

Charles University in Prague

Faculty of Social Sciences
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MASTER'S THESIS

**Global Spillover Effects from
Unconventional Monetary Policy During
the Crisis**

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Declaration of Authorship

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Abstract

This work investigates the international spillover effects and transmission channels of Unconventional Monetary Policy (UMP) of major central banks from United States, United Kingdom, Japan and Europe to Latin-American countries. A Global VAR model is estimated to analyze the impact on output, inflation, credit, equity prices and money growth on the selected countries. Results suggest that indeed, there are international spillovers to the region with money growth, stock prices and international reserves as the main transmission channels. In addition, outcomes are different between countries and variables implying not only that transmission channels are not same across the region but also that the effects of the monetary policy are not distributed equally. Furthermore, it is found evidence that for some countries transmission channels may have transformed due to the crisis. Finally, effects of UMP during the crisis were in general positive with exception of Japan indicating that policies from this country brought more costs than benefits to the region.

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Acronyms

BoE	Bank of England
BoJ	Bank of Japan
ECB	European Central Bank
EMEs	Emerging Market Economies
Fed	Federal Reserve
FOMC	Federal Open Market Committee
IRF	Impulse Response Functions
OIRFs	Orthogonalized Impulse Response Functions
QE	Quantitative Easing
UMP	Unconventional Monetary Policies
VAR	Vector Autoregressive
ZLB	Zero Lower Bound

Master's Thesis Proposal

Author:	Bc. Brenda Solís González
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Proposed Topic:

Global spillover effects from unconventional monetary policy during the crisis
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Topic Characteristics:

Unconventional monetary policies (UMP) have served as a baseline for the economic recovery. Special attention has arisen on the reversal effects that can take place now that Ben S. Bernanke, chairman of the US Federal Reserve, has announced the start of exiting measures on May 2013. Examine the global impact of UMP helps the economies affected to establish measures to mitigate the negative consequences.

The financial crisis of 2007-2009 strengthened the reality of spillover effects from US to the rest of the world. The Federal Reserve (Fed), as well as other major Central Banks like Bank of England (BoE), European Central Bank (ECB), Bank of Japan (BoJ) and the People's Bank of China (PBC), adopted conventional and unconventional expansionary monetary policies to stimulate the economy during the financial turmoil.

Even though the measures taken by advanced economies were globally supported, there is an intense focus on the spillover effects to the rest of the countries. Monetary policy like Quantitative Easing can have over unintended consequences (IMF, July 2011). Policy makers have pointed out that UMP have created excessive global liquidity and caused an acceleration of capital flows to emerging markets. In turn, this capital flow surge is widely blamed for appreciation pressures on emerging markets currencies and a build-up of financial imbalances in emerging markets (Fratzscher, Lo Duca, & Straub, June 2013).

Most of the literature has focused on the short term effects of UMP rather than long term effects given the brief length time from the implementation of the policies when the studies were carried out and the data availability. There have been applied different methodologies in order to study the cross-border effects of UMP. Generally, event studies approach is used to assess the short term effects of the announcements of such policies (Chen et al., 2011; Neely, 2011; Glick & Leduc, 2013; Neely & Bauer, 2013; Bayoumi & Vitek, 2013; and Filardo & Hofmann, 2014). On the other hand, when assessing the long term effects, impulse response techniques based on different types of VARs are applied (Chen et al., 2011; and Chinn, 2013).

Overall, studies found spillover effects of UMP to advanced and emerging economies. In general, conclusions about short term effects point out immediate increase of asset prices and decrease of interest rates and, therefore contribution to better global liquidity conditions. On the other hand, real effects resulted heterogeneous across regions which could be the reflection of differences between

the economies in terms of institutions, policy frameworks, exchange rate regimes, among other factors (Chen et al., 2011).

This master thesis will focus on examining firstly, whether there are spillover effects from UMP of major central banks to systemic emerging economies, focusing on Latin-American countries. If so, what are the transmission channels of these linkages that, according to the IMF, there are three possibilities: trade flows, financial flows and exogenous co movements in asset prices.

Hypotheses:

1. Hypothesis #1: Is there real spillover effects from UMP of major Central Banks to Latin-American countries?
2. Hypothesis #2: What are the transmission channels of the real spillover effects from UMP?
3. Hypothesis #3: How did UMP from major central banks affect the Latin-American countries?

Methodology:

Global Vector Autorregressive model (Global VAR) will be used to analyze the long term spillover effects of UMP of major central banks (i.e. Fed, BoE, ECB and BoJ) to Latin-American countries in order to compare the grade and types of impacts on the region as well as to evaluate the particularities of the cross-country linkages applying Chen et al. (2011) approach. This methodology seems more feasible nowadays as there is more available data given the date of implementation of the UMP and that long term effects may be more visible. Therefore, the results can be more meaningful.

Global VAR was developed by Pesaran, Shuermann and Weinner on 2004 to capture the linkages between countries or regions due to a contryspecific shock, i.e. interactions among countries. Under Global VAR, each country is modeled individually by a Vector Autorregressive (VAR) model treating foreign and global variables as exogenous (VARX model). After the estimation of the partial system, the results are connected through a link matrix or global vector so that the global model can be built. In order to interpret the Global VAR results, impulse response analysis is employed.

Following Chen's work, it will be estimated the impulse responses to the UMP shocks on output, inflation, credit, equity prices and monetary policies on a pre-crisis sample, crisis sample and full sample. The UMP shocks will be captured by the change on basis points of term spreads between long and short term government yields from the US, UK, Japan and Europe. For the model of each economy, endogenous variables will be real GDP, inflation, credit and equity prices and money growth. Exogenous variables will include foreign real GDP and foreign inflation. For robustness check, the impulse response analysis will be performed using different order of the variables as well as different specifications.

Outline:

1. Introduction: motivation for the study and brief description about the economic situation that lead major central banks to use UMP.
2. UMP from major Central Banks: description of UMP and their objectives.
3. Literature review: description of studies about the effects of UMP during the last financial crisis.
4. The Impact of UMP

- a. Methodology: description of the Global VAR
- b. Data: description about data to be use for the estimation
- c. Empirical results: discussion about the results
5. Conclusion: summary of the findings and implications for policy makers of the economies affected.
6. References: bibliography used as baseline for the thesis.

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1 Introduction

The global financial crisis that started on September 2007 emerged the topic about the spillovers that major economies have to the rest of the world. The negative impact of the subprime mortgage crisis was so deep that drove central banks to cut interest rates close to zero in order to reactivate the economy. As no more room was left to achieve the monetary and economic targets, central bankers began the implementation of Unconventional Monetary Policy (UMP). However, the experience on these policies was limited same as the knowledge on their effectiveness, efficacy and externalities.

Traditionally, central banks implement three main policy instruments to attain their goals such as open market operations, minimum reserves and the setting of the discount rate. However, when interest rates are already close to zero, these traditional tools are useless to stimulate the aggregate demand and alternative non-conventional policies must be taken. These alternative policies are known as UMP.

There are three main UMP. First, forward guidance which consists on official policy announcements describing the current state of the economy and the motivation for the policy decision with the aim of shaping interest rate expectations. Second, credit easing that functions by changing the composition of the asset side of central bank's balance sheet to affect the relative supply of securities. Finally, third, Quantitative easing (QE) which also manipulates central bank's balance sheet but on the liability side in order to increase liquidity to the markets.

The above polices have led numerous studies about the different effects that these might have induced not only domestically but also externally. The grade of impact to other economies will depend on the strength of the transmission channel as well as the particularities of the economy, such as fiscal and financial regulations.

Given that the events are recent, most of literature is focused on the short term effects while the literature for the medium and long term effects is still growing as time pass by and effects start to get visible. Typically, the short term approach uses event studies methodology with high frequency data. In general, these works found evidence of spillovers with immediate increase of asset prices and decrease of interest rates contributing to better global liquidity conditions.

Most of the medium and long term approaches employ Vector Autoregressive (VAR) models to measure the real effects of UMP domestically and cross-border. The key element on this methodology is how to capture the shocks of UMP. Mainly, this has been engaged by changes in central bank's balance sheet so that QE is the only UMP considered. Therefore, the challenge is to find a single variable that can involve the different types of UMP.

This thesis studies the medium and long term potential spillover effects of UMP from major central banks to Latin-American countries based on Chen et al. (2014) work. First, it is investigated whether there are spillover effects from UMP of major central banks to Latin-American countries; second, how the policy shocks are conducted into Latin-American countries, i.e. the transmission channels; and third, what were the effects of UMP from major central bank to these countries.

This work differs from others as not only studies the impact from monetary policy from the United States but also from other major economies like United Kingdom, Japan and Europe to Latin-American. Moreover, it brings extra results as we attempt to model medium and long term effects of UMP with a larger data sample than most of the literature which is mainly focused on short term effects and with limited data set. Particularly, for Chen et. al. ending on February 2013 while on our case on May 2014.

We use the Global VAR methodology as it is a useful technique to describe and understand the channels of transmission of the specific shock to system. In addition, Impulse Response Functions (IRFs) are obtained to interpret the results of the model. Specifically, it is investigated the shocks of UMP from Fed, BoE, BoJ and ECB on output, inflation, credit, equity prices and money growth of 16 countries in Latin-American.

The estimated Global VAR model uses monthly data for the period from January 1995 to May 2014. Three models are performed for each central bank shock: full sample model, pre-crisis model and crisis model. Full sample model is considered the baseline to capture the spillover effects of UMP from major central banks. The rest of the models serve to support such results and to detect whether a transmission channel suffered any transformation of behavior.

The monetary policy shocks are captured by one standard deviation on the spread between 10 year and 3 months government yields. This approach seems plausible considering that the reduction of long term interest rates is the target of central banks at the Zero Lower Bound (ZLB) so that all UMP types are covered by

this variable. Treasury spreads were selected over corporate spreads as the second one is a function of government yields plus a spread. Therefore, by picking the treasury yields we can avoid noise of other information affecting this indicator. Additionally, Gilchrist et. al. (2013) found evidence that both conventional and unconventional monetary policy affect Treasury bills spread. While, Neely (2011) provided empirical evidence that QE announcements both reduced US and international long term bond yields after the announcement took place.

The performed Global VAR model gave empirical evidence about the existence of spillover effects from major central banks to Latin-American countries. Results point as main transmission channels for the region money growth, stock prices and international reserves. However, effects across countries and variables were unequal suggesting that the cost and benefits of the UMP effect were not distributed evenly across the region. Also, there was found evidence about the possible change on the transmission channel for some countries and for different central bank shock. This could be observed as results between sample periods not only differ in magnitude, as expected, but also on direction.

Full sample models for United States and Europe as well as crisis model for Japan non stable. Full sample models indicate a possible structural change that the rest of the sample models meet the necessary conditions. Whereas, the results for the crisis model for Japan may be a consequence of the short data sample.

The impact of the US monetary policy to Latin America indicates as main transmission channels money growth, stock prices and international reserves suggesting co-movement of policy rates and capital flows into Latin-American looking for better yields after the reduction US interest rates. The UMP shocks from BoE had a positive effect on Latin-American with different magnitude between the three sample periods, being during crisis when Latin-American countries had the highest positive impact. Shocks from Japan to this region are very limited compared to the shock from US and UK and, in general, negative for all variables indicating that UMP from Japan brought more costs than benefits into Latin-American. Finally, the impact of UMP from ECB to Latin-American countries boosted the economies initially for a later stabilization.

This work is organized as follow. Section 2 defines and describes the UMP adopted by the major central banks during the last crisis. Section 3, introduces the concept of international spillovers and the transmission channels of monetary policy; in addition, it discusses the related literature regarding spillover effects both in the short term and medium term using different methodologies based on event studies

and VARs. Section 4 outlines the methodology and data while section 5 presents the findings. Finally, section 6 summarizes the empirical results and concludes.

2 UMP from Major Central Banks

During the crisis, economic activity slowed down deeply raising the prospect of future depression. In response, major central banks reacted aggressively with the traditional monetary instruments cutting target policy rates close to zero. Moreover, inflation was low and conventional monetary rules suggested negative interest rates. Given this scenario, central banks had to explore different alternatives to restore the financial markets and economic activity and to provide monetary policy accommodation at the ZLB (International Monetary Fund, 2013, pg. 5).

Bernanke and Reinhart (2004) discuss three alternatives to stimulate the economy when short term interest policy rate is at or close to zero or ZLB:

- (i) Forward guidance which consists on shaping interest rate expectations that short term interest rates will be kept lower in the future than currently expected.
- (ii) Qualitative easing or credit easing based on altering the composition of Central Bank's balance sheet to change the relative supply of securities in the market place.
- (iii) Quantitative easing (QE) or large-scale asset purchases by expanding the size of Central Bank's balance sheet beyond the level needed by buying or selling securities to affect the overall supply of reserves and money stock.

Experience from major central banks on these type of policies is still narrow. Though, it has shown that under the situation when central banks do not have space to affect short term policy interest rate, the adoption of UMP provides a way to target real long term yields which are the most relevant rates for investment, consumption and employment. Indeed, expected future short term interest rates are a key ingredient for the determination of long term interest rates (Cœuré, 2013).

2.1 Forward Guidance

Forward guidance serves as a measure to shape market's expectations about the future path of interest rates. It consists on official policy announcements or other type of communication describing the currently state of the economy and the motivation for the policy decision, guiding the public about the future path of the policy rate.

Forward guidance aims to ensure that market expectations on future monetary policy are indeed consistent with the policy intentions of the respective central bank (Cœuré, 2013).

The forward guidance can be either a conditional or unconditional commitment. The conditional commitment consists on establishing a fix period of time or date for low short term interest rates by the central banks. On the case of unconditional commitment, central banks trigger the current duration of the policy to economic conditions such as inflation, economic growth, employment, etc.

Transparent communication from central banks started on the seventies from last century. Before that time, central bank's decisions were secret and based on market surprise. Hence, the guidance about the future path of interest rates was commonly used earlier the recent crisis. Notwithstanding, the BoJ was the first central bank to use this policy instrument under the scenario of ZLB in 1999. On 2003, the Fed adopted it; although, there was not a situation of interest rates close to zero. Since 2008, it became a common monetary tool for the major central banks.¹

When there is an abnormal situation on the economy, like when interest rate are close to zero, there is a value added if central bankers make a clear communication so that the economic agents are sure about the policy's aim. At or close to the ZLB, forward guidance decreases the long term nominal interest rates and increases inflation expectations affecting long term real yields. In addition, it can convince the markets that low interest rates will be kept for a longer period flattening the yield curve, supporting other asset prices and raising expectations of economic recovery.

In order to be a successful tool, the announcement has to be credible, i.e. central banks have to commit to what was announced to obtain a higher impact. On the other hand, the impact of the forward guidance also depends on the clarity of the message in a way that the public fully understands the aim of the policy.

Moreover, this policy tool faces also challenges. Forward guidance, if misinterpreted, can have contractionary effects on the economy as it can, instead, give the signal about a future negative economic outlook.

Filardo and Hofmann (2014) present evidence that forward guidance has been a successful tool to shape markets expectations by clarifying the intention of unusual

¹ See also Filardo & Hofmann (2014) for futher details about forward guidance.

policy decisions and then, lowering the volatility about future path of policy rates. In addition, they found evidence that for the United States, futures rates and long term bond yields decreased on most announcement days. However, the results were unclear about the effects on the level of interest rate expectations and on the responsiveness of financial markets to news.

Given the scenario that major central banks were facing, forward guidance has served as tool for central bankers to ensure to the market participants their commitment to preserve the accommodative policy while the economy remain slow.

2.2 Credit Easing

Credit easing consists on manipulating the composition on the central bank's balance sheet focusing on asset side in order to affect the relative prices of assets and then affect the real economy.

The key difference between this tool and QE, it that the objective is not to increase the central bank's balance sheet but to change the composition of assets.

Bernanke (2009) classifies the credit easing into the following:

- (i) Direct provision of liquidity to financial institutions, acting as a lender of last resort.
- (ii) Direct provision of liquidity to borrowers and investors in key credit markets.
- (iii) The purchase of longer term securities.

Following the previous, credit easing changes the combination of the assets hold by the central banks and its risk profile in a way to target specific markets in troubles. Additionally, credit easing can help to reduce credit market spreads and improve private credit markets.

Major central banks have implemented this tool on its three different versions. Since the beginning of the crisis, the Fed provided liquidity to specific credit markets and institutions as well as disclosed lending operations to financial institutions.

In the case of ECB, even earlier than the Fed, this central bank provided liquidity to the European banking system for €335 billion, since August 2007, to stimulate money markets. Later on 2009, ECB announced the Covered Bond Purchase Programme for a value of €60 billion distributed across the euro area with the

purpose of supporting a specific financial market segment important for the funding of banks and affected by the financial crisis.

On July 2012, United Kingdom started the Funding Lending Scheme where banks and building societies that increase lending to households and businesses will be able to borrow more and at lower cost. Additionally, on the last quarter of 2011, BoE announced the purchase of bonds issued by companies for £40 billion to support the raise of capital investment.

In the same line, in 2010, the BoJ introduced the Comprehensive Monetary Easing Program which included three points: (i) an interest rate between 0 and 0.1, (ii) a commitment to maintain the virtually zero interest rate on the basis of the "understanding of medium- to long-term price stability," and (iii) an Asset Purchase Program that included not only government bonds but also corporate bonds and commercial paper between other instruments.

Overall, there is a consensus that credit easing has helped boosting the economic activity, lowering the financial costs for banks and reactivating the markets.

2.3 Quantitative Easing

As the forward guidance, QE serves to affect long term interest rates. It consists on increasing the balance sheet of the central bank to broaden the liquidity of the markets more than needed, focusing on the liability side.

QE differs from the traditional monetary tool of open market operation as it increases the bank's balance sheet by expanding the reserves beyond the level required to keep the overnight rate at zero.

In line with Bernanke and Reinhart, this monetary tool affects the economy by signaling the future path of interest rates similarly to a central bank commitment. In addition, it may also affect through portfolio substitution from investors when different assets are imperfect substitutes lowering long term yield. Furthermore, it may have expansionary fiscal effects by reducing the expected value of government debt costs and thus of future tax payments.

Previous experience on these type of policies dates back on 1961 with Operation Twist on US as an initiative by Kennedy's Administration. This program consisted on changing the composition of the central bank balance sheet with the intention to flatten the treasury yield curve by selling short term government debt and buying long term government bonds and then, as consequence, reducing the spread

between long term and short term government yields. The conception of this operation arose after the US economy had been on recession for several months. The idea was that business investment and housing demand were primarily determined by longer term interest rates, while cross-currency arbitrage was primarily determined by short term interest rate differentials across countries (Alon and Swanson, 2013, pg. 1). However, Operation Twist wanted to prevent gold outflows and US economy was not under the ZLB.

In contrast, another case of this policy was implemented in Japan from 2001 until 2006. During this period, BoJ adopted QE under the ZLB scenario with the aim of bringing liquidity into the economy. Before the adoption of this policy, this economy had been already with zero interest rates since 1999. Within just two years, the BoJ increased its monetary base by roughly 60% (Andolfatto & Li, 2013, pg. 1).

The experience of QE for UK during the crisis started 2009 with the Asset Purchase Program consisting on the purchase mainly on conventional bonds with residual maturity between five and 25 years. Between March 2009 and January 2010, BoE purchased over £200 billion of gilts. Joyce et. al. (2011) found empirical evidence that UK's QE policy decreased gilt yields by around 100 basis points. During the next years, this programme was extended.

Also, the ECB also launched QE programmes like Covered Bond Purchase Program for a value of €60 billion and Security Market Program to ensure depth and liquidity on sovereign paper.

Table 2.1 summarizes the selected UMP applied by the major central banks since the start of the crisis.

Table 2.1: Selected UMP by major central banks

Date	Country	UMP	Announcement
09.08.2007	Europe	CE	€335 billion liquidity provision to the banking system to stimulate money markets.
25.11.2008	US	QE	Intention to start LSAP-I.
01.12.2008	US	QE	Potential purchase of Treasury securities.
16.12.2008	US	FG	Anticipation of low levels of federal funds rate for some time.
18.03.2009	US	QE	Start of LSAP-I (US\$300 billion over the next six months).
03.05.2009	UK	QE	Asset Purchase Program (APP1) program consisting on the purchase £75 billion of assets.
08.05.2009	Europe	QE	Announcement of the Covered Bond Purchase Program for a value of €60 billion.
09.05.2010	Europe	QE	Security Market Program to ensure depth and liquidity on sovereign paper.
21.05.2010	Japan	CE	Fund provisioning measure to support economic growth.
05.10.2010	Japan	FG	The Bank will maintain the virtually zero interest rate policy until it judges.
		QE	Announcement of the Comprehensive Monetary Easing program for JPY\$76 trillion.
10.08.2010	US	QE	Announcement of the intention of LSAP-II.
09.08.2011	US	FG	Anticipation of low levels of federal funds rate for at least through mid-2013.
21.09.2011	US	CE	Start of the Maturity Extension Program (MEP) for US\$400 billion.
06.10.2011	UK	QE	APP2 program expanding asset purchase by £75 billion.
25.01.2012	US	FG	Anticipation of low levels of federal funds rate for at least through late 2014.
20.06.2012	US	CE	Continuation of the MEP until end of 2012.
12.07.2012	UK	CE	Implementation of the Funding Lending Scheme (FLS) to stimulate credit to private sector.
06.09.2012	Europe	QE	Initiation of the Outright Monetary Transactions.
13.09.2012	US	FG	Anticipation of low levels of federal funds rate for at least through mid-2015.
		QE	Announcement of LSAP-III.
30.10.2012	Japan	CE	Fund provisioning measure to support bank

Date	Country	UMP	Announcement
			lending.
12.12.2012	US	FG QE	Target range for the federal funds rate will be maintained close to zero until targets are met. Increase of LSAP-III to US\$85 billion per month.
04.04.2013	Japan	FG QE	Announcement that inflation target rate will be met in over about two years. Quantitative and Qualitative Easing to increase monetary base to JPY 70 trillion annually.
19.06.2013	US	FG	Intention to start tapering asset purchases later on the year and to end LSAP-III by mid-2014.
04.07.13	Europe	FG	Anticipation that the key ECB interest rates will remain at present or lower levels for an extended period of time.
07.08.13	UK	FG	Asset Purchase Facility (APF) will continue until economic targets are met.
18.12.13	US	QE Exiting	Announcement of the beginning of the tapering on January.
12.02.14	UK	FG	Intention to maintain the stock of purchased assets until interest rate is increased.
18.02.14	Japan	CE	Extension and Enhancement of the Stimulating Bank Lending Facility.
19.03.14	US	FG	Announcement that interest rates will be kept in zero even if employment inflation are close to targets.
05.06.14	Europe	QE	Conduction of a series of targeted longer-term refinancing operations (TLTROs) to improve bank lending.
04.09.14	Europe	QE	Announcement of ABS purchase programme (ABSPP) and the third covered bond purchase programme (CBPP3).
29.10.14	US	QE Exiting	Fed concludes its asset purchase program.
31.10.14	Japan	CE and QE	Expansion of the Quantitative and Qualitative Monetary Easing.

Source: local central banks and IMF.

Since the last financial crisis, different major central banks adopted UMP. These, not only helped the economies domestically but also externally raising the topic about international spillovers. On the countries of origin, these policies helped to boost the economy and to alleviate the markets. However, externally, it is not clear the grade and direction of the impact of these policies pointing out the need of further understanding of the transmission channels in order to mitigate any negative effect.

Next chapter, introduces the term of international spillover and presents the different transmission channels of potential spillover effects of monetary policy to the rest of the countries. In addition, main literature review about UMP spillovers is included, dividing the studies into two groups to distinguish between the different approaches.

3 Review of Literature on Spillovers from UMP

Monetary spillovers from major central banks generated the discussion between policy makers from EMEs about the alternatives to stabilize their effects. Generally, EMEs supported the “emergency” actions taken by major central banks. Though, the challenges arise when trying to estimate the spillover effects and possible adjustment mechanisms.

According to Chen et al. (2014), there are two conventional views about the international spillovers of advanced economies. The first one establishes that UMP are planned to address domestic contingencies so that spillover effects are unintended externalities and thus, the impact should be evaluated in the countries of origin. This view is based on Mundell-Fleming model with uncovered interest rate parity. If a major economy decreases global interest rates as a consequence of an expansionary monetary policy, the open economy can use its policy tools to limit the fall on interest rates causing currency appreciation. Consequently, the small economy will finish with interest rate similar to the one of the major economy; contrary to the Trilemma which states that the impossibility to have more than two of the following: floating exchange rates, free capital movements and independent monetary policy. Hence, there should not be intervention on capital markets not international cooperation on monetary policy.

Conversely, the second view, considers that the UMP conducted by major economies have significant impact on EMEs recognizing the spillovers from monetary policies. This second view has been supported mostly by policy makers and central bankers from the affected economies, mainly EMEs, as these monetary tool have played a role on determining their monetary conditions.

A spillover occurs when the quantities of assets, prices of assets and/or endogenous policy responses are affected due to external monetary policy (Caruana, 2013). The size of the effects may differ across countries depending on the strength of the transmission channels (Chen et al., 2014, pg. 6). The ECB defines a transmission mechanism of monetary policy as a process through which monetary policy decisions affect the economy in general and the price levels in particular.

Current spillovers are not one moment shocks but can continue for several years (St. John et. al.). The conjecture from stylized observations suggests that the QE by the Fed was followed by periods of capital flow surges, sustained increases in equity and house prices, appreciation of exchange rates, strong credit expansion and declining yield spreads in EMEs (Sheair et. Al, 2013, pg. 5).

Takáts and Vela (2014) describe five channels of international spillovers to EMEs: *(i)* short term policy rate, *(ii)* long term interest rates, *(iii)* exchange rate, *(iv)* international bank lending and *(v)* market risk-taking or portfolio flows.

The first channel of transmission consists on a co-movement of policy rates or follow-the-leader behavior when setting domestic short term interest rates. As discussed by Caruana, the reasons for this behavior vary. It may be either an issue of currency appreciation or a threat of capital inflows via the banking system. Under fixed exchange rate regimes, the link between their policies with the ones of major economies is direct and automatic while full floating exchange rate regimes might help to mitigate these external effects.

Taylor (2013) argues that EMEs may follow advanced economies in lowering rates because currency appreciation has an immediate negative effect on output, while the favourable trade effect from higher growth in advanced economies comes with a lag. Other considerations may also play a role (as cited in Mohanti, 2014, pg.5). However, the linkages may still appear because of the lack of capital controls. For instance, there can be another factors that both EMEs and advanced economies consider when setting short term rates and ultimately, it is their decision.

The second channel operates through portfolio investment decisions and global bond markets integration. These effects occur when investors turn to EMEs to purchase assets with same maturity and higher interest rates as a response to lower bond yields of advanced economies. This boosts asset prices, lowers interest rates and eases financial conditions on the emerging economies (Chen et al., 2014, pg. 6).

The long term interest rate channel can be explained as a consequence of the reduction of domestic yields forcing investors to look for assets with better returns, usually in EMEs. Thus, the freer capital markets are and the greater the substitutability between long term bonds of major economies and those of EMEs, the stronger is the expected impact (Takáts and Vela, 2014, pg.31). Central bankers have agreed that long term rates need to have greater attention. They stated that long term rates should not be seen anymore as the average of future short term rates given their

importance for government financing and corporate funding.² Yet, the fact that US dollar is considered a reserve currency, gives to the Fed the power to influence the size and direction of capital flows to the rest of the countries.

In an open economy, the third transmission channel is the most common. Under the exchange rate channel, UMP may appreciate domestic currencies caused by the fall on external interest rates. The grade of impact will depend on the grade of flexibility of exchange rate regime. In the case of Latin-America, we should also take into account the dollarized countries such as Ecuador, Panama and El Salvador. As proposed by Chen et al. (2014), when the UMP is prolonged for an extended period, EMEs could be affected by persistent currency appreciation. Moreover, it could bring excessive accumulation of reserves when currencies are pegged to the major economy currency. Therefore, steralization is needed to avoid increase domestic money and credit.

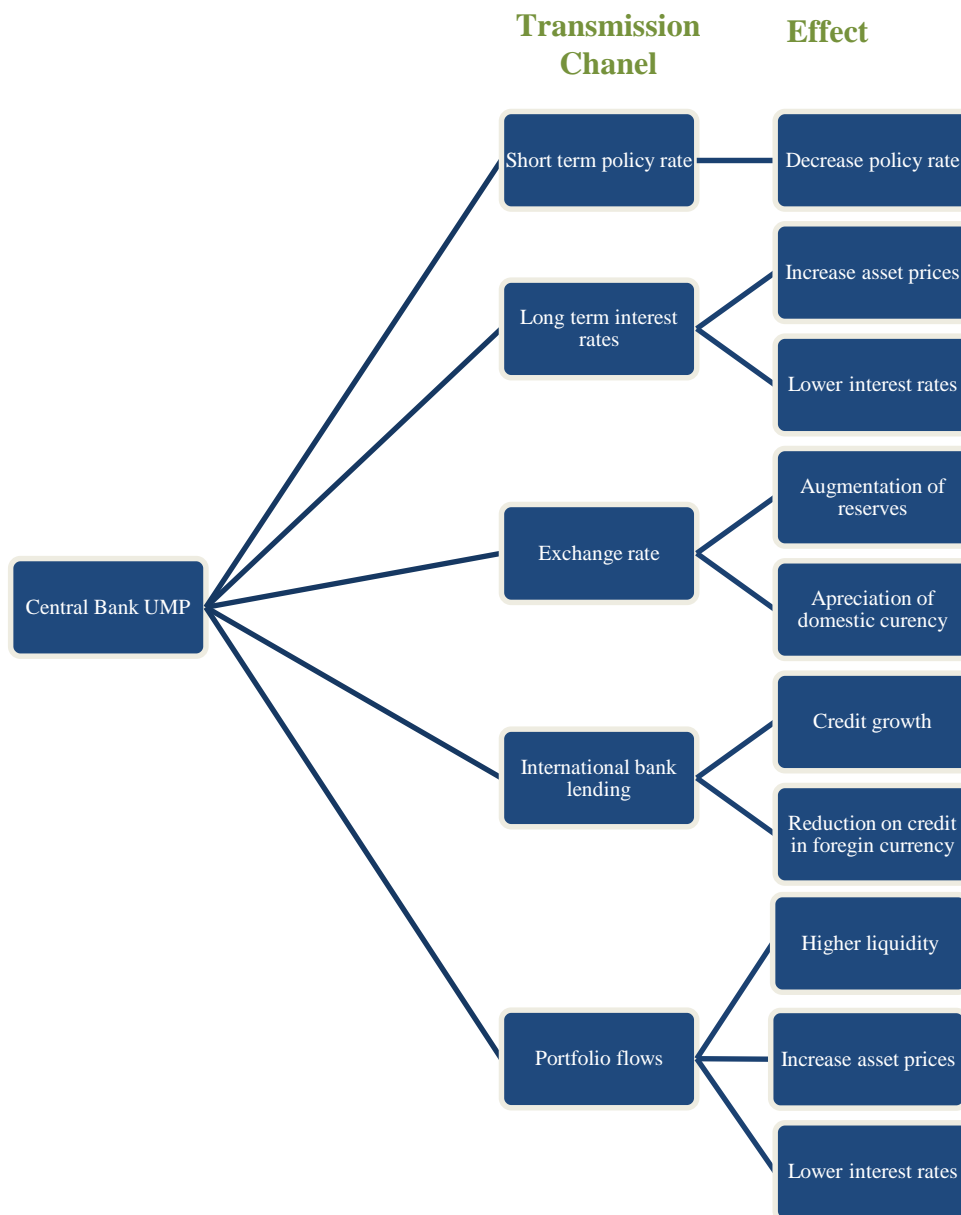
The fourth transmission channel consists on the reduction of credit growth of foreign currency debt on non-UMP countries. When monetary policy is accomodative in major economies, there are incentives to borrow on those currencies caused by cheaper borrowing costs and expected appreciation of non-UMP currencies. In addition, given that EMEs receive indirectly more liquidity, this encourages banks to increase bank lending in presence of more liquid assets.

The fifth channel, portfolio flows, works through the global financial markets and is driven by liquidity, prices, investor sentiment and market risk-taking. UMP can steer capital flows to EMEs if market participants expect extended periods of higher liquidity and interest rates diffenrentials relatively to EMEs. Through this channel, investor sentiment and low risk premiums are restored by the used of the monetary policy as signal the level of commitment from the monetary authorities to boost the economy. Hence, the expectations of low interest rates for a prolonged period creates incentives for investors to look for better yields into more “attractive” markets, like EMEs.

Figure 3.1 represents the five channels of transmissions with the expected effects on linked economies.

² BIS opinion questionnaire to central banks about the importance of different spillover effects contained in Mohanti (2014).

Figure 3.1: UMP Transmission Channels



Source: author's creation.

Monetary policy authorities at EMEs have externalized their difficulties to preserve financial stability and their internal monetary goals in the same time. Special attention has arisen on the possible reversal effects after the start of exiting measures.

Mohanti (2014) discusses about central banks views concerning the relative importance of different spillover effects obtained by a BIS questionnaire to central bankers. He concludes that there is a convergence on the views among central bankers that advanced economies monetary policy is transmitted to EMEs mainly through the policy rate, long-term interest rate, the exchange rate and portfolio flows. In addition, several central banks suggest that commodity prices, international credit conditions and inflation expectations can also be affected by advanced economies monetary policy. Moreover, they also point out that capital flows channel has taken a bigger importance since the announcement of the tapering by Fed on May 2013. Finally, central bankers suggested that the particularities of each country determines the transmission of the shocks.

According to Bayoumi, the increase of policy spillovers may have been induced by the fact that the long term spread, i.e. long term yields, are the target under the scenario of interest rates close to zero given the importance of international bond and equity market investors.

Spillovers can take different forms on the affected economies and most of them, are expected to be beneficial in view that the monetary policies are implemented with the aim to boost the economy in the countries of origin. Yet, EMEs can be negatively affected in some areas and hence, actions must be taken in response. Some of the affected countries have responded by capital controls to limit or reduce capital inflows and macro prudential policies.

The implementation of monetary policy requires countries of origin to take into account both the objectives and responses of other economies when determining their own policies. Therefore, reinforcement of cooperation between policy makers is necessary. Understanding of monetary policy transmission helps external monetary policy makers to recognize how these policies will affect the economy and to establish measures to mitigate the negative consequences.

Literature studying the effects of the measures implemented by major central banks arose since the beginning of the crisis. Earlier researches on these type of policy were mainly based on previous experience from Operation Twist on 1961-1964 during Kennedy Administration and QE in Japan back from 2001 until 2006 after facing several years of deflation.

Recent experience on UMP by central banks has opened the opportunity of new literature regarding the effectiveness of these policies. First studies were focused on the domestic impact of QE after announcement days. Nevertheless, literature about the international spillovers commenced once foreign policy makers warned of the possible unintended negative consequences. As a result of the implementation of UMP from major advanced economies, several economists call the attention about the different effects that these policies had not only domestically but globally.

The empirical evidence about the international effects of UMP has been focused on the short term effects rather than long term effects given the brief length time from the implementation of the policies when the studies were done and the data availability. In addition, when taking into account just pre-crisis studies, results might not be accurate as transmission channels may have evolved in the last years.

Mostly, event studies approach is used to assess the short term effects of the announcements of such policies. On the other hand, when studying the long term effects, impulse response techniques based on different types of Vector Autoregressive (VAR) are more commonly applied.³

Next sections provide a discussion about main empirical studies on cross-border effects of UMP. To have a better understanding of the goals and methodologies, the sections are divided by short term and medium-long term approaches.

3.1 Short Term Approach

The study of the short term effects has the majority of the literature regarding UMP. The main reason for this is data availability. Plus, long term effects from the implementation had not visualized yet.

When measuring the effectiveness and global spillover effects of major central banks, the literature focuses on high frequency data carrying out event studies. Event studies method is used to capture the relevance of a particular event by measuring the difference between the reactions during normal circumstances and when the event occurred.

The size of the window is a key element for this type of analysis as it isolates the data from other events that might have happened close to the event under study.

³ See Appendix A for the summary of empirical studies on UMP.

Therefore, short windows are more preferred to minimize the potential contamination of another information.

Bayoumi and Vitek (2013) proposed this methodology as an attractive method to calibrate market reactions to particular policy announcements. They analyzed the international bond market spillover effects of QE and fiscal policy announcements to advanced economies and EMEs. The model was applied using two days window during 2009 and 2010 and exploring the long term interest rate transmission channel. They used key dates of US policy and fiscal announcements and assumed that any deviation of a “typical” reaction on the markets was an effect of that policy. The results from Bayoumi and Vitek show that financial market reactions vary depending on the circumstances. Particularly, QE1 led to a larger than typical fall in foreign bond yields and had a major boost to the debilitated economy. In contrast, QE2 had a smaller than usual spillover to most of the regions shadowed by the expectations and visible but weak economic recovery. Alike, fiscal policies stimulus from 2009 had a more favorable spillovers than those from 2011. In 2009, fiscal policies were seen positive for the financial markets while in 2010, market participants perceived these policies questionable given the high levels US government debt.

