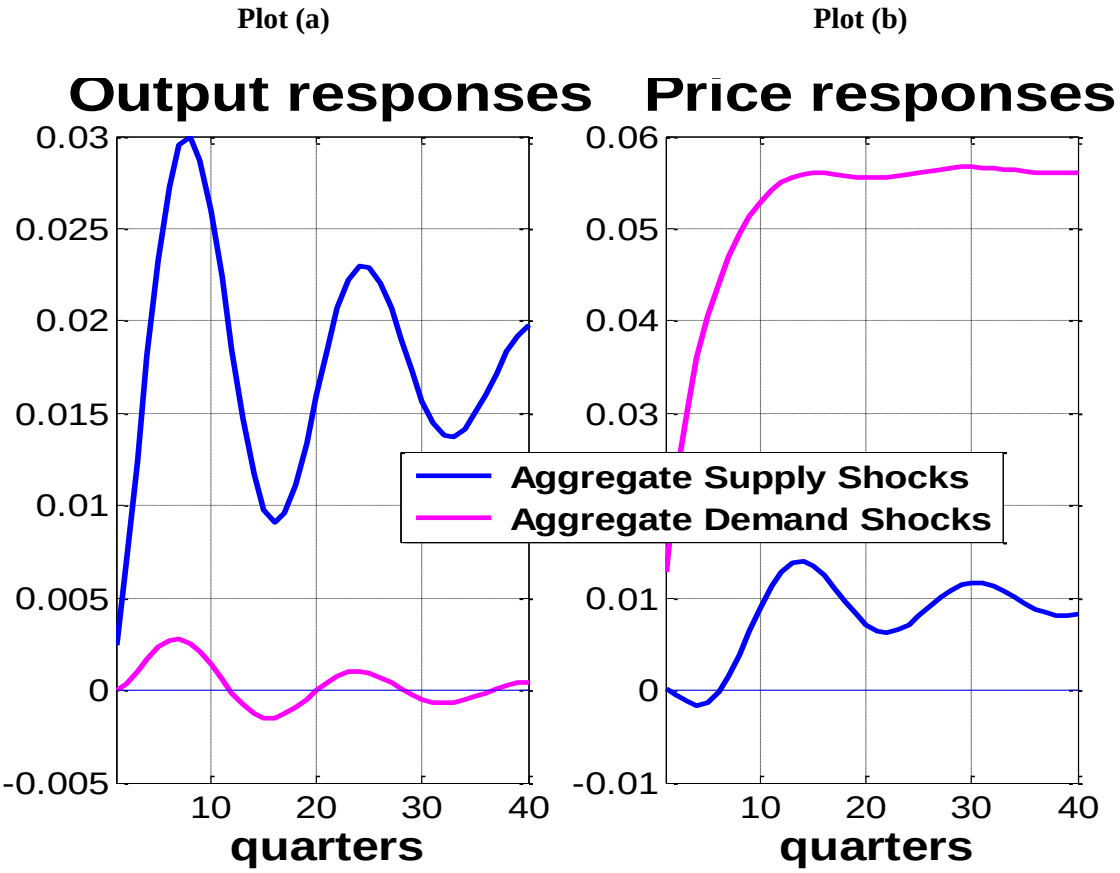
c) Nicaragua



Source: Calculations based on IMF data

The figure above shows the output and price impulse response functions for Panama. The impulse response functions for output illustrated in plot (a) illustrate that aggregate demand shocks have only temporary effects on the level of output while supply shocks have permanent output effects. On one side, positive aggregate demand shocks produce a rise in output initially, which then gradually returns to its baseline level. They will tend to stabilize after the 40th quarter (or 10th year). On the other side, the positive aggregate supply shocks will not be back to their initial levels but instead, they will produce a steady rise in output to a new higher equilibrium level. The impulse response functions for prices illustrated in plot (b) indicates that while both aggregate supply and aggregate demand shocks have long run effects on the price level, demand shocks produce a gradual rise in prices over time up to the 12th quarter (3rd year), while supply shocks produce a decline in prices in the first three quarters, and thereafter, there are alternations of rises and declines in prices over time such that the prices will stabilize after the 40th quarter.