Following the same type of studies, Chen et al. (2011) investigated the cross-border impact of QE announcements on EMEs by the application of event studies. They used two days window as a way to calibrate opening and closing times of emerging markets and estimated the cumulative two days impact of major financial indicators across emerging financial markets. Findings reveal expansionary cross border effects of US monetary policy to EMEs. Likewise to Bayoumi and Vitek, Chen et al. results indicate that QE1 spillovers were stronger than QE2 and differed between economies. In the short run, QE lowered EM Asian bond yields, boosted asset prices globally and helped stabilize the financial markets following the crisis. In addition, yield curves shifted downwards with higher decline on long term yields on QE1 by almost 80 basis points than QE2 that moved down yields by 9 basis points reducing government and corporate spreads. Finally, they conclude that one of the reasons QE1 had stronger effects than QE2 was that Fed made a clear message about its support to the private sector on the US.

Neely (2011) also studies the international effects of LSAP announcements from the Fed on international long term bond yields and exchange rate using event studies with intraday and daily windows from the period of 2008 to 2010. To measure the size effect of LSAP announcements, he compares LSAP reactions to the historical distributions of two day asset price changes and with FOMC announcements that

contain no information about the LSAP. Neely finds that LSAP announcements reduced both international long term bond yields and the spot value of the dollar mainly after the announcement took place as reflection of an expected weaker growth for several years. This caused a higher demand for safe assets increasing the effect on US bond yields but mitigating the exchange rate effects. Finally, he concludes that the success of LSAP demonstrates that central banks are not powerless under the scenario of ZLB but also that the effects include international channels suggesting international coordination.

Furthermore, Glick and Leduc (2013) examine the surprise effect of conventional and unconventional monetary policy on the exchange rate relying event studies with intraday windows for the period from November 2008 until January 2013. The results suggest that the dollar depreciated significantly after both conventional and unconventional monetary policy surprises and have the same bang per surprise on the value of the dollar for about 6 basis points change per unit surprise. In contrast, the response of the US net exports was less than in the past given the greater global uncertainty.

The forward guidance spillover effects from four of the major central banks are addressed by Filardo and Hoffman (2014) using event studies with one day window from 2008 to 2014 focusing on the effects to the level of volatility of interest rate expectations and the sensitivity of market economic news. Evidence indicates that forward guidance enabled lower volatility of near-term expectations of the future path of policy rates but effects are less clear on the level of interest rate expectations and on the responsiveness of financial markets to news. In general, forward guidance has helped to shape market expectations on the short term but beyond the near term it is not clear whether it provides further stimulus. Additionally, forward guidance can expose central banks to financial stability risk or potential reputation risks if guidance is revised frequently and substantially.

On the same line, Neely and Baouer (2013) explored the spillovers of signaling and portfolio balancing of LSAP employing event studies and dynamic term structure models with daily data from 2008 until 2012 to measure the impact to yields to US, Canada, Japan, Germany and Australia. For the event study approach they considered the changes in assets prices and compared with past sensitivity to conventional monetary policy and covariance of foreign bond returns to the US ones. The later approach is used to decompose the changes in government bond yields on the announcement dates into expectations and term premium components. Their work shows that both signaling channel and portfolio balance channel contributed to the

decline on bond yields. Signaling effects tend to be large for countries with strong yield responses to conventional US monetary policy surprises and portfolio balance effects depend on the degree of substitutability between international bonds, similar to the interest rate dynamic during normal times. Furthermore, international effects of LSAP programs on foreign yields are consistent with past sensitivity of US conventional monetary policy and covariance of foreign and US bond returns.

Different approaches were performed by Moore et al. (2013) and Fratzscher et al. (2013). Moore et al. employed a panel analysis of EMEs on spillovers of LSAP announcements with quarterly data from 2004 to 2010. Specifically, whether UMP influenced capital outflows from the US to EMEs and the degree of pass-through from US long term bond yields to those from EMEs. The empirical evidence indicates that LSAPs increased portfolio flows into many emerging market economies, i.e. estimates suggest that 10 basis points reduction on US Treasury yields results 0.4 percentage point increase in foreign ownership share of emerging market debt and reduced government bond yields in EMEs about 1.7 basis points. In addition, a VAR model was run as a robustness check, finding similar results.

Fratzscher et al. measured the spillovers by benchmark model using daily data from January 2007 to December 2010. They analyzed different types UMP, such as liquidity operations, purchases of MBS and US Treasuries, to see why QE1 and QE2 had different effects on the US and foreign markets. They concluded that LSAP-I was successful on increasing bond and equity prices and led to U.S. dollar appreciation. On the other hand, LSAP-II boosted equity prices worldwide and led to US dollar depreciation. Plus, capital flows to EMEs were procyclical to Fed policies and counter-cyclical to the US. QE1 boosted equity and bond prices, especially in the US, appreciated the US dollar and triggered portfolio rebalancing out on EMEs into US, while the opposite during QE2.

Overall, studies on the short term effects found international spillovers of UMP to advanced and emerging economies. In general, conclusions about short term effects indicate immediate increase of asset prices and decrease of interest rates and, therefore contribution to better global liquidity conditions.

3.2 Medium - Long Term Approach

The medium and long term approaches have not been addressed deeply yet. Nevertheless, main researches employ Vector Autoregressive (VAR) models to measure the real effects of UMP domestically and cross-border.

Spillover effects of UMP on exchange rates and assets prices on EMEs are studied by Chinn (2013) using a VAR model with monthly data from September 2008 to March 2013. He concludes that the implementation of UMP measures may introduce more volatility into global markets. But, in general it will also support global rebalancing by encouraging emerging market currency revaluation. Additionally, the effectiveness of the measures depends on the state of the economy and financial markets, pointing out the different effects between QE1 and QE2. Even though, UMP put upward pressures to currencies on economies with near full employment and-or current account surpluses and almost no coordination between the countries, the application of the policies were beneficial to the global economy.

Tillman (2014) explores the spillover effects of US QE to EMEs using Qual VAR with monthly data from August 2007 to March 2013. The Qual VAR integrated binary information of QE announcements dates with a standard VAR with US and EMEs variables. His findings indicate that unexpected increase in Fed's propensity to undertake QE increases highly EMEs' capital flows, bond prices, equity prices and exchange rates suggesting that QE has strong effects on EMEs financial conditions. Furthermore, QE1 effects were limited on emerging markets, while QE2 and QE3 explain a substantial fraction of emerging market variables.

Another study on cross-border effects on QE announcements to EMEs in line with VAR methodology is done by Chen et al. (2011). They used a Global Vector Error Correction Model (Global VECM) with main focus in Asian countries and Latin-American countries. They captured the UMP shocks by the reduction in the US term spreads between 10 year and three month Treasury yields and examine the effect of those on real and financial variables in both advanced and emerging economies using various channels of transmission. The analysis suggests spillover effects in the short and medium term. Results reveal differed international spillover across countries. The effects on EMEs were stronger and more diverse than on advanced economies. The impact on the US and for some EMEs had opposite signs pointing out that benefits and costs of these policies were not distributed evenly. They suggest that the differences in the responses may be a reflection of differences across economies suggesting different adjustment mechanisms to react to US UMP.

Moreover, Chen et. al. actualized their previous study on 2014. On this, they added US corporate spread and market volatility as monetary policy indicators. They focused their analysis on pre-crisis and crisis samples pointing out the possibility of inaccurate results given the data length. The analysis results based on Global VECM model suggest that reductions in US corporate spreads and market volatility had impact domestically and internationally. In addition, impulse responses reveal differences between economies in how each endogenous variable evolves and the response on monetary policy and exchange rate is more diverse on emerging economies. Moreover, the impact of US stimulus on the US economy and on some emerging economies actually have opposite signs, suggesting that benefits and costs have not been distributed evenly and by far there was greater impact on most emerging economies.

Even though there is a consensus that UMP alleviated the global economy, there is an intense focus on the spillover effects to the rest of the countries. The study of the spillovers effects of UMP helps not only to measure the effectiveness of the policies but also to understand the possible path of such consequences so that policy makers can stablish actions to mitigate potential costs. Although, literature analyzing spillovers is increasing and improving, there is little agreement in the size of the effect and sometimes even in direction. Yet, there is still wide space for more investigation as data sample is still not large enough and some long term effects are not yet visible.

Next chapter presents the study of the medium and long term effects of UMP based on the Chen et al. work. This thesis differs from other studies as it takes special attention on EMEs in Latin-American countries and considers spillover effects not only from United States but also from United Kingdom, Japan and Europe. Moreover, it brings extra results as data sample is more extensive compared to most of the literature which is mainly focused on short term effects and with limited data set. Particularly, for Chen et. al. ending on February 2013 while on our case on May 2014. However, these results should be taken cautiously as the sample is still not large enough.

4 The Impact of UMP to Latin-American Countries

In this thesis, Global VAR methodology is utilized to model the potential medium-long term spillover effects from major central banks to Latin-American countries. Consequently, impulse responses are computed to the UMP shocks on output, inflation, credit, equity prices and monetary policy indicator following Chen et. al. work.

Global VAR is a useful technique for global macroeconomic modelling as it provides a framework for the quantitative analysis of the relative importance of different shocks and channels of transmission mechanism (Smith and Galesi, 2014, pg. 3). Moreover, this methodology helps to capture the long and variable lags that characterized monetary policy.

Next sections will describe with detail the methodology for modeling the Global VAR and data use for the analysis.

4.1 Methodology

Global VAR model is a macroeconomic framework to address how foreign variables influence a domestic economy and how this economy affects abroad. Global VAR was introduced by Pesaran, Schuermann and Weiner (2004) to capture the linkages between countries or regions due to a country specific shock, i.e. to represent the interactions among economies.

Under Global VAR, each country is modeled individually by a VAR treating foreign and global variables as exogenous, i.e. VARX model. The main feature of the model is that for each country model weak exogeneity is assumed for foreign and global variables. After the estimation of the partial system, the results are connected through a link matrix or global vector so that the global model can be built.

In order to summarize the general structure of the Global VAR, assume $N+1$ economies in the world ($i = 1, 2, \dots, N$).

Table 4.1: Countries Included in the Global VAR model

Countries/Region with Major Central Banks	Countries in Latin-America
United States	Argentina
	Bolivia
United Kingdom	Brazil
	Chile
Japan	Colombia
	Costa Rica
Europe	Ecuador
	El Salvador
	Guatemala
	Honduras
	Mexico,
	Nicaragua
	Panama
	Paraguay
	Peru
	Uruguay

Source: author's computations.

The main idea of the estimated Global VAR model was to capture spillover effects for the whole Latin-America region. Therefore, the countries included are selected according data availability in order to get the maximum number of countries.

Each country i is represented by a cointegrated VARX (p_i, q_i):

$$y_{it} = a_{i0} + a_{i1}t + \sum_{i=1}^{p_i} \theta_{i0} y_{i,t-1} + \sum_{i=0}^{q_i} \beta_{i0} y_{it}^* + \sum_{i=0}^{r_i} \gamma_i d_t + u_{it} \quad (4.1)$$

y_{it} : $k_i \times 1$ vector of the country specific variables

$y_{i,t}^*$: $k_i \times 1$ vector of country specific foreign variables

so that,

$$y_{it}^* = \sum_{j=0}^N w_{ij} y_{jt} \quad (4.2)$$

with $u_{it} \stackrel{iid}{\sim} (0, \Sigma_{ii})$

for $i = 1, 2, \dots, N$, $t = 1, \dots, T$ and $w_{ij} \geq 0$, where a_{i0} and a_{i1} are $k_i \times 1$ vectors of fixed intercepts and deterministic trends, respectively.

The vector y_{it} represents the country specific endogenous variables which include real GDP (y), inflation (cpi), credit to the private sector ($credit$), equity prices (soi), international reserves ($reserves$) and monetary policy indicator (mon) chosen to represent the five channels of transmission to EMEs described by Takáts and Vela (2014). The number of endogenous variables is not homogeneous for all the country specific VARX models due to data availability. Therefore, k_i is not same across countries.

The selected indicator for monetary policy for Latin-American was M2 growth considering that monetary authorities use monetary aggregates to achieve price stability. While, for the case of the major central banks we use the spread between short term and long term treasury yields for each country. Further discussion about the selection of this variable is given below on this chapter.

y_{it}^* vector contains the foreign specific variables and represents the influence among economies which is calculated by the weighted average w_{ij} . Exogenous variables include foreign real GDP (y^*), credit to private sector ($credit^*$), equity price (soi^*) and inflation (cpi^*). While, for the United States, United Kingdom, Japan and Europe, foreign variables are real GDP, inflation and international reserves.

The vector d_t is the set of global variables. The selected global variable common to each country is oil prices (oil). In the case of the major central bank countries, this variable is treated as endogenous as this countries are considered to be big enough to alter international prices like oil.

From the above, the set of variables for the i^{th} non-major central bank country is given by:

$$y_{it} = (y_{it}, cpi_{it}, credit_{it}, soi_{it}, reserves_{it}, mon_{it})' \quad (4.3)$$

$$y_{i,t}^* = (y_{it}^*, cpi_{it}^*, credit_{it}^*, soi_{it}^*)' \quad (4.4)$$

$$d_t = (oil_t)' \quad (4.5)$$

while for the i^{th} country with major central bank:

$$y_{it} = (y_{it}, cpi_{it}, credit_{it}, soi_{it}, reserves_{it}, mon_{it}, oil_t)' \quad (4.6)$$

$$y_{i,t}^* = (y_{it}^*, cpi_{it}^*, reserves_{it}^*)' \quad (4.7)$$

w_{ij} represents the weight of the relative importance of the economy j on i capturing the spillover effect such that $\sum_{j=0}^N w_{ij} = 1$ and $w_{ii} = 0$. Weights of w_{ij} are not estimated but constructed using data from bilateral foreign trade or capital flows (Chudik and Pesaran, 2014, pg. 5) and can be either fixed or time-varying.

For this particular model, time-varying weight matrix from bilateral trade with two years window size is used as trade linkages between countries tend to fluctuate and/or evolve. This feature is important given that commercial relationships between economies may be affected in certain period of time and, therefore, economic linkages also.

The country level trade shares are constructed by dividing the total trade of each country i by the amount of trade with country j , such that the sum of all i shares is one (Smith and Galesi, GVAR Toolbox 2.0. User Guide, 2014, pg. 124). When a country does not have data for a variable, the weight for that country is set to zero for the construction of the foreign specific variables and the weights for the rest of the countries are re-adjusted so that the sum of all weights is one. For further detail, see electronic version.

u_{it} represents the idiosyncratic shocks which are weakly correlated across countries, following:

$$E(u_{it}u'_{jt'}) = \begin{cases} \sum_{ij} & \text{for } t = t' \\ 0 & \text{for } t \neq t' \end{cases} \quad (4.8)$$

where $\sum_{ij} = Cov(u_{it}, u_{ij}) = E(u_{it}u'_{jt})$, for $i \neq j$

Then, (4.8) shows that the Global VAR model allows correlation of domestic variables (y_{it}) with foreign variables (y_{it}^*) and with their lags, correlation of domestic variables y_{it} with global variables (d_t) and their lags, and contemporaneous dependence of shocks in country i on the shocks of country j (Galesi and Lombardi, 2009, pg.12).

Before running the individual VARX models, all domestic, foreign and global variables have to be tested to see if they are I(1). Therefore, Augmented Dickey Fuller unit root test (ADF) and weighted symmetric estimation of ADF (WS) are implemented. Both statistics are based on AR(p) models in levels, where p is chosen according to Akaike information criterion (AIC) with maximum lag order of 3 and null hypothesis there is a unit root.

ADF test is the commonly used estimation method for unit root in time series. The second approach, WS test, exploits the time reversibility of stationary autoregressive processes in order to increase their power performance (Smith and Galesi, GVAR Toolbox 2.0. User Guide, 2014, pg. 126). Appendix D shows test results which indicates that most of the series are I(1) at 95% confidence level.

The country specific VARX model is estimated individually using OLS, assuming foreign specific ($y_{i,t}^*$) and global variables (d_t) as weakly exogenous I(1) or long forcing with respect the parameter of the VARX model and considering possible cointegration between y_{it} and across y_{it} and y_{it}^* . The weak exogeneity assumption in the context of cointegrating models implies no long run feedback from y_{it} to y_{it}^* , without necessarily ruling out lagged short run feedback between the two sets of variables (Smith and Galesi, 2014, pg. 132).

Lag order for both domestic (p_i) and foreign (q_i) specific variables are chosen according information criteria Akaike and Schwartz and can differ across countries. The maximum lag order was set to three due to data limitations (233 observations for full sample, 145 observations for pre-crisis sample and 89 for crisis sample). For some particular models, this maximum lag order was moved to four for the major economies in order to get a stable model. Furthermore, for each VARX model an additional condition was incorporated where $p_i \geq q_i$ for better dynamics of the model.

After having tested for unit root for all the variables, the cointegrating VARX model for each country is estimated subject to a reduced rank restriction and considering the possibility of cointegration between domestic and foreign variables. The final rank order selection was determined by the trace statistic, which in small samples yields to better power results.

The cointegrating rank is derived using Johansen's trace and maximal eigenvalue statistics for models with weakly exogenous I(1) regressors. Under the trace test, the null hypothesis of r cointegrating vectors against the alternative n cointegrating vectors. While, under eigenvalue test the null hypothesis is r cointegrating vectors against $r+1$ cointegrating vectors.

Pesaran, Shin and Smith (2000) employ three options for the treatment of deterministic component:

- (i) Case II: restricted intercepts and no trend coefficients.
- (ii) Case III: unrestricted intercepts and no trend coefficients.
- (iii) Case IV: unrestricted intercepts and restricted trends coefficients.

The selection of restrictions for the intercept and trends coefficients will determine the asymptotic distribution of the trace and maximum eigenvalue statistic. The chosen treatment of deterministic components of the VARX is case IV of unrestricted intercepts and restricted trends coefficients so that the intercept is restricted to lie in the cointegrating space.

For all the cointegrating relationships, over identifying restrictions should be imposed. These restrictions were carried out for each cointegrating vector by normalization scheme for exact identification. Afterwards, the Vector Error Correction form for each VARX is estimated.

Final VARX models were chosen considering also serial correlation test results, i.e. the model that either eliminated or had the least serial correlation was selected. Rank test statistics and rank for each country VARX model are reported in appendix E and F.

After the estimation of the VARX model for each country, weak exogeneity assumption is tested for foreign and global variables using Johansen (1992) and Harbo, Johansen, Nielsen and Rahbek (1998) approach.

Weak exogeneity implies that the estimated error correction terms from each country specific VARX model do not enter into the marginal model of y_{it}^* . Then, the weak exogeneity test consists on testing the joint significance for both foreign and global country specific variables of the estimated error correction terms. Particularly, the F test of $\delta_{i,j,l}=0$, $j=1, \dots, r_i$ from (4.8):

$$\Delta y_{it,l}^* = a_{il} + \sum_{j=1}^{r_i} \delta_{i,j,l} ECM_{i,t-1}^j + \sum_{k=1}^{p_i} \rho_{i,k,l} \Delta y_{i,t-k} + \sum_{m=1}^{q_i} \mu_{i,m,l} \Delta y_{i,t-m}^* + \varepsilon_{it,l} \quad (4.9)$$

where $ECM_{i,t-1}^j$, $j=1, \dots, r_i$ are the estimated error correction terms to the r_i cointegrating ranks found on the i^{th} model and p_i^* and q_i^* are the orders of the lagged changes for the domestic and foreign variables, respectively. The lag order of the weakly exogenous regression equation is selected according to AIC criterion with a maximum lag order set up to two base on theory recommendations that lag orders should be (p_i^*-1, q_i^*-1) given that the test is done to lagged changes.

The test delivers an F statistic of the joint null hypothesis of weak exogeneity. Results are reported on appendix H and show that most of the assumptions cannot be rejected. The countries for which weak exogeneity test is rejected are relatively small; therefore, even though the assumption is rejected statistically, practically, does not appear unrealistic.

Once each VARX model is estimated and hypothesis are proved for the variables, the estimates are stacked into one through link matrices so that the Global VAR model is solved. Therefore, the model is solved for the world as a unit, even when each VARX model is estimated individually.

The solution of the model goes as follow. The individual VARX model estimations are collected to create a $k \times 1$ global vector where $k = \sum_{i=0}^N k_i$:

$$y_t = \begin{pmatrix} y_{0t} \\ y_{1t} \\ \vdots \\ y_{Nt} \end{pmatrix} \quad (4.10)$$

So that,

$$z_{it} = W_i y_t \quad (4.11)$$

for $i = 1, 2, \dots, L$ where W_i corresponds a $(k_i \times k_i^*) \times k$ vector of the defined weighting scheme.

Thus, by applying identity (4.11) into each country specific VARX model (4.1):

$$Gy_{it} = a_{i0} + a_{i1}t + \sum_{s=1}^p \theta_{is}y_{i,t-s} + \sum_{s=0}^r \gamma_s d_s + u_{it} \quad (4.12)$$

So that G is assumed to be a full rank matrix. By inverting G on equation (4.12):

$$y_{it} = G^{-1}a_{i0} + G^{-1}a_{i1}t + G^{-1}\sum_{s=1}^p \theta_{is}y_{i,t-s} + G^{-1}\sum_{s=0}^r \gamma_s d_s + G^{-1}u_{it} \quad (4.13)$$

where $p = \max \{p_i, q_i\}$, $r = \{r_i\}$ and

$$G = \begin{Bmatrix} A_0 W_0 \\ A_1 W_1 \\ \vdots \\ A_N W_N \end{Bmatrix}, H_S = \begin{Bmatrix} B_{s,0} W_0 \\ B_{s,1} W_1 \\ \vdots \\ B_{s,0} W_N \end{Bmatrix}, u_t = \begin{Bmatrix} u_{0,t} \\ u_{1,t} \\ \vdots \\ u_{N,t} \end{Bmatrix}$$

Then, global model reduced form is obtained:

$$y_t = a_0 + a_1 t + \sum_{s=1}^p \theta_s y_{t-s} + \sum_{s=0}^r \gamma_s d_s + u_t \quad (4.14)$$

Final Global VAR model specifications were chosen considering stability, i.e. no eigenvalue lies above the unit circle, convergence to zero of the persistence profiles and impulse response behavior.

In order to understand the Global VAR results, Impulse Response Analysis is employed. The Impulse Response Analysis helps to investigate the dynamic properties of the Global VAR as it is a useful tool to interpret by simulation how a country responds to a common specific shock through future states of a dynamical system.

The IRFs shows the dynamic response of each endogenous variable for each country to a one standard deviation of shock for the selected forecast horizon. Specifically, Orthogonalized Impulse Response Functions (OIRFs) were obtained for the analysis of the shock.

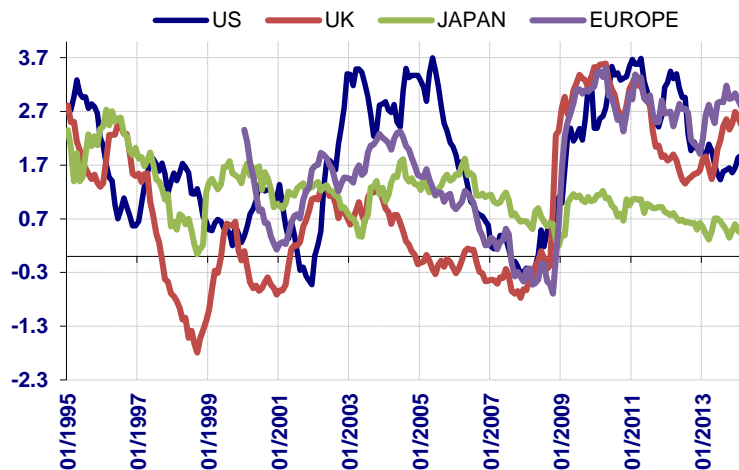
OIRFs approach allows you to identify specific shocks to the system with the particularity that the order of all the k endogenous variables and $N + 1$ countries included on the Global VAR has to be indicated. Hence, results will depend on the choice of ordering.

The selected order of endogenous variables is: output growth, inflation, monetary policy, market volatility, equity price inflation, credit growth and reserves in accordance with Chen et al. (2011) choice which is similar to VAR literature. The order of countries was selected according to their amount of GDP plus of importance on the region, starting each model with the country of the major central bank.

A key element when using VAR models for UMP is how to capture the shocks to the system. Most of the approaches have based their studies on QE shocks, therefore, this shocks have been represented mainly by changes in the central banks' balance sheets. However, the challenge is to find a single variable that can involve the different types of UMP.

For this study purposes, the monetary policy indicator for United States, United Kingdom, Japan and Europe is captured by the spread between long and short term interest rates. Particularly, the spread between 10 year and 3 months government yields.

The impulse responses are estimated to a negative shock on the monetary policy indicator for each major central bank for the full sample, pre-crisis and crisis periods. Hence, a negative shock occurs when there is a reduction on the spread of treasury yields. As short term interest rates are closed to zero on the ZLB, this decrease on the spread is basically a decrease on the long term yield. Figure 4.1 shows the behavior of this indicator for the sample period under analysis.

Figure 4.1: Treasury Spreads from Major Economies

Source: local central banks.

The use of government yields spread helps to capture the immediate reaction of the markets to the announcement of a policy so that all the UMP types can be considered covered by this variable. This approach seems plausible considering that the reduction of long term interest rates is the target of central banks at the ZLB, as discussed on section 2. In addition, corporate bond yields are a function of government bond yields plus a spread. Therefore, in some portion, this variable captures same information as it would have been chosen corporate spreads.

Gilchrist et. al. (2013) found evidence that both conventional and unconventional monetary policy affect Treasury bills spread. Particularly, conventional monetary policy steepens real yield curve but has a pronounced effect on long term real interest rate. While during UMP, the target is to flatten the yield curve causing a more pronounced effect on real long term interest rates.

Furthermore, Neely (2011) found that LSAP announcements both reduced US and international long term bond yields after the announcement took place as reflection of an expected weaker growth for several years. He estimated that, by total, US real 10 year treasury yields fell by 187 basis points during LSAP. These results were interpreted as a consequence of investors flying to “safety markets” given that LSAP announcements were understood as bad news for the whole world economy.

In addition, several researches like Moore et. al. (2013), Chen et. al. (2011), Neely (2011) and Glick and Leduc (2013) performed the study of effects from UMP captured by the changes on long term Treasury yields.

However, it is clear that this variable may involve many other information besides monetary policy as it is generally used as a predictor of economic activity. Though, it is generally accepted as a monetary policy indicator.

In addition, it is necessary to estimate the covariance matrix \sum_u of the stacked country specific residuals u_t . This covariance matrix will be used to compute the bootstrap data and estimates for the OIRFs. Particularly, it was estimated the sample covariance matrix and performed shrinkage on the correlation matrix in order to achieve non-singularity and to get a better estimator of the covariance matrix (Smith and Galesi, GVAR Toolbox 2.0. User Guide, 2014, pg. 147).

The selected forecast horizon for the OIRFs analysis was 36 periods or three years. Confidence intervals are at 68% confidence bands constructed by inverse bootstrapping with 1000 replications and standard variance-covariance matrix from residuals of the country specific models is used for the dynamic analysis. The reduction on the confidence band from the usual 90% or 95% was done with the purpose to fix possible misleading confidence intervals for impulse response obtained from the use of the bootstrap method to constructed, as suggested by Lütkepohl (2012).

In the case of the Global VAR, bootstrapping method allows to obtain:

- The empirical distribution of the persistence profiles and IRFs.
- The empirical distribution of the likelihood ratio statistic for testing over-identifying restrictions on the cointegrating vectors (Smith and Galesi, GVAR Toolbox 2.0. User Guide, 2014, pg. 147).

In order to have a better understanding of the behavior of the region, this study presents the average of the impulse response results for each variable for the selected countries on section 5.1. The comparison between sample periods impulse response graphs for each country are included on Appendix I, while the median estimates and confidence bands obtained from bootstrapping the Global VAR are presented on Appendix J.

4.2 Data Description

The estimated Global VAR model uses monthly data for the period from January 1995 to May 2014. An exception was done for the Europe model, where sample starts from January 2000 due to data availability.

Data sources include Thompson Reuters Datastream, OECD statistics, Bank of International Settlements, FRED Federal Reserve statistics and for the 16 Latin-American countries the Inter-American Development Bank. Complete detail of data sources is contained in Appendix B.

As mentioned on the methodology section 4.1, for some countries, there was not available the full set of variables or the data sample did not cover the period specified for our model. The summary of the data available for each country is shown on Table 4.2.

Table 4.2: Data Available for Each Country Included on the Global VAR Model

Country	y	credit	soi	cpi	reserves	mon
Argentina	✓	✓	✓	✓	✓	✓
Bolivia				✓		✓
Brazil		✓	✓	✓	✓	✓
Chile	✓	✓	✓	✓	✓	✓
Colombia		✓	✓	✓	✓	✓
Costa Rica	✓	✓	✓	✓	✓	✓
Ecuador	✓		✓	✓	✓	
El Salvador				✓		
Europe	✓	✓	✓	✓	✓	✓
Guatemala	✓			✓	✓	✓
Honduras		✓		✓	✓	✓
Japan	✓	✓	✓	✓	✓	✓
Mexico	✓	✓	✓	✓	✓	✓
Nicaragua	✓			✓	✓	✓
Panama			✓	✓	✓	
Paraguay	✓	✓		✓	✓	✓
Peru	✓	✓	✓	✓	✓	✓
United States	✓	✓	✓	✓	✓	✓
United Kingdom	✓	✓	✓	✓	✓	✓
Uruguay				✓	✓	✓

Source: author's computations.

In the case that a particular variable for a country was not obtained on monthly frequency, Chow-Lin interpolation (1971) was applied to expand these low frequency data into higher frequency data, i.e. monthly data. Data which was not seasonally adjusted, X-12 ARIMA model based method was used following the U.S. Census Bureau for seasonal adjustment methodology.

For variables with exponential growth i.e. real GDP, credit to private sector and equity prices, the logarithm was applied to the original series so they can be used for analysis. The rest of the variables were used at their levels.

The estimations are undertaken using the GVAR Toolbox 2.0 developed by L. Vanessa Smith and Alessandro Galesi. Three models are performed for each central bank shock for a total of 12 models:

- (i) Full sample model with data from January 1995 to May 2014.
- (ii) Pre-crisis model with data from January 1995 until December 2006.
- (iii) Crisis model with data from January 2007 until May 2014.

The results from the full sample model are considered the baseline to capture the spillover effects of UMP from major central banks. While the pre-crisis and crisis models are used to support such results and to detect whether a transmission channel suffered any transformation of behavior. However, these last two models' results should be taken cautiously given the fact that sample sizes may not be large enough, affecting the outcomes.

Based on the transmission channels explained, we can expect that policy shocks may conduct into EMEs by:

- 1) Lower domestic policy rates by co-movement of the policy rates or by herding behavior.
- 2) Higher asset prices and lower interest rates by portfolio flows depending on the substitutability between long term bonds of major economies and those of EMEs, how free the markets are and portfolio flows.
- 3) Appreciation of domestic currencies and/or augmentation on reserves depending on the exchange rate regime of each country and the grade of attachment of the currencies.

- 4) Higher bank credit and reduction of credit growth on foreign currencies as a consequence of cheaper borrowing costs and appreciation of domestic currencies.
- 5) Higher output, liquidity and inflation.

Any deviation from the expected results would indicate that the effects of the UMP is representing a cost to that particular country instead of bringing benefits. Therefore, special attention would need to be taken to that particular channel of transmission to diminish the effects.

On the next section, it is presented the discussion of the Impulse Responses Analysis' results as well as the implications of such results. Furthermore, it is also included the robustness check to verify the validity of the main results.

5 Results of the Impulse Response Analysis

This section presents the results of the impulse response analyzes of a negative shock on the spread of treasury yields from United States, United Kingdom, Japan and Europe to countries in Latin America. Figures 5.1, 5.2, 5.3 and 5.4 present the average OIRFs for Latin-American countries for each variable in order to have an analysis of the region. However, this approach may hide the differences across countries. Country specific results are presented on Appendix I while confidence bands and median estimates constructed by bootstrapping are included on Appendix J.

We start with the analysis for the OIRFs from Fed's negative shock taking into account the relative importance of the American economy in Latin-America given the strong commercial linkages. Afterwards, we continue with the analysis of BoE, BoJ and ECB. Special attention will be put on Japan as UMP was also conducted previous the recent financial crisis.

The estimated Global VAR model gave empirical evidence about the spillover effects from major central banks to Latin-American countries. From the impulse response analysis, we notice that in many cases results between the full sample and pre-crisis sample period not only differ in magnitude but also on direction. The change on direction indicates a possible transformation on the transmission of monetary policy shocks. For such cases, crisis model serves as a support for those assumptions. However, crisis model results should be taken cautiously as sample size is not large enough.

Similarly to Chen et. al. (2014), OIRFs results are different between countries and variables suggesting not only that transmission channels are not same across the region but also that the distribution of the effects of the monetary policy are not distributed equally.

Full sample models for United States and Europe as well as crisis model for Japan were not stable, ie. at least one eigen value lied above the unit circle, persistence profiles did not converge to zero and impulse response did not stabilize, even with adjustments on model specifications such as, lag orders for foreign and domestic variables and cointegration ranks. Thus, results from those models should

not be used for accurate comparison between models as there is no cointegration and therefore, the Global GVAR does not hold. However, we present the results on our impulse response graphs and consider as indicative the sign of the results.

Non-stability for the full sample models can be an indicator of possible structural change in one of the series, in a country or the system affecting the results given that the other two sample models meet the necessary conditions. For the case of the crisis model for Japan, the results may be a consequence of the short data sample.

Figure 5.1 presents the average OIRFs of the impact of US monetary policy shock to Latin America. We observe that the reduction on spread of treasury yields has a positive effect to the region for both full sample and crisis sample. Evidence shows that during the crisis, the channels with major impact were money growth, stock prices and international reserves with an average increase of 0.2%, 0.3% and US\$50 million, respectively over a period of one year.

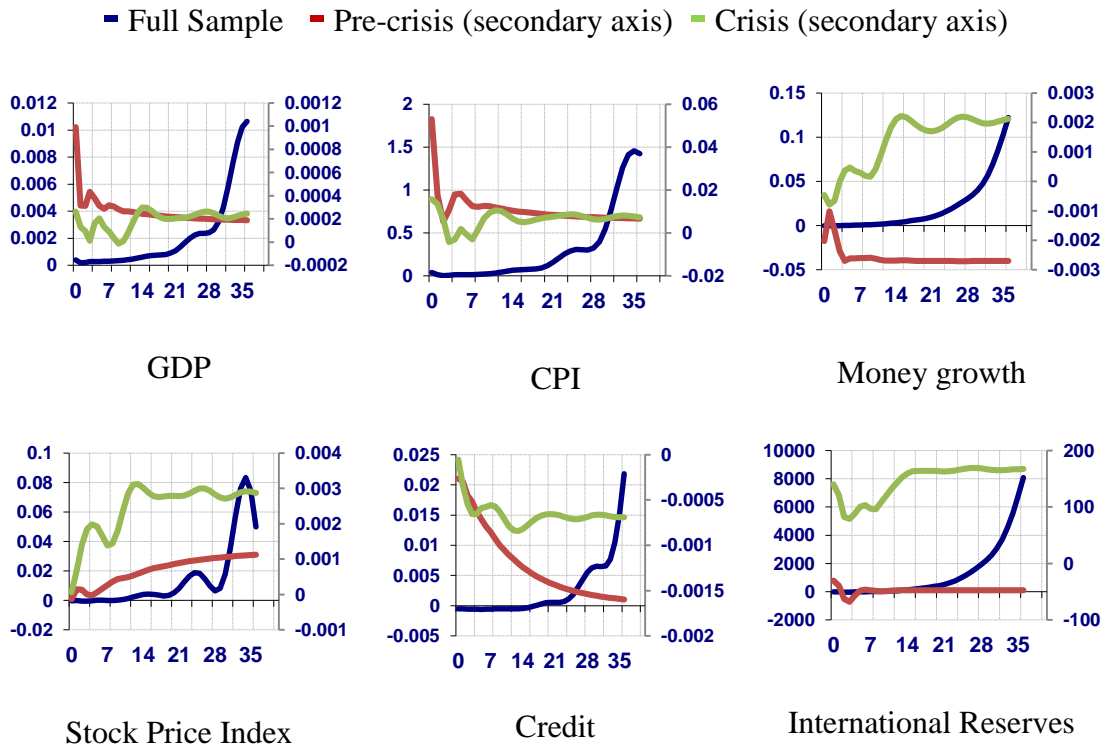
The evidence on stock prices indicates a possible flight on investment to Latin-American countries possibly caused by a negative reaction to the monetary policy as a sign of a weaker outlook for the US economy. Main countries affected were Brazil, Chile, Mexico, Argentina and Colombia which are the economies with the most developed stock exchanges in Latin-America. For Brazil and Mexico, even though results show strong positive effects, these appeared to be non-significant as a possible reflection of the capital controls applied by both economies to deal with the capital inflows.

For the case on international reserves, the positive impact signs the linkages between the currencies and the flexibility of the exchange rate regime. The increase on domestic money, in one hand, can be attributed as a consequence of the accumulation of reserves. On the other hand, may reflect the co-movements of the local policy rates to the US ones.

The relatively small impact on GDP and negative effect on inflation and credit can be attributed to the fact that the monetary policy from US was perceived as negative outlook for the economic growth of the region in the following periods given the strong commercial linkages with this country.

In contrast, the impact of the US monetary policy to Latin America during the pre-crisis period was on average relatively null to the international reserves and money growth reflecting a change on behavior on these transmission channels during the crisis.