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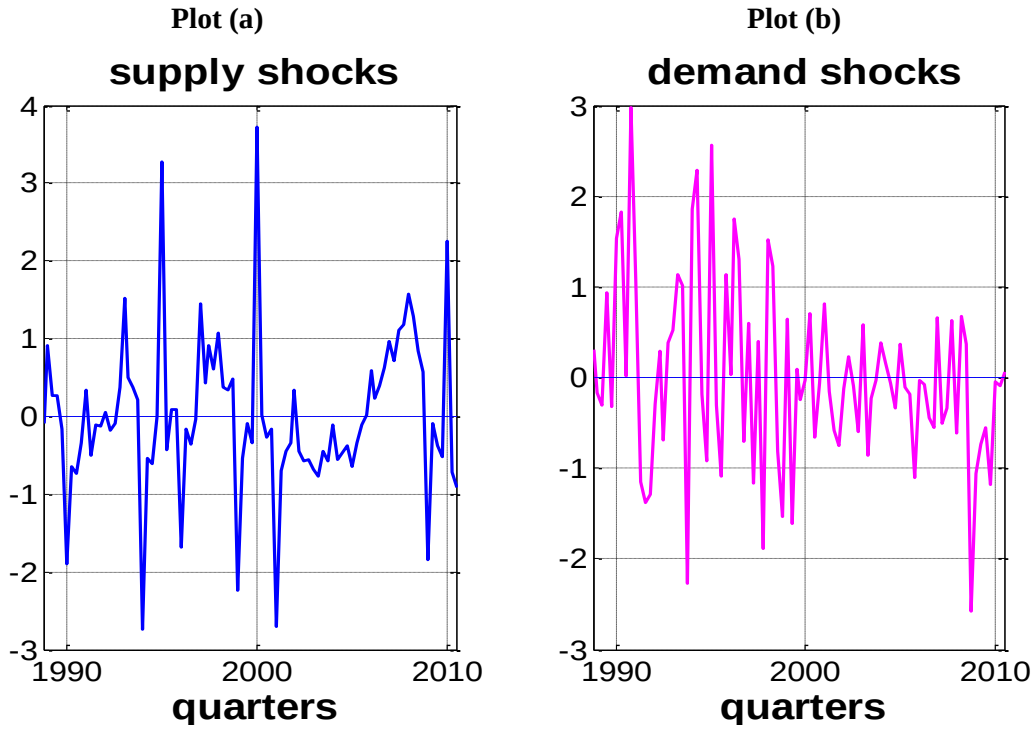
d) Mexico



Source: Calculations based on IMF data

The figure above in plot (a) shows the fluctuation in supply shocks and in plot (b) shows the fluctuation in demand shocks of Mexico over the period from 1990 to 2010.

Leading variable to GDP, the majority of significant coefficient and the highest correlation is observed after four lags (0.468) in the right-side column of the table(the correlation appears stronger between the CC of the variable and the CC of real GDP when we take into account the current CC of real GDP and the CC of the variable computed four lags before. From the figure, the household consumption has been mainly procyclical to real GDP. However, this trend is not observed during the PESO crisis. At the end of 1993 the household consumption collapsed then reversed in 1995. From the figure 5 we mostly observe a procyclical trend and the leading character of the household consumption is quite intuitive as the household consumption represents generally a large part of the GDP. Moreover, this correlation is strong.

The real GDP has been growing more from 2003 to 2007. During 2006 and 2007, the rates of GDP growth were higher than they had been during the previous four years. The economic growth that occurred during that period was due to a significant reduction of the lending rate (from 18.5% in December 2005 to 16.5% in 2007) which encouraged vigorous growth of credit to the private sector, in real terms. It also contributed to a significant reduction in the open unemployment rate in the urban sector over the same period. Hence, this resulted in a positive supply shock. However, the labor instability and uncertainty in the business sector caused the volatility of the demand over the period from 2000 to 2007. In 2008 the expansion slowed down as a result of the international financial crisis and world recession which led to a scarcity of international funding that, in turn, also contributed to the rise in lending rates. This reflects the negative supply and demand shocks which occurred over the period 2008 to 2009. As in other small and open economies, commodity and oil prices were among the most important determinants of inflationary pressures in 2008 and 2009 which the central bank attempted to control by raising the policy interest rate. In response to the international financial crisis and world recession, the government of Honduras pushed down to zero the legal reserve requirement for loan requests where at least 60% of the lending resources would go to production activities. This led to a positive supply shock in 2010 and prices have grown at a much slower pace in the same year.

IV. An Overview of the Functioning and the History of Government Bond Market in Latin Countries

a) Panama

i. *Primary Issuance in the Domestic Market*

The government issues standardized public debt with maturity terms of up to 10 years via a public auction process.

The Office of Public Debt (*Dirección de Crédito Público*—CP) is responsible for the integrated management of public debt. As part CP issues treasury bills at three, six, and 12 months, and treasury notes with fixed interest at maturities of two to 10 years.

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Interest is paid semiannually on a 30/360-day basis. The current maturities are three, four, six and eight years. Both bills and notes are completely fungible and have homogenous characteristics (standardized).

Domestic public debt is issued in a series of electronic multiple-price auctions with competitive and noncompetitive bidders.

Treasury bills are auctioned on the third Tuesday and treasury notes on the first Tuesday of each month according to an annual auction schedule. The auction is administered by the national stock exchange (BVP), for which the primary placement of government debt securities has become an important activity. The CP usually announces the (indicative) auction volume, the maturity, and the day of liquidation eight days prior to the auction date. Any national and foreign natural and legal entity can participate in the auction via authorized and registered brokerage firms *(casas de valores)* or dealers *(puestos de bolsa)* only. Interested parties may present either competitive or noncompetitive bids. However, nonfinancial public institutions, such as Social Security Agency, can only submit noncompetitive bids (via BNP as agent). After the auction closes, the bids are categorized into private competitive bids, private noncompetitive bids, and noncompetitive bids by public entities. The issuer then decides on the minimum acceptable price and allocates the issue to all successful competitive bids at their individual bid prices (discriminatory price). If the cut-off price results in oversubscription, allocations to competitive bidders are prorated. Unless the available auction volume is exhausted, the residual is offered to private noncompetitive bids before public bidders receive any allotment. Noncompetitive auctions are allocated at the average price of successful bids. Settlement occurs at T+3 through the clearing system of the *Central Latinoamericana de Valores* (LatinClear), the exclusive custody system for clearing and settlement of securities traded at BVP. The transfer of ownership happens via book entry.

The BVP fee structure for primary issuers requires marginal registration and listing fees.

The debt issuers pay BVP a one-time registration fee of $250 plus a basic (or listing) fee of $50 for each series of debt listed, plus an annual fee of $100 and $25 for each outstanding series as long as the debt instruments are listed. In addition, primary issuers pay fees ranging from 1/8 to 1/32 of 1 percent, depending on the issue volume. Currently there are 15 brokerage houses registered with BVP, of which nine are authorized to receive and present bids for both treasury bills and notes. All brokers are privately owned, with the exception of BNP, which intermediates bids from public sector entities.

Public sector investors have substantial influence in determining auction rates in the primary market for public debt.

The price formation in the auction process of public debt differs for short- and medium-term debt instruments. The auction results of 2005 suggest that both treasury bills and notes attract comparable levels of demand of around $50 million on average, against an indicative offer volume of $17 million and $32 million of treasury bills and notes, respectively. While bills were sometimes under allocated (i.e., the issued amount was lower than the indicative amount), both bills and notes are consistently oversubscribed. Moreover, bidders are on average more than twice as likely to be successful in auctions of notes (54 percent) than in auctions of bills (24 percent).

Despite their restriction to noncompetitive participation in the primary market, public sector bidders influence price formation.

Large public sector demand allows the government to curtail competitive bids at a high cut-off price (i.e., a low offered interest rate). Although both auctions of bills and notes are heavily oversubscribed, noncompetitive public sector bids receive an above-average allocation rate at the average auction price.

The authorities believe that external finance is generally less costly than domestic public funding.

There is the spread difference between domestic and external debt, which, according to market participants, has averaged approximately 60 basis points over the last year (after adjustment for different issuance costs) for comparable maturity terms. In 2005, bills and notes sold at respective spreads of about 19 and 144 basis points over the equivalent U.S. Treasury rate. Given that the last external bond issuance of 30-year global bonds on January 17, 2006 generated a spread of 230 basis points over the U.S. Treasury 30-year benchmark rate, medium term domestic funding via the notes program indeed appears costly. This might encourage the government to abandon the local market for more externally issued debt.