Figure 5.1: United States 1se Negative Shock to Monetary Policy Indicator. Average Latin-American countries



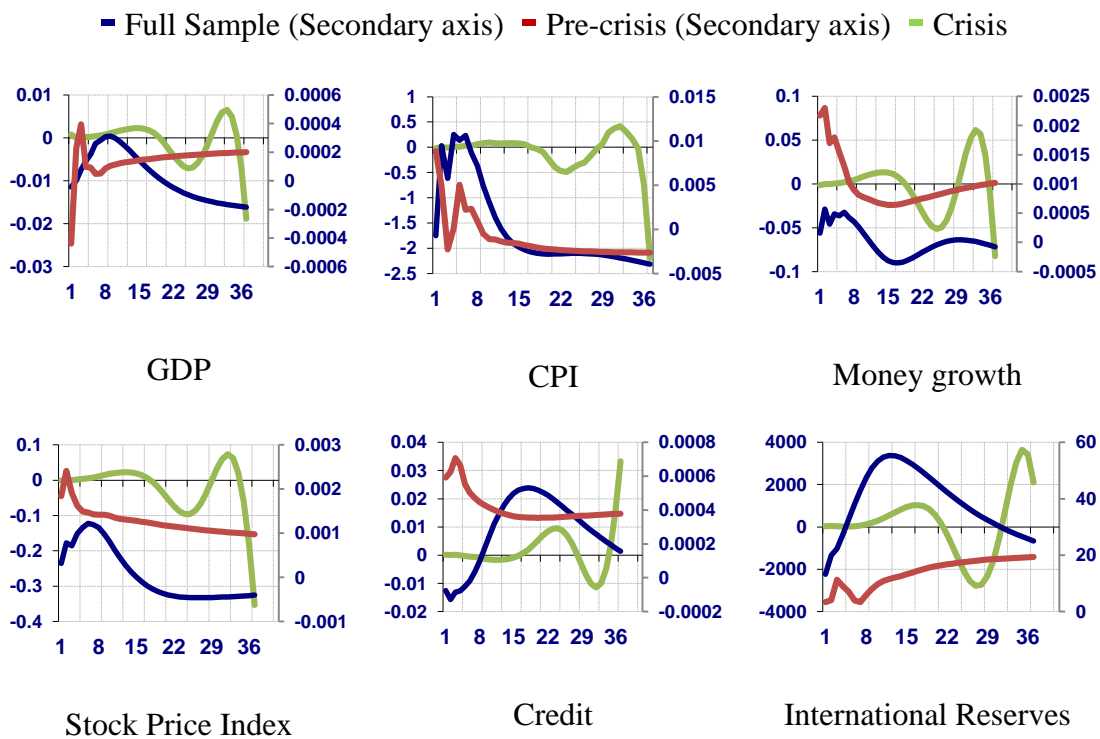
Source: author's computations.

The analysis for Japan is notable given that BoJ implemented UMP since 2001. Particularly, for this country, evidence reveals (Figure 5.2) that the shocks to the region are very limited compared to the shocks from US. As already mentioned previously, we can observe that crisis sample results are non conclusive probably because of sample size. However, full sample and pre-crisis models have in general similar results and just differences on grade of impact and timing of reaction.

A negative shock on monetary policy from BoJ had an initial immediate positive effect on the first year on all the variables for a later, overall less than initial level indicating that Japan's UMP brought more costs than benefits into the region. On average, pre-crisis model had a positive effect on real GDP and international reserves. For the rest of the variables, it is observed an initial positive stimulus to the variables for a later decline, usually lower than initial levels. Same pattern occurs for all variables for the full sample model but international reserves implying capital flows and/or currency appreciation on the region.

In addition, the reduction of treasury spreads from Japan boosted stock prices on the first six months showing that either markets in Latin-America perceived positively the monetary policy decisions from Japan or these countries received capital flows to substitute assets. In contrast to the rest of the countries, Mexico presented an sustainable increase of stock prices for 0.02% after 20 periods.

Figure 5.2: Japan 1se Negative Shock to Monetary Policy Indicator.
Average Latin-American countries



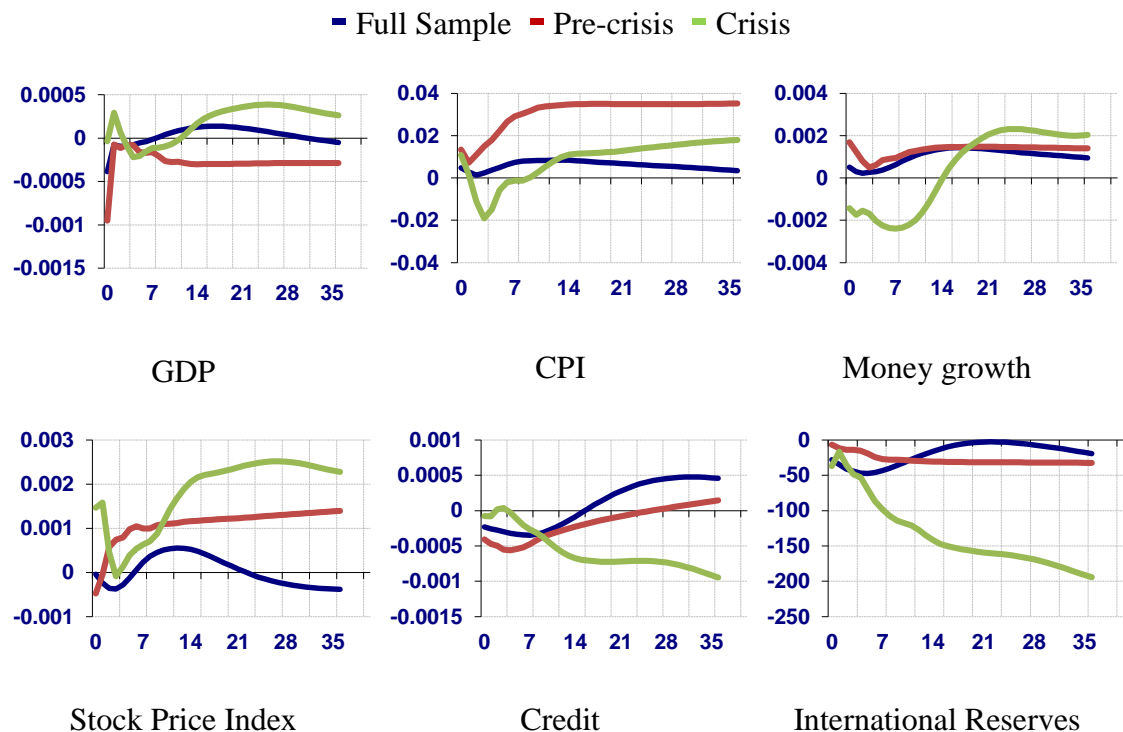
Source: author’s computations.

The impact of a negative shock of UMP from BoE is presented on Figure 5.3. On average, the impact of United Kingdom’s UMP have same sign but different magnitudes for all three sample periods where full sample results can be interpreted as the weighted average of pre-crisis and crisis sample. Generally, full sample had a positive effect on the region with highest impact on real GDP and credit. During the crisis, UMP shocks had higher positive impact to Latin-American countries than during pre-crisis. However, credit and international reserves observed an immediate slight increase for a later overall decrease.

International reserves was one of the weakest transmission channel from UK to the region as it presents almost no response to the negative shock on treasury spread. Only reactions were observed in Costa Rica and Paraguay on crisis sample for as much as US\$30 million on each country on four months on Costa Rica and 20 months on Paraguay. However, for Paraguay the impulse response function was non-significant. An explanation to the almost muted impact to reserves can be attributed to the fact that currencies on these regions are not strongly pegged to the british pound.

Ecuador, Colombia and Uruguay seem to have a change on behavior on the inflation transmission channel. During the pre-crisis, this variable had a higher positive effect up to 10% after four months. However, the behavior modifies during the crisis and full sample where results appeared to be almost null. In the case of money growth, for Mexico, Argentina and Chile, crisis sample is not significant. Therefore, it appeared not to be co-movement between policies from United Kingdom and this Latin-American countries.

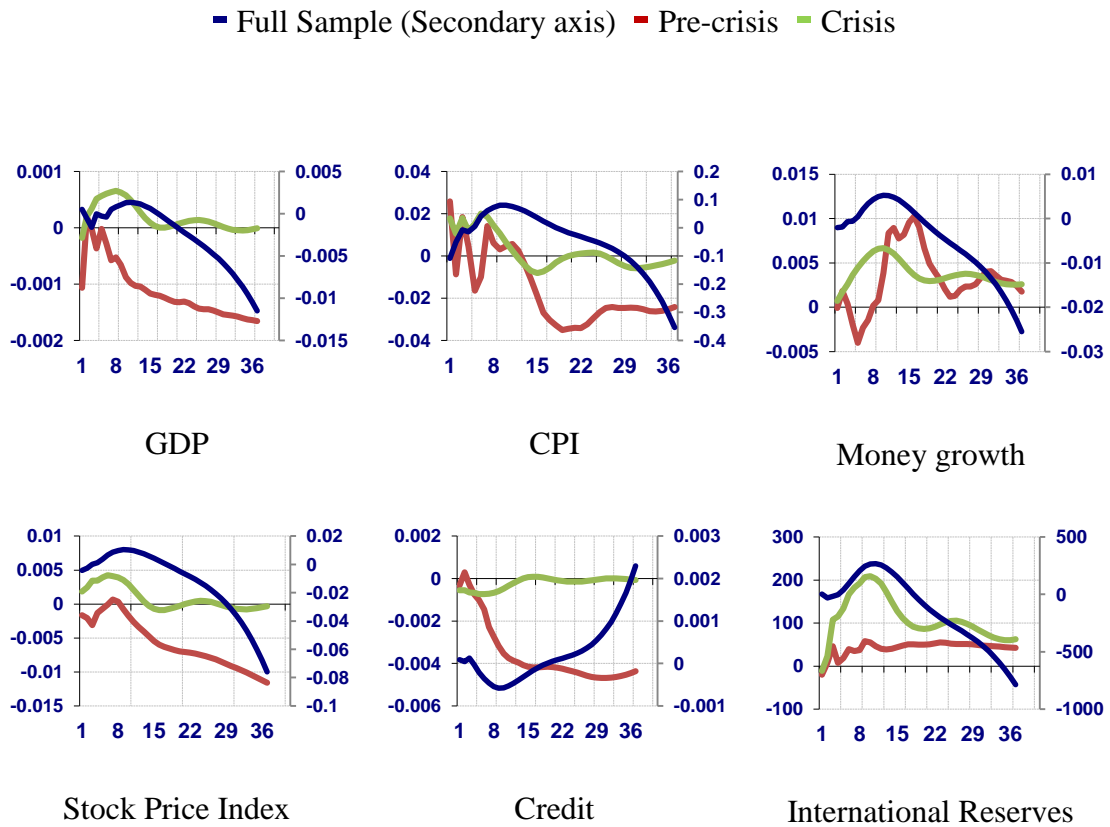
Figure 5.3: United Kingdom 1se Negative Shock to Monetary Policy Indicator. Average Latin-American countries



Source: author's computations.

The shock of monetary policy from ECB to Latin-America is presented on Figure 5.4. The impact of UMP from ECB to Latin-American countries for the full sample model has an initial boost to the region for a later stabilization. These are corroborated with the results from the other two models. The UMP shock during the crisis had a higher impact to Latin-American countries compared to the pre-crisis sample. Though, in the case of credit to the private sector, impulse response shows that during the crisis there is an almost muted positive effect on average to the region compared to pre-crisis.

**Figure 5.4: Europe 1se Negative Shock to Monetary Policy Indicator.
Average Latin-American countries**



Source: author's computations.

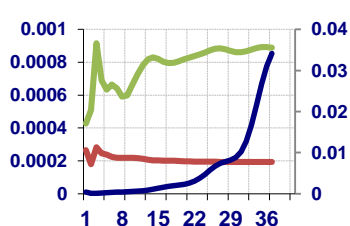
Most of countries which responses during full sample and pre-crisis samples for real GDP were negative, we can observe that during the crisis these turned out positive. This not only indicates a change on the behavior of the transmission channel but also, that UMP from major central banks helped to boost both domestic and foreign economies. Monetary policy shocks mainly have a negative effect on credit in Latin-America contrary to expectations. However, in most on the cases, results are moving together with money growth or are non significant.

When we turn into Brazil, Chile and Mexico (see Figure 5.5), the most representative countries for Latin-America in terms of GDP, we can notice that the monetary stimulus from the United States had the highest impact on the real GDP for as much as 0.01% in one year and probably, as a consequence, this translated into the increase of money and credit for these economies. Although, this positive impact on money growth is limited indicating tightening of monetary policy. In general, these three countries were beneficiated from Fed's policies. Contrastly, the reduction on the UK spread yields presented a decreased on credit for Brazil and Mexico for as much as 0.1% in one year, as well on international reserves. In line with the region's average, the shock from BoJ brought more costs than benefits with exception of Mexico which presented an increase on international reserves for US\$100 million in one year and 0.3% on money growth in two years. In terms of the shocks from ECB, results indicate that it brought mainly benefits into these three countries on the first year for later stabilization.

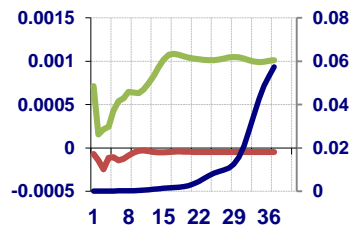
**Figure 5.5: United States 1se Negative Shock to Monetary Policy
Indicator for Brazil, Chile and Mexico**

■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis

GDP

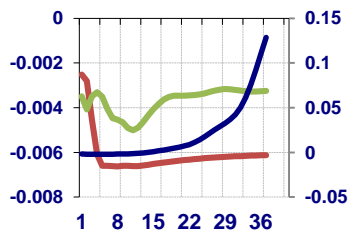


Chile

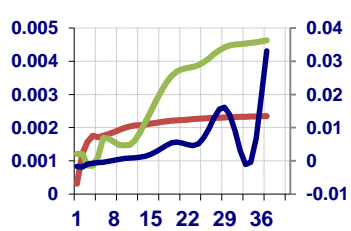


Mexico

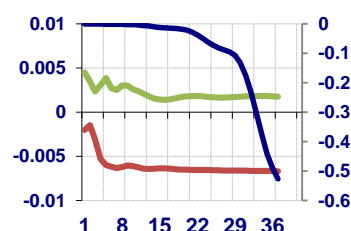
Money Growth



Brazil

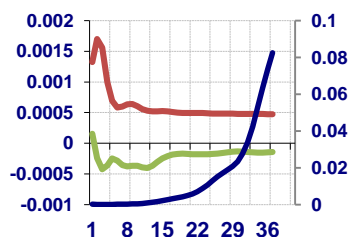


Chile

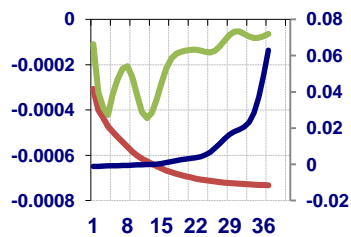


Mexico

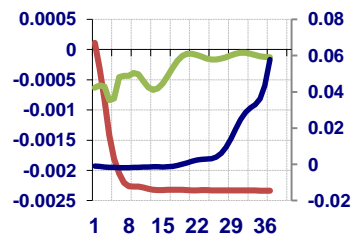
Credit



Brazil



Chile



Mexico

Source: author's computations.

In case of Central-American countries, even though these economies are economically interconnected, results are diversified across countries and regardless of the origin of the monetary policy shock. Responses of Panama to major central banks monetary policy shocks are mainly negative on international reserves and inflation so that this country basically was not benefited by these type of policies. Though, this responses can be attached to the fact that Panama is a fully dollarized economy, therefore, effects on international reserves and prices went on opposite direction than the rest of the countries which their own currency.

Also, another interesting case of a dollarized economy is Ecuador which presented reactions from monetary policy shocks from United States during the full sample and pre-crisis period for all variables. Contrastly, during the crisis, the reduction on treasury spread reduced reserves by US\$100 million in six months while real GDP, inflation and prices appeared not to be affected. We can attribute these results to the series on expansionary monetary policies and economic policy reforms but also by the new political stability in the country since 2006, even when this country does not count with its own currency.⁴ Notably, monetary policy shocks for the rest of the major central banks do have effect on Ecuador.

The impact of the reduction on treasury spreads of major central banks to Colombia also had mostly negative effects than positives. Exception was found from the shocks of monetary policy from United Kingdom. One standar deviation of UK treasury spreads increased inflation by 1% in four months and in one year 0.4% stock prices and 0.3% money growth.

Broadly, cost and benefits of the UMP effect were not distributed evenly across the countries reflected by the opposite sign of the effects among countries and variables. Moreover, results suggest a change on the transmissions of the monetary policy by the different results between sample periods for a particular country. Main transmission channels for the region, according to Global VAR methodology, were real GDP , money growth, stock prices and international reserves.

⁴ See Ray & Kozameh (2012) for further detail on Ecuador's economy.

5.1 Robustness Check

In order to test whether the impulse response analysis from all the models are robust, these were re-estimated using different order of the variables.

Results for US, Europe and UK did not present major changes. For all the cases, the only discrepancy was on the magnitude rather than sign of the responses. In addition, the rank of impact to countries was not affected, i.e. the order of countries which were the most affected to the lowest was kept.

In contrast, the shocks from BoJ were not robust to the order of variables. Specifically, for Chile and Argentina on pre-crisis sample, both magnitude and sign of response were not consistent with the original models. The rest of the countries had results aligned with the original model specification.

6 Conclusion

In this work, the potential medium and long term spillovers effects from UMP from major central bank to Latin-American countries were analyzed based on the evidence from the impulse response obtained from the estimation of the Global VAR. The use of this methodology helped to describe and understand the channels of transmission of the monetary policy to the Latin-American countries and to capture the long and variable lags that characterized monetary policy.

This thesis provided empirical evidence of spillover effects to countries in Latin America from a negative shock on the spread between 10 year and 3 months treasury yields from United States, United Kingdom, Japan and Europe, where the spread is consider the monetary policy indicator of UMP.

The impulse response analysis from the estimated Global VAR suggested money growth, stock prices and international reserves as the main transmission channels to the region. The effects across countries and variables from the negative shock of the treasury spreads were unequal indicating that the cost and benefits of the UMP effect were not distributed evenly across the region.

When analyzing OIRFs between sample periods, for some countries, the results not only differ in magnitude but also on direction suggesting possible change on behavior of the transmission channels. Therefore, crisis sample was used to support those assumptions. Although, the results from this sample period should be taken cautiously as sample size is not large enough.

In addition, outcomes are different between countries and variables suggesting not only that transmission channels are not same across the Latin-American region but also that the distributions of the effects of the monetary policy are not distributed equally.

Furthermore, a couple of full sample models were non stable, specifically for United States and Europe, as well as the crisis model for Japan. The possible cause for these results, in the case of full sample models, could be a change of pattern on the transmission channels given that the rest of the models for those economies meet the necessary conditions. Whereas, the size of the data sample may be the explanation for the crisis model for Japan.

The US monetary policy shock to Latin America had its major impact on money growth, stock prices and international reserves. The increase on money growth suggests a possible co-movement of policy rates from Latin-American countries to US policy rates or as a consequence of high accumulation of reserves. The evidence on stock prices indicates capital flows into Latin-American looking for better yields after the reduction US interest rates. In contrast, the impact on real GDP was relatively null while negative for credit and inflation indicating that the implementation of the policies were perceived as a forecast of a negative economic outlook.

For the case of the impact of UK monetary policy, OIRs presented that, during the crisis, UMP shocks had higher positive impact to Latin-American countries than when considering the full sample and pre-crisis models. The variables with the highest impact were real GDP and credit. Whereas, international reserves was one of the weakest transmission channels from UK to the region attributed to the fact that currencies on these countries are not strongly pegged to the British pound.

Evidence from Japan showed that the shocks to the region are very limited compared to the shocks from US and, in general, with an overall negative impact indicating that UMP from Japan brought more costs than benefits into Latin-American. While, the shocks from ECB brought an initial boost to the region for a later stabilization.

In the case of the three biggest economies on the region, Brazil, Chile and Mexico, US monetary policy shock boosted the most their real GDP for as much as 0.01% in one year, together with money growth and credit. While, Central-American countries had diversified results despite of the origin of the monetary policy shock the strong interconnection between these economies.

Finally, robustness check was performed by re-ordering the variables for the OIRs for all models. These indicated that results are robust to different order of the variables with exception of the shock of BoJ to Chile and Argentina for pre-crisis sample.

Yet, further analyses on the long term effects of these policies should continue as time pass by so that crisis sample estimates are more accurate and comparable to the rest of the models.

Nonetheless, so far empirical evidence validates that indeed, there is an impact of these policies to the rest of the countries warning about the necessity of

mechanisms to adjust and mitigate the positive and counterproductive effects for all the affected economies. However, the current tools available for policy maker to alleviate the negative effects from spillovers are limited and expensive and even more, insufficient.

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Appendix A: Summary of Empirical Studies on UMP

Author	UMP	Spillover to	Model	Period	Frequency	Channels	Results
Chen et. Al. (2011)	QE- announcement of asset purchase programme.	EMEs in Asia	Event studies	Cumulative two-day changes around announcement days	Daily	Various channels	In the short run, US QE stimulated the US domestic economy. Moreover, boosted asset prices globally and helped stabilize the financial markets following the crisis. The effect from US LSAP-I had larger cumulative effect than US LSAP-II. In the longer run, the international spillovers differed across economies. In contrast, the effect on emerging economies was in general stronger and more diverse.
	QE- announcements of asset purchase programmes	Major advanced economies and a number of EMEs in Asia and in Latin America	VECM and Global VECM	1995:02– 2010:12	Monthly	Various channels	
Moore et. Al. (2013)	QE- announcement LSAP	EMEs	Panel analysis	2004-2010	Quarterly	Foreign investment in EMEs’ government bond markets and bond yields	U.S. LSAPs increased portfolio flows into many emerging market economies. 10-basis-point reduction in long-term U.S. Treasury yields results in a 0.4-percentage-point increase in the foreign ownership share of emerging market debt. This, in turn, is estimated to reduce government bond yields in EMEs by approximately 1.7 basis points.

Author	UMP	Spillover to	Model	Period	Frequency	Channels	Results
Neely (2011)	QE-announcement LSAP	International long bond yields and exchange rates	Event studies	2008-2010, 2 days window and intraday	Daily and intraday		The LSAP effects on expected real U.S. bond yields somewhat exceed those implied by portfolio choice model, but the changes in international bond yields are consistent with such a model. Exchange rates changes at the time of the LSAP announcements are smaller but in the same direction as those implied by an “overshooting” effect.
Chinn (2013)	QE, credit easing and forward guidance	EMEs	VAR	2008:09-2013:03	Monthly	Exchange Rates and Other Asset Prices	Implementation of unconventional monetary policy measures may introduce more volatility into global markets. But, in general it will also support global rebalancing by encouraging emerging market currency revaluation.
Glick & Leduc (2013)	Effect of surprise changes in unconventional policy on the exchange rate to those from changes in the federal funds rate.	U.K., Canada, euro area, and Japan	Event studies with 30 minute window, from 10 minutes before an announcement to 20 minutes after	2008:11-2013:01	Intraday	Exchange rate	Surprise easing in monetary policy since the crisis had significant effects on the value of the dollar. These changes are comparable to the effects of conventional policy changes prior to the crisis.
Neely & Bauer (2013)	QE –LSAP	Canada, U.K., Japan and Germany	Event study with 3 day window	2008-2012	Daily	Signaling and portfolio balance channels	Signaling effects were a significant driving force for the sizable LSAP effects in the U.S. and Canada. It is

Author	UMP	Spillover to	Model	Period	Frequency	Channels	Results
			Dynamic term structure models (DTSMs)	1995:01-2013:09	Daily	Yields (Expected short-term interest rates and term premia)	also plausible that they contributed to the decrease in yields in Australia and Germany but portfolio balance effects probably played a more important role. In Japan, signaling effects were absent and portfolio balance effects were modest
Fratzscher, Lo Duca, and Straub (2013)	Liquidity operations, purchases of MBS and of US Treasuries	65 foreign financial markets: EMEs and advanced economies	Benchmark model	2007:01-2010:12	Daily	Net inflows (into bonds or into equities) and prices (equity and bond)	LSAP-I was effective in boosting bond and equity prices, especially in the U.S., and led to U.S. dollar appreciation. On the other hand, LSAP-II boosted equity prices worldwide and led to U.S. dollar depreciation. FED policies functioned in a pro-cyclical manner for capital flows to EMEs and in a counter-cyclical way for the U.S. LSAP-I triggered a portfolio rebalancing across countries out of EMEs into the U.S., while LSAP-II triggered rebalancing in the opposite direction
Bayoumi & Vitek (2013)	QE-policy announcements	Advanced economies and EMEs	Event studies normalized per 1 percentage point reduction in U.S. bond yields.	LSAP-I and LSAP-II-2 days window	Daily	Bond yields	Financial market reactions vary depending on the circumstances. Particularly, QE1 led to a larger fall in foreign bond yields and had a major boost to the economies than QE2 which by contrast, had negative growth spillover to most of the regions.

Author	UMP	Spillover to	Model	Period	Frequency	Channels	Results
Filardo & Hofmann (2014)	Forward guidance	Effects to the level and volatility of interest rate expectations and the sensitivity of markets to economic news.	Event studies 1 day window	2008-2014	Daily	Bond yields	Forward guidance appears to have led to lower volatility of near-term expectations of the future path of policy rates, but the effects on the level of interest rate expectations and on the responsiveness of financial markets to news is less clear.
Tillman (2014)	QE announcements	EMEs	Qual VAR	2007:08-2013:03	Monthly	Various channels	Unexpected increase in FED's propensity to undertake QE increases strongly EMEs' capital flows, bond prices, equity prices and exchange rates.

Appendix B: Data Sources and Description

Data sources include Thompson Reuters Datastream, OECD statistics, Bank of International Settlements, FRED Federal Reserve statistics and for Latin-American countries the Inter-American Development Bank.

Variable	Description	Latin-American countries	US, UK, JP and Europe
Real GDP	Economic activity index.	IADB, monthly frequency, seasonally adjusted X-12 Arima.	OECD statistics, quarterly frequency. Expanded by Chow-Lin method.
CPI	Consumer Price Index monthly growth.	IADB, monthly frequency, monthly growth.	OECD statistics, monthly frequency, seasonally adjusted by X-12 arima.
International reserves	International Reserves, millions of US\$, end of period.	IADB, monthly frequency, seasonally adjusted X-12 Arima.	FRED, monthly frequency, seasonally adjusted by X-12 arima.
Credit to the private sector	Credit to the Private Sector, constant prices.	IADB, monthly frequency, millions of D/C, end of period.	BIS, quarterly frequency. Expanded by Chow-Lin method.
Monetary policy indicator	M2, constant prices, millions of 1998 D/C, deflated by CPI, end of period.	IADB, monthly frequency, monthly growth, end of period.	Spread of 10y and 3m treasuries
Stock market index	Stock Market Index: US\$ index, monthly average.	IADB, monthly frequency, period average.	End of the period.
Oil price	Europe Brent Spot Price FOB (Dollars per barrel)		
Bilateral trade	Balance of Trade, thousands of US\$.	IADB, annual frequency.	

Appendix D: Unit Root Test Statistics

Standard ADF unit root t-statistics and weighted symmetric estimation of ADF type regression (WS) by Park and Fuller is performed for domestic, foreign and global variables. The regressions are at the level with trend and with no trend. Lag length employed was selected by AIC information criterion with maximum lag order of 12. The 95% critical values for ADF are with trend -3.45 and no trend -2.89, while for WS are -3.24 and -2.55, respectively.

United States Full Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
Domestic Variables																		
y (w/trend)	ADF	-1.60			-2.35		-2.12	-4.16		-2.52		-3.37	-2.18		-1.28	-1.74	-2.33	
y (w/trend)	WS	-1.46			-2.40		-2.16	-3.81		-1.45		-3.34	-1.95		-1.21	-0.83	-1.11	
y (n/trend)	ADF	0.22			-0.69		-0.26	-0.39		0.87		-1.28	-1.08		1.31	1.35	-2.60	
y (n/trend)	WS	-0.13			3.23		2.13	2.13		1.66		-0.25	2.37		1.42	2.20	0.83	
credit (w/trend)	ADF	-2.22		-2.12	-2.83	-0.82	-2.75				-3.47	-2.40			-1.07	-2.37	1.24	
credit (w/trend)	WS	-2.41		-1.23	-3.10	-0.85	-3.10				-3.68	-0.38			-1.46	-2.24	0.89	
credit (n/trend)	ADF	-2.01		0.63	0.28	1.15	-1.36				-1.53	-1.99			-0.26	-0.39	-1.84	
credit (n/trend)	WS	-2.22		0.06	0.41	0.87	0.01				-0.85	-0.48			-0.63	0.50	-0.54	
soi (w/trend)	ADF	-2.46		-2.50	-2.37	-2.11	-1.88	-2.13				-1.95		-2.34		-2.15	-1.33	
soi (w/trend)	WS	-2.69		-2.51	-1.38	-0.79	-1.68	-0.52				-1.89		-1.84		-1.93	-1.22	
soi (n/trend)	ADF	-1.44		-2.28	-0.74	-0.37	-1.85	-2.81				-0.89		-1.96		-0.75	-0.71	
soi (n/trend)	WS	-1.38		-1.12	-1.21	-0.96	-1.84	0.36				-0.73		0.58		-0.83	0.41	
cpi (w/trend)	ADF	-4.92	-4.22	-5.06	-3.88	-3.12	-4.38	-4.61	-8.92	-5.03	-2.93	-4.04	-4.16	-7.85	-5.77	-2.95	-2.03	-4.41

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
cpi (w/trend)	WS	-5.00	-4.17	-3.59	-3.87	-3.16	-3.25	-4.65	-9.01	-5.28	-2.63	1.03	-4.39	-7.98	-6.03	-2.60	-1.45	-3.40
cpi (n/trend)	ADF	-4.49	-4.22	-5.17	-3.82	-1.82	-3.68	-3.12	-4.26	-4.40	-2.19	-4.59	-4.05	-3.80	-8.48	-3.12	-1.45	-4.36
cpi (n/trend)	WS	-4.63	-4.17	-3.16	-3.53	-0.70	-1.57	-3.31	-3.11	-4.60	-0.87	2.83	-4.23	-3.93	-8.62	-2.10	-1.75	-2.80
reserves (w/trend)	ADF			-1.55	-0.76	0.66	-1.20	-2.13		-2.78	-3.08	0.37	-1.21	-1.80	-0.67	-1.18	-1.28	1.21
reserves (w/trend)	WS			-1.05	-1.08	1.32	-0.98	-2.10		-1.03	-3.32	-0.11	-1.01	-2.03	0.26	-0.97	-1.36	1.08
reserves (n/trend)	ADF			0.64	0.75	4.82	1.25	-0.98		1.18	-0.94	2.69	1.18	-1.17	2.59	0.94	-0.15	3.94
reserves (n/trend)	WS			-0.01	0.26	3.24	1.19	-1.26		1.69	0.11	2.56	1.40	-1.02	1.70	0.46	-0.55	3.03
mon (w/trend)	ADF	-3.06	-1.39	-2.59	-2.19	-4.07	-3.55					-4.98	-3.60		-2.03	-3.24	-2.93	-2.96
mon (w/trend)	WS	-3.18	-1.80	-2.55	-2.03	-2.37	-1.46					-1.94	-3.34		-2.41	-1.27	-2.57	-1.89
mon (n/trend)	ADF	-2.97	-1.65	-2.97	-2.28	-4.39	-4.21					-4.79	-3.40		-2.02	-3.04	-2.65	-3.37
mon (n/trend)	WS	-2.79	-1.75	-2.28	-2.03	-1.69	-1.01					-1.93	-3.30		-2.16	-1.28	-2.58	-1.55
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
y (w/trend)	ADF	-2.68	-1.93	-3.16	-1.87	-1.84	-2.19	-2.54	-0.76	-3.07	-1.44	-1.84	-2.48	-2.22	-2.36	-2.52	-2.32	-3.18
y (w/trend)	WS	-2.87	-1.43	-3.33	-2.06	-2.25	-2.45	-2.69	-1.13	-3.19	-1.67	-2.10	-2.69	-2.18	-2.53	-2.76	-1.62	-3.44
y (n/trend)	ADF	-2.53	-2.24	-3.16	-1.93	-1.89	-1.77	-2.62	-1.73	-2.42	-1.78	-2.00	-2.30	-2.17	-2.08	-2.51	-1.39	-3.19
y (n/trend)	WS	-2.80	-0.89	-3.34	-2.07	-2.21	-1.97	-2.70	-1.03	-1.83	-1.56	-1.50	-2.48	-2.18	-2.31	-2.77	0.99	-3.44
credit (w/trend)	ADF	-2.43	-2.74	-2.61	-1.25	-2.83	-2.96	-2.61	-0.75	-2.93	-1.76	-2.01	-1.62	-1.73	-2.65	-2.39	-1.33	-1.74
credit (w/trend)	WS	-2.60	-2.87	-2.83	-1.49	-2.91	-3.13	-2.88	-1.03	-3.16	-1.94	-1.87	-2.23	-1.76	-2.93	-2.67	-0.85	-1.81
credit (n/trend)	ADF	-2.36	-2.69	-2.27	-0.47	-2.58	-2.79	-2.61	-2.07	-1.05	-0.95	-1.06	-2.03	-1.63	-2.58	-2.37	-1.72	-1.22
credit (n/trend)	WS	-2.59	-2.54	-2.50	-0.80	-2.82	-3.05	-2.89	-0.54	0.86	0.18	-1.31	-2.27	-0.08	-2.84	-2.65	-0.07	-1.57
soi (w/trend)	ADF	-2.62	-2.58	-3.00	-1.93	-3.84	-2.64	-2.92	-2.38	-3.10	-2.10	-0.89	-2.97	-2.19	-4.76	-3.30	-2.33	-2.28
soi (w/trend)	WS	-2.90	-2.33	-3.26	-1.71	-4.06	-2.73	-3.03	-1.01	-0.69	-1.49	-1.17	-3.28	-1.75	-4.91	-3.44	-2.65	-2.50
soi (n/trend)	ADF	-2.58	-2.41	-2.99	-1.84	-2.81	-2.15	-2.66	-1.91	-3.24	-2.32	-0.40	-2.93	-1.97	-2.38	-3.32	-1.45	-2.11
soi (n/trend)	WS	-2.85	-2.38	-3.25	-1.88	-2.89	-2.45	-2.91	-1.08	-0.43	-1.12	-0.35	-3.10	-1.99	-2.66	-3.44	-0.95	-2.33
cpi (w/trend)	ADF	-3.41	-3.77	-2.48	-3.76	-3.28	-3.74	-2.70	-3.06	-3.03	-3.02	-1.99	-1.65	-3.11	-3.79	-4.12	-3.68	-3.67
cpi (w/trend)	WS	-3.51	-3.94	-2.78	-3.80	-3.53	-2.76	-2.94	-2.56	-1.59	-2.63	-1.56	-2.18	-2.83	-4.06	-4.26	-2.32	-3.76

US Pre-crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU	
Domestic Variables																			
y (w/trend)	ADF	-1.50			-1.75		-1.63	-3.62		-4.39		-2.63	-4.15		-2.69	-0.40	-2.67		
y (w/trend)	WS	-1.95			-1.89		-1.54	-2.99		-0.92		-2.52	-4.19		-2.89	-0.73	-2.03		
y (n/trend)	ADF	-1.30			0.25		0.85	-1.27		2.37		-1.32	-0.26		-1.01	1.67	-2.23		
y (n/trend)	WS	-1.54			1.60		2.04	1.14		1.38		-0.67	2.09		-0.45	2.57	-0.17		
credit (w/trend)	ADF	-3.69		-0.24	-1.30	-0.39	-2.48				-1.98	1.39			-2.16	-3.48	-3.69		
credit (w/trend)	WS	-3.98		-0.44	-2.06	-0.68	-1.91				-2.25	-0.10			-1.27	-1.91	-3.51		
credit (n/trend)	ADF	-1.74		1.89	1.36	-0.53	0.16				-0.68	-1.89			-0.64	-3.38	0.11		
credit (n/trend)	WS	-2.07		1.56	1.52	-0.79	0.48				0.15	-0.14			-1.14	-0.55	0.80		
soi (w/trend)	ADF	-1.53		-2.43	-1.22	-0.83	-1.44	-0.40				-0.69		-1.44		0.57	-2.65		
soi (w/trend)	WS	-1.86		-2.46	-0.92	-0.25	-1.42	-0.47				-0.96		-1.28		-0.08	-2.40		
soi (n/trend)	ADF	-1.45		-1.65	-0.55	0.54	-1.47	-1.93				0.55		-0.76		2.06	-2.32		
soi (n/trend)	WS	-1.43		-0.75	-0.71	0.08	-1.23	0.22				0.22		1.03		1.30	-1.27		
cpi (w/trend)	ADF	-3.83	-6.10	-3.86	-7.77	-4.75	-4.13	-4.50	-2.85	-8.30	-2.54	-2.69	-2.72	-	11.1	-6.62	-3.38	-0.57	-3.26
														7					
cpi (w/trend)	WS	-3.91	-6.01	-3.20	-7.79	-4.91	-2.05	-4.52	-1.31	-8.21	-2.71	-0.18	-3.07	-	11.2	-6.76	-3.51	-0.63	-2.77
														9					
cpi (n/trend)	ADF	-3.58	-5.91	-3.95	-2.45	-1.72	-4.32	-3.87	-3.54	-2.60	-1.52	-3.25	-2.64	-	11.1	-6.65	-2.04	-1.44	-3.21
														4					
cpi (n/trend)	WS	-3.75	-5.59	-2.88	-1.48	-1.29	-1.29	-4.03	-1.98	-2.71	-0.49	1.67	-2.82	-	11.2	-6.78	-1.16	-0.80	-2.08
														4					
reserves (w/trend)	ADF			-0.40	-1.87	-1.02	-0.48	-1.07		-2.58	-2.16	-3.31	-0.73	-3.80	-0.25	0.11	-1.47	-3.07	
reserves (w/trend)	WS			-1.02	-1.98	-1.22	-0.79	-1.60		-1.78	-2.64	-3.19	-1.13	-3.78	-0.33	-0.28	-1.77	-3.24	
reserves (n/trend)	ADF			-0.38	-1.86	0.69	1.48	-1.32		0.51	0.63	-0.25	0.76	-3.74	0.21	1.22	-1.46	-2.98	