Panamanian authorities face an important choice in balancing the objectives of securing least cost funding and developing domestic debt market.

The lower secondary market yields of global bonds versus domestic bonds (to the limited extent such comparisons can be made) may be explained by a variety of factors including the much larger volume and higher liquidity of global bonds, larger and more international investor base, and the preference for international settlement, governing law, and jurisdiction. These advantages are likely to persist. Moreover, as Panama is formally dollarized, avoiding currency risk is not a reason for domestic issuance. Treasury bills would have to be issued domestically for several obvious reasons. But potential reasons for domestic issuance of

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bonds would have to be essentially long term and strategic, such as developing a domestic institutional and retail investor base, supporting local exchange and brokerages, and encouraging greater issuance by Panamanian corporations in the local exchange. While Panama enjoys good market access, exclusive reliance does carry some risk of sudden stops of capital flows and changes in risk appetite for the emerging market assets. For strategic risk reduction and domestic financial sector development, it may be reasonable for Panama to maintain a significant domestic issuance, as envisaged in its fiscal responsibility laws.

If it decides to do so, it may be useful to focus on specific maturities, say, up to 5 or 10 years, while relying on global bonds for other maturities. Panama may also be able to reduce the cost of such domestic funding by seeking both domestic and foreign investors in such locally issued debt, issuing such bonds domestically in volumes that would attract foreign investors, and incorporating the standard provisions of Eurobonds into its local issuance to the maximum possible extent.

ii. *Secondary Market for Public Debt*

Secondary market trading is organized by the national stock exchange.

BVP was created in 1989 by Resolution No. 349 of the National Securities Commission (*Comisión Nacional de Valores or CNV*) and commenced operations on June 26, 1990 as the national stock exchange. As the sole securities market regulator in Panama, the CNV acts as an autonomous unit of the Ministry of Economy and Finance subject to the control of the General Comptroller's Office. However, national law in Panama does not bestow exclusive rights to the BVP as the only authorized stock exchange. The BVP handles dematerialized equity and debt securities (including public debt) under the custodianship of Latin Clear. Investors can obtain Latin Clear's services through any of the 23 participant organizations (brokerage houses, licensed banks, and other qualified financial institutions). With the exception of government debt, all exchange-listed securities must be registered with the CNV. Latin Clear operates on a continuous netting system for all transactions conducted through the electronic trading system (*Sistema Transaccional Electrónico*—SITREL).

While market capitalization continues to rise, it fails to stimulate more trading.

The market capitalization of securities traded on the BVP almost doubled from $4,702 million in 2002 to $8,061 million in 2005. BVP is small and limited in offerings, with a total of 83 authorized issuers of shares or debt instruments. Securities traded in the secondary market of the BVP are charged an annual trading fee of 1/16 of 1 percent. Notwithstanding a sound exchange-trading infrastructure, a comprehensive trading platform and low trading costs, secondary market trading of public debt either via the BVP or the interbank over-the-counter market is low, at a turnover rate of only 5.6 percent of market capitalization. While reported overall trading volume has risen from $1.05 billion to $1.68 billion over the last five years, secondary trading without primary issuance dwindled from $512 million to $454 million from 2002 to 2005.

Most exchange-based secondary market activity centers on equity and medium term government debt, but trading in corporate bonds remains thin.

Based on primary issuance and secondary market trading at BVP, government notes and bonds ($672.9 million, or 50 percent of exchange-based trading) were the most frequently traded securities in 2004, with corporate debt/commercial paper ($296.4 million, or 22.1 percent of exchange-based trading) and equity ($293.7 million, or 21.8 percent) accounting for the remaining trading activity. However, once exchange-based primary issuance is excluded, equity ($202.9 million, or 44.6 percent) was the single most traded asset class, followed by public debt securities ($120.2 million, or 26.8 percent of total trading) and private debt securities ($74 million, or 16.3 percent). Private debt securities tend to be thinly traded and only play a minor role in terms of primary issuance at the BVP. As opposed to the larger exchanges in Costa Rica and El Salvador, where most of exchange-based trading is on short-term securities (86.1 and 96.3 percent of total trading, respectively), the BVP conducts most trading on securities with maturity terms beyond one year (64.4 percent). Repo trading, which used to account for bulk of the secondary trading, has declined substantially in recent years.

The current organization of the primary market restricts the development of a liquid secondary market for public debt.

The limited issuance of public debt has resulted in frequently oversubscribed and under-allocated primary market auctions. The large allocation to noncompetitive public bidders has curtailed greater private sector participation and impedes greater diversification of demand across the financial system. Moreover, the short-term nature of public debt encourages a large investor base of nonfinancial public agencies, insurance companies, and private pension funds to hold public debt until maturity ("buy and hold"), which prevents secondary market trading and the development of a liquid yield curve.

b) Honduras

i. *Primary Issuance*

At the beginning of each year, Congress authorizes the total annual issuance volume of public debt.

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However, this decision does not set the overall debt ceiling or maturity profile of debt within an integrated debt management strategy or desired level of indebtedness. Congress frequently authorizes new debt issuance at a later stage if the need for more funding arises during the year.

Public debt issuance in Honduras is mostly limited to short-term, negotiable certificates issued by both the BCH and the Ministry of Finance.

While the government desires to issue medium- and long-term debt, at the moment, it issues debt only to the extent of amortizations (i.e., no net increase in debt stock), and such issuance currently is short term. In addition, long-term government bonds are issued annually to cover the losses of the central bank, but outside the normal auction process.

Domestic government debt issuance is rare and considered a last resort to raising external finance.

In contrast, issuance by the central bank for monetary policy purposes is frequent and more significant in volume than the debt issuance by the finance ministry.

The BCH made efforts to modernize its monetary operations beginning in 2004 with the adoption of the new Central Bank Law.

The central bank relies mainly on open market operations as the appropriate instrument to control monetary aggregates in terms of liquidity and net international assets.78 Key elements of the new monetary policy are the market-based primary auctions of negotiable central bank securities and an interest rate corridor for an overnight (collateralized) loan facility to commercial banks, with the interbank reserve loan rate (i.e. deposit facility) as the floor (at 4 percentage points below the monetary policy rate (*tasa de política monetaria* or TPM)) and a new Lombard facility (*facilidad permanente de crédito*) as the ceiling (at 4 percentage points below the TPM). The monetary policy rate is allowed to fluctuate within a band and sets the maximum rate permitted in the weekly auction of seven-day CAMs.

A rather large number of competing sovereign securities are issued in Honduras.

The BCH conducts auctions for both central bank and finance ministry issues. The central bank issues two types of standardized, short-term public debt instruments, through a discriminatory price auction. The central bank issues zero-coupon discount Absorption Certificates in domestic currency (CAM), with maturities of either 7 days (only for financial institutions) or 21, 28, 91, 182, and 364 days (for all eligible investors), and U.S.-dollar denominated Absorption Certificates (CADD), with maturities of 98, 182, and 364 days. The Ministry of Finance Debt Management Office (*Crédito Público* or CP) uses the same auction platform to issue standardized, short-term government notes (*valores gubernamentales en moneda nacional* or VG), with maturities of 98, 182, and 364 days every two weeks and to issue three-year government bonds a few times a year.

The auctions of public debt follow a preannounced calendar.

Prior to adoption of Government Securities Trading Rulebook (RNVG), auctions of central bank debt securities (in local currency and U.S. dollars) were scheduled alternately on a weekly basis. After RNVG came into effect in July 2005, the central bank switched to weekly and bi-weekly

CAM auctions, while CADD auctions continued to be taken place once every two weeks. The auction of seven-day CAMs is held every Tuesday afternoon and may be attended only by financial institutions. The central bank uses this auction to absorb excess liquidity in the banking system. The bi-weekly auction of CAMs with a maturity of three months or longer is held on Tuesday mornings and may be attended by representatives all public and private financial institutions that buy directly and by intermediaries that represent the investing public. Until their recent suspension, weekly auctions for CADDs were scheduled every Wednesday and were meant to provide an investment outlet for dollar deposits. Although Honduran banks may invest their sizable dollar deposits abroad, dollar rates in the United States were below the cost of their dollar deposits.

Government debt is always auctioned on the same day and in parallel with the auction of either CAMs or CADDs of the central bank with the same security characteristics.