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
reserves (n/trend)	WS			-0.71	-1.70	0.63	1.63	-1.59		0.85	0.40	0.84	1.15	-3.60	-0.14	2.21	-1.75	-2.98
mon (w/trend)	ADF	-3.99	-1.14	-2.53	-1.44	-3.08	-3.13					-3.57	-3.13		-2.37	-3.24	-2.62	-2.42
mon (w/trend)	WS	-4.13	-1.57	-2.59	-1.42	-2.20	-1.92					-1.83	-2.57		-2.46	0.17	-2.13	-1.83
mon (n/trend)	ADF	-3.77	-0.38	-2.64	-1.44	-3.33	-3.37					-3.92	-2.68		-1.65	-3.40	-2.43	-2.61
mon (n/trend)	WS	-3.80	-0.89	-2.19	-1.29	-1.42	-0.45					-1.62	-2.53		-2.03	0.79	-2.26	-1.36
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
y (w/trend)	ADF	-2.08	-3.01	-2.73	-1.61	-0.63	-2.16	-1.79	-2.40	-2.56	-2.04	-2.30	-1.13	-2.10	-1.42	-2.59	-2.02	-1.74
y (w/trend)	WS	-2.36	-3.35	-2.64	-1.67	-1.00	-2.19	-2.07	-2.44	-2.95	-2.04	-2.44	-1.21	-2.35	-2.07	-2.80	-1.70	-1.99
y (n/trend)	ADF	-2.01	-0.67	-2.67	0.26	-0.16	-1.31	-1.85	-1.02	-1.91	-0.65	-1.25	-1.22	-1.89	-1.78	-2.59	-1.08	-1.84
y (n/trend)	WS	-2.35	0.04	-2.67	0.10	-0.47	-1.70	-1.82	0.03	-1.92	-0.68	-1.23	-1.23	-1.79	-1.80	-2.78	0.61	-2.48
credit (w/trend)	ADF	-2.53	-2.31	-1.97	-1.79	-2.16	-2.26	-2.66	-2.44	-2.24	-2.17	-1.08	-0.79	-2.48	-1.62	-2.30	-1.34	-1.22
credit (w/trend)	WS	-2.74	-2.67	-2.23	-1.27	-2.39	-2.50	-2.82	-2.74	-2.68	-1.73	-1.70	-0.74	-2.84	-1.46	-2.46	-1.92	-1.56
credit (n/trend)	ADF	-2.10	-2.03	-1.78	-1.05	-2.17	-2.16	-2.53	-0.10	-0.33	0.05	-1.26	1.30	-0.84	-1.56	-2.30	-1.30	-1.46
credit (n/trend)	WS	-2.24	-2.09	-2.16	-1.52	-2.39	-2.49	-2.75	0.28	1.00	0.26	-1.60	0.99	-0.24	-0.69	-2.46	-0.15	-1.69
soi (w/trend)	ADF	-2.19	-2.15	-2.49	-1.02	-2.36	-2.23	-2.71	-0.94	-2.23	-2.52	-2.05	-2.47	-1.14	-1.26	-1.81	-2.83	-1.87
soi (w/trend)	WS	-2.51	-1.92	-2.69	-1.13	-2.54	-2.34	-2.86	-0.92	-0.87	-2.54	-2.10	-2.66	-0.65	-1.50	-2.01	-3.06	-1.99
soi (n/trend)	ADF	-2.22	-1.89	-2.48	-1.25	-0.20	-1.87	-2.66	-1.46	-2.78	-1.78	-2.07	-2.62	-1.53	-1.28	-1.72	-1.03	-1.89
soi (n/trend)	WS	-2.48	-1.94	-2.70	-1.17	-0.08	-2.22	-2.86	-0.57	-0.13	-0.39	-2.11	-2.13	-0.57	-1.49	-1.96	-1.05	-2.14
cpi (w/trend)	ADF	-3.71	-3.10	-3.38	-3.50	0.33	-3.03	-2.85	-1.26	-1.93	-1.09	-0.52	-2.56	-2.35	-4.05	-1.48	-3.09	-3.51
cpi (w/trend)	WS	-3.75	-3.32	-3.58	-3.67	0.01	-2.10	-3.03	-0.45	-1.29	-0.42	-0.58	-0.61	-2.38	-4.11	-1.67	-2.24	-3.68
cpi (n/trend)	ADF	-2.92	-3.07	-3.08	-3.09	0.90	-3.50	-2.84	-3.21	-3.02	-2.78	-1.45	-3.72	-2.50	-4.06	-1.10	-2.52	-3.05
cpi (n/trend)	WS	-3.14	-3.24	-3.21	-3.13	0.55	-1.90	-3.02	0.38	-0.96	-0.17	-1.46	0.06	-1.67	-4.12	-1.36	-1.36	-3.17
reserves (w/trend)	ADF	-2.55	-2.01	-2.49	-2.12	-1.61	-2.11	-2.48	-1.65	-1.71	-2.14	-3.09	-0.96	-1.67	-2.35	-2.48	-3.33	-2.85
reserves (w/trend)	WS	-2.58	-2.30	-2.67	-2.14	-1.75	-2.35	-2.70	-1.92	-1.97	-2.17	-3.30	-1.25	-1.97	-2.44	-2.70	-3.14	-3.02
reserves (n/trend)	ADF	-1.96	-1.86	-1.74	-1.72	-1.19	-1.91	-2.47	-0.91	-1.14	-0.53	-1.60	-1.42	-1.14	-2.36	-2.53	-0.30	-2.85
reserves (n/trend)	WS	-2.22	-1.79	-2.06	-2.02	-1.49	-2.27	-2.69	-0.14	-0.79	-0.60	-1.62	-1.47	-1.01	-2.32	-2.71	0.11	-3.02

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
mon (w/trend)	ADF	-4.19	-2.71	-1.84	-3.91	-3.53	-2.71	-2.37	-3.13	-2.85	-3.08	-2.43	-2.75	-3.09	-3.14	-2.94	-4.66	-1.94
mon (w/trend)	WS	-4.36	-1.76	-2.13	-3.94	-3.71	-2.89	-2.71	-2.17	-1.95	-2.40	-2.08	-2.35	-2.28	-2.96	-3.11	-2.93	-2.14
mon (n/trend)	ADF	-3.60	-2.69	-1.80	-2.70	-3.47	-2.71	-2.74	-3.17	-2.78	-3.04	-2.18	-2.57	-3.04	-3.16	-2.96	-4.28	-1.79
mon (n/trend)	WS	-3.78	-1.60	-2.15	-1.38	-3.63	-2.88	-2.94	-2.06	-1.98	-2.40	-2.23	-2.46	-2.30	-2.86	-3.12	-3.02	-1.99
Global Variable	Test	Stat																
Oil (w/trend)	ADF	-2.18																
Oil (n/trend)	WS	-2.19																
Oil (w/trend)	ADF	-0.56																
Oil (n/trend)	WS	-0.65																

US Crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
Domestic Variables																		
y (w/trend)	ADF	-2.53			-2.21		-2.25	-3.09		-1.58		-2.37	-1.48		-2.95	-2.11	-1.98	
y (w/trend)	WS	-2.61			-1.86		-2.49	-1.70		-1.66		-2.29	-1.84		-3.14	-2.30	-1.60	
y (n/trend)	ADF	-1.19			-0.08		0.11	0.76		1.25		-0.15	0.06		-0.68	-1.28	0.24	
y (n/trend)	WS	0.80			0.74		0.84	0.13		0.91		-0.25	1.02		-0.16	1.29	-0.32	
credit (w/trend)	ADF	-1.50		-2.61	-1.77	-3.03	-2.78				-2.72	-3.89			-1.22	-3.46	-3.08	
credit (w/trend)	WS	-1.82		-2.03	-2.04	-2.67	-1.92				-3.33	-3.85			-0.84	-2.49	-2.52	
credit (n/trend)	ADF	-0.97		-1.79	-0.39	0.14	-1.81				-1.17	-0.58			-2.77	-0.66	-2.75	
credit (n/trend)	WS	0.69		-0.20	1.87	0.35	2.99				0.36	1.13			0.08	0.68	-2.64	
soi (w/trend)	ADF	-2.21		-2.82	-1.53	-1.71	-0.80	-1.93				-3.22		-2.07		-2.95	-2.44	
soi (w/trend)	WS	-2.23		-2.63	-1.85	-1.80	-1.50	-1.66				-3.07		-1.21		-3.10	0.68	

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
soi (n/trend)	ADF	-1.69		-2.02	-1.44	-1.39	-1.52	-2.55				-2.22		-0.95		-2.72	0.76	
soi (n/trend)	WS	-1.91		-2.26	-1.61	-1.67	-1.59	-1.40				-2.53		-1.39		-2.97	0.17	
cpi (w/trend)	ADF	-4.23	-2.86	-4.82	-3.08	-3.91	-3.33	-2.68	-5.51	-3.50	-4.41	-6.85	-3.59	-4.98	-2.81	-3.66	-2.36	-6.37
cpi (w/trend)	WS	-4.37	-3.22	-4.93	-3.31	-4.04	-3.58	-2.44	-5.69	-3.44	-4.58	-6.98	-3.76	-5.08	-3.16	-3.49	-2.63	-6.05
cpi (n/trend)	ADF	-3.46	-2.83	-4.63	-3.02	-2.98	-2.44	-2.25	-5.30	-3.56	-4.24	-6.64	-3.70	-4.79	-3.00	-3.55	-2.38	-8.30
cpi (n/trend)	WS	-3.64	-2.98	-4.60	-3.24	-2.54	-2.66	-2.41	-5.49	-3.04	-4.43	-6.83	-3.53	-4.95	-3.07	-3.51	-2.63	-8.41
reserves (w/trend)	ADF			-1.36	-2.47	-1.10	-1.49	-4.01		-3.29	-3.58	-1.98	-2.64	-2.15	-4.24	-2.31	-1.99	-1.31
reserves (w/trend)	WS			-1.84	-2.88	-1.61	-1.81	-3.35		-3.52	-3.66	-1.59	-2.86	-1.20	-4.43	-2.59	-1.88	-1.45
reserves (n/trend)	ADF			-0.93	-1.21	1.51	-0.21	-3.99		-0.67	-1.93	0.48	-0.63	-2.60	-0.66	-1.12	-0.84	1.04
reserves (n/trend)	WS			0.50	-0.36	1.19	0.10	-3.37		1.09	-2.18	0.39	1.10	-0.85	1.35	0.61	-0.65	1.80
mon (w/trend)	ADF	-1.94	-1.52	-4.27	-1.72	-1.91	-2.41					-2.02	-2.19		-2.68	-2.06	-1.21	-1.69
mon (w/trend)	WS	-2.01	-1.69	-2.64	-1.81	-1.84	-1.13					-2.40	-2.42		-2.99	-2.43	-1.49	-2.26
mon (n/trend)	ADF	-1.36	-2.18	-1.21	-1.76	-1.75	-3.11					-1.93	-2.07		-2.12	-1.74	-1.62	-1.23
mon (n/trend)	WS	-1.84	-0.91	-1.67	-1.54	-1.88	-0.28					-2.10	-2.35		-1.61	-1.80	-1.19	-1.58
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
y (w/trend)	ADF	-2.08	-1.67	-2.00	-1.50	-2.49	-0.95	-1.73	-2.74	-2.41	-2.30	-0.59	-1.90	-1.59	-1.51	-1.77	-1.55	-1.46
y (w/trend)	WS	-2.29	-1.89	-2.22	-1.78	-2.76	-1.33	-1.97	-2.43	-2.80	-2.52	-1.64	-2.12	-1.89	-2.40	-1.72	-1.58	-1.38
y (n/trend)	ADF	-1.83	-2.02	-1.92	-1.18	-1.11	-1.29	-1.68	-0.75	-0.61	-1.92	-1.09	-1.45	-1.79	-2.04	-0.88	-0.08	-1.57
y (n/trend)	WS	-2.11	-1.44	-2.21	-0.54	-0.79	-0.84	-1.96	-1.24	0.20	-1.86	-0.82	-1.74	-2.03	-2.17	-1.38	-0.45	0.25
credit (w/trend)	ADF	-1.91	-1.79	-2.06	-2.07	-1.79	-2.43	-1.96	-1.41	-2.42	-1.96	-0.66	-1.87	-1.29	-2.25	-1.63	-2.90	-1.45
credit (w/trend)	WS	-2.33	-1.30	-2.34	-1.82	-2.07	-2.60	-2.22	-0.87	-2.04	-2.23	-2.16	-2.11	-1.62	-2.35	-1.76	-3.33	-1.70
credit (n/trend)	ADF	-1.46	-1.62	-2.11	-2.05	-1.88	-1.11	-2.01	-1.01	0.34	-1.55	-0.95	-1.59	-1.65	-2.12	-1.54	-1.20	-1.03
credit (n/trend)	WS	-1.82	-1.39	-2.31	-0.32	-2.03	-1.15	-2.21	-0.73	0.62	-0.52	-0.90	-1.88	-0.31	-2.35	-0.91	0.06	0.22
soi (w/trend)	ADF	-1.66	-2.43	-1.74	-1.90	-2.89	-1.65	-2.00	-2.57	-3.35	-2.29	-2.43	-2.19	-3.43	-3.27	-2.13	-2.96	-2.77
soi (w/trend)	WS	-2.08	-1.77	-2.14	-2.11	-3.12	0.27	-2.38	-2.80	-1.15	-1.58	0.73	-2.45	-0.30	-3.43	-1.51	-3.03	-3.02
soi (n/trend)	ADF	-1.95	-1.19	-1.67	-1.67	-2.82	0.44	-1.96	-2.26	-1.91	-1.66	0.73	-2.16	0.87	-3.03	-2.63	-1.89	-2.83

UK Full Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
Domestic Variables																		
y (w/trend)	ADF	-1.60			-2.35		-2.12	-4.16		-2.52		-3.37	-2.18		-1.28	-1.74	-2.04	
y (w/trend)	WS	-1.46			-2.40		-2.16	-3.81		-1.45		-3.34	-1.95		-1.21	-0.83	-2.35	
y (n/trend)	ADF	0.22			-0.69		-0.26	-0.39		0.87		-1.28	-1.08		1.31	1.35	-0.22	
y (n/trend)	WS	-0.13			3.23		2.13	2.13		1.66		-0.25	2.37		1.42	2.20	1.12	
credit (w/trend)	ADF	-2.22		-2.12	-2.83	-0.82	-2.75				-3.47	-2.40			-1.07	-2.37	1.13	
credit (w/trend)	WS	-2.41		-1.23	-3.10	-0.85	-3.10				-3.68	-0.38			-1.46	-2.24	-0.14	
credit (n/trend)	ADF	-2.01		0.63	0.28	1.15	-1.36				-1.53	-1.99			-0.26	-0.39	-1.99	
credit (n/trend)	WS	-2.22		0.06	0.41	0.87	0.01				-0.85	-0.48			-0.63	0.50	-0.44	
soi (w/trend)	ADF	-2.46		-2.50	-2.37	-2.11	-1.88	-2.13				-1.95		-2.34		-2.15	-2.61	
soi (w/trend)	WS	-2.69		-2.51	-1.38	-0.79	-1.68	-0.52				-1.89		-1.84		-1.93	-1.80	
soi (n/trend)	ADF	-1.44		-2.28	-0.74	-0.37	-1.85	-2.81				-0.89		-1.96		-0.75	-2.53	
soi (n/trend)	WS	-1.38		-1.12	-1.21	-0.96	-1.84	0.36				-0.73		0.58		-0.83	-0.89	
cpi (w/trend)	ADF	-4.92	-4.22	-5.06	-3.88	-3.12	-4.38	-4.61	-8.92	-5.03	-2.93	-4.04	-4.16	-7.85	-5.77	-2.95	-2.73	-4.41
cpi (w/trend)	WS	-5.00	-4.17	-3.59	-3.87	-3.16	-3.25	-4.65	-9.01	-5.28	-2.63	1.03	-4.39	-7.98	-6.03	-2.60	-3.00	-3.40
cpi (n/trend)	ADF	-4.49	-4.22	-5.17	-3.82	-1.82	-3.68	-3.12	-4.26	-4.40	-2.19	-4.59	-4.05	-3.80	-8.48	-3.12	-2.64	-4.36
cpi (n/trend)	WS	-4.63	-4.17	-3.16	-3.53	-0.70	-1.57	-3.31	-3.11	-4.60	-0.87	2.83	-4.23	-3.93	-8.62	-2.10	-2.86	-2.80
reserves (w/trend)	ADF			-1.55	-0.76	0.66	-1.20	-2.13		-2.78	-3.08	0.37	-1.21	-1.80	-0.67	-1.18	-0.43	1.21
reserves (w/trend)	WS			-1.05	-1.08	1.32	-0.98	-2.10		-1.03	-3.32	-0.11	-1.01	-2.03	0.26	-0.97	-0.21	1.08
reserves (n/trend)	ADF			0.64	0.75	4.82	1.25	-0.98		1.18	-0.94	2.69	1.18	-1.17	2.59	0.94	1.60	3.94
reserves (n/trend)	WS			-0.01	0.26	3.24	1.19	-1.26		1.69	0.11	2.56	1.40	-1.02	1.70	0.46	0.95	3.03
mon (w/trend)	ADF	-3.06	-1.39	-2.59	-2.19	-4.07	-3.55					-4.98	-3.60		-2.03	-3.24	-2.61	-2.96
mon (w/trend)	WS	-3.18	-1.80	-2.55	-2.03	-2.37	-1.46					-1.94	-3.34		-2.41	-1.27	-1.95	-1.89
mon (n/trend)	ADF	-2.97	-1.65	-2.97	-2.28	-4.39	-4.21					-4.79	-3.40		-2.02	-3.04	-2.06	-3.37

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU	
mon (n/trend)	WS	-2.79	-1.75	-2.28	-2.03	-1.69	-1.01						-1.93	-3.30		-2.16	-1.28	-2.01	-1.55
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU	
y (w/trend)	ADF	-2.01	-2.94	-3.76	-2.91	-3.19	-2.72	-2.50	-3.54	-2.04	-2.45	-2.73	-3.18	-1.02	-1.90	-2.38	-2.43	-1.83	
y (w/trend)	WS	-1.94	-2.94	-3.39	-2.80	-3.32	-2.92	-2.69	-1.78	-1.11	-2.57	-2.90	-3.49	-1.24	-1.65	-2.49	-2.65	-2.15	
y (n/trend)	ADF	-1.18	-2.60	-3.89	-1.48	-2.99	-2.62	-1.98	-1.69	-1.94	-1.03	-2.73	-2.15	-1.17	-2.03	-2.20	-2.42	-0.69	
y (n/trend)	WS	-1.44	-2.83	-3.32	-0.32	-2.14	-2.88	-2.24	-1.83	-0.09	-0.84	-2.90	-1.66	-1.32	-1.67	-2.42	-2.63	-0.99	
credit (w/trend)	ADF	-2.61	-3.17	-2.94	-1.04	-2.90	-3.21	-2.86	-2.27	-3.59	-1.66	-2.26	-2.85	-3.60	-3.04	-1.81	-2.88	-2.24	
credit (w/trend)	WS	-2.81	-2.91	-3.00	-2.13	-3.13	-3.24	-2.37	-2.55	-0.91	-1.61	-2.47	-3.08	-3.74	-3.26	-1.93	-2.93	-1.96	
credit (n/trend)	ADF	-2.05	-3.09	-2.59	-1.55	-2.68	-2.65	-2.05	-2.00	-4.22	-0.21	-2.34	-0.89	-1.50	-2.68	-1.38	-2.52	-1.61	
credit (n/trend)	WS	-2.13	-2.92	-2.85	-1.94	-2.51	-2.92	-2.67	-2.12	-0.45	-0.46	-2.47	-1.14	-1.62	-2.95	-1.70	-2.77	-1.83	
soi (w/trend)	ADF	-0.55	-2.90	-2.34	-1.76	-2.06	-3.28	-3.16	-2.47	-2.63	-2.41	-2.68	-4.11	-2.84	-2.42	-1.42	-3.59	-2.60	
soi (w/trend)	WS	-0.43	-2.40	-2.58	-1.78	-2.36	-3.24	-3.29	-2.40	-2.91	-2.39	-2.73	-4.13	-2.58	-2.71	-1.33	-3.87	-2.79	
soi (n/trend)	ADF	1.04	-2.15	-1.92	-1.29	-2.06	-2.60	-2.95	-1.08	-1.21	-0.40	-2.70	-2.06	-1.54	-2.44	-0.97	-3.24	-1.59	
soi (n/trend)	WS	0.59	-2.31	-2.15	0.28	-2.36	-2.87	-3.20	-1.33	-0.32	-0.40	-2.60	-1.02	-1.87	-2.72	-1.37	-3.37	-1.13	
cpi (w/trend)	ADF	-4.09	-3.24	-2.58	-3.49	-3.72	-5.12	-5.17	-5.88	-4.75	-4.67	-5.13	-4.87	-4.41	-5.19	-3.95	-4.90	-4.87	
cpi (w/trend)	WS	-4.09	-3.03	-2.80	-2.92	-2.26	-5.35	-5.20	-5.09	0.56	-2.26	-5.24	-2.59	-4.31	-5.33	-4.02	-4.49	-4.96	
cpi (n/trend)	ADF	-4.10	-2.93	-2.50	-2.87	-3.59	-4.31	-4.77	-2.17	-4.44	-4.56	-4.97	-4.30	-1.84	-4.90	-3.90	-4.80	-4.45	
cpi (n/trend)	WS	-4.09	-2.98	-2.30	-2.83	-1.97	-3.97	-4.94	-0.84	2.64	-0.94	-5.10	-0.97	-1.06	-5.03	-4.01	-4.00	-4.59	
reserves (w/trend)	ADF	-2.02	-2.78	-3.47	-3.17	-2.25	-3.08	-3.74	-3.11	-3.55	-2.27	-2.61	-2.06	0.12	-3.27	-1.69	-1.43	-2.41	
reserves (w/trend)	WS	-1.95	-2.70	-2.99	-3.15	-2.05	-3.10	-2.24	-2.19	-1.46	-2.49	-2.87	-2.55	-0.76	-3.52	-1.84	-1.03	-2.73	
reserves (n/trend)	ADF	-1.10	-2.41	-1.48	-3.20	-1.25	-3.00	-3.55	-2.77	-4.09	-1.64	-2.57	-1.86	-0.93	-3.27	-1.50	1.46	-2.36	
reserves (n/trend)	WS	-1.25	-2.61	-1.82	-3.13	-1.49	-3.10	-2.27	-2.20	-0.44	-1.74	-2.85	-2.22	-1.09	-3.52	-1.82	-0.46	-2.38	
mon (w/trend)	ADF	-3.15	-5.92	-4.20	-3.61	-5.74	-5.80	-3.13	-6.19	-11.07	-4.67	-3.10	-5.06	-4.80	2.98	-3.99	-1.36	-4.45	
mon (w/trend)	WS	-3.15	-5.72	-3.21	-3.64	-2.91	-5.81	-1.97	-4.17	-1.35	-1.88	-3.00	-0.17	-4.14	1.31	-3.98	-1.30	-3.68	
mon (n/trend)	ADF	-3.37	-5.85	-2.69	-3.74	-2.52	-5.82	-3.56	-5.21	-11.32	-4.26	-3.18	-5.66	-4.51	3.35	-3.92	-1.51	-4.47	
mon (n/trend)	WS	-2.70	-5.51	-2.73	-3.77	-2.13	-5.81	-1.87	-3.92	-1.04	-1.92	-2.85	0.20	-3.12	2.64	-3.73	-1.55	-3.37	

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
Global Variable	Test	Stat																
Oil (w/trend)	ADF	-3.24																
Oil (n/trend)	WS	-3.23																
Oil (w/trend)	ADF	-1.03																
Oil (n/trend)	WS	-0.79																

UK Pre-crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
Domestic Variables																		
y (w/trend)	ADF	-1.50			-1.75		-1.63	-3.62		-4.39		-2.63	-4.15		-2.69	-0.40	-0.68	
y (w/trend)	WS	-1.95			-1.89		-1.54	-2.99		-0.92		-2.52	-4.19		-2.89	-0.73	-1.30	
y (n/trend)	ADF	-1.30			0.25		0.85	-1.27		2.37		-1.32	-0.26		-1.01	1.67	0.70	
y (n/trend)	WS	-1.54			1.60		2.04	1.14		1.38		-0.67	2.09		-0.45	2.57	1.46	
credit (w/trend)	ADF	-3.69		-0.24	-1.30	-0.39	-2.48				-1.98	1.39			-2.16	-3.48	-3.30	
credit (w/trend)	WS	-3.98		-0.44	-2.06	-0.68	-1.91				-2.25	-0.10			-1.27	-1.91	-3.00	
credit (n/trend)	ADF	-1.74		1.89	1.36	-0.53	0.16				-0.68	-1.89			-0.64	-3.38	0.24	
credit (n/trend)	WS	-2.07		1.56	1.52	-0.79	0.48				0.15	-0.14			-1.14	-0.55	0.27	
soi (w/trend)	ADF	-1.53		-2.43	-1.22	-0.83	-1.44	-0.40				-0.69		-1.44		0.57	-1.94	
soi (w/trend)	WS	-1.86		-2.46	-0.92	-0.25	-1.42	-0.47				-0.96		-1.28		-0.08	-0.79	
soi (n/trend)	ADF	-1.45		-1.65	-0.55	0.54	-1.47	-1.93				0.55		-0.76		2.06	-2.16	
soi (n/trend)	WS	-1.43		-0.75	-0.71	0.08	-1.23	0.22				0.22		1.03		1.30	-0.03	
cpi (w/trend)	ADF	-3.83	-6.10	-3.86	-7.77	-4.75	-4.13	-4.50	-2.85	-8.30	-2.54	-2.69	-2.72	-	-6.62	-3.38	-3.07	-3.26
cpi (w/trend)	WS	-3.91	-6.01	-3.20	-7.79	-4.91	-2.05	-4.52	-1.31	-8.21	-2.71	-0.18	-3.07	7	-6.76	-3.51	-3.21	-2.77

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
														11.2				
														9				
														-				
cpi (n/trend)	ADF	-3.58	-5.91	-3.95	-2.45	-1.72	-4.32	-3.87	-3.54	-2.60	-1.52	-3.25	-2.64	11.1	-6.65	-2.04	-3.04	-3.21
														4				
														-				
cpi (n/trend)	WS	-3.75	-5.59	-2.88	-1.48	-1.29	-1.29	-4.03	-1.98	-2.71	-0.49	1.67	-2.82	11.2	-6.78	-1.16	-3.26	-2.08
														4				
reserves (w/trend)	ADF			-0.40	-1.87	-1.02	-0.48	-1.07		-2.58	-2.16	-3.31	-0.73	-3.80	-0.25	0.11	-1.62	-3.07
reserves (w/trend)	WS			-1.02	-1.98	-1.22	-0.79	-1.60		-1.78	-2.64	-3.19	-1.13	-3.78	-0.33	-0.28	-1.89	-3.24
reserves (n/trend)	ADF			-0.38	-1.86	0.69	1.48	-1.32		0.51	0.63	-0.25	0.76	-3.74	0.21	1.22	-1.79	-2.98
reserves (n/trend)	WS			-0.71	-1.70	0.63	1.63	-1.59		0.85	0.40	0.84	1.15	-3.60	-0.14	2.21	-1.87	-2.98
mon (w/trend)	ADF	-3.99	-1.14	-2.53	-1.44	-3.08	-3.13					-3.57	-3.13		-2.37	-3.24	-2.46	-2.42
mon (w/trend)	WS	-4.13	-1.57	-2.59	-1.42	-2.20	-1.92					-1.83	-2.57		-2.46	0.17	-2.15	-1.83
mon (n/trend)	ADF	-3.77	-0.38	-2.64	-1.44	-3.33	-3.37					-3.92	-2.68		-1.65	-3.40	-2.40	-2.61
mon (n/trend)	WS	-3.80	-0.89	-2.19	-1.29	-1.42	-0.45					-1.62	-2.53		-2.03	0.79	-1.66	-1.36
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
y (w/trend)	ADF	-1.87	-2.31	-2.76	-2.65	-2.53	-2.03	-2.15	-3.50	-1.62	-2.03	-2.56	-3.14	-1.93	-1.84	-1.92	-2.18	-2.30
y (w/trend)	WS	-1.67	-2.37	-2.74	-2.76	-2.87	-2.38	-2.24	-1.32	-0.91	-2.00	-2.71	-3.43	-0.91	-1.99	-2.18	-2.23	-2.70
y (n/trend)	ADF	-1.03	-2.06	-2.93	-1.39	-2.30	-2.06	-1.59	-1.41	-1.57	-0.40	-2.58	-1.76	-0.95	-1.97	-2.02	-1.82	-2.46
y (n/trend)	WS	-1.45	-2.33	-2.69	-0.86	-2.11	-2.39	-1.98	-1.37	-0.18	-0.58	-2.71	-1.78	-0.77	-1.70	-2.19	-2.01	-2.79
credit (w/trend)	ADF	-1.43	-2.71	-2.34	-1.55	-2.24	-2.78	-2.19	-2.60	-2.34	-2.52	-2.18	-2.81	-1.89	-1.40	-0.99	-2.33	-1.72
credit (w/trend)	WS	-2.08	-2.85	-2.42	-1.78	-2.60	-2.69	-2.00	-2.57	-1.46	-2.71	-2.51	-3.14	-2.15	-1.29	-1.35	-2.38	-1.94
credit (n/trend)	ADF	-0.89	-2.75	-2.04	-0.81	-2.10	-2.10	-1.92	-2.24	-3.16	-2.53	-1.78	-2.63	-1.73	-1.41	-1.02	-1.99	-1.92
credit (n/trend)	WS	-1.21	-2.77	-2.35	-1.49	-2.26	-2.43	-2.12	-2.57	-0.53	-2.73	-1.59	-2.95	-2.00	-0.98	-1.34	-2.30	-1.90
soi (w/trend)	ADF	-2.43	-2.63	-1.88	-2.59	-1.62	-2.84	-2.19	0.07	-2.78	-1.61	-1.84	-2.04	-1.79	-1.44	-0.33	-3.74	-2.01
soi (w/trend)	WS	-2.61	-2.41	-2.27	-2.10	-2.01	-2.69	-2.12	-0.11	-2.90	-1.70	-2.09	-2.22	-1.89	-1.75	-0.82	-3.93	-2.26
soi (n/trend)	ADF	-2.36	-2.24	-1.90	-0.76	-1.66	-2.10	-2.24	1.34	-0.76	-0.24	-1.87	-1.09	-1.41	-1.13	-0.97	-3.64	-1.05
soi (n/trend)	WS	-2.34	-2.38	-2.29	-0.29	-2.02	-2.41	-2.13	0.60	-0.82	-0.48	-1.67	-0.24	-1.73	-1.21	-1.09	-3.84	-0.96

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
cpi (w/trend)	ADF	-2.62	-3.10	-4.84	-2.73	-2.79	-3.36	-4.11	-4.90	-3.66	-3.89	-4.16	-3.86	-3.82	-4.11	-2.89	-4.00	-3.79
cpi (w/trend)	WS	-2.27	-2.96	-4.89	-2.32	-2.02	-3.44	-4.18	-4.56	-0.15	-1.33	-4.32	-1.72	-3.99	-4.18	-3.09	-3.07	-3.91
cpi (n/trend)	ADF	-2.72	-2.84	-3.08	-2.36	-2.78	-3.34	-3.78	-3.40	-3.41	-4.27	-4.16	-3.78	-2.83	-4.04	-2.76	-4.03	-3.62
cpi (n/trend)	WS	-2.13	-2.93	-3.24	-2.32	-1.50	-3.20	-4.01	-2.27	1.72	-0.01	-4.30	-0.09	-2.44	-4.16	-2.91	-2.94	-3.79
reserves (w/trend)	ADF	-1.98	-2.36	-2.07	-2.39	-2.28	-2.40	-2.81	-3.11	-1.91	-2.23	-2.64	-2.80	-2.27	-2.26	-1.04	-0.45	-2.25
reserves (w/trend)	WS	-1.66	-2.20	-1.65	-2.53	-2.35	-2.52	-2.10	-2.01	-2.01	-2.28	-2.85	-3.23	-1.85	-2.40	-1.40	-0.50	-2.60
reserves (n/trend)	ADF	-0.89	-1.88	-1.79	-2.39	-2.24	-2.38	-2.97	-2.79	-1.94	-2.11	-2.38	-2.95	-0.25	-2.27	-1.33	0.39	-1.26
reserves (n/trend)	WS	-1.30	-2.15	-1.72	-2.52	-2.36	-2.53	-1.93	-1.75	-1.18	-2.28	-2.48	-2.92	-0.58	-2.36	-1.57	0.11	-1.18
mon (w/trend)	ADF	-2.68	-4.90	-3.45	-2.63	-6.01	-4.59	-1.95	-5.22	-8.53	-3.63	-3.14	-3.58	-4.17	-3.52	-2.86	-2.38	-4.05
mon (w/trend)	WS	-2.39	-4.94	-3.03	-2.83	-3.73	-4.72	-1.93	-3.38	-1.62	-1.64	-1.41	-0.93	-3.86	-3.67	-2.85	-1.21	-3.87
mon (n/trend)	ADF	-2.78	-4.56	-4.14	-2.80	-6.10	-4.54	-2.91	-4.45	-9.75	-4.16	-3.41	-4.62	-3.69	-3.52	-2.87	-1.81	-3.59
mon (n/trend)	WS	-1.96	-4.37	-4.17	-2.97	-3.76	-4.60	-2.05	-3.24	-0.99	-1.03	-0.96	0.20	-2.59	-3.68	-2.78	-1.18	-2.78
Global Variable	Test	Stat																
Oil (w/trend)	ADF	-2.18																
Oil (n/trend)	WS	-2.19																
Oil (w/trend)	ADF	-0.56																
Oil (n/trend)	WS	-0.65																

UK Crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
Domestic Variables																		
y (w/trend)	ADF	-2.53			-2.21		-2.25	-3.09		-1.58		-2.37	-1.48		-2.95	-2.11	-3.17	
y (w/trend)	WS	-2.61			-1.86		-2.49	-1.70		-1.66		-2.29	-1.84		-3.14	-2.30	-2.16	