Only the auctions of VGs are reopening of existing series. All auctions are competitive, but public auctions of VGs also allow noncompetitive bids86 by public sector entities and government agencies, which receive an allocation at the average rate of successful competitive bids.

RNVG and Resolution No. 154-4/2005 establish the auction procedure.

Bids for public debt securities are accepted until 11 a.m. on auction day (except CAM/IFs, for which a deadline of 10:30 a.m. applies) and are submitted to the BCH's Debt Management Department. The auction closes at 11 a.m. after all the bid envelopes are opened. The central bank only registers bids if they comply with RNVG, the minimum bid requirement, and the preannounce indicative interest rate for each type of security tendered. The highest acceptable interest rate (cut-off rate) is set by the board of directors of the central bank and is meant to signal the market as to the central bank's interest rate targets. In auctions of VGs, this decision is taken by the CP of the Ministry of Finance. Noncompetitive bids receive the average rate of successful bids (Article 28 of Resolution No. 154-

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4/2005). The auction is declared void *(subasta desierta)* if only one valid bid is received. BCH acts as custodian of the auction process, while the Central American Stock Exchange (*Bolsa Centroamericano de Valores*—BCV) usually administers the settlement and clearing on the same day of the auction.

Participants in the primary auction are mainly banks and exchange brokers.

Any natural and legal person, resident or nonresident, is eligible to participate in the primary market. According to RNVG, private financial institutions and the Honduran Bank for Production and Housing (BANHPROVI), a public second-tier bank, participate directly and commission-free in all auctions. All other investors (mutual funds, private and public pension funds, state-owned banks, and individual investors) may submit bids via authorized intermediaries (brokers) of public debt on a commission basis. Recently, public entities have been allowed to also submit bids directly.

As of February 2006, brokerage firms were able to implicitly control market access of public sector and nonfinancial bidders to the primary public debt market.

Honduras has 11 brokerage firms, nine of which are active participants in the auction process of public debt. More than two-thirds of all registered brokerage firms are subsidiaries of large banking groups. Since brokerage firms are largely owned by banks, which can access the primary market themselves, the legal restrictions on primary market participation by nonfinancial investors and public entities (other than BANHPROVI) profits banks. Brokers charge semiannual commissions in the range of 0.07 to 0.25 percent to their clients (both in primary and secondary market).

Conscious of the commission fees public entities pay to brokerage firms, the BCH on March 2, 2006 the BHC revised the existing provisions regulating primary market access (Article 13 of RNVG) and allowed public sector institutions to directly participate in primary auction of public debt.

This policy change is likely to result in substantially lower revenues for brokers and ends indirect primary market control by commercial banks. Nonetheless, brokers retain the right to charge fees if they serve as intermediaries

Primary issuance is dominated by local currency-denominated, short-term certificates issued by the BCH.

CAMs represent 95 percent of the primary market issuance of $2,864 million (2005), with the rest of the issuance volume being attributable to CADD (3 percent) and government bonds (2 percent). Banks and investment funds (mostly public, such as large government pension funds) are dominant investors in VGs, while only banks (by virtue of regulatory restrictions or organizational nature) invest in CAMs and CADDs. In 2005, most CAMs were issued at maturities of 7 days (29.4 percent) and 364-days (33.7 percent). The average auction volume of all CAMs was $80.1 million. Sporadic auction of VGs in 2005 resulted in large variations in issuance volumes of government debt—as much as $7.9 million and as little as $54,295. New issuance volume for 2006 was expected to exceed $2.5 billion.

Despite structural differences in the execution of the auction process for CAMs and VGs, both types of public debt are priced the same.

Auctions for CAMs are more competitive than VG auctions and attract more private and smaller bids. Issuance volumes for CAMs are much larger. Successful bids for CAMs also tend to be roughly twice as large as unsuccessful bids, which, at high aggregate allocation rates, suggests less price sensitivity of larger bidders. CAM auctions also show more efficient price formation and greater market consensus on a single price, given the small difference of mean/median bid prices between successful and unsuccessful bids. Notwithstanding these structural differences, the refinancing costs of both the central bank and the finance ministry are about the same. Spreads of VGs concur with those of CAMs for almost all maturity terms.

There are several problems associated with the primary auction process.