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
y (n/trend)	ADF	-1.19			-0.08		0.11	0.76		1.25		-0.15	0.06		-0.68	-1.28	-0.08	
y (w/trend)	WS	0.80			0.74		0.84	0.13		0.91		-0.25	1.02		-0.16	1.29	-0.34	
credit (w/trend)	ADF	-1.50		-2.61	-1.77	-3.03	-2.78				-2.72	-3.89			-1.22	-3.46	-1.83	
credit (w/trend)	WS	-1.82		-2.03	-2.04	-2.67	-1.92				-3.33	-3.85			-0.84	-2.49	-1.04	
credit (n/trend)	ADF	-0.97		-1.79	-0.39	0.14	-1.81				-1.17	-0.58			-2.77	-0.66	-2.55	
credit (n/trend)	WS	0.69		-0.20	1.87	0.35	2.99				0.36	1.13			0.08	0.68	-0.50	
soi (w/trend)	ADF	-2.21		-2.82	-1.53	-1.71	-0.80	-1.93				-3.22		-2.07		-2.95	-2.47	
soi (w/trend)	WS	-2.23		-2.63	-1.85	-1.80	-1.50	-1.66				-3.07		-1.21		-3.10	-2.34	
soi (n/trend)	ADF	-1.69		-2.02	-1.44	-1.39	-1.52	-2.55				-2.22		-0.95		-2.72	-2.00	
soi (n/trend)	WS	-1.91		-2.26	-1.61	-1.67	-1.59	-1.40				-2.53		-1.39		-2.97	-2.16	
cpi (w/trend)	ADF	-4.23	-2.86	-4.82	-3.08	-3.91	-3.33	-2.68	-5.51	-3.50	-4.41	-6.85	-3.59	-4.98	-2.81	-3.66	-2.99	-6.37
cpi (w/trend)	WS	-4.37	-3.22	-4.93	-3.31	-4.04	-3.58	-2.44	-5.69	-3.44	-4.58	-6.98	-3.76	-5.08	-3.16	-3.49	-3.20	-6.05
cpi (n/trend)	ADF	-3.46	-2.83	-4.63	-3.02	-2.98	-2.44	-2.25	-5.30	-3.56	-4.24	-6.64	-3.70	-4.79	-3.00	-3.55	-2.97	-8.30
cpi (n/trend)	WS	-3.64	-2.98	-4.60	-3.24	-2.54	-2.66	-2.41	-5.49	-3.04	-4.43	-6.83	-3.53	-4.95	-3.07	-3.51	-3.19	-8.41
reserves (w/trend)	ADF			-1.36	-2.47	-1.10	-1.49	-4.01		-3.29	-3.58	-1.98	-2.64	-2.15	-4.24	-2.31	-1.83	-1.31
reserves (w/trend)	WS			-1.84	-2.88	-1.61	-1.81	-3.35		-3.52	-3.66	-1.59	-2.86	-1.20	-4.43	-2.59	-1.70	-1.45
reserves (n/trend)	ADF			-0.93	-1.21	1.51	-0.21	-3.99		-0.67	-1.93	0.48	-0.63	-2.60	-0.66	-1.12	-0.07	1.04
reserves (n/trend)	WS			0.50	-0.36	1.19	0.10	-3.37		1.09	-2.18	0.39	1.10	-0.85	1.35	0.61	0.20	1.80
mon (w/trend)	ADF	-1.94	-1.52	-4.27	-1.72	-1.91	-2.41					-2.02	-2.19		-2.68	-2.06	-1.65	-1.69
mon (w/trend)	WS	-2.01	-1.69	-2.64	-1.81	-1.84	-1.13					-2.40	-2.42		-2.99	-2.43	-1.72	-2.26
mon (n/trend)	ADF	-1.36	-2.18	-1.21	-1.76	-1.75	-3.11					-1.93	-2.07		-2.12	-1.74	-1.85	-1.23
mon (n/trend)	WS	-1.84	-0.91	-1.67	-1.54	-1.88	-0.28					-2.10	-2.35		-1.61	-1.80	-1.21	-1.58
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
y (w/trend)	ADF	-2.44	-2.37	-0.51	-2.13	-1.74	-2.01	-1.20	-3.14	-2.09	-1.58	-1.66	-1.27	-2.33	-1.86	-1.32	-1.85	-3.02
y (w/trend)	WS	-1.47	-2.60	-0.98	-2.25	-1.69	-2.41	-1.51	-2.88	-2.56	-1.73	-1.97	-1.33	-2.37	-1.87	-1.44	-1.98	-3.42
y (n/trend)	ADF	-1.94	-1.94	-1.55	-1.39	-1.92	-2.12	-1.40	-1.12	-2.25	-1.40	-1.99	-1.42	-0.08	0.11	-2.05	-1.49	-0.25

Japan Full Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
Domestic Variables																		
y (w/trend)	ADF	-1.60			-2.35		-2.12	-4.16		-2.52		-2.44	-3.37	-2.18		-1.28	-1.74	
y (w/trend)	WS	-1.46			-2.40		-2.16	-3.81		-1.45		-2.58	-3.34	-1.95		-1.21	-0.83	
y (n/trend)	ADF	0.22			-0.69		-0.26	-0.39		0.87		-1.23	-1.28	-1.08		1.31	1.35	
y (n/trend)	WS	-0.13			3.23		2.13	2.13		1.66		0.06	-0.25	2.37		1.42	2.20	
credit (w/trend)	ADF	-2.22		-2.12	-2.83	-0.82	-2.75				-3.47	-1.05	-2.40			-1.07	-2.37	
credit (w/trend)	WS	-2.41		-1.23	-3.10	-0.85	-3.10				-3.68	-1.70	-0.38			-1.46	-2.24	
credit (n/trend)	ADF	-2.01		0.63	0.28	1.15	-1.36				-1.53	-2.10	-1.99			-0.26	-0.39	
credit (n/trend)	WS	-2.22		0.06	0.41	0.87	0.01				-0.85	-1.04	-0.48			-0.63	0.50	
soi (w/trend)	ADF	-2.46		-2.50	-2.37	-2.11	-1.88	-2.13				-1.87	-1.95		-2.34		-2.15	
soi (w/trend)	WS	-2.69		-2.51	-1.38	-0.79	-1.68	-0.52				-2.12	-1.89		-1.84		-1.93	
soi (n/trend)	ADF	-1.44		-2.28	-0.74	-0.37	-1.85	-2.81				-1.90	-0.89		-1.96		-0.75	
soi (n/trend)	WS	-1.38		-1.12	-1.21	-0.96	-1.84	0.36				-1.84	-0.73		0.58		-0.83	
cpi (w/trend)	ADF	-4.92	-4.22	-5.06	-3.88	-3.12	-4.38	-4.61	-8.92	-5.03	-2.93	-1.76	-4.04	-4.16	-7.85	-5.77	-2.95	-4.41
cpi (w/trend)	WS	-5.00	-4.17	-3.59	-3.87	-3.16	-3.25	-4.65	-9.01	-5.28	-2.63	-2.16	1.03	-4.39	-7.98	-6.03	-2.60	-3.40
cpi (n/trend)	ADF	-4.49	-4.22	-5.17	-3.82	-1.82	-3.68	-3.12	-4.26	-4.40	-2.19	-1.93	-4.59	-4.05	-3.80	-8.48	-3.12	-4.36
cpi (n/trend)	WS	-4.63	-4.17	-3.16	-3.53	-0.70	-1.57	-3.31	-3.11	-4.60	-0.87	-2.18	2.83	-4.23	-3.93	-8.62	-2.10	-2.80
reserves (w/trend)	ADF			-1.55	-0.76	0.66	-1.20	-2.13		-2.78	-3.08	-2.23	0.37	-1.21	-1.80	-0.67	-1.18	1.21
reserves (w/trend)	WS			-1.05	-1.08	1.32	-0.98	-2.10		-1.03	-3.32	-1.95	-0.11	-1.01	-2.03	0.26	-0.97	1.08
reserves (n/trend)	ADF			0.64	0.75	4.82	1.25	-0.98		1.18	-0.94	-0.18	2.69	1.18	-1.17	2.59	0.94	3.94
reserves (n/trend)	WS			-0.01	0.26	3.24	1.19	-1.26		1.69	0.11	0.59	2.56	1.40	-1.02	1.70	0.46	3.03
mon (w/trend)	ADF	-3.06	-1.39	-2.59	-2.19	-4.07	-3.55					-3.62	-4.98	-3.60		-2.03	-3.24	-2.96

mon (n/trend)	WS	-3.46	-0.17	-4.65	-3.65	-0.72	-1.43	-0.05	0.51	-1.32	-2.12	-1.73	-1.56	-0.88	-0.84	-2.85	-2.83	-3.45	
Global Variable	Test	Stat																	
Oil (w/trend)	ADF	-3.24																	
Oil (n/trend)	WS	-3.23																	
Oil (w/trend)	ADF	-1.03																	
Oil (n/trend)	WS	-0.79																	

Japan Pre-crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
Domestic Variables																		
y (w/trend)	ADF	-1.50			-1.75		-1.63	-3.62		-4.39		-1.11	-2.63	-4.15		-2.69	-0.40	
y (w/trend)	WS	-1.95			-1.89		-1.54	-2.99		-0.92		-1.58	-2.52	-4.19		-2.89	-0.73	
y (n/trend)	ADF	-1.30			0.25		0.85	-1.27		2.37		0.56	-1.32	-0.26		-1.01	1.67	
y (n/trend)	WS	-1.54			1.60		2.04	1.14		1.38		1.32	-0.67	2.09		-0.45	2.57	
credit (w/trend)	ADF	-3.69		-0.24	-1.30	-0.39	-2.48				-1.98	-1.88	1.39			-2.16	-3.48	
credit (w/trend)	WS	-3.98		-0.44	-2.06	-0.68	-1.91				-2.25	-1.86	-0.10			-1.27	-1.91	
credit (n/trend)	ADF	-1.74		1.89	1.36	-0.53	0.16				-0.68	-1.29	-1.89			-0.64	-3.38	
credit (n/trend)	WS	-2.07		1.56	1.52	-0.79	0.48				0.15	-1.26	-0.14			-1.14	-0.55	
soi (w/trend)	ADF	-1.53		-2.43	-1.22	-0.83	-1.44	-0.40				-0.93	-0.69		-1.44		0.57	
soi (w/trend)	WS	-1.86		-2.46	-0.92	-0.25	-1.42	-0.47				-1.28	-0.96		-1.28		-0.08	
soi (n/trend)	ADF	-1.45		-1.65	-0.55	0.54	-1.47	-1.93				-1.30	0.55		-0.76		2.06	
soi (n/trend)	WS	-1.43		-0.75	-0.71	0.08	-1.23	0.22				-1.42	0.22		1.03		1.30	
cpi (w/trend)	ADF	-3.83	-6.10	-3.86	-7.77	-4.75	-4.13	-4.50	-2.85	-8.30	-2.54	-1.95	-2.69	-2.72	-11.17	-6.62	-3.38	-3.26
cpi (w/trend)	WS	-3.91	-6.01	-3.20	-7.79	-4.91	-2.05	-4.52	-1.31	-8.21	-2.71	-2.23	-0.18	-3.07	-11.29	-6.76	-3.51	-2.77
cpi (n/trend)	ADF	-3.58	-5.91	-3.95	-2.45	-1.72	-4.32	-3.87	-3.54	-2.60	-1.52	-1.76	-3.25	-2.64	-11.14	-6.65	-2.04	-3.21
cpi (n/trend)	WS	-3.75	-5.59	-2.88	-1.48	-1.29	-1.29	-4.03	-1.98	-2.71	-0.49	-2.13	1.67	-2.82	-11.24	-6.78	-1.16	-2.08

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
reserves (w/trend)	ADF			-0.40	-1.87	-1.02	-0.48	-1.07		-2.58	-2.16	-1.75	-3.31	-0.73	-3.80	-0.25	0.11	-3.07
reserves (w/trend)	WS			-1.02	-1.98	-1.22	-0.79	-1.60		-1.78	-2.64	-1.77	-3.19	-1.13	-3.78	-0.33	-0.28	-3.24
reserves (n/trend)	ADF			-0.38	-1.86	0.69	1.48	-1.32		0.51	0.63	0.11	-0.25	0.76	-3.74	0.21	1.22	-2.98
reserves (n/trend)	WS			-0.71	-1.70	0.63	1.63	-1.59		0.85	0.40	-0.02	0.84	1.15	-3.60	-0.14	2.21	-2.98
mon (w/trend)	ADF	-3.99	-1.14	-2.53	-1.44	-3.08	-3.13					-2.92	-3.57	-3.13		-2.37	-3.24	-2.42
mon (w/trend)	WS	-4.13	-1.57	-2.59	-1.42	-2.20	-1.92					-2.86	-1.83	-2.57		-2.46	0.17	-1.83
mon (n/trend)	ADF	-3.77	-0.38	-2.64	-1.44	-3.33	-3.37					-2.87	-3.92	-2.68		-1.65	-3.40	-2.61
mon (n/trend)	WS	-3.80	-0.89	-2.19	-1.29	-1.42	-0.45					-2.44	-1.62	-2.53		-2.03	0.79	-1.36
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
y (w/trend)	ADF	-1.73	-2.56	-2.59	-2.69	-1.88	-2.33	-2.28	-3.25	-2.42	-1.54	-2.29	-2.58	-3.23	-1.93	-0.45	0.50	-2.09
y (w/trend)	WS	-1.78	-2.97	-2.75	-2.47	-2.11	-2.61	-2.50	-2.32	-2.15	-1.70	-2.62	-2.88	-3.41	-1.90	-1.26	-1.28	-2.34
y (n/trend)	ADF	-1.29	0.40	-2.53	-1.51	-1.97	-2.32	-2.33	-1.57	-2.13	-1.62	-2.68	-2.18	-0.79	-1.93	-0.94	1.04	-1.17
y (n/trend)	WS	-1.66	0.64	-2.74	-1.93	-2.14	-2.62	-2.48	0.30	-2.19	-1.71	-1.48	-2.44	-0.08	-1.91	-1.25	0.43	-0.84
credit (w/trend)	ADF	-0.81	-2.27	-2.08	-2.07	-2.59	-1.98	-2.19	-0.74	-1.92	-1.90	-2.49	-2.53	-2.97	-1.81	-0.96	0.17	-1.41
credit (w/trend)	WS	-1.97	-2.42	-2.35	-2.43	-2.87	-2.15	-2.42	-1.14	-1.94	-2.17	-2.39	-3.17	-3.27	-2.07	-1.60	-1.11	-1.72
credit (n/trend)	ADF	-0.26	-2.26	-2.13	-2.07	-1.93	-1.68	-2.18	-1.32	-2.02	-1.92	-1.89	-2.09	-2.94	-1.61	-1.60	1.48	-1.66
credit (n/trend)	WS	-0.60	-1.90	-2.36	-2.42	-0.62	-1.92	-2.42	-1.01	-1.09	-2.19	-0.77	-0.71	-3.27	-1.89	-1.54	0.02	-1.63
soi (w/trend)	ADF	-2.65	-1.35	-1.84	-2.35	-1.87	-1.81	-1.85	-0.13	-1.53	-2.17	-1.64	-2.06	-1.16	-0.82	-0.72	-2.28	-1.62
soi (w/trend)	WS	-2.96	-1.31	-2.12	-2.47	-2.06	-2.05	-1.28	-0.88	-1.05	-2.28	-1.82	-2.81	-1.64	-1.08	-0.85	-2.70	-1.92
soi (n/trend)	ADF	-2.66	-2.03	-1.87	-2.35	-1.85	-1.81	-2.35	-0.59	0.46	-2.04	-0.75	-2.63	-1.69	-0.67	-0.76	0.61	-1.37
soi (n/trend)	WS	-3.01	-0.63	-2.14	-2.49	-1.97	-2.02	-0.71	-0.87	-0.30	-1.92	-1.04	-2.33	-1.49	-1.02	-0.84	0.47	-1.51
cpi (w/trend)	ADF	-3.48	-4.20	-5.43	-4.94	-3.28	-3.66	-2.00	-4.53	-3.40	-2.94	-2.20	-3.08	-1.55	-5.03	-4.16	-4.42	-3.93
cpi (w/trend)	WS	-2.92	-4.33	-5.45	-5.11	-3.23	-3.14	-2.38	-4.56	-3.18	-0.33	0.24	-2.73	-1.33	-5.17	-4.28	-4.57	-4.05
cpi (n/trend)	ADF	-3.49	-4.20	-3.56	-4.62	-3.32	-3.55	-1.70	-2.94	-3.68	-3.99	-3.76	-2.85	-2.04	-2.97	-4.10	-4.21	-3.77
cpi (n/trend)	WS	-2.20	-4.34	-3.75	-4.87	-3.21	-2.38	-1.83	-2.35	-3.46	0.99	1.84	-2.72	-0.19	-2.78	-4.25	-4.32	-3.94
reserves (w/trend)	ADF	-2.51	-2.19	-1.93	-1.24	-1.69	-2.67	-1.51	-3.00	-1.96	-2.97	-3.12	-2.44	-1.68	-0.96	-1.98	0.77	-2.26

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
reserves (w/trend)	WS	-2.88	-2.49	-1.85	-1.59	-1.94	-2.68	-1.69	-3.35	-2.17	-3.16	-3.31	-2.91	-1.76	-1.31	-1.77	-1.54	-2.32
reserves (n/trend)	ADF	-2.29	-2.05	-1.84	0.15	-1.95	-2.01	-1.02	-1.50	-1.46	-1.22	-0.34	-2.14	-0.34	0.50	-0.33	-0.07	-2.75
reserves (n/trend)	WS	-2.45	-2.42	-1.87	0.38	-1.81	-2.27	-1.36	-1.14	-1.71	-0.22	1.24	-2.40	-0.01	0.96	-0.57	0.49	-2.83
mon (w/trend)	ADF	-2.43	-2.45	-4.02	-2.92	-3.33	-4.37	-2.61	-2.82	-3.31	-3.04	-3.58	-2.71	-3.61	-2.93	-2.83	-2.40	-4.10
mon (w/trend)	WS	-2.70	-1.55	-4.16	-2.85	-2.59	-4.51	-1.41	-2.21	-3.05	-3.21	-1.79	-2.22	-3.14	-3.00	-2.84	-2.63	-4.26
mon (n/trend)	ADF	-2.17	-2.67	-3.65	-2.25	-3.07	-4.05	-2.71	-2.08	-2.92	-2.83	-4.19	-3.12	-3.01	-2.34	-2.82	-1.92	-4.12
mon (n/trend)	WS	-2.36	-0.44	-3.95	-2.48	-1.02	-4.08	-0.16	-0.07	-1.97	-3.10	-1.36	-1.18	-1.65	-1.70	-2.86	-2.04	-4.26
Global Variable	Test	Stat																
Oil (w/trend)	ADF	-2.18																
Oil (n/trend)	WS	-2.19																
Oil (w/trend)	ADF	-0.56																
Oil (n/trend)	WS	-0.65																

Japan Crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
Domestic Variables																		
y (w/trend)	ADF	-2.53			-2.21		-2.25	-3.09		-1.58		-2.21	-2.37	-1.48		-2.95	-2.11	
y (w/trend)	WS	-2.61			-1.86		-2.49	-1.70		-1.66		-2.05	-2.29	-1.84		-3.14	-2.30	
y (n/trend)	ADF	-1.19			-0.08		0.11	0.76		1.25		-1.77	-0.15	0.06		-0.68	-1.28	
y (n/trend)	WS	0.80			0.74		0.84	0.13		0.91		-1.98	-0.25	1.02		-0.16	1.29	
credit (w/trend)	ADF	-1.50		-2.61	-1.77	-3.03	-2.78				-2.72	-1.93	-3.89			-1.22	-3.46	
credit (w/trend)	WS	-1.82		-2.03	-2.04	-2.67	-1.92				-3.33	-2.40	-3.85			-0.84	-2.49	
credit (n/trend)	ADF	-0.97		-1.79	-0.39	0.14	-1.81				-1.17	-1.39	-0.58			-2.77	-0.66	

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
credit (n/trend)	WS	0.69		-0.20	1.87	0.35	2.99				0.36	-1.52	1.13			0.08	0.68	
soi (w/trend)	ADF	-2.21		-2.82	-1.53	-1.71	-0.80	-1.93				-1.55	-3.22		-2.07		-2.95	
soi (w/trend)	WS	-2.23		-2.63	-1.85	-1.80	-1.50	-1.66				-1.20	-3.07		-1.21		-3.10	
soi (n/trend)	ADF	-1.69		-2.02	-1.44	-1.39	-1.52	-2.55				-1.90	-2.22		-0.95		-2.72	
soi (n/trend)	WS	-1.91		-2.26	-1.61	-1.67	-1.59	-1.40				-1.16	-2.53		-1.39		-2.97	
cpi (w/trend)	ADF	-4.23	-2.86	-4.82	-3.08	-3.91	-3.33	-2.68	-5.51	-3.50	-4.41	-0.99	-6.85	-3.59	-4.98	-2.81	-3.66	-6.37
cpi (w/trend)	WS	-4.37	-3.22	-4.93	-3.31	-4.04	-3.58	-2.44	-5.69	-3.44	-4.58	-1.40	-6.98	-3.76	-5.08	-3.16	-3.49	-6.05
cpi (n/trend)	ADF	-3.46	-2.83	-4.63	-3.02	-2.98	-2.44	-2.25	-5.30	-3.56	-4.24	-0.93	-6.64	-3.70	-4.79	-3.00	-3.55	-8.30
cpi (n/trend)	WS	-3.64	-2.98	-4.60	-3.24	-2.54	-2.66	-2.41	-5.49	-3.04	-4.43	-1.22	-6.83	-3.53	-4.95	-3.07	-3.51	-8.41
reserves (w/trend)	ADF			-1.36	-2.47	-1.10	-1.49	-4.01		-3.29	-3.58	-2.60	-1.98	-2.64	-2.15	-4.24	-2.31	-1.31
reserves (w/trend)	WS			-1.84	-2.88	-1.61	-1.81	-3.35		-3.52	-3.66	-2.87	-1.59	-2.86	-1.20	-4.43	-2.59	-1.45
reserves (n/trend)	ADF			-0.93	-1.21	1.51	-0.21	-3.99		-0.67	-1.93	-0.84	0.48	-0.63	-2.60	-0.66	-1.12	1.04
reserves (n/trend)	WS			0.50	-0.36	1.19	0.10	-3.37		1.09	-2.18	0.07	0.39	1.10	-0.85	1.35	0.61	1.80
mon (w/trend)	ADF	-1.94	-1.52	-4.27	-1.72	-1.91	-2.41					-2.64	-2.02	-2.19		-2.68	-2.06	-1.69
mon (w/trend)	WS	-2.01	-1.69	-2.64	-1.81	-1.84	-1.13					-2.81	-2.40	-2.42		-2.99	-2.43	-2.26
mon (n/trend)	ADF	-1.36	-2.18	-1.21	-1.76	-1.75	-3.11					-2.35	-1.93	-2.07		-2.12	-1.74	-1.23
mon (n/trend)	WS	-1.84	-0.91	-1.67	-1.54	-1.88	-0.28					-2.27	-2.10	-2.35		-1.61	-1.80	-1.58
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PARA	PERU	URU
y (w/trend)	ADF	-2.37	-2.23	-1.97	-1.79	-1.71	-2.25	-2.33	-1.64	-2.06	-1.55	-1.65	0.79	-1.69	-0.45	-1.35	-1.63	-1.03
y (w/trend)	WS	-1.56	-2.44	-1.57	-2.06	-2.02	-2.46	-1.95	-1.62	-2.44	-1.63	-1.79	-1.19	-1.44	-1.86	-2.36	-1.92	-1.31
y (n/trend)	ADF	0.21	-2.26	-0.37	-1.79	-1.17	-1.02	-2.29	-0.50	-2.11	-1.50	-1.38	-1.12	0.20	-2.33	-1.98	-1.83	-1.70
y (n/trend)	WS	-0.18	-2.20	-0.75	-2.03	-0.70	-1.07	-1.45	-0.74	-0.92	-1.64	-1.85	-0.38	-0.06	-1.46	-2.03	-0.44	-0.19
credit (w/trend)	ADF	-1.56	-1.69	-1.65	-1.30	-0.64	-1.57	-1.84	-0.91	-1.56	-1.81	-1.94	-1.39	-0.82	-1.98	-2.11	-2.09	-3.04
credit (w/trend)	WS	-1.91	-1.56	-1.54	-1.84	-2.09	-1.51	-2.13	-1.30	-1.99	-1.63	-1.64	-1.14	-1.10	-0.96	-2.20	-2.07	-3.25
credit (n/trend)	ADF	-1.99	-1.72	-0.49	-0.79	-1.98	-1.90	-1.26	-1.68	-1.30	-1.92	-1.69	-0.86	-0.06	-2.42	-2.05	-1.79	-0.72
credit (n/trend)	WS	-1.22	-1.56	-0.85	-1.73	-2.21	-1.28	-1.35	0.11	0.25	0.48	-1.85	-1.17	0.82	1.67	-2.23	-0.62	1.35

Europe Full Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
Domestic Variables																		
y (w/trend)	ADF	-4.31			-2.15		-2.07	-1.75		-1.30	-2.54		-2.86	-2.27		-2.24	-2.88	
y (w/trend)	WS	-1.52			-2.30		-2.24	-2.03		-1.23	-2.53		-2.64	-2.13		-2.07	-1.27	
y (n/trend)	ADF	0.28			-0.41		-0.84	-0.14		-1.65	-0.62		-0.09	0.28		0.78	0.18	
y (n/trend)	WS	-0.20			2.25		-0.06	2.25		0.51	1.11		0.17	0.70		1.36	0.37	
credit (w/trend)	ADF	-2.57		-2.41	-1.92	-3.11	-2.60			-0.57		-2.90	-3.31			-1.60	-1.99	
credit (w/trend)	WS	-1.22		-1.05	-0.88	-0.98	-2.84			-1.47		-3.10	-1.41			-0.50	-0.86	
credit (n/trend)	ADF	-0.87		0.53	0.61	0.86	-1.40			-1.20		-0.73	-0.69			0.76	0.33	
credit (n/trend)	WS	-1.22		0.27	1.93	0.77	2.61			0.01		-0.18	-1.17			-0.08	-0.57	
soi (w/trend)	ADF	-2.86		-1.70	-1.92	-1.04	-1.64	-2.44		-2.07			-1.57		-2.67		-1.74	
soi (w/trend)	WS	-2.85		-1.79	-1.99	-1.68	-1.95	-2.42		-1.96			-1.99		-1.79		-1.82	
soi (n/trend)	ADF	-1.31		-1.43	-1.18	-2.26	-1.94	-2.83		-2.41			-1.42		-0.59		-1.11	
soi (n/trend)	WS	-1.51		-1.70	-0.89	-1.21	-1.89	-1.71		-1.63			-0.79		-0.85		-0.91	
cpi (w/trend)	ADF	-4.24	-3.55	-3.29	-4.92	-6.34	-4.10	-4.72	-8.41	-2.69	-4.57	-6.61	-3.41	-5.19	-6.76	-8.14	-7.02	-6.14
cpi (w/trend)	WS	-4.38	-3.86	-3.32	-5.05	-6.04	-4.25	0.89	-8.54	-2.37	-4.72	-6.75	-2.37	-5.11	-6.89	-8.29	-7.15	-6.22
cpi (n/trend)	ADF	-4.21	-3.45	-2.95	-4.94	-3.74	-3.26	-4.67	-8.30	-2.40	-3.24	-6.23	-3.41	-5.21	-3.28	-7.85	-6.90	-6.13
cpi (n/trend)	WS	-4.31	-3.69	-3.17	-5.06	-3.21	-3.45	2.53	-8.44	-1.16	-3.29	-6.33	-1.53	-5.12	-3.44	-7.97	-7.03	-6.23
reserves (w/trend)	ADF			-1.83	-1.64	-0.35	-2.00	-3.25		-1.15	-4.69	-2.66	-0.23	-3.26	-1.47	-2.13	-2.16	-0.37
reserves (w/trend)	WS			-1.02	-1.30	0.56	-1.56	-3.42		-0.81	-4.84	-2.95	-0.17	-1.11	-1.69	-0.12	-1.28	0.66
reserves (n/trend)	ADF			0.03	0.50	3.44	0.78	-1.93		-0.09	0.08	-1.18	2.53	0.58	-1.13	1.79	0.44	3.11
reserves (n/trend)	WS			-0.16	-0.04	2.72	0.75	-1.79		-0.58	1.97	-0.54	2.50	0.17	-1.02	1.27	0.11	2.10
mon (w/trend)	ADF	-4.36	-1.31	-1.98	-1.57	-1.95	-1.65			-2.40			-2.84	-2.83		-1.68	-4.87	-1.33
mon (w/trend)	WS	-4.41	-1.34	-1.71	-1.93	-2.19	-2.01			-2.24			-2.17	-3.08		-1.95	-5.08	-1.72
mon (n/trend)	ADF	-4.38	-1.56	-2.34	-1.65	-2.07	-1.58			-2.01			-2.46	-2.70		-1.89	-2.53	-1.79

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
mon (n/trend)	WS	-4.38	-1.23	-1.65	-2.00	-1.97	-1.95			-2.25			-0.55	-2.98		-1.86	-2.46	-1.67
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
y (w/trend)	ADF	-1.68	-2.26	1.92	-2.48	-2.76	-2.39	-2.74	-0.60	-2.73	-2.84	-1.93	-2.80	-3.16	-2.13	-2.06	-1.98	-2.01
y (w/trend)	WS	-1.81	-2.57	-0.11	-2.55	-2.61	-2.65	-2.90	-1.66	-1.79	-1.73	-2.10	-2.34	-2.73	-1.68	-2.30	-2.01	-2.16
y (n/trend)	ADF	-1.84	-2.12	1.73	-2.54	-1.12	-2.39	-2.59	-1.13	-2.59	-2.14	-1.56	-1.91	-3.11	-0.91	-1.51	-1.11	-2.12
y (n/trend)	WS	-1.57	-2.42	0.59	-2.29	-1.48	-2.57	-2.85	-1.60	-1.33	-1.86	-1.66	-2.23	-2.26	-1.31	-0.99	-1.32	-2.12
credit (w/trend)	ADF	-1.02	-2.63	1.65	-2.36	-1.19	-2.04	-2.43	-1.94	-2.22	-2.94	-1.92	-2.38	-3.57	-2.86	-2.15	-1.65	-2.06
credit (w/trend)	WS	-1.94	-2.94	-0.12	-2.45	-2.04	-2.34	-1.95	-2.15	-2.55	-1.68	-1.98	-2.18	-2.99	-1.70	-2.19	-1.52	-1.82
credit (n/trend)	ADF	-0.27	-2.53	0.50	-2.22	-0.19	-1.27	-2.33	-1.66	-2.21	-1.06	-1.23	-1.75	-2.51	-1.70	-1.59	-1.10	-1.00
credit (n/trend)	WS	-1.04	-2.83	-0.18	-2.45	-1.84	-1.83	-2.00	-1.86	-2.52	-1.66	-1.31	-2.05	-2.65	-1.75	-0.19	-1.38	-1.37
soi (w/trend)	ADF	-3.94	-1.37	-0.29	-2.65	-2.42	-1.58	-2.76	-2.42	0.02	-1.97	-2.16	-2.36	-2.93	-2.74	-2.16	-2.36	-2.40
soi (w/trend)	WS	-1.79	-1.78	-0.39	-2.79	-2.44	-2.18	-2.32	-2.77	-0.45	-1.97	-2.37	-1.35	-2.86	-3.06	-2.32	-2.58	-2.14
soi (n/trend)	ADF	-1.77	-1.69	-0.24	-2.66	-2.12	-2.74	-2.78	-1.04	0.46	-1.57	-2.26	-1.41	-1.76	-1.90	-1.84	-2.29	-2.61
soi (n/trend)	WS	-0.81	-1.41	0.00	-2.72	-2.45	-2.57	-1.48	-0.92	0.20	-0.36	-2.42	-1.30	-0.89	-1.15	-1.06	-2.47	-2.14
cpi (w/trend)	ADF	-2.77	-3.37	-2.90	-3.30	-1.46	-2.41	-2.65	-2.80	-3.68	-3.53	-3.36	-2.53	-3.71	-3.86	-2.82	-3.84	-3.12
cpi (w/trend)	WS	-1.85	-3.22	-2.76	-3.33	-1.87	-2.29	-2.60	-0.74	-3.88	-3.66	-3.48	-2.38	-2.87	0.50	-1.26	-2.78	-3.22
cpi (n/trend)	ADF	-2.66	-3.08	-3.66	-3.24	-1.91	-2.67	-2.61	-2.02	-3.70	-2.52	-2.48	-2.53	-3.21	-3.91	-3.02	-3.49	-3.07
cpi (n/trend)	WS	-1.78	-2.38	-3.68	-3.05	-2.09	-1.42	-1.91	0.89	-3.89	-2.22	-1.93	-2.20	-2.85	1.66	0.24	-1.49	-2.93
reserves (w/trend)	ADF	-2.60	-2.68	-0.14	-2.49	-1.80	-2.60	-2.34	0.31	-2.22	-1.99	-1.87	-1.52	-2.98	-1.37	-1.90	-1.67	-2.15
reserves (w/trend)	WS	-1.93	-1.44	-1.48	-2.76	-2.21	-2.34	-2.51	-0.94	-2.55	-2.07	-2.02	-0.81	-2.78	-1.23	-1.51	-1.37	-2.37
reserves (n/trend)	ADF	-2.78	-3.04	-1.03	-2.21	-1.93	-2.69	-2.36	-0.08	-2.24	-1.96	-1.43	0.20	-2.95	-0.48	-1.80	0.29	-2.09
reserves (n/trend)	WS	-1.85	-0.01	-1.44	-2.47	-2.23	-1.07	-2.32	-0.47	-2.53	-2.16	-1.52	-0.54	-2.44	-1.20	-1.50	-0.04	-2.37
mon (w/trend)	ADF	-0.46	-1.39	-1.87	-3.00	-2.64	-4.61	-3.22	-2.39	-3.37	-2.18	-2.43	-2.24	-2.52	-3.12	-2.48	-2.73	-3.19
mon (w/trend)	WS	-1.72	-1.58	-2.47	-2.74	-2.13	-0.51	-3.20	-2.02	-2.63	-2.37	-2.62	-1.95	-1.70	-1.15	-2.13	-2.73	-3.23
mon (n/trend)	ADF	-0.03	-1.85	-1.39	-2.88	-0.23	-4.83	-3.42	-2.26	-3.33	-2.12	-1.71	-1.48	-2.69	-0.92	-2.43	-1.59	-3.22
mon (n/trend)	WS	-1.39	-1.14	-2.22	-2.82	-0.44	0.61	-3.19	-2.55	-2.55	-2.38	-1.72	-1.81	-1.12	-1.36	-2.32	-1.79	-3.08

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
Global Variable	Test	Stat																
Oil (w/trend)	ADF	-2.80																
Oil (n/trend)	WS	-3.11																
Oil (w/trend)	ADF	-1.27																
Oil (n/trend)	WS	-0.72																

Europe Pre-Crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
Domestic Variables																		
y (w/trend)	ADF	-3.15			-1.57		-2.73	-7.42		1.53	-2.12		-1.38	-1.71		-3.59	-1.51	
y (w/trend)	WS	-1.40			-1.11		-0.05	-7.26		-1.33	-2.00		-0.28	-1.13		-3.77	-0.04	
y (n/trend)	ADF	-0.76			1.54		1.04	-0.27		4.44	0.04		2.71	2.10		-0.91	2.63	
y (n/trend)	WS	-1.17			1.82		-0.71	1.88		1.42	2.08		0.82	0.46		-0.70	0.68	
credit (w/trend)	ADF	-0.90		-0.12	0.96	-1.65	-1.86		-2.60			1.06	1.05			-1.25	0.23	
credit (w/trend)	WS	-1.53		-0.64	0.47	-1.13	-1.38		-3.56			-0.24	0.95			-1.62	-1.38	
credit (n/trend)	ADF	-2.00			1.37	3.69	0.58	-0.07		2.09		2.12	-0.93			-1.31	-0.86	
credit (n/trend)	WS	-1.53			1.27	2.22	0.12	2.79		0.86		1.21	-0.64			-0.88	-1.33	
soi (w/trend)	ADF	-2.94			-1.82	-2.41	-3.25	0.52	-4.34	-0.75			-1.45		-0.10		-1.87	
soi (w/trend)	WS	-1.91			-1.16	-0.97	-0.36	-0.11	-2.92	-0.91			-0.37		0.47		0.84	
soi (n/trend)	ADF	-0.78			-0.41	0.57	0.62	-1.29	-0.50	-1.62			1.09		2.09		2.53	
soi (n/trend)	WS	-1.36			-0.82	-0.01	-0.03	-1.46	-0.99	-0.97			-0.07		0.64		1.19	
cpi (w/trend)	ADF	-2.87	-2.32	-3.82	-6.79	-5.56	-2.71	-4.07	-7.12	-1.92	-2.70	-5.42	-6.68	-6.42	-8.99	-5.33	-5.13	-3.96
cpi (w/trend)	WS	-3.07	-1.98	-3.79	-6.92	-5.14	-3.06	-0.38	-7.34	-2.14	-2.27	-5.63	-6.78	-5.69	-9.22	-5.56	-5.33	-4.10

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
cpi (n/trend)	ADF	-2.88	-1.15	-3.65	-6.81	-4.42	-2.73	-3.64	-7.01	-1.64	-2.79	-3.88	-2.55	-6.11	-8.81	-5.38	-5.15	-3.96
cpi (n/trend)	WS	-3.07	-1.71	-3.75	-6.88	-3.40	-3.01	1.38	-7.21	-0.67	-2.20	-3.64	-0.83	-5.57	-9.02	-5.59	-5.35	-4.12
reserves (w/trend)	ADF			-1.11	-3.58	-2.16	-0.48	0.73		-0.58	-2.91	-1.21	-4.35	-1.10	-3.08	-1.61	-0.87	-1.35
reserves (w/trend)	WS			-1.40	-3.79	-2.38	0.12	-1.02		-1.34	-2.98	-0.62	-4.49	-0.43	-3.29	-1.39	-0.04	-1.54
reserves (n/trend)	ADF			1.11	1.29	-0.17	3.02	2.71		1.45	-1.11	1.80	-0.82	1.20	-3.08	0.50	2.25	-1.18
reserves (n/trend)	WS			0.72	1.13	0.85	1.35	0.43		1.20	0.88	1.22	0.22	0.48	-3.24	-0.49	1.70	-1.50
mon (w/trend)	ADF	-3.15	-2.63	-1.47	-2.04	-3.02	-2.93			-1.71			-1.21	-2.27		-2.47	-5.08	-2.25
mon (w/trend)	WS	-3.33	-2.77	-1.47	-1.76	-2.68	-1.98			-2.50			-0.91	-2.40		-2.51	-4.69	-2.17
mon (n/trend)	ADF	-3.15	-0.83	-2.14	-1.31	-0.77	-1.85			-1.88			-1.93	-1.81		-1.95	-2.06	-0.92
mon (n/trend)	WS	-3.26	-0.50	-0.91	-1.65	-0.89	-2.12			-2.00			-0.30	-2.19		-2.25	-2.32	-1.28
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
y (w/trend)	ADF	-1.93	-1.24	-2.11	-1.57	-1.77	-1.81	-2.29	-1.92	-2.26	-0.81	-1.45	-1.09	-1.08	-0.07	-2.12	-0.91	-1.96
y (w/trend)	WS	-1.79	-1.55	-2.15	-1.81	-1.89	-2.11	-2.55	-1.43	-1.80	-1.54	-1.68	-2.35	-2.13	-0.93	-2.33	-1.32	-2.13
y (n/trend)	ADF	-2.08	-1.65	-2.18	-1.73	-1.41	-1.85	-2.30	-1.20	-0.08	-2.02	-1.47	-2.32	-2.17	-2.68	-1.35	-0.57	-0.47
y (n/trend)	WS	-1.00	-1.61	-0.67	-0.79	-1.87	-1.98	-2.51	-0.96	-1.02	-1.01	-1.67	-2.10	-1.80	-0.08	-1.47	-1.00	-0.58
credit (w/trend)	ADF	-1.91	-2.15	-0.81	-1.98	-3.12	-2.49	-1.60	-2.35	-1.35	-1.50	-1.41	-1.16	-0.56	-2.21	-1.62	-1.74	-1.22
credit (w/trend)	WS	-1.72	-2.36	-1.59	-1.79	-1.67	-1.73	-1.96	-1.67	-1.65	-1.70	-2.51	-1.45	-1.03	-2.28	-1.83	-2.37	-1.48
credit (n/trend)	ADF	-0.87	-2.07	-1.41	-1.92	0.01	-1.34	-1.87	-0.40	-1.04	-1.54	-1.83	-1.60	-1.46	-2.11	-1.58	0.37	-1.18
credit (n/trend)	WS	-0.61	-2.34	-0.17	-0.64	-1.59	-1.99	-1.43	-1.73	-1.36	-1.55	-2.31	0.14	-0.97	-1.38	-1.04	0.19	-1.47
soi (w/trend)	ADF	-2.42	-2.11	-3.05	-2.01	-0.80	-2.40	-1.46	-2.33	-1.73	-3.48	-2.04	-0.54	-1.49	-2.55	-1.73	-2.44	-1.72
soi (w/trend)	WS	-1.78	-1.88	-1.84	-2.27	-1.81	-1.67	-1.81	-1.67	-2.04	-3.96	-1.73	-0.80	-2.12	-1.07	-2.03	-1.19	-1.72
soi (n/trend)	ADF	0.29	-1.27	-1.30	-1.76	-1.19	-0.67	-2.11	0.40	-0.49	-0.01	-1.57	-1.80	-1.96	0.20	-1.45	-0.53	-1.87
soi (n/trend)	WS	-0.89	-1.64	0.19	-1.84	-1.76	-1.93	-1.09	-0.40	0.49	0.29	-1.80	-0.86	-0.81	-0.35	-1.44	-0.87	-1.46
cpi (w/trend)	ADF	-2.74	-2.68	-3.60	-1.89	-4.57	-1.68	-2.55	-1.45	-5.34	-2.47	-3.19	-1.71	-2.00	-1.32	-1.39	-3.33	-2.80

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
cpi (w/trend)	WS	-1.69	-2.90	-3.79	-2.04	-2.06	-2.18	-2.74	-1.36	-5.54	-2.69	-2.57	-1.93	-1.90	-0.15	-1.54	-2.46	-3.01
cpi (n/trend)	ADF	-2.77	-2.18	-3.27	-1.90	-3.02	-1.80	-1.98	-1.08	-5.23	-1.61	-3.28	-1.60	-2.65	-1.62	-1.76	-3.25	-2.21
cpi (n/trend)	WS	0.15	-2.01	-3.29	-2.01	-2.20	-1.29	-2.14	0.84	-5.40	-1.62	-2.06	-0.45	-1.68	1.09	-0.23	-1.52	-2.31
reserves (w/trend)	ADF	-1.83	-1.48	-0.89	-1.08	-2.35	-1.45	-1.44	-0.69	-0.93	-1.78	-1.44	-3.05	-1.22	-1.95	-1.82	-1.59	-1.18
reserves (w/trend)	WS	-1.68	-1.73	-1.61	-1.14	-1.88	-1.90	-1.99	-1.53	-1.31	-1.26	-1.67	-3.25	-2.11	-1.47	-2.12	-2.24	-1.74
reserves (n/trend)	ADF	-2.01	-1.72	-1.39	-0.96	-0.90	-1.95	-1.82	0.68	-0.74	-0.97	-1.42	-0.66	-2.14	-0.90	-0.31	-2.15	0.75
reserves (n/trend)	WS	-0.08	-0.52	-0.56	-0.67	-1.74	-1.13	-0.97	-0.58	-1.07	-1.28	-1.53	0.57	-1.92	0.86	0.54	-2.06	-0.82
mon (w/trend)	ADF	-1.31	-1.43	-1.51	-3.87	-1.48	-5.15	-3.09	-1.40	-2.98	-1.00	-1.94	-1.97	-1.23	-3.64	-2.77	-2.95	-3.11
mon (w/trend)	WS	-0.58	-1.95	-1.49	-0.54	-1.83	0.73	-2.13	-1.98	-1.74	-1.36	-1.57	-2.69	-0.90	-3.39	-2.97	-3.17	-3.24
mon (n/trend)	ADF	-2.51	-1.15	-2.07	-4.16	-1.51	-5.30	-2.97	-1.80	-2.22	-1.27	-1.92	-2.01	-2.12	-3.37	-2.69	-2.94	-3.05
mon (n/trend)	WS	0.74	-1.19	-1.34	0.21	-1.73	1.31	-2.19	-1.93	-1.67	-1.60	-1.74	-1.95	-0.70	-2.48	-2.51	-3.15	-3.03
Global Variable	Test	Stat																
Oil (w/trend)	ADF	-3.11																
Oil (n/trend)	WS	-2.54																
Oil (w/trend)	ADF	-0.68																
Oil (n/trend)	WS	-1.00																

Europe Crisis Sample

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
Domestic Variables																		
y (w/trend)	ADF	-2.53			-2.21		-2.25	-3.09		-3.14	-1.58		-2.37	-1.48		-2.95	-2.11	
y (w/trend)	WS	-2.61			-1.86		-2.49	-1.70		-2.47	-1.66		-2.29	-1.84		-3.14	-2.30	

	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
y (n/trend)	ADF	-1.19			-0.08		0.11	0.76		-2.41	1.25		-0.15	0.06		-0.68	-1.28	
y (n/trend)	WS	0.80			0.74		0.84	0.13		-2.68	0.91		-0.25	1.02		-0.16	1.29	
credit (w/trend)	ADF	-1.50		-2.61	-1.77	-3.03	-2.78			-3.11		-2.72	-3.89			-1.22	-3.46	
credit (w/trend)	WS	-1.82		-2.03	-2.04	-2.67	-1.92			-1.19		-3.33	-3.85			-0.84	-2.49	
credit (n/trend)	ADF	-0.97		-1.79	-0.39	0.14	-1.81			-2.99		-1.17	-0.58			-2.77	-0.66	
credit (n/trend)	WS	0.69		-0.20	1.87	0.35	2.99			0.66		0.36	1.13			0.08	0.68	
soi (w/trend)	ADF	-2.21		-2.82	-1.53	-1.71	-0.80	-1.93		-2.07			-3.22		-2.07		-2.95	
soi (w/trend)	WS	-2.23		-2.63	-1.85	-1.80	-1.50	-1.66		-2.15			-3.07		-1.21		-3.10	
soi (n/trend)	ADF	-1.69		-2.02	-1.44	-1.39	-1.52	-2.55		-2.53			-2.22		-0.95		-2.72	
soi (n/trend)	WS	-1.91		-2.26	-1.61	-1.67	-1.59	-1.40		-1.86			-2.53		-1.39		-2.97	
cpi (w/trend)	ADF	-4.23	-2.86	-4.82	-3.08	-3.91	-3.33	-2.68	-5.51	-3.05	-3.50	-4.41	-6.85	-3.59	-4.98	-2.81	-3.66	-6.37
cpi (w/trend)	WS	-4.37	-3.22	-4.93	-3.31	-4.04	-3.58	-2.44	-5.69	-3.31	-3.44	-4.58	-6.98	-3.76	-5.08	-3.16	-3.49	-6.05
cpi (n/trend)	ADF	-3.46	-2.83	-4.63	-3.02	-2.98	-2.44	-2.25	-5.30	-2.90	-3.56	-4.24	-6.64	-3.70	-4.79	-3.00	-3.55	-8.30
cpi (n/trend)	WS	-3.64	-2.98	-4.60	-3.24	-2.54	-2.66	-2.41	-5.49	-3.16	-3.04	-4.43	-6.83	-3.53	-4.95	-3.07	-3.51	-8.41
reserves (w/trend)	ADF			-1.36	-2.47	-1.10	-1.49	-4.01		-2.84	-3.29	-3.58	-1.98	-2.64	-2.15	-4.24	-2.31	-1.31
reserves (w/trend)	WS			-1.84	-2.88	-1.61	-1.81	-3.35		-3.08	-3.52	-3.66	-1.59	-2.86	-1.20	-4.43	-2.59	-1.45
reserves (n/trend)	ADF			-0.93	-1.21	1.51	-0.21	-3.99		-0.86	-0.67	-1.93	0.48	-0.63	-2.60	-0.66	-1.12	1.04
reserves (n/trend)	WS			0.50	-0.36	1.19	0.10	-3.37		-0.19	1.09	-2.18	0.39	1.10	-0.85	1.35	0.61	1.80
mon (w/trend)	ADF	-1.94	-1.52	-4.27	-1.72	-1.91	-2.41			-1.47			-2.02	-2.19		-2.68	-2.06	-1.69
mon (w/trend)	WS	-2.01	-1.69	-2.64	-1.81	-1.84	-1.13			-1.80			-2.40	-2.42		-2.99	-2.43	-2.26
mon (n/trend)	ADF	-1.36	-2.18	-1.21	-1.76	-1.75	-3.11			-1.61			-1.93	-2.07		-2.12	-1.74	-1.23
mon (n/trend)	WS	-1.84	-0.91	-1.67	-1.54	-1.88	-0.28			-1.40			-2.10	-2.35		-1.61	-1.80	-1.58
Foreign Variables	Test	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PARA	PERU	URU
y (w/trend)	ADF	-1.32	-2.06	0.82	-1.94	-1.80	-2.31	-1.35	-0.94	-1.84	-1.59	-1.17	0.00	-1.44	-2.61	-1.13	-1.39	-2.19
y (w/trend)	WS	-2.73	-2.28	-1.42	-2.14	-1.20	-2.53	-1.63	-0.85	-2.17	-1.76	-1.37	-1.69	-1.53	-1.44	-2.21	-1.72	-2.38
y (n/trend)	ADF	-0.16	-2.15	1.53	-1.89	0.23	-2.22	-1.36	1.04	-1.09	-2.13	-1.34	-1.14	0.46	-0.69	-1.85	-1.55	-0.93

Appendix E: VARX Order and Cointegration Relationships

VARX Order of Individual Models (p: lag order of domestic variables, q: lag order of foreign variables, r: number of cointegrating relations).

US Model	Full Sample			Pre-crisis			Crisis		
	p	q	r	p	q	r	p	q	r
ARG	3	1	1	3	1	1	3	1	2
BOL	2	1	1	3	1	1	3	2	1
BRAZIL	2	1	2	3	2	1	3	1	1
CHILE	2	1	2	2	1	1	3	1	2
COL	3	3	1	3	3	1	3	1	1
CR	3	1	1	3	3	1	3	2	3
EC	3	1	1	3	2	1	3	3	1
ELSAL	2	1	1	3	1	1	1	1	1
GUA	2	1	1	3	2	1	3	3	1
HON	3	1	1	3	3	1	3	1	1
MEX	2	1	1	3	3	1	3	3	2
NIC	2	2	1	3	3	1	3	2	1
PAN	2	2	1	3	3	1	3	2	1
PARA	2	1	1	3	3	1	2	1	1
PERU	3	1	1	2	1	1	3	3	1
US	4	1	4	3	2	1	3	3	1
URU	1	1	1	2	1	1	3	1	1

UK Model	Full Sample			Pre-crisis			Crisis		
	p	q	r	p	q	r	p	q	r
ARG	3	3	3	2	2	3	3	2	4
BOL	3	2	1	3	1	1	3	3	2
BRAZIL	3	3	2	3	3	2	3	1	1
CHILE	3	1	3	3	1	2	3	3	3
COL	3	1	3	3	3	1	2	1	1
CR	1	1	1	2	2	1	2	1	2
EC	2	1	3	3	3	2	2	1	2
ELSAL	1	1	1	3	1	1	1	1	1
GUA	3	3	2	3	3	1	3	3	2
HON	2	2	1	3	1	1	3	2	1
MEX	3	3	3	3	1	2	3	3	3
NIC	3	2	1	2	1	1	2	1	1
PAN	3	3	1	2	2	1	2	1	1
PARA	3	3	1	1	1	2	2	1	1
PERU	3	1	4	3	1	2	2	1	2
UK	3	1	3	3	3	2	3	3	5
URU	1	1	2	2	2	1	3	3	3

JP Model	Full Sample			Pre-crisis			Crisis		
	p	q	r	p	q	r	p	q	r
ARG	3	2	3	3	2	4	1	1	1
BOL	1	1	1	2	1	1	2	2	1
BRAZIL	3	2	2	3	1	1	2	1	1
CHILE	2	1	2	3	1	2	2	1	1
COL	2	1	2	2	1	1	1	1	1
CR	2	1	2	1	1	2	2	1	1
EC	3	1	3	3	1	2	1	1	1
ELSAL	1	1	1	3	1	1	2	1	1
GUA	3	3	2	3	2	1	2	1	1
HON	3	2	1	3	1	1	2	1	1
JP	3	3	4	3	1	2	4	2	2
MEX	2	1	3	3	2	3	2	1	1
NIC	3	2	1	2	1	1	1	1	1
PAN	3	2	1	2	2	1	1	1	1
PARA	3	1	1	3	1	1	2	1	1
PERU	3	1	4	3	2	3	2	1	1
URU	2	1	1	3	2	2	3	1	1

Europe Model	Full Sample			Pre-crisis			Crisis		
	p	q	r	p	q	r	p	q	r
ARG	1	1	1	3	3	4	1	1	3
BOL	2	1	1	3	2	1	3	3	1
BRAZIL	2	1	1	3	3	2	3	3	2
CHILE	2	2	1	3	3	4	3	3	2
COL	3	3	1	3	1	2	2	1	1
CR	2	1	1	3	2	4	3	1	2
EC	3	3	1	3	3	2	1	1	3
ELSAL	3	1	1	1	1	1	1	1	1
GUA	4	2	6	3	2	4	3	3	4
HON	3	1	1	3	3	1	3	3	2
JP	3	3	1	1	1	1	2	1	1
MEX	1	1	1	2	1	3	3	1	3
NIC	3	3	1	3	1	1	2	1	1
PAN	3	3	1	3	3	1	2	1	1
PARA	1	1	1	2	2	4	2	1	1
PERU	1	1	1	1	1	4	2	2	4
URU	3	1	1	3	3	3	3	3	2

Appendix F: Rank Test Statistics

Johansen test for cointegration base on (i) trace test and (ii) maximal eigenvalue test. For trace test, the null hypothesis indicates r cointegrating vectors against the alternative n cointegrating vectors. For eigenvalue test, the null hypothesis indicates r cointegrating vectors against $r+1$ cointegrating vectors. Test is performed at 95% significance level.

United States Full Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	88.11	86.66	70.69	85.97	68.09	117.04	129.57	168.94	100.69	70.89	126.86	86.09	151.47	157.19	103.69	117.68	69.05
r=1	67.51	21.87	57.39	67.79	37.97	50.35	85.95		56.97	34.11	83.27	24.94	11.79	67.60	93.68	81.42	38.65
r=2	49.91		33.14	36.31	33.13	34.00	73.97		25.83	14.98	60.12	18.13	11.04	45.00	69.50	54.63	21.88
r=3	25.11		17.56	33.26	20.74	23.94	28.56				34.68	7.93		26.21	52.20	33.52	
r=4	14.81		3.32	23.15	10.00	20.86					22.45			11.29	18.64	28.30	
r=5				17.25		12.13					19.81				10.45	18.54	
r=6																12.20	

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	245.45	108.53	182.11	263.73	169.92	258.33	318.06	168.94	183.49	119.99	347.18	137.09	174.30	307.30	348.16	346.28	129.59
r=1	157.34	21.87	111.41	177.76	101.83	141.29	188.49		82.80	49.09	220.33	51.00	22.83	150.11	244.47	228.60	60.53
r=2	89.83		54.02	109.97	63.87	90.94	102.54		25.83	14.98	137.05	26.06	11.04	82.51	150.79	147.18	21.88
r=3	39.92		20.88	73.66	30.74	56.93	28.56				76.94	7.93		37.50	81.28	92.55	
r=4	14.81		3.32	40.40	10.00	32.99					42.26			11.29	29.09	59.03	

	r=5		17.25		12.13		19.81		10.45		30.73						
	r=6										12.20						
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	184.53	110.03	78.52	145.30	184.53	197.07	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	145.30	78.52	50.72	110.03	145.30	158.01	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	110.03	50.72	26.24	78.52	110.03	122.96	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				78.52	26.24		50.72	78.52	91.81	
r=4	26.24		26.24	50.72	26.24	50.72					50.72			26.24	50.72	64.54	
r=5				26.24		26.24					26.24				26.24	41.03	
r=6																20.98	

United States Pre-crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	193.64	56.82	58.84	69.35	56.23	78.36	51.15	54.30	81.58	47.80	106.40	65.84	65.34	70.17	80.16	65.91	52.39
r=1	61.48	15.03	36.64	54.53	39.91	68.45	38.62		32.38	26.51	55.76	34.76	31.26	38.96	55.70	45.97	30.65
r=2	40.50		35.33	34.11	24.58	50.58	30.46		17.18	10.02	45.38	16.91	13.86	28.98	52.72	42.79	11.65
r=3	30.30		16.59	22.12	19.96	25.30	15.57				32.31	9.45		22.61	23.42	36.93	
r=4	19.22		10.91	19.15	14.81	17.99					20.10			15.17	17.94	23.93	
r=5				16.81		9.83					18.62				8.51	15.41	
r=6																	4.78

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	345.14	71.85	158.31	216.07	155.49	250.51	135.80	54.30	131.14	84.33	278.57	126.96	110.46	175.89	238.45	235.73	94.70
r=1	151.50	15.03	99.47	146.73	99.26	172.14	84.65		49.56	36.53	172.18	61.13	45.12	105.72	158.29	169.82	42.31

r=2	90.02	62.83	92.19	59.36	103.69	46.03	17.18	10.02	116.41	26.37	13.86	66.77	102.59	123.85	11.65		
r=3	49.52	27.50	58.08	34.77	53.12	15.57			71.03	9.45		37.78	49.87	81.06			
r=4	19.22	10.91	35.96	14.81	27.82				38.72			15.17	26.45	44.12			
r=5			16.81		9.83				18.62				8.51	20.20			
r=6														4.78			
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	184.53	110.03	78.52	145.30	184.53	197.07	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	145.30	78.52	50.72	110.03	145.30	158.01	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	110.03	50.72	26.24	78.52	110.03	122.96	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				78.52	26.24		50.72	78.52	91.81	
r=4	26.24		26.24	50.72	26.24	50.72					50.72			26.24	50.72	64.54	
r=5				26.24		26.24					26.24				26.24	41.03	
r=6																20.98	

United States Crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	67.08	42.71	68.17	66.43	64.08	84.47	39.54	80.82	41.26	46.45	68.38	42.26	55.37	59.21	92.15	86.65	46.34
r=1	48.08	20.36	42.84	48.19	44.47	64.54	25.22		30.17	26.24	65.97	30.61	32.01	38.48	70.79	53.67	30.60
r=2	41.20		30.64	46.86	36.84	54.41	19.16		19.33	7.41	58.11	26.01	24.39	22.26	42.19	40.23	14.74
r=3	27.97		24.32	24.06	18.60	32.08	14.19				32.21	11.92		17.87	31.86	28.63	
r=4	22.53		12.17	17.57	8.87	25.91					23.85			10.92	22.54	26.65	
r=5				13.23		14.51					19.36				16.41	17.06	
r=6																10.81	
Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3

# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	206.87	63.07	178.14	216.33	172.87	275.92	98.11	80.82	90.76	80.10	267.87	110.80	111.77	148.75	275.94	263.70	91.68
r=1	139.78	20.36	109.97	149.90	108.79	191.45	58.56		49.49	33.65	199.49	68.54	56.40	89.54	183.79	177.05	45.34
r=2	91.70		67.12	101.72	64.31	126.91	33.35		19.33	7.41	133.52	37.92	24.39	51.06	113.00	123.38	14.74
r=3	50.50		36.49	54.86	27.47	72.50	14.19				75.42	11.92		28.80	70.81	83.15	
r=4	22.53		12.17	30.80	8.87	40.42					43.21			10.92	38.95	54.52	
r=5				13.23		14.51					19.36				16.41	27.87	
r=6																10.81	

Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)

Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	US	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	184.53	110.03	78.52	145.30	184.53	197.07	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	145.30	78.52	50.72	110.03	145.30	158.01	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	110.03	50.72	26.24	78.52	110.03	122.96	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				78.52	26.24		50.72	78.52	91.81	
r=4	26.24		26.24	50.72	26.24	50.72					50.72			26.24	50.72	64.54	
r=5				26.24		26.24					26.24				26.24	41.03	
r=6																20.98	

United Kingdom Full Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level

Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	97.48	51.00	94.64	86.76	67.83	159.90	86.44	168.30	69.70	93.26	134.99	99.20	83.73	75.34	87.91	84.40	75.24
r=1	59.45	10.06	58.60	67.77	52.71	56.75	53.49		41.47	29.13	87.90	34.43	19.45	39.10	80.45	71.06	40.16
r=2	48.93		41.83	44.33	35.84	42.28	39.37		10.21	18.22	47.01	31.67	10.49	26.71	58.44	50.21	15.65
r=3	23.65		23.47	35.35	26.99	25.15	11.67				34.42	5.77		21.24	44.17	31.76	
r=4	16.48		12.50	24.52	17.81	11.85					18.22			17.26	30.27	21.08	
r=5				14.71		8.93					13.24				14.04	13.69	
r=6																11.28	

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	245.98	61.05	231.04	273.44	201.18	304.87	190.96	168.30	121.38	140.61	335.77	171.08	113.67	179.66	315.29	283.47	131.05
r=1	148.50	10.06	136.40	186.68	133.35	144.97	104.52		51.68	47.34	200.79	71.88	29.94	104.31	227.37	199.07	55.81
r=2	89.06		77.80	118.91	80.64	88.21	51.03		10.21	18.22	112.89	37.44	10.49	65.22	146.93	128.01	15.65
r=3	40.13		35.97	74.58	44.80	45.94	11.67				65.88	5.77		38.50	88.49	77.80	
r=4	16.48		12.50	39.23	17.81	20.78					31.46			17.26	44.32	46.04	
r=5				14.71		8.93					13.24				14.04	24.97	
r=6																11.28	
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	184.53	110.03	78.52	145.30	184.53	197.07	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	145.30	78.52	50.72	110.03	145.30	158.01	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	110.03	50.72	26.24	78.52	110.03	122.96	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				78.52	26.24		50.72	78.52	91.81	
r=4	26.24		26.24	50.72	26.24	50.72					50.72			26.24	50.72	64.54	
r=5				26.24		26.24					26.24				26.24	41.03	
r=6																20.98	

United Kingdom Pre-crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	79.80	52.86	74.12	68.56	54.92	87.23	47.86	54.62	54.63	62.21	110.98	80.96	125.68	92.75	70.12	74.61	55.91
r=1	67.51	14.81	46.43	62.82	34.93	52.95	39.20		29.28	28.85	46.43	40.08	30.41	72.74	58.35	53.03	39.46
r=2	46.07		31.01	40.12	33.18	37.65	32.73		12.95	17.27	38.55	24.64	9.67	23.94	38.30	39.02	8.52
r=3	32.86		22.81	34.56	19.13	22.27	16.40				31.15	7.15		19.77	28.26	32.02	

	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
r=4	15.67		13.51	25.51	11.74	11.09					26.04			9.57	20.07	16.68	
r=5				9.43		5.46					9.35				14.70	13.11	
r=6																8.43	
Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	241.91	67.67	187.88	241.00	153.89	216.65	136.19	54.62	96.86	108.34	262.50	152.83	165.76	218.77	229.80	236.90	103.89
r=1	162.11	14.81	113.76	172.44	98.97	129.42	88.33		42.23	46.13	151.52	71.87	40.08	126.02	159.68	162.29	47.98
r=2	94.60		67.34	109.62	64.04	76.48	49.13		12.95	17.27	105.09	31.79	9.67	53.28	101.33	109.25	8.52
r=3	48.52		36.32	69.50	30.86	38.82	16.40				66.54	7.15		29.34	63.03	70.24	
r=4	15.67		13.51	34.94	11.74	16.55					35.39			9.57	34.77	38.21	
r=5				9.43		5.46					9.35				14.70	21.53	
r=6																8.43	
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	184.53	110.03	78.52	145.30	184.53	197.07	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	145.30	78.52	50.72	110.03	145.30	158.01	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	110.03	50.72	26.24	78.52	110.03	122.96	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				78.52	26.24		50.72	78.52	91.81	
r=4	26.24		26.24	50.72	26.24	50.72					50.72			26.24	50.72	64.54	
r=5				26.24		26.24					26.24				26.24	41.03	
r=6																20.98	

United Kingdom Crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	66.23	41.77	64.55	78.91	69.61	97.42	57.18	76.92	58.31	52.62	86.36	54.06	50.78	49.60	88.66	100.45	57.09

r=1	48.14	30.24	40.50	63.71	41.90	56.75	33.96		43.58	29.57	66.20	40.50	24.40	44.83	73.19	59.68	36.86
r=2	38.44		24.74	52.71	30.23	53.14	30.03		23.24	16.96	48.26	24.92	16.20	22.55	45.09	42.95	28.42
r=3	37.67		18.94	33.54	22.56	27.41	17.44				31.45	10.29		14.82	33.53	34.33	
r=4	24.89		13.37	21.26	14.29	15.71					23.68			12.77	17.06	30.65	
r=5				12.89		12.03					22.45				9.79	22.99	
r=6																13.80	
Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	215.37	72.01	162.10	263.02	178.59	262.47	138.59	76.92	125.13	99.15	278.40	129.78	91.39	144.58	267.32	304.86	122.37
r=1	149.14	30.24	97.55	184.11	108.98	165.05	81.42		66.82	46.53	192.04	75.72	40.61	94.98	178.66	204.40	65.28
r=2	101.00		57.05	120.40	67.08	108.30	47.46		23.24	16.96	125.84	35.21	16.20	50.15	105.47	144.73	28.42
r=3	62.57		32.31	67.69	36.86	55.16	17.44				77.58	10.29		27.59	60.38	101.78	
r=4	24.89		13.37	34.15	14.29	27.74					46.13			12.77	26.85	67.45	
r=5				12.89		12.03					22.45				9.79	36.80	
r=6																13.80	
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	6	4	3	5	6	7	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	184.53	110.03	78.52	145.30	184.53	197.07	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	145.30	78.52	50.72	110.03	145.30	158.01	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	110.03	50.72	26.24	78.52	110.03	122.96	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				78.52	26.24		50.72	78.52	91.81	
r=4	26.24		26.24	50.72	26.24	50.72					50.72			26.24	50.72	64.54	
r=5				26.24		26.24					26.24				26.24	41.03	
r=6																20.98	

Japan Full Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	89.70	105.51	84.10	87.75	78.71	123.09	79.09	168.19	72.41	74.42	62.69	128.67	90.20	97.47	76.33	82.25	62.65
r=1	65.25	24.37	73.97	70.60	40.74	55.25	44.02		34.49	28.85	52.49	84.46	21.23	14.61	43.69	73.83	28.24
r=2	52.29		37.83	30.81	33.27	40.61	38.52		17.28	18.36	46.87	63.45	15.21	7.78	28.50	51.81	22.33
r=3	23.56		23.48	28.63	24.51	31.47	17.81				38.22	27.28	6.34		22.96	44.54	
r=4	15.34		16.00	13.78	15.26	13.07					31.64	14.98			10.51	27.85	
r=5				9.05		11.28					19.97	10.13				15.83	
r=6											9.03						
Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	246.15	129.88	235.39	240.62	192.48	274.76	179.44	168.19	124.18	121.63	260.91	328.98	132.97	119.86	181.99	296.11	113.21
r=1	156.45	24.37	151.29	152.86	113.77	151.68	100.35		51.77	47.21	198.22	200.31	42.78	22.39	105.66	213.86	50.56
r=2	91.19		77.32	82.27	73.04	96.43	56.33		17.28	18.36	145.73	115.84	21.55	7.78	61.97	140.03	22.33
r=3	38.90		39.49	51.46	39.77	55.82	17.81				98.86	52.39	6.34		33.47	88.22	
r=4	15.34		16.00	22.83	15.26	24.35					60.64	25.11			10.51	43.68	
r=5				9.05		11.28					29.01	10.13				15.83	
r=6											9.03						
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	197.07	184.53	110.03	78.52	145.30	184.53	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	158.01	145.30	78.52	50.72	110.03	145.30	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	122.96	110.03	50.72	26.24	78.52	110.03	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				91.81	78.52	26.24		50.72	78.52	
r=4	26.24		26.24	50.72	26.24	50.72					64.54	50.72			26.24	50.72	
r=5				26.24		26.24					41.03	26.24				26.24	

r=6

20.98

Japan Pre-crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	81.71	60.64	62.96	66.17	52.12	103.76	60.67	53.62	66.40	67.78	72.76	104.96	83.61	121.56	63.74	61.84	43.00
r=1	65.89	16.29	39.59	59.80	35.59	68.78	44.73		26.08	27.23	53.56	58.75	35.63	29.44	39.28	53.95	39.46
r=2	47.41		33.81	44.37	22.88	42.79	34.42		12.50	19.32	36.27	42.94	17.84	11.99	25.85	44.96	14.95
r=3	32.40		19.89	30.18	19.99	29.37	12.33				29.43	38.96	10.25		22.89	31.23	
r=4	24.12		12.00	14.52	15.16	16.25					23.25	27.51			20.66	24.07	
r=5				8.39		6.89					12.33	11.55				20.44	
r=6											7.48						

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	251.54	76.93	168.23	223.44	145.74	267.82	152.16	53.62	104.98	114.33	235.08	284.67	147.33	162.98	172.42	236.49	97.41
r=1	169.83	16.29	105.28	157.28	93.62	164.06	91.49		38.58	46.55	162.32	179.71	63.72	41.43	108.68	174.65	54.41
r=2	103.94		65.69	97.47	58.03	95.29	46.75		12.50	19.32	108.76	120.96	28.08	11.99	69.40	120.70	14.95
r=3	56.53		31.88	53.10	35.15	52.50	12.33				72.49	78.02	10.25		43.55	75.74	
r=4	24.12		12.00	22.92	15.16	23.14					43.06	39.06			20.66	44.51	
r=5				8.39		6.89					19.81	11.55				20.44	
r=6											7.48						

Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	197.07	184.53	110.03	78.52	145.30	184.53	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	158.01	145.30	78.52	50.72	110.03	145.30	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	122.96	110.03	50.72	26.24	78.52	110.03	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				91.81	78.52	26.24		50.72	78.52	

r=4	26.24	26.24	50.72	26.24	50.72	64.54	50.72	26.24	50.72
r=5			26.24		26.24	41.03	26.24		26.24
r=6						20.98			

Japan Crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	88.78	42.64	65.06	51.03	61.48	76.27	108.26	80.02	49.15	54.97	76.07	76.40	56.66	45.36	101.48	66.66	47.81
r=1	57.00	26.24	58.70	46.87	54.11	65.77	46.12		36.39	25.44	57.16	63.51	38.22	32.77	63.14	58.87	34.30
r=2	34.27		50.69	42.42	30.96	53.90	31.44		33.50	18.10	51.30	52.98	19.47	22.91	27.73	49.92	23.88
r=3	29.64		41.26	24.96	28.29	24.30	15.10				38.71	33.66	11.47		18.05	42.90	
r=4	22.15		27.66	20.83	12.77	14.15					26.98	27.33			14.07	25.19	
r=5				17.77		10.29					20.12	23.67				15.90	
r=6											13.16						

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	JP	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	231.84	68.88	243.37	203.88	187.60	244.69	200.91	80.02	119.04	98.51	283.49	277.55	125.82	101.04	224.47	259.44	105.98
r=1	143.06	26.24	178.31	152.85	126.13	168.42	92.65		69.89	43.54	207.42	201.15	69.17	55.67	122.99	192.78	58.18
r=2	86.06		119.61	105.97	72.02	102.65	46.54		33.50	18.10	150.27	137.64	30.95	22.91	59.85	133.91	23.88
r=3	51.79		68.92	63.55	41.06	48.75	15.10				98.97	84.66	11.47		32.12	83.99	
r=4	22.15		27.66	38.59	12.77	24.44					60.25	51.00			14.07	41.09	
r=5				17.77		10.29					33.28	23.67				15.90	
r=6											13.16						

Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	GUA	HON	MEX	NIC	PAN	PARA	PERU	UK	URU
# endogenous variables	5	2	5	6	5	6	4	1	3	3	7	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	78.52	78.52	197.07	184.53	110.03	78.52	145.30	184.53	78.52

r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		50.72	50.72	158.01	145.30	78.52	50.72	110.03	145.30	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		26.24	26.24	122.96	110.03	50.72	26.24	78.52	110.03	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24				91.81	78.52	26.24		50.72	78.52	
r=4	26.24		26.24	50.72	26.24	50.72					64.54	50.72			26.24	50.72	
r=5				26.24		26.24					41.03	26.24				26.24	
r=6											20.98						

Europe Full Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	75.17	50.34	70.93	66.19	82.82	70.77	82.36	90.69	87.12	53.29	66.99	99.37	58.59	72.82	77.91	79.85	94.60
r=1	55.96	12.10	48.75	53.22	41.76	58.53	51.91		69.65	34.10	29.94	81.07	29.34	21.60	42.28	60.38	39.20
r=2	43.80		30.49	43.88	27.00	41.79	27.69		42.26	25.34	12.33	51.79	23.66	7.76	35.49	52.76	17.75
r=3	38.92		26.07	34.38	18.54	29.12	12.03		28.00			38.48	12.76		20.91	44.67	
r=4	24.34		11.54	25.92	10.35	10.35			24.29			29.66			17.31	37.88	
r=5				15.32		9.65			18.15			18.76				8.64	
r=6									9.56								

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	238.19	62.44	187.78	238.89	180.47	220.21	174.00	90.69	279.04	112.73	109.26	319.14	124.35	102.18	193.89	284.19	151.55
r=1	163.02	12.10	116.85	172.71	97.65	149.44	91.64		191.91	59.44	42.27	219.77	65.76	29.36	115.98	204.34	56.95
r=2	107.06		68.09	119.49	55.88	90.91	39.72		122.27	25.34	12.33	138.70	36.42	7.76	73.71	143.96	17.75
r=3	63.26		37.61	75.61	28.88	49.12	12.03		80.01			86.90	12.76		38.22	91.20	
r=4	24.34		11.54	41.23	10.35	20.00			52.01			48.42			17.31	46.53	
r=5				15.32		9.65			27.72			18.76				8.64	
r=6									9.56								

Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU

# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	197.07	78.52	78.52	184.53	110.03	78.52	145.30	184.53	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52		158.01	50.72	50.72	145.30	78.52	50.72	110.03	145.30	50.72
r=2	78.52		78.52	110.03	78.52	110.03	50.72		122.96	26.24	26.24	110.03	50.72	26.24	78.52	110.03	26.24
r=3	50.72		50.72	78.52	50.72	78.52	26.24		91.81			78.52	26.24		50.72	78.52	
r=4	26.24		26.24	50.72	26.24	50.72			64.54			50.72			26.24	50.72	
r=5				26.24		26.24			41.03			26.24				26.24	
r=6									20.98								

Europe Pre-crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUR	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	115.33	49.95	65.86	84.41	68.49	72.56	77.32	84.12	88.56	40.94	67.44	82.12	38.85	48.03	70.88	93.53	70.04
r=1	75.19	20.70	47.08	66.29	65.10	61.05	37.23		64.93	26.92	23.12	68.96	22.98	32.02	50.17	61.79	35.92
r=2	42.46		37.21	37.07	27.54	48.85	31.50		50.00	16.57	9.98	45.00	17.94	14.93	34.57	58.04	30.66
r=3	31.64		25.77	30.82	24.28	34.93	14.63		40.11			31.39	13.05		30.79	39.50	
r=4	20.08		11.33	29.87	9.82	27.03			27.53			22.80			19.99	28.42	
r=5				18.18		18.95			24.66			11.41				13.98	
r=6									9.41								

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUR	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	284.70	70.65	187.25	266.64	195.22	263.38	160.68	84.12	305.21	84.42	100.55	261.69	92.81	94.98	206.41	295.25	136.61
r=1	169.37	20.70	121.39	182.24	126.73	190.81	83.36		216.65	43.48	33.10	179.57	53.96	46.95	135.53	201.73	66.57
r=2	94.18		74.31	115.94	61.64	129.76	46.13		151.72	16.57	9.98	110.61	30.98	14.93	85.36	139.93	30.66

r=3	51.72	37.10	78.87	34.09	80.91	14.63	101.72	65.61	13.05	50.79	81.89						
r=4	20.08	11.33	48.05	9.82	45.98	61.60	34.22	19.99	42.39								
r=5	18.18	18.95	34.08	11.41	13.98												
r=6	9.41																
Critical Values for Trace Statistic at the 5% Significance Level (MacKinnon, Haug, Michelis, 1999)																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUR	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	145.30	50.72	145.30	184.53	145.30	184.53	110.03	26.24	197.07	78.52	78.52	184.53	110.03	78.52	145.30	184.53	78.52
r=1	110.03	26.24	110.03	145.30	110.03	145.30	78.52	158.01	50.72	50.72	145.30	78.52	50.72	110.03	145.30	50.72	
r=2	78.52	78.52	110.03	78.52	110.03	50.72	122.96	26.24	26.24	110.03	50.72	26.24	78.52	110.03	26.24		
r=3	50.72	50.72	78.52	50.72	78.52	26.24	91.81	78.52	26.24	50.72	78.52	26.24	50.72	78.52			
r=4	26.24	26.24	50.72	26.24	50.72	64.54	50.72	26.24	50.72	26.24	50.72						
r=5	26.24	26.24	41.03	26.24													
r=6	20.98																

Europe Crisis Sample

Detailed Cointegration Results for the Maximum Eigenvalue Statistic at the 5% Significance Level																	
Country	ARG	BOL	BRAZIL	CHILE	COL	CR	EC	ELSAL	EUROPE	GUA	HON	MEX	NIC	PAN	PAR	PERU	URU
# endogenous variables	5	2	5	6	5	6	4	1	7	3	3	6	4	3	5	6	3
# foreign (star) variables	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5
r=0	90.60	38.49	91.35	108.89	61.86	85.79	76.13	81.81	92.36	54.91	41.75	77.50	62.03	48.32	66.61	81.67	49.62
r=1	66.73	22.12	52.28	58.17	37.37	49.10	41.81	71.85	50.84	14.15	58.16	37.20	23.81	45.97	54.41	32.56	
r=2	37.81	34.48	47.56	30.54	37.18	35.31	50.42	22.46	6.11	45.14	21.63	15.02	19.52	52.97	20.38		
r=3	27.76	29.86	29.52	21.43	30.12	21.42	35.07	31.14	4.90	17.64	42.41						
r=4	21.18	10.63	23.20	6.73	20.05	28.19	22.84	15.06	36.76								
r=5	8.87	14.63	15.86	20.88	12.50												
r=6	12.77																

Detailed Cointegration Results for the Trace Statistic at the 5% Significance Level

Appendix H: Weak Exogeneity Test

Test for Weak Exogeneity at the 5% Significance Level.