Although the auction process is transparent, it results in frequent auction failures and deviations from the announced auction volumes. There are also some problems with the timing of the auction process. Moreover, BCH is exposed to high roll-over risk from the large-scale issuance of very-short term CAMs.

Concurrent issuance by both the government and central bank has led to an excessive frequency of small issuances at short maturities, inefficient price formation, and auction failures.

The average auction volume offered ranges from $7.4 to $26 million for CAMs and from $800,000 to just shy of $8 million for VGs, with average indicative amounts between $200,000 and $34.8 million for CAMs and $200,000 and $15.1 million for VGs. Moreover, undersubscribed auctions are frequent, and first-time auctions of VGs are routinely declared void. Bids for VGs are never rejected, yet occasional rationing takes place. In 2005, only about 70 percent of all announced auctions (and only at the most popular maturity terms of three months and longer) solicited sufficient demand to be declared valid. On average, demand falls consistently short of the indicative issuance amounts of both central bank and government debt and varies widely by maturity term. Only 28-day and 364-day CAMs (or 20.9 percent of offered CAMs) as well as 28-day VGs (or 0.2 percent of offered VGs) attracted sufficient investor demand for market clearing. At the same time, bidders can almost be certain to receive a full allocation (at a probability of 90 percent or more) across all

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maturities of CAM and VG issues, indicating that low demand for the announced volume coincides with little price competition. This problem is also compounded by the lack of a binding commitment on the part of the Ministry of Finance and the BCH to the indicative offered volume. In case of some incomplete auctions, the available issue amount is altered after the auction. Such ex-post changes in auction parameters reduce the perceived transparency of the process.

The primary market auctions are conducted without complete ex ante coordination of fiscal funding with liquidity operations by BCH.

In 2005, the government perceived no immediate fiscal funding need and yielded its allocation of bids to the central bank about half of the time. More generally, the simultaneous issuance of identical debt securities may not be ideal for each issuer.

There is also a problem of delayed disclosure of auction results.

The results of the Tuesday morning auction of CAMs with a maturity of three weeks or longer are not published before the afternoon auction of seven-day CAMs. Hence, bidders lack essential information about their success rate for CAMs at longer maturities before entering the afternoon auction of CAMs. While the central bank believes that there is an effective cash yield curve for 7, 28, 98, 182, and 364-day maturities, some banks believe that only central bank debt with a maturity of one year is efficiently priced.

Auctions of debt securities with maturities of one month or more entails reveal a substantial maturity premium, which may reflect a convergence of market views on yields.

While the Ministry of Finance attempts to avert auction failure by sounding the market about current yields prior to the auction, the absence of liquid trading prevents adequate convergence on market clearing rates. Between 1 and 12 months, yield premia rise by nearly 380 basis points which might be explained by investor uncertainty in the absence of a liquid yield curve. The recent cancellation of a government bond issue for the national energy company (*Empresa Nacional de Energía Eléctrica)* (Box 3) underscores this problem.

The large liquidity operations by the decapitalized central bank carry potentially high rollover risk.

Open market operations have resulted in a stock of short-term central bank securities (seven-day CAMs) of only about $47 million (as of April 2006), which is less than 6 percent of the monetary base and about 2 percent of net international reserves. However, last year, BCH issued more than $815 million of seven-day CAMs (or more than 92 percent of total domestic central bank debt) at an average weekly auction volume of $22.6 million (or almost half of the current stock of seven-day CAMs). All of central bank issuance is short term, and the sleep yield curve may partly explain the preference for large issuance at very short term maturities. Although the central bank has sufficient discretion in choosing desired maturities up to one year, when reserves decline, the overall refinancing needs of the decapitalized central bank may imply large rollover risks.

ii. *Secondary Market for Public Debt*

Secondary market trading is largely limited to short-term debt securities, virtually all of which is public debt.

The BCV administers the secondary market for exchange-traded securities in Honduras. Public debt constitutes 99.8 percent of secondary market trading, which dwarfs the secondary trading in financial sector bonds. Commercial paper and long-term corporate debt issued by financial institutions are insignificant in size and trading, and are limited to Certificates of deposit (*certificados de depósitos a plazo* or CDP). An exchange-based repo market is virtually nonexistent. Capital market-based corporate finance does not have a large following among the mainly family-owned businesses, which are reluctant to comply with public disclosure requirements for corporate bond listing.

Central bank-issued certificates are most frequently traded.

In 2005, the total trading volume of public debt and other securities at the BCV was $2,038 million. CAMs were the most heavily traded (94.2 percent or $1.92 billion), followed by CADDs (3.14 percent or $63.89 million), some medium-term government bonds (2.48 percent or $50.59 million) and CDPs (0.2 percent or $4.36 million). Traded government bonds had maturities of between 657 and 1,096 days and traded at an average yield of 12.31 percent, whereas debt certificates issued by the central bank recorded maturities of between 98 and 364 days (the dollar denominated CADDs) and 82 and 180 days (CAMs), at average yields of 3.15 and 9.57 percent, respectively. Secondary trading volume in 2005 suggests that the outstanding stock of these BCH-issued, open-market-operation securities ($867.2 million of CAMs and $13.2 million of CADDs) is turned over at least twice annually.

The absence of significant volumes of medium-term government-issued debt and very small trading therein has prevented the development of a sovereign term structure beyond one year.

Notwithstanding the extension of the maturity term of CAMs and VGs in 2005 up to one year, almost all public debt securities are still short term. Currently, the absence of new issues of medium- and long-term government debt is due to the current standby agreement with the IMF, which requires total domestic debt issuance to be equal to zero.

Systemic constraints have limited secondary market development.

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Private interbank trading of public debt (to circumvent listing and registration fees) and the expedience of a "buy-and-hold" investment strategy for short-term debt have foiled broad secondary market development. Moreover, retail investors prefer certificates of deposit with local banks, which participate in the primary and secondary public debt markets. Although the secondary market is still incipient and lacks liquidity, the recent introduction of three-year, fixed-rate government debt and greater investor sophistication indicate an ongoing progress of market deepening.

c) NICARAGUA

GDP & Public Consumption in Nicaragua.

Public consumption is a lagging variable to GDP, the highest correlation is observed after one lag (-0.473) in the left-side column of the table (the correlation appears stronger between the CC of the variable and the CC of real GDP when we take into account the current CC of the variable and the CC of real GDP computed four lags before). From the figure we can say that from 1990 to 2010 Mexican real government consumption was procyclical to GDP except from very short periods of time. It means that government had been amplifying fluctuation because when GDP decreases, government consumption also decreases that can deteriorate situation in time of recession. Moreover, this correlation is strong.

GDP & Real wage in Nicaragua.

Real wage is coincident to GDP, the highest correlation is contemporaneous (0.485). Probably the shock in real wage can be transmitted rapidly to GDP or reverse. From this figure, we can understand that Mexican real wage is procyclical to GDP most of the years from 1990 to 2009. Moreover, this correlation is strong.

GDP & Real credit in Nicaragua.

Real credit is a lagging variable to GDP, the highest correlation is observed after two lags (0.675) in the left-side column of the table (the correlation appears stronger between the CC of the variable and the CC of real GDP when we take into account the current CC of the variable and the CC of real GDP computed two lags before). In general the variable is procyclical except for the mid-90s. The correlation between real GDP and Credit to private sector is very strong in this case. This could mean that private investment remains an important factor influencing US's economy.

V. Conclusions

As a matter of conclusion, we would like to give the following policy recommendations to Latin American Countries.

- Improve its institutional setting and give policy-makers incentives to enforce quickly countercyclical policies.
- Increase the links with its trading partner, but on the condition that Mexican policy-making institutions are sound in order to protect the domestic economy from foreign shocks and recessions.
- Policies which foster human capital and technology development in order to reduce the negative impact of Chinese competition and diversify the national economy.
- Focus on fostering the exports which were so far one of the few countercyclical indicator.
- Achievement of internal political stability through e.g. the international cooperation in the fight against the drug cartels.
- Redistribution policies to reduce inequality within the country and reinforce the domestic market.
- Reduction of extremely high level of inflation because of the huge social and welfare costs which inflation brings about. Moreover, the inflation was also counter-cyclical in the last few years and decrease of inflation could have a positive impact on the stabilization of the Mexican economy (at any case the issue is not settled yet whether far lower inflation rate could have in Mexico the same counter-cyclical impact or perhaps change to be pro-cyclical. This dispute could be resolved only empirically).
- Policies to give incentives to people which are credit-constrained to startup businesses.

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