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
US Full Sample									
ARG	F(1,212)	3.8857	0.2858	0.1593	1.0033	0.9056			0.6439
BOL	F(1,218)	3.8845	1.7874	0.4475	1.1547	0.0436			2.4751
BRAZIL	F(2,211)	3.0387	0.1392	0.2803	0.1688	0.2468			2.5621
CHILE	F(2,209)	3.0391	0.2472	0.4480	0.6804	0.2310			0.3070
COL	F(1,207)	3.8868	0.0982	2.0576	0.3383	0.3546			1.3667
CR	F(1,205)	3.8872	0.2416	0.2584	0.0664	4.0036			1.6645
EC	F(1,219)	3.8843	0.2309	0.8510	1.4958	0.3690			0.0424
ELSAL	F(1,222)	3.8837	0.9220	1.3350	0.0638	0.2141			0.0024
GUA	F(1,216)	3.8849	0.0749	0.0037	0.0475	3.5228			0.0026
HON	F(1,216)	3.8849	1.8880	0.2236	0.5360	0.2849			1.2480
MEX	F(1,210)	3.8861	1.4426	0.7021	1.7527	0.1208			1.5335
NIC	F(1,209)	3.8863	1.6279	1.5052	0.7629	0.6746			0.0015
PAN	F(1,211)	3.8859	0.0038	0.4222	1.4180	0.0077			0.0295
PARA	F(1,218)	3.8845	2.3492	0.2572	0.1899	0.0454			0.5320
PERU	F(1,210)	3.8861	0.2401	1.0816	1.5701	1.6047			0.8700
US	F(4,207)	2.4153	0.4847			1.9378	0.9340		
URU	F(1,220)	3.8841	0.0988	0.0014	1.9190	0.0031			0.0102
		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
US Pre-crisis Sample									
ARG	F(1,129)	3.9146	0.3316	0.0324	0.2118	1.8782			2.8652
BOL	F(1,132)	3.9129	1.3644	0.0976	0.4988	0.0858			2.9837
BRAZIL	F(1,129)	3.9146	3.9790	2.3677	2.6989	0.0774			6.7917
CHILE	F(1,128)	3.9151	1.4611	1.1347	1.5635	0.6183			8.6730
COL	F(1,118)	3.9215	1.3300	0.4488	0.6794	2.7488			1.5430
CR	F(1,128)	3.9151	7.8177	3.2730	5.3727	2.8538			0.0018
EC	F(1,130)	3.9140	0.5545	1.0710	0.0343	3.5370			1.6498
ELSAL	F(1,133)	3.9123	1.4397	1.2793	0.0783	0.0031			0.4267
GUA	F(1,131)	3.9134	2.6659	0.7791	0.3068	0.0003			0.5453
HON	F(1,131)	3.9134	0.2160	0.0009	0.2666	0.4178			0.0298
MEX	F(1,128)	3.9151	1.4341	0.8022	0.3702	0.2892			0.0713
NIC	F(1,130)	3.9140	4.5345	5.7547	0.0426	0.2874			3.4727
PAN	F(1,131)	3.9134	1.1569	0.0717	0.2996	0.5664			3.4935
PARA	F(1,129)	3.9146	0.0853	0.3576	0.3332	1.5709			0.0487
PERU	F(1,128)	3.9151	0.0970	0.0040	0.0594	0.0416			0.4010
US	F(1,118)	3.9215	0.2384			0.4540	0.5294		
URU	F(1,131)	3.9134	0.6716	1.1526	0.6179	0.4123			0.1998

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
US Crisis Sample									
ARG	F(2,73)	3.1221	2.9512	1.1604	0.1777	2.9178			0.2796
BOL	F(1,77)	3.9651	0.4772	0.1651	0.2732	0.6760			0.2180
BRAZIL	F(1,74)	3.9702	0.0221	0.9693	2.8426	3.0829			1.0105
CHILE	F(2,72)	3.1239	0.6524	0.4682	1.5513	2.7236			0.5336
COL	F(1,68)	3.9819	0.7838	0.1802	0.2556	0.0819			4.0133
CR	F(3,71)	2.7336	0.7783	0.2049	0.1347	0.9283			3.9048
EC	F(1,75)	3.9685	0.0329	0.8897	0.1133	3.2314			0.3329
ELSAL	F(1,78)	3.9635	0.0055	0.0399	0.0784	0.6698			0.4495
GUA	F(1,76)	3.9668	4.8840	2.5291	4.5640	0.0520			3.3624
HON	F(1,76)	3.9668	0.2359	0.0476	3.1747	0.2714			0.2228
MEX	F(2,72)	3.1239	0.7708	1.5178	2.2074	2.3051			0.0747
NIC	F(1,75)	3.9685	0.0120	0.0259	0.1937	0.2731			0.0798
PAN	F(1,76)	3.9668	1.2837	0.7947	0.6076	0.7382			0.2225
PARA	F(1,63)	3.9934	2.8619	0.0485	0.0053	0.1046			4.0940
PERU	F(1,61)	3.9985	0.0007	0.0084	0.0123	0.2697			0.0129
US	F(1,63)	3.9934	0.5641			0.2009	0.1726		
URU	F(1,76)	3.9668	0.2556	0.7480	1.0958	3.2761			0.0618

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
UK Full Sample									
ARG	F(3,205)	2.6486	1.7992	0.5382	1.2807	0.3535			0.9514
BOL	F(1,221)	3.8839	2.3702	1.0001	2.3671	0.1964			8.1200
BRAZIL	F(2,211)	3.0387	1.1906	1.3573	0.7334	2.6957			1.8021
CHILE	F(3,215)	2.6466	1.5632	1.2857	1.4775	0.1825			1.8671
COL	F(3,205)	2.6486	1.7515	0.5050	1.7320	3.3406			0.1587
CR	F(1,205)	3.8872	0.0103	3.7046	3.5140	0.0156			0.6312
EC	F(3,217)	2.6462	3.2989	0.2295	2.2340	0.0343			0.2871
ELSAL	F(1,222)	3.8837	2.8250	1.3132	0.0861	0.1620			0.0033
GUA	F(2,210)	3.0389	0.0572	2.1084	2.1934	0.5417			0.2628
HON	F(1,220)	3.8841	0.9708	0.5373	0.0873	0.0397			0.2729
MEX	F(3,215)	2.6466	0.3597	1.1271	0.3607	1.5465			0.9519
NIC	F(1,209)	3.8863	0.6541	1.0589	0.0796	0.9847			0.0074
PAN	F(1,220)	3.8841	2.0780	0.3474	0.3940	0.5945			1.4299
PARA	F(1,207)	3.8868	0.0683	0.1039	0.3090	0.7189			0.1666
PERU	F(4,214)	2.4138	0.9363	0.4048	0.7991	0.5604			0.9301
UK	F(3,205)	2.6486	0.1001			0.7482	0.8545		
URU	F(2,219)	3.0371	0.2412	0.2032	0.6358	1.6086			3.2137
UK Pre-crisis Sample									
ARG	F(3,116)	2.6828	0.1357	0.0866	0.2036	0.2075			2.0045
BOL	F(1,129)	3.9146	0.5623	0.1905	5.1254	0.1542			0.2889
BRAZIL	F(2,122)	3.0705	1.0135	1.3063	1.8257	2.6826			3.9550

CHILE	F(2,127)	3.0675	0.5668	0.5822	0.7936	0.0512		3.4724
COL	F(1,118)	3.9215	1.2965	0.9050	1.6046	1.1143		0.6171
CR	F(1,116)	3.9229	0.7533	0.0814	0.1262	0.1488		0.5687
EC	F(2,129)	3.0664	6.6199	0.0697	1.4208	1.2885		3.8912
ELSAL	F(1,133)	3.9123	3.0217	0.3266	0.2286	0.5797		0.6079
GUA	F(1,127)	3.9157	0.0182	1.1873	1.0474	0.0016		0.8838
HON	F(1,131)	3.9134	0.6071	1.0093	0.0673	0.1526		0.0312
MEX	F(2,127)	3.0675	0.4181	0.4972	0.2873	0.4467		0.0018
NIC	F(1,130)	3.9140	6.4862	2.3151	0.0679	0.0632		3.1837
PAN	F(1,131)	3.9134	0.0131	0.1806	0.0717	0.6661		4.1523
PARA	F(2,128)	3.0670	2.6500	0.3988	1.2071	0.5675		0.2195
PERU	F(2,127)	3.0675	0.1236	0.0078	0.0595	0.4892		0.0130
UK	F(2,117)	3.0738	3.9897			0.0314	1.0405	
URU	F(1,131)	3.9134	0.2594	0.2477	0.6497	0.7502		0.1210

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
UK Crisis Sample									
ARG	F(4,71)	2.5008	1.0207	3.1562	0.9364	1.4310			1.1766
BOL	F(2,76)	3.1170	2.5294	1.3123	3.9840	2.4785			1.7049
BRAZIL	F(1,74)	3.9702	0.2911	0.3127	0.3244	3.0205			2.4897
CHILE	F(3,71)	2.7336	1.7851	0.2238	0.4008	0.7035			1.4707
COL	F(1,74)	3.9702	0.1727	0.0140	0.0901	0.2743			2.9970
CR	F(2,72)	3.1239	0.2841	1.2237	0.0688	0.4124			0.6458
EC	F(2,74)	3.1203	0.0321	1.8725	1.1373	1.1735			3.2345
ELSAL	F(1,78)	3.9635	1.1866	0.1994	0.0322	0.0080			0.1966
GUA	F(2,75)	3.1186	0.4212	0.9615	1.6367	1.5349			10.0058
HON	F(1,76)	3.9668	2.6902	0.1099	0.3012	0.4283			0.0193
MEX	F(3,64)	2.7482	1.9664	1.2592	2.2502	4.2480			5.3673
NIC	F(1,75)	3.9685	5.4267	1.7880	3.9523	2.0686			0.0350
PAN	F(1,76)	3.9668	0.3090	0.0534	0.5977	0.5274			0.1729
PARA	F(0,75)								
PERU	F(2,72)	3.1239	0.0167	1.2420	0.3719	0.5236			0.0804
UK	F(5,59)	2.3710	0.2817			0.2070	0.0454		
URU	F(3,74)	2.7283	2.1196	0.5904	0.6384	1.8086			0.3502

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
JP Full Sample									
ARG	F(3,205)	2.6486	2.8079	0.1532	1.1328	0.1554			0.7206
BOL	F(1,221)	3.8839	0.5280	0.4526	0.7678	0.2256			4.6729
BRAZIL	F(2,206)	3.0397	1.0790	1.2792	0.5435	0.1523			1.3097
CHILE	F(2,209)	3.0391	1.6317	0.3139	0.1010	0.0194			0.3073
COL	F(2,217)	3.0375	0.3979	1.0015	1.2553	0.7565			0.2853
CR	F(2,204)	3.0402	1.9904	0.3575	3.6030	4.0051			0.2786

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
EC	F(3,217)	2.6462	0.4490	7.8411	4.6961	0.7143			0.8312
ELSAL	F(1,222)	3.8837	7.5316	0.7477	1.8499	1.4114			0.0398
GUA	F(2,210)	3.0389	2.3106	2.5836	0.4022	0.1394			0.1586
HON	F(1,220)	3.8841	0.2477	0.0575	0.6925	0.4291			0.0396
JP	F(4,204)	2.4159	1.5159			2.3085	1.3897		
MEX	F(3,215)	2.6466	0.3039	0.1808	0.1532	1.9621			0.3874
NIC	F(1,219)	3.8843	0.9630	0.0025	2.0663	0.0139			0.4902
PAN	F(1,220)	3.8841	0.0162	0.1767	0.0101	1.7967			0.6488
PAR	F(1,207)	3.8868	0.8204	0.2222	0.0626	0.1366			0.1864
PERU	F(4,214)	2.4138	0.3460	0.2217	0.2487	1.1269			0.9404
URU	F(1,220)	3.8841	0.6867	0.1642	3.3854	0.7654			0.0535
		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
JP Pre-crisis Sample									
ARG	F(4,126)	2.4436	0.3863	0.7545	0.4050	1.3568			1.5951
BOL	F(1,132)	3.9129	0.8034	0.5359	0.9653	0.1768			3.5795
BRAZIL	F(1,118)	3.9215	1.1358	2.3781	0.0797	0.2257			2.8235
CHILE	F(2,115)	3.0751	1.2604	0.1977	0.0510	1.7704			0.4990
COL	F(1,129)	3.9146	1.4633	0.5524	1.8654	0.6563			0.1907
CR	F(2,127)	3.0675	0.7271	1.0128	0.5161	3.7715			1.3838
EC	F(2,129)	3.0664	0.4020	4.6442	2.7182	0.7032			0.4467
ELSAL	F(1,133)	3.9123	5.7660	0.0095	1.4267	2.7093			0.5766
GUA	F(1,127)	3.9157	1.4600	1.0042	0.2773	0.0049			2.6519
HON	F(1,131)	3.9134	0.0806	2.8808	0.7972	0.0324			0.2961
JP	F(2,117)	3.0738	0.0639			2.3224	0.5238		
MEX	F(3,126)	2.6765	0.0602	0.5308	0.1089	4.6468			0.6071
NIC	F(1,130)	3.9140	0.0043	0.1811	3.6216	0.0278			3.1378
PAN	F(1,131)	3.9134	0.0495	0.1890	0.2532	2.3541			3.1381
PAR	F(1,129)	3.9146	0.2645	0.5039	0.6811	0.6261			0.0161
PERU	F(3,126)	2.6765	0.1445	0.4584	0.0903	1.4335			0.2901
URU	F(2,130)	3.0658	0.2730	0.2075	3.9647	0.7529			0.1286
		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
JP Crisis Sample									
ARG	F(1,74)	3.9702	0.2702	0.4184	0.1559	0.0472			0.0010
BOL	F(1,77)	3.9651	0.1742	0.0028	0.5098	0.1525			0.0716
BRAZIL	F(1,74)	3.9702	0.7902	0.0295	0.0018	1.5276			2.0556
CHILE	F(1,66)	3.9863	0.0975	0.6508	2.9467	0.1116			0.3151
COL	F(1,74)	3.9702	0.3336	0.5774	0.5039	0.2506			2.0670
CR	F(1,73)	3.9720	6.6834	4.0102	0.8107	0.0716			0.0012
EC	F(1,75)	3.9685	0.5738	0.1304	0.7220	0.0199			0.9771
ELSAL	F(1,78)	3.9635	0.2412	0.1968	0.1556	0.0660			0.2668
GUA	F(1,76)	3.9668	0.0957	0.0002	0.0001	0.0013			0.0188
HON	F(1,76)	3.9668	1.1729	0.1970	0.4977	0.0133			0.7938
JP	F(2,62)	3.1453	0.9374			1.1737	0.8650		
MEX	F(1,73)	3.9720	2.1988	0.0007	0.5344	1.5006			1.3381
NIC	F(1,75)	3.9685	4.0656	0.1255	3.4364	3.4127			0.0242

PAN	F(1,76)	3.9668	0.6187	0.1907	1.0159	0.0196		1.7792
PAR	F(1,74)	3.9702	4.0916	0.4514	0.4993	1.4424		5.7891
PERU	F(1,73)	3.9720	4.4609	4.8600	5.0175	0.0048		1.7001
URU	F(1,76)	3.9668	0.0686	1.5747	1.0538	4.1720		0.0079

		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
Europe Full Sample									
ARG	F(1,147)	3.9055	0.6286	1.6566	0.5384	0.0851			0.1409
BOL	F(1,153)	3.9030	5.0581	0.3148	0.0673	0.0000			3.0295
BRAZIL	F(1,152)	3.9034	0.2483	0.0239	0.7306	0.0906			0.2634
CHILE	F(1,145)	3.9064	1.4207	0.3650	0.5064	0.7036			1.9330
COL	F(1,147)	3.9055	0.4302	0.0036	1.7109	2.4982			3.5315
CR	F(1,145)	3.9064	2.4019	0.0117	0.0063	0.7194			0.8434
EC	F(1,149)	3.9046	0.2293	0.3827	1.0921	0.3363			0.5067
ELSAL	F(1,160)	3.9002	0.0168	0.1710	0.0325	0.7158			1.1562
EUROPE	F(6,142)	2.1630	0.7956			0.3916	1.0893		
GUA	F(1,151)	3.9038	1.0509	1.2601	1.3374	1.8375			0.7113
HON	F(1,156)	3.9018	0.0746	0.0023	0.0352	1.0391			1.1006
MEX	F(1,145)	3.9064	0.0011	0.7366	0.2877	1.5850			1.9861
NIC	F(1,149)	3.9046	0.0469	0.4075	0.1305	0.0152			1.4135
PAN	F(1,151)	3.9038	0.0132	0.0609	0.9742	0.6765			0.8497
PAR	F(1,147)	3.9055	0.2542	0.0007	0.2672	0.0068			0.8095
PERU	F(1,145)	3.9064	0.0466	0.0775	0.3550	0.0137			0.1097
URU	F(1,151)	3.9038	0.2922	0.1643	0.0498	1.4350			0.0028
		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
Europe Pre-crisis Sample									
ARG	F(4,55)	2.5397	3.0893	3.2932	2.8965	3.4290			0.6981
BOL	F(1,72)	3.9739	0.4949	0.4039	0.1065	0.0291			4.5466
BRAZIL	F(2,68)	3.1317	3.4507	0.0733	2.4746	0.1067			0.0150
CHILE	F(4,65)	2.5130	0.2248	1.0336	1.2491	1.4601			1.3105
COL	F(2,68)	3.1317	0.5466	0.1896	0.2893	0.6895			0.0062
CR	F(4,53)	2.5463	0.1853	1.5525	1.6351	0.8961			1.4867
EC	F(2,69)	3.1296	0.0634	0.4056	0.4774	1.2611			0.3410
ELSAL	F(1,73)	3.9720	5.7778	2.7178	1.7861	0.1258			0.3919
EUROPE	F(4,55)	2.5397	1.9091			1.6691	0.2580		
GUA	F(1,67)	3.9840	2.3190	3.2147	1.9586	0.9716			0.7692
HON	F(1,71)	3.9758	0.3176	0.4994	0.2746	0.5709			0.9925
MEX	F(3,66)	2.7437	0.6548	0.5357	0.4378	0.4925			0.3060
NIC	F(1,70)	3.9778	0.3255	0.0002	0.0889	1.3248			4.9611
PAN	F(1,71)	3.9758	1.8394	0.3541	0.5681	3.5230			0.4007
PAR	F(4,66)	2.5108	0.9275	0.8635	0.5633	1.7288			0.2760
PERU	F(4,65)	2.5130	0.7680	0.7592	1.6667	1.1440			0.8788

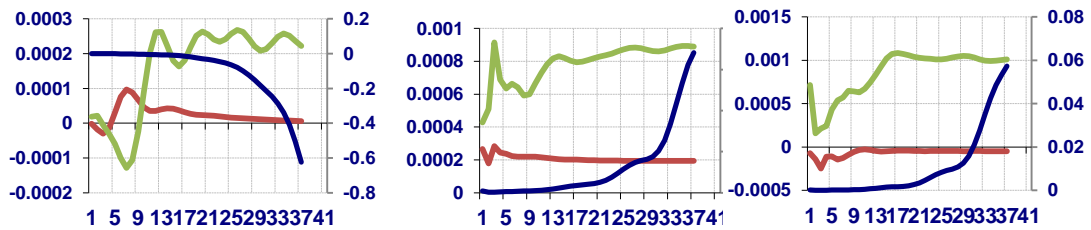
URU	F(3,69)	2.7375	0.6243	0.7225	1.3895	0.5320			0.8581
		Fcrit_0.05	ys	credits	sois	cpis	reservess	mons	oil
Europe Crisis Sample									
ARG	F(3,61)	2.7555	0.9768	0.9479	0.7190	0.3217			0.1771
BOL	F(1,77)	3.9651	1.9429	1.0697	1.5824	2.3046			2.7711
BRAZIL	F(2,73)	3.1221	1.8298	1.8929	1.6431	1.9458			0.0212
CHILE	F(2,60)	3.1504	0.1012	0.3519	0.3909	0.4225			0.6497
COL	F(1,74)	3.9702	0.1982	0.0000	0.0670	0.3664			4.9710
CR	F(2,60)	3.1504	1.0014	1.8126	1.2088	1.3262			1.4397
EC	F(3,73)	2.7300	1.9532	1.6220	0.8888	0.8417			3.1423
ELSAL	F(1,78)	3.9635	0.2980	0.2610	0.1608	0.0344			0.0497
EUROPE	F(4,60)	2.5252	1.3471			0.4509	0.2765		
GUA	F(2,75)	3.1186	5.0297	2.7849	0.5513	0.7576			12.3406
HON	F(1,76)	3.9668	0.0001	0.0545	0.2085	0.7668			0.1992
MEX	F(3,71)	2.7336	1.4335	0.6235	0.1192	2.0172			1.1675
NIC	F(1,75)	3.9685	0.0829	5.8774	6.1566	1.0830			0.0150
PAN	F(1,76)	3.9668	0.0008	0.0023	2.9377	0.4478			0.1354
PAR	F(1,74)	3.9702	5.1448	4.1541	4.9689	2.7042			4.4170
PERU	F(4,70)	2.5027	1.2111	2.1974	1.3375	0.5553			1.8194
URU	F(2,75)	3.1186	0.0728	0.6453	1.3951	1.0102			0.0598

Appendix I: Impulse Response Analysis. Comparisons between periods

OIRFs analysis for one standard deviation from a negative shock on monetary policy indicator for the major central bank. Forecast horizon 36 periods.

United States 1se Negative Shock to Monetary Policy Indicator: GDP

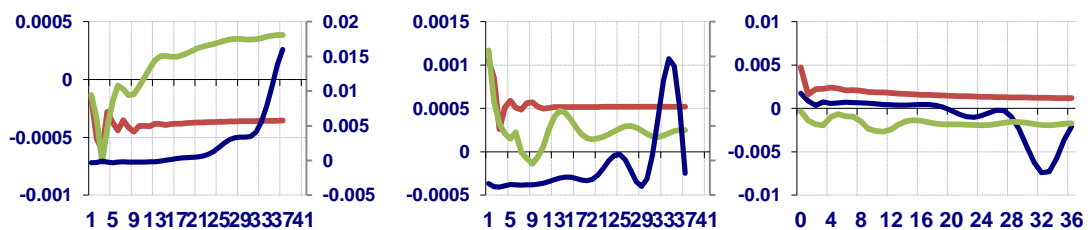
■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis



United States

Chile

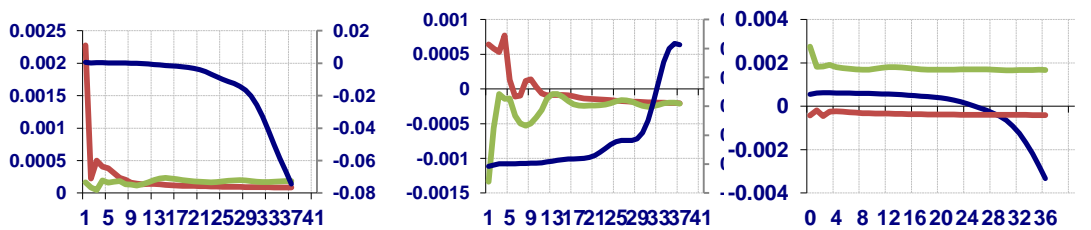
Mexico



Argentina

Costa Rica

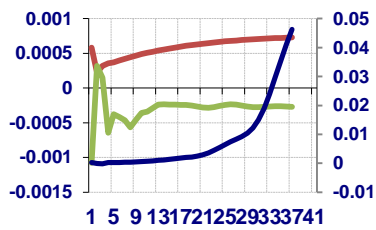
Ecuador



Guatemala

Nicaragua

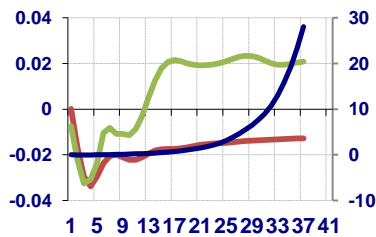
Paraguay



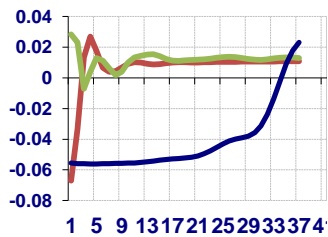
Peru

United States 1se Negative Shock to Monetary Policy Indicator: CPI

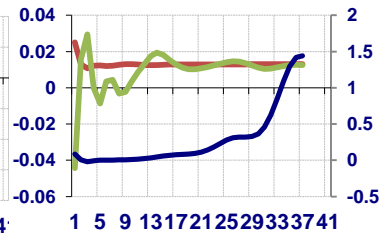
■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis



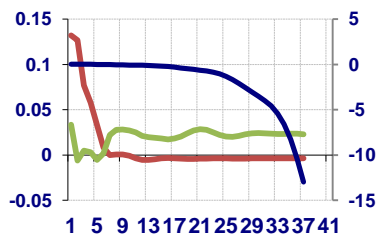
United States



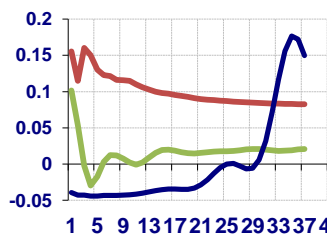
Brazil



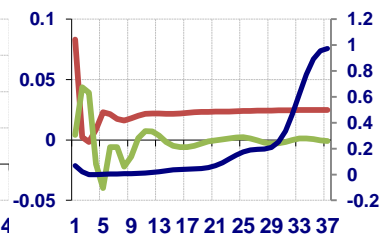
Chile



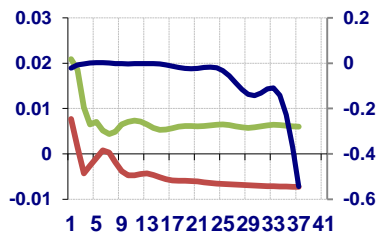
Mexico



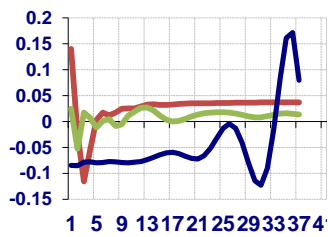
Argentina



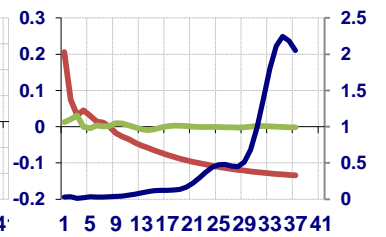
Bolivia



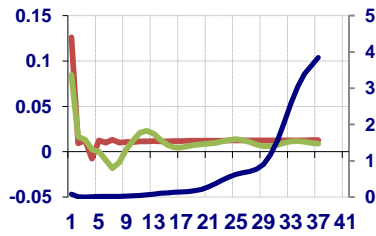
Colombia



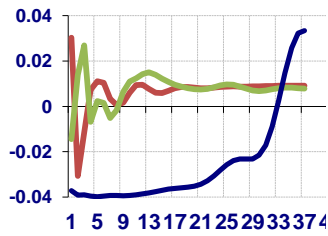
Costa Rica



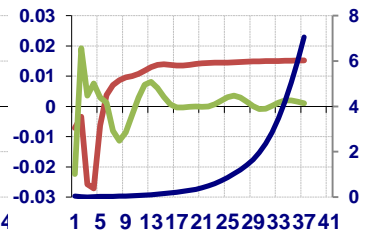
Ecuador



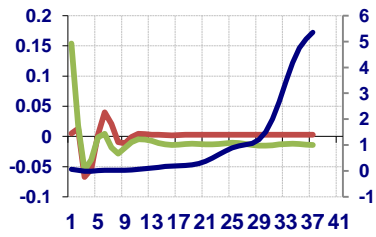
El Salvador



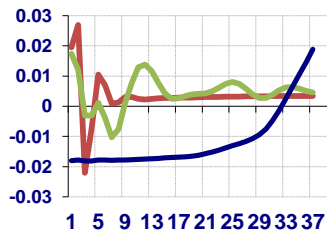
Guatemala



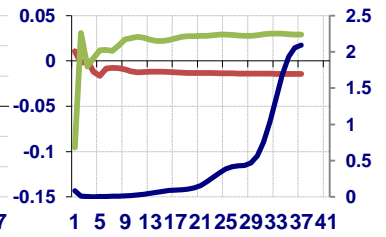
Honduras



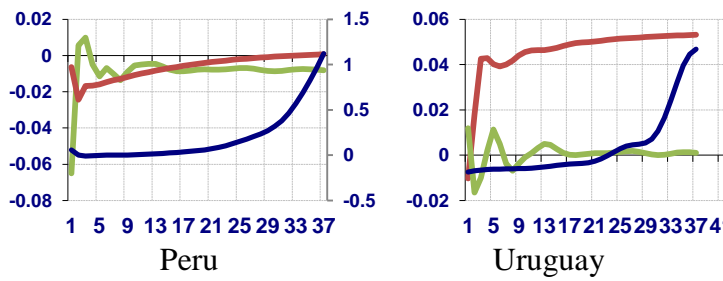
Nicaragua



Panama

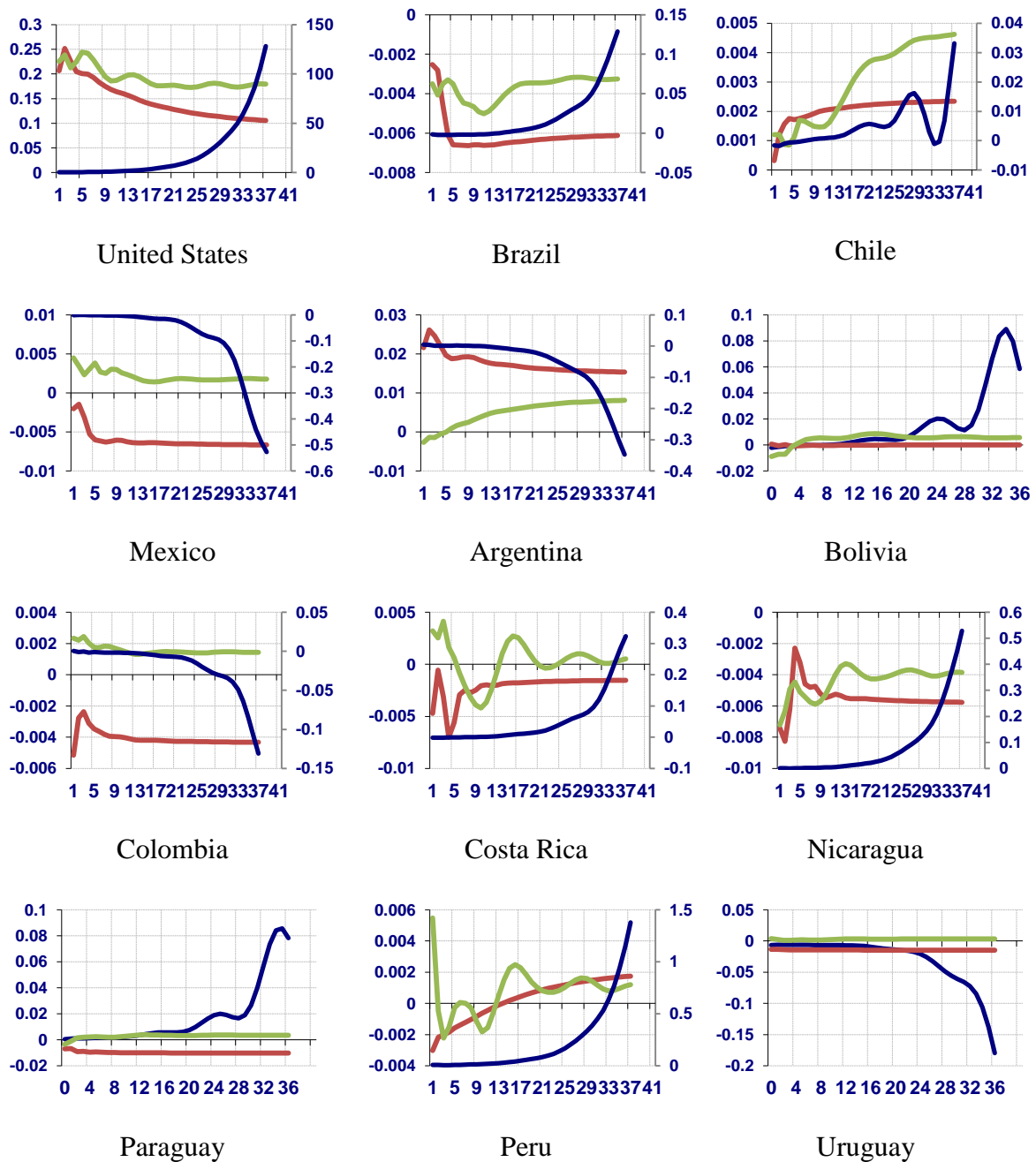


Paraguay



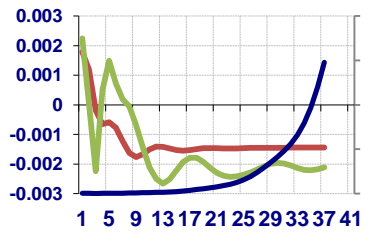
United States 1se Negative Shock to Monetary Policy Indicator: Money Growth

■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis

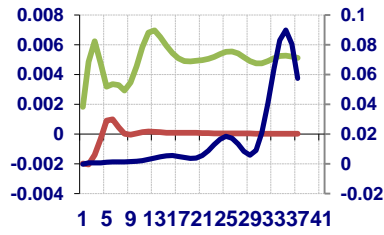


United States 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

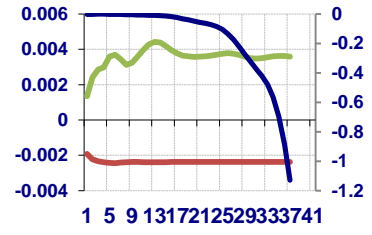
■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis



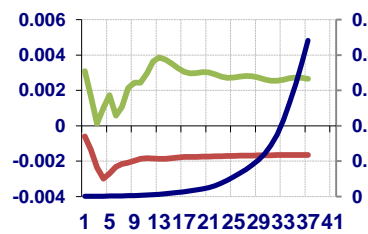
United States



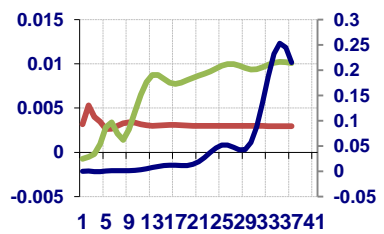
Brazil



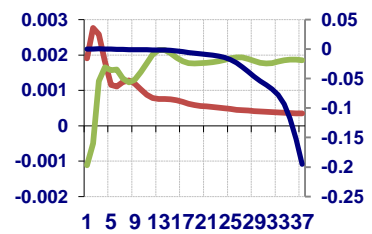
Chile



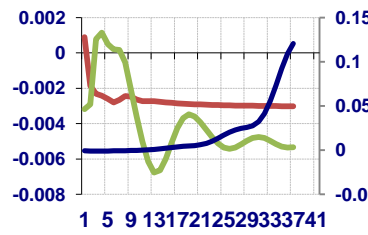
Mexico



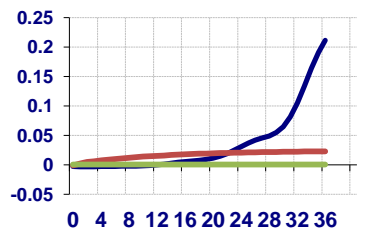
Argentina



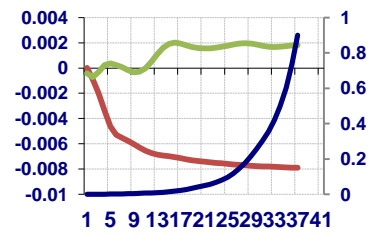
Colombia



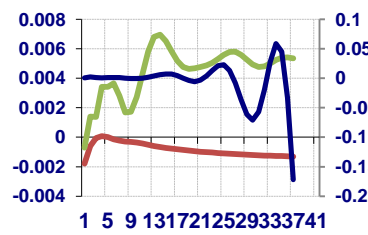
Costa Rica



Ecuador



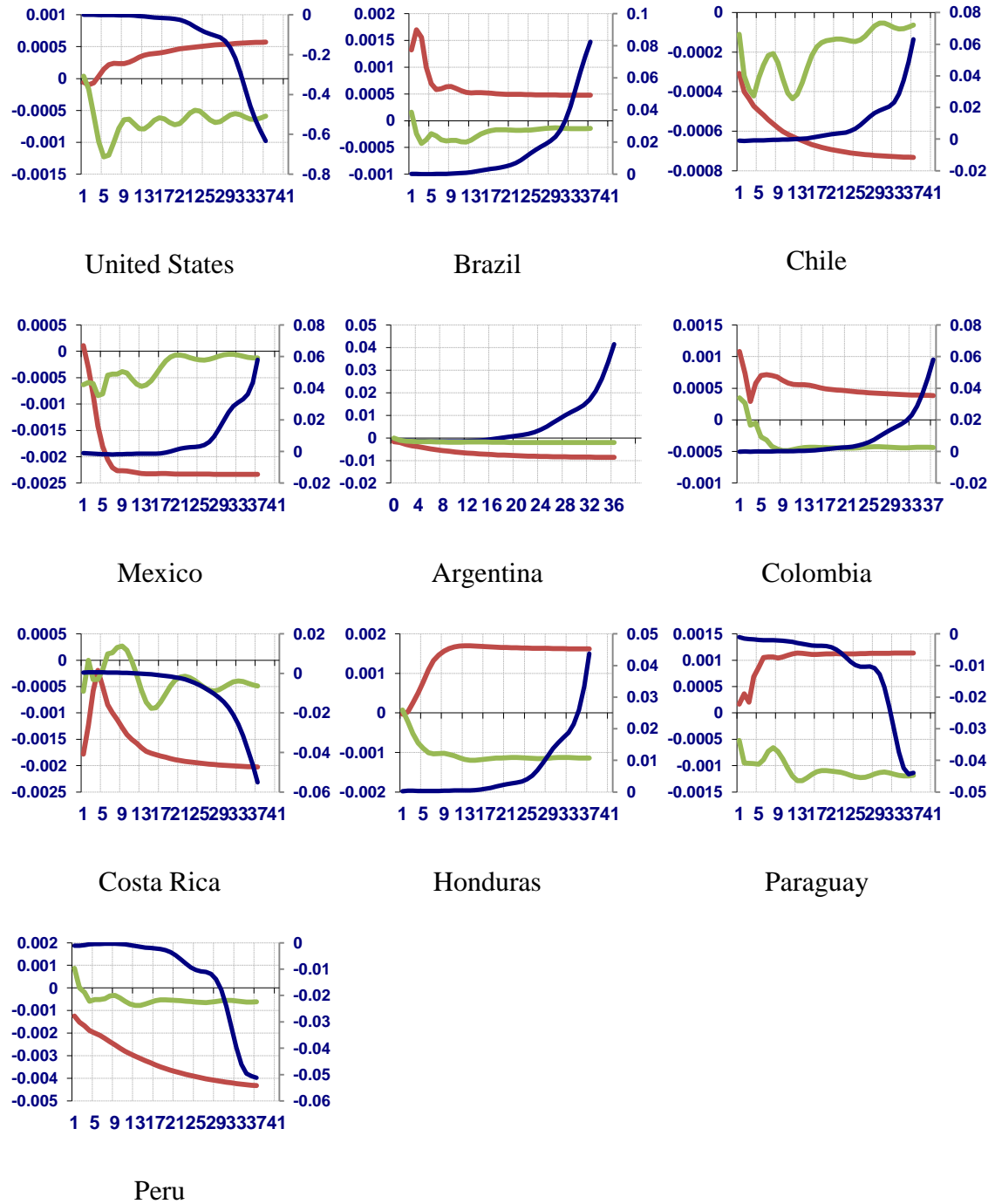
Panama



Peru

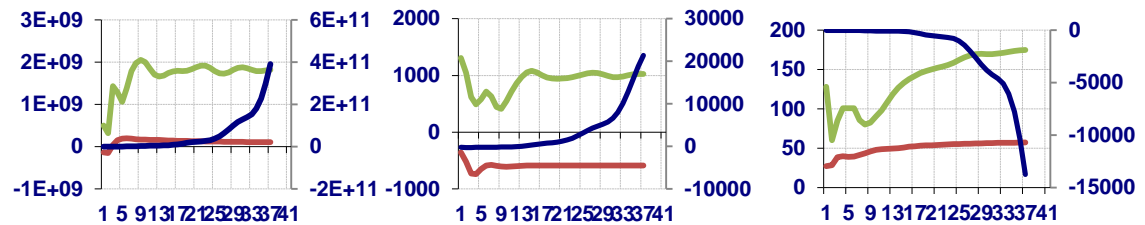
United States 1se Negative Shock to Monetary Policy Indicator: Credit

■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis



United States 1se Negative Shock to Monetary Policy Indicator: International Reserves

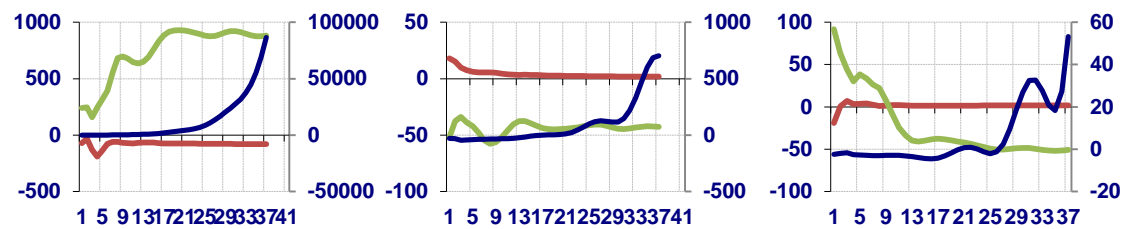
■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis



United States

Brazil

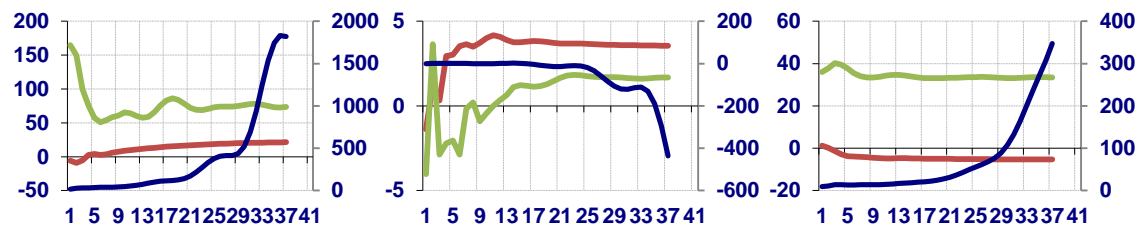
Chile



Mexico

Colombia

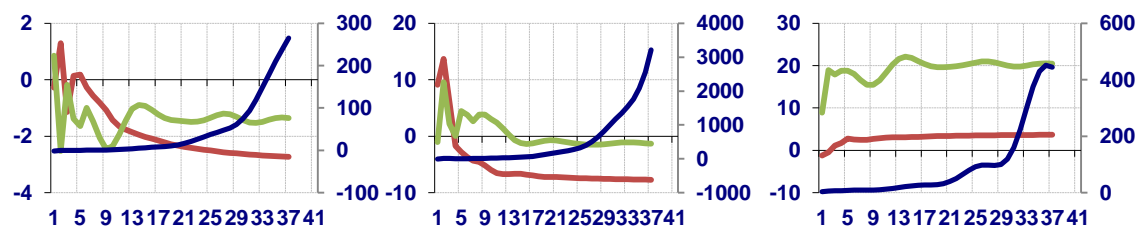
Costa Rica



Ecuador

Guatemala

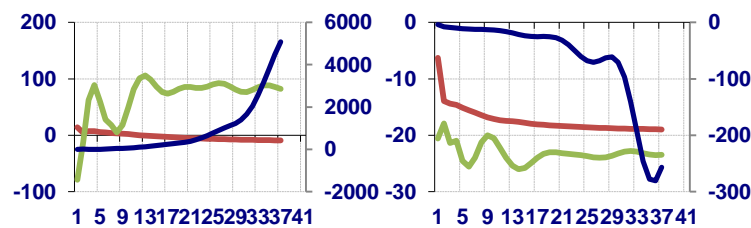
Honduras



Nicaragua

Panama

Paraguay

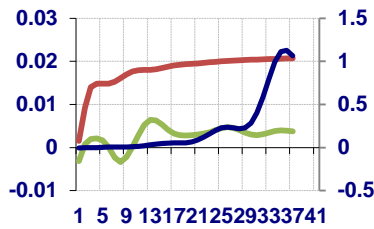


Peru

Uruguay

United States 1se Negative Shock to Monetary Policy Indicator: Oil Prices

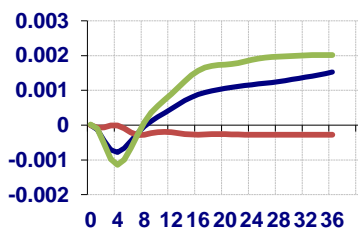
■ Full Sample (secondary axis) ■ Pre-crisis ■ Crisis



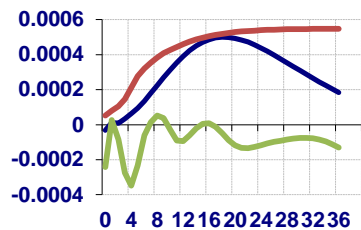
Oil Price

United Kingdom 1se Negative Shock to Monetary Policy Indicator: GDP

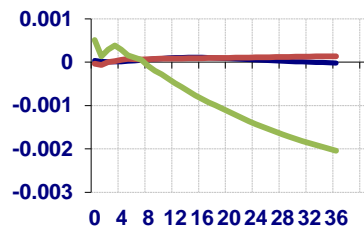
■ Full Sample ■ Pre-crisis ■ Crisis



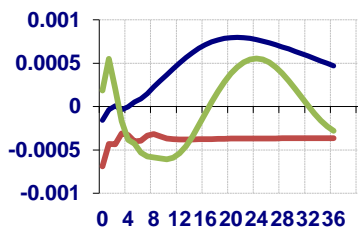
United Kingdom



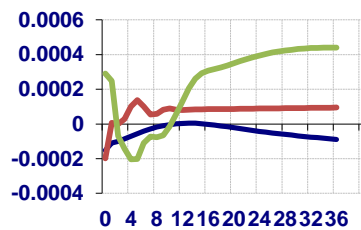
Chile



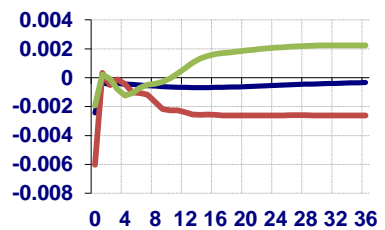
Mexico



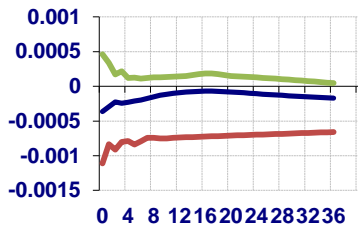
Argentina



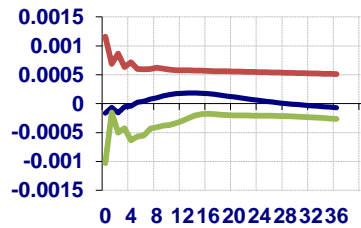
Costa Rica



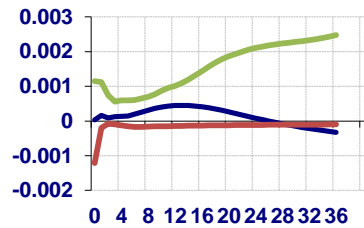
Ecuador



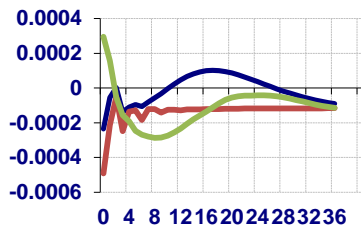
Guatemala



Nicaragua



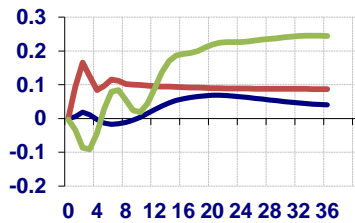
Paraguay



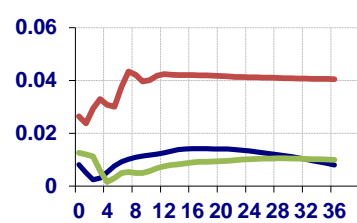
Peru

United Kingdom 1se Negative Shock to Monetary Policy Indicator: CPI

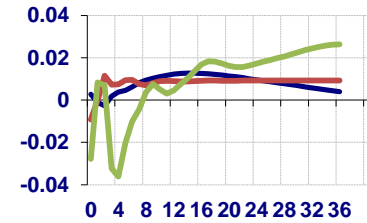
■ Full Sample ■ Pre-crisis ■ Crisis



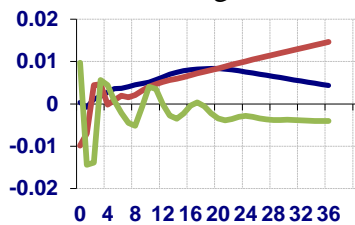
United Kingdom



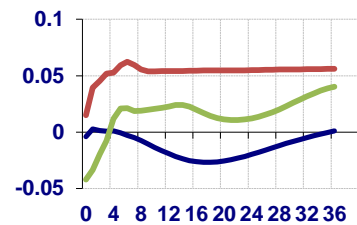
Brazil



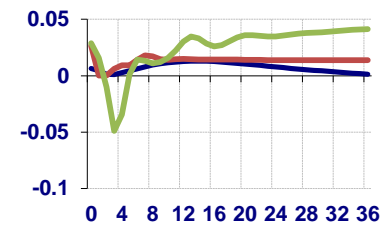
Chile



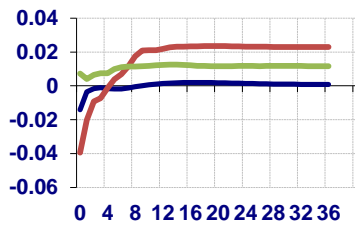
Mexico



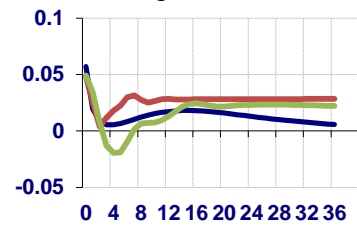
Argentina



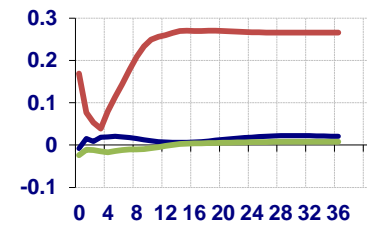
Bolivia



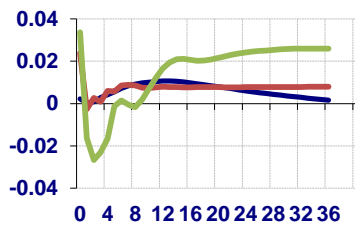
Colombia



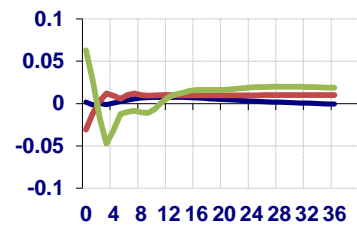
Costa Rica



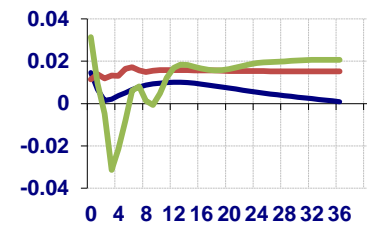
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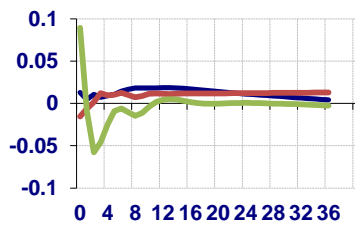
El Salvador



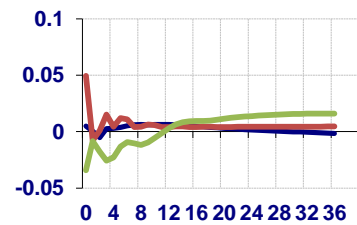
Guatemala



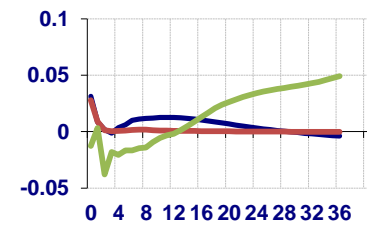
Honduras



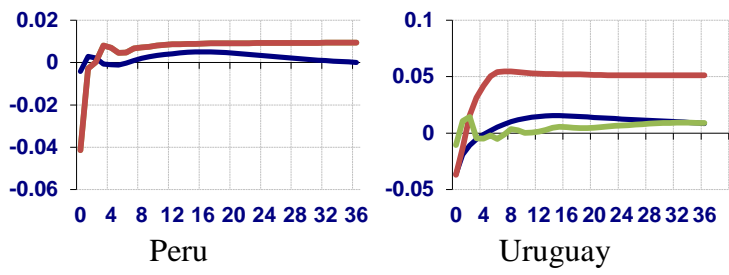
Nicaragua



Panama

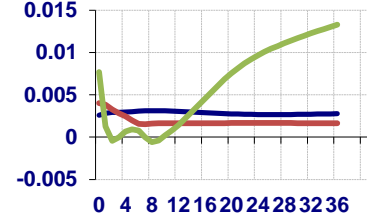
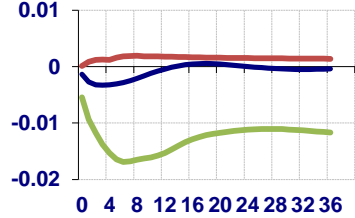
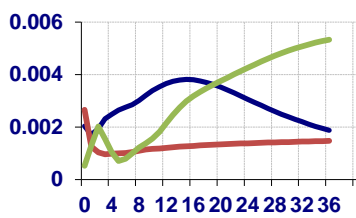
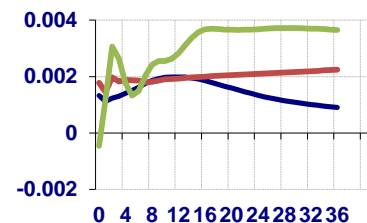
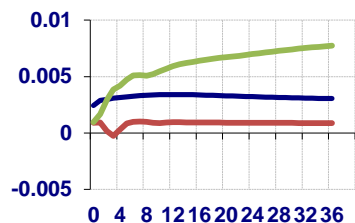
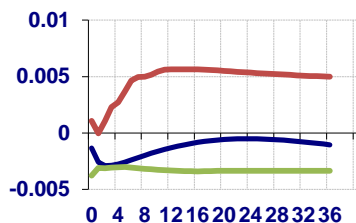
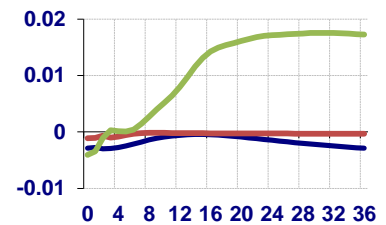
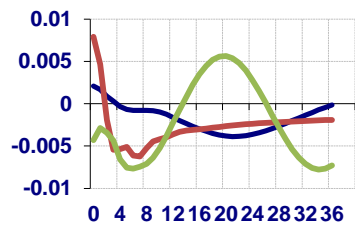
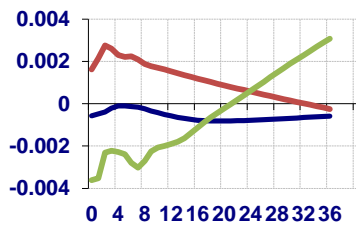
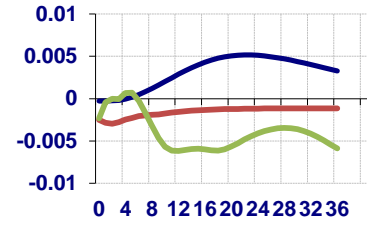
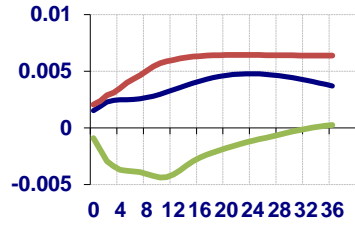
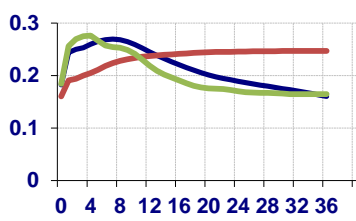


Paraguay



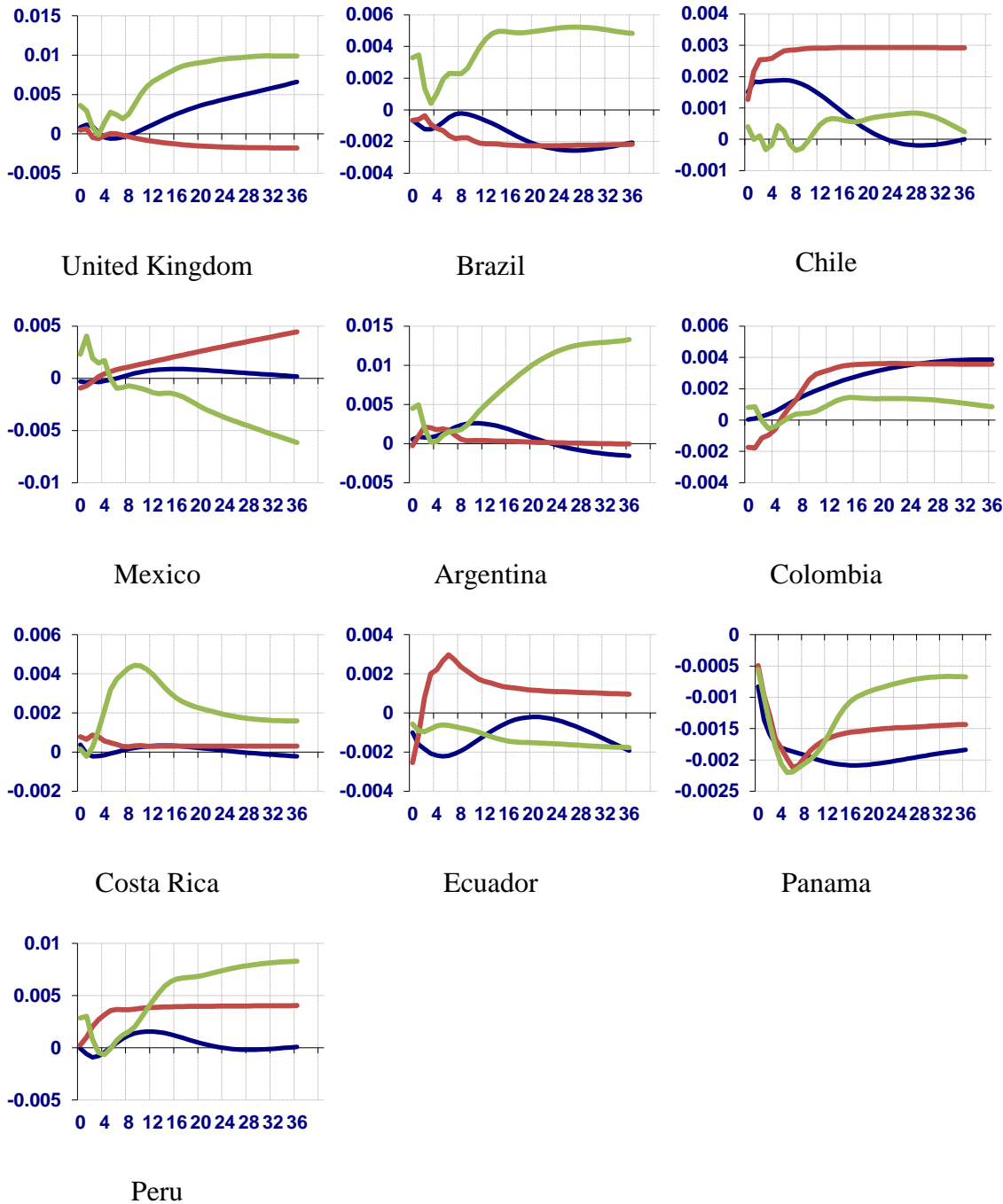
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Money Growth

■ Full Sample ■ Pre-crisis ■ Crisis



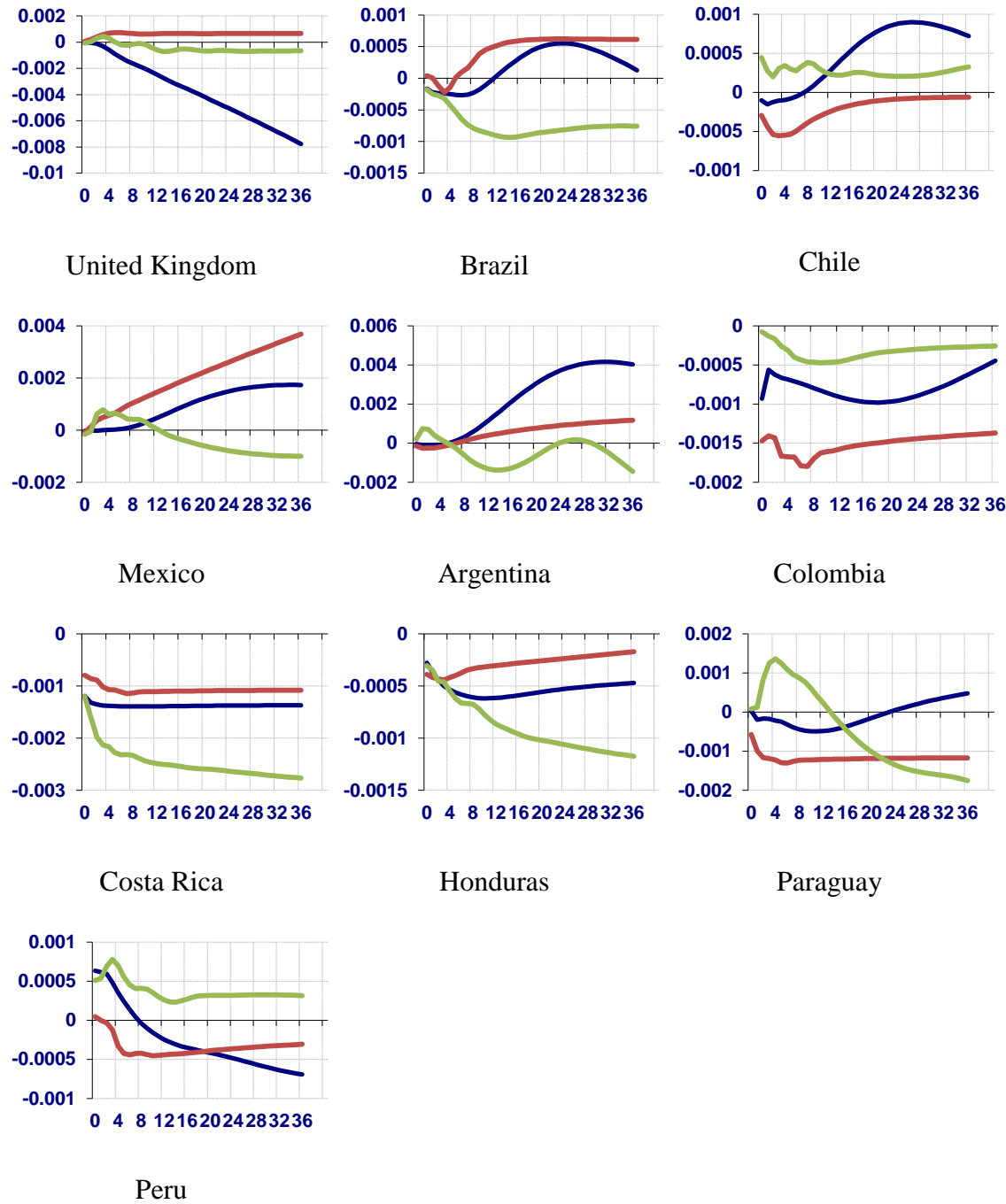
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

■ Full Sample ■ Pre-crisis ■ Crisis



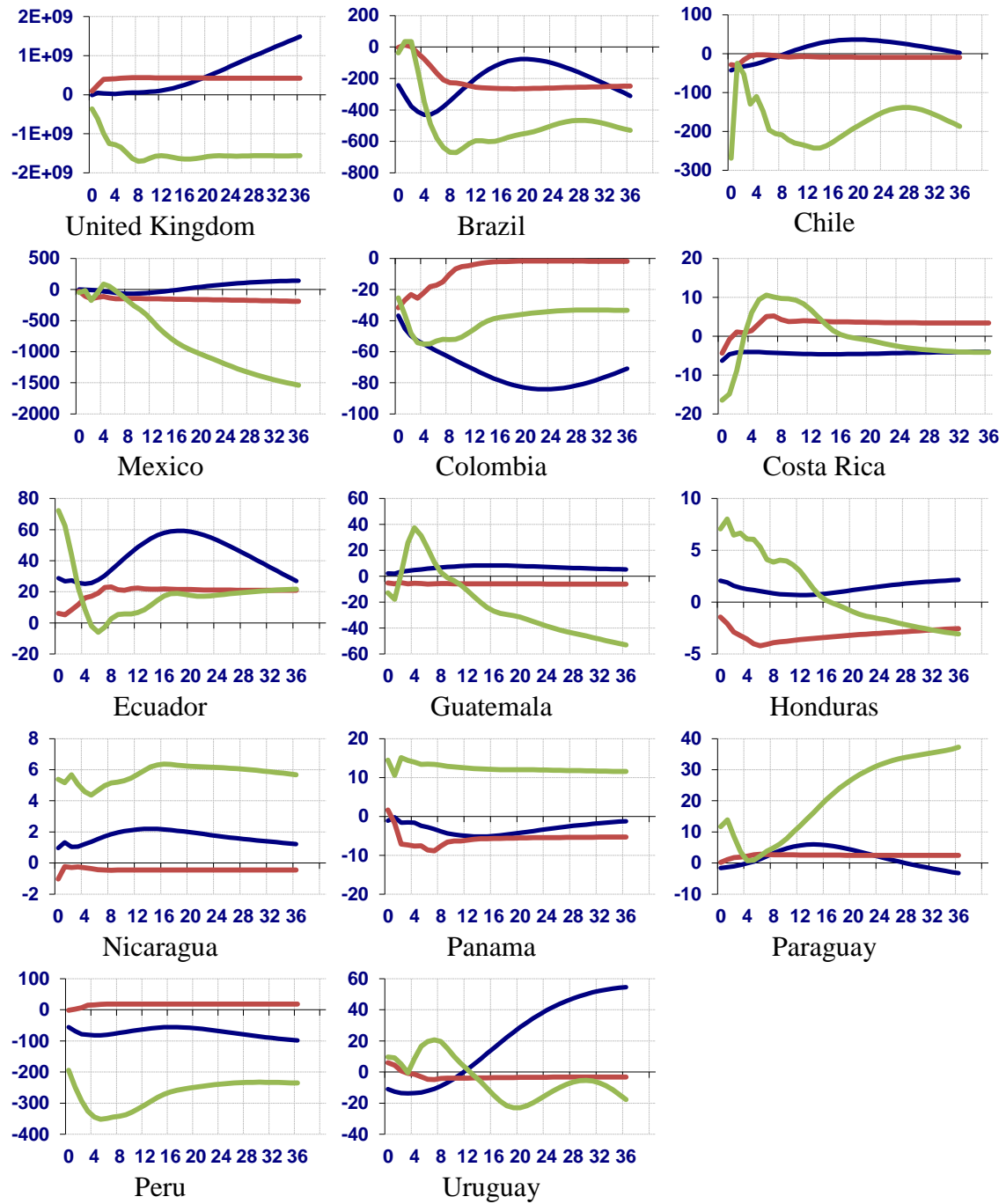
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Credit

■ Full Sample ■ Pre-crisis ■ Crisis



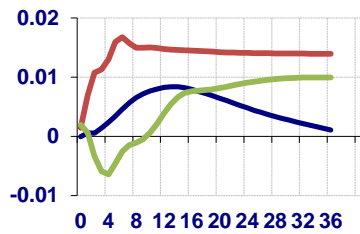
United Kingdom 1se Negative Shock to Monetary Policy Indicator: International Reserves

■ Full Sample ■ Pre-crisis ■ Crisis



United Kingdom 1se Negative Shock to Monetary Policy Indicator: Oil Prices

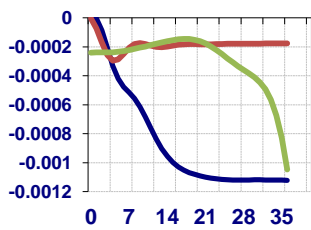
■ Full Sample ■ Pre-crisis ■ Crisis



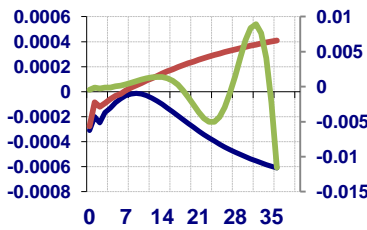
Oil Price

Japan 1se Negative Shock to Monetary Policy Indicator: GDP

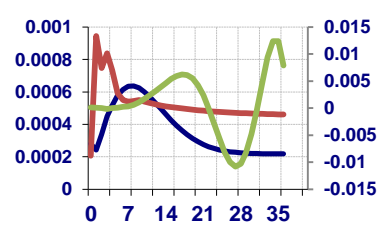
■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)



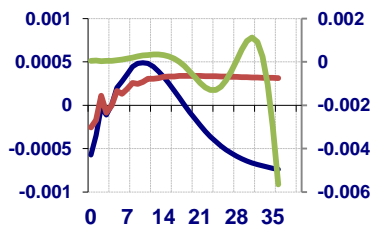
Japan



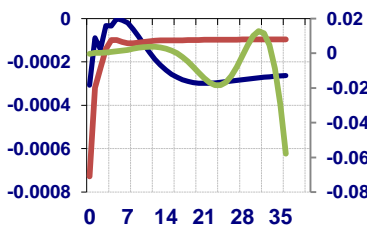
Chile



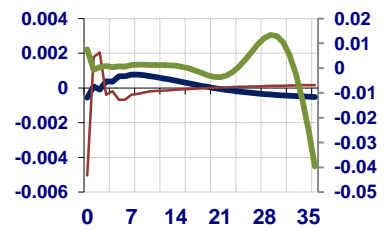
Mexico



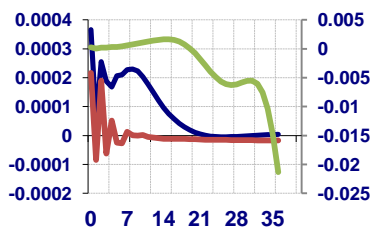
Argentina



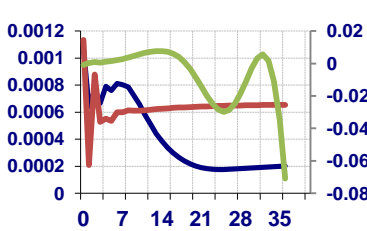
Costa Rica



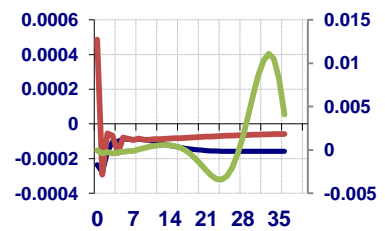
Ecuador



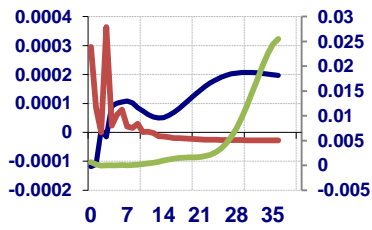
Guatemala



Nicaragua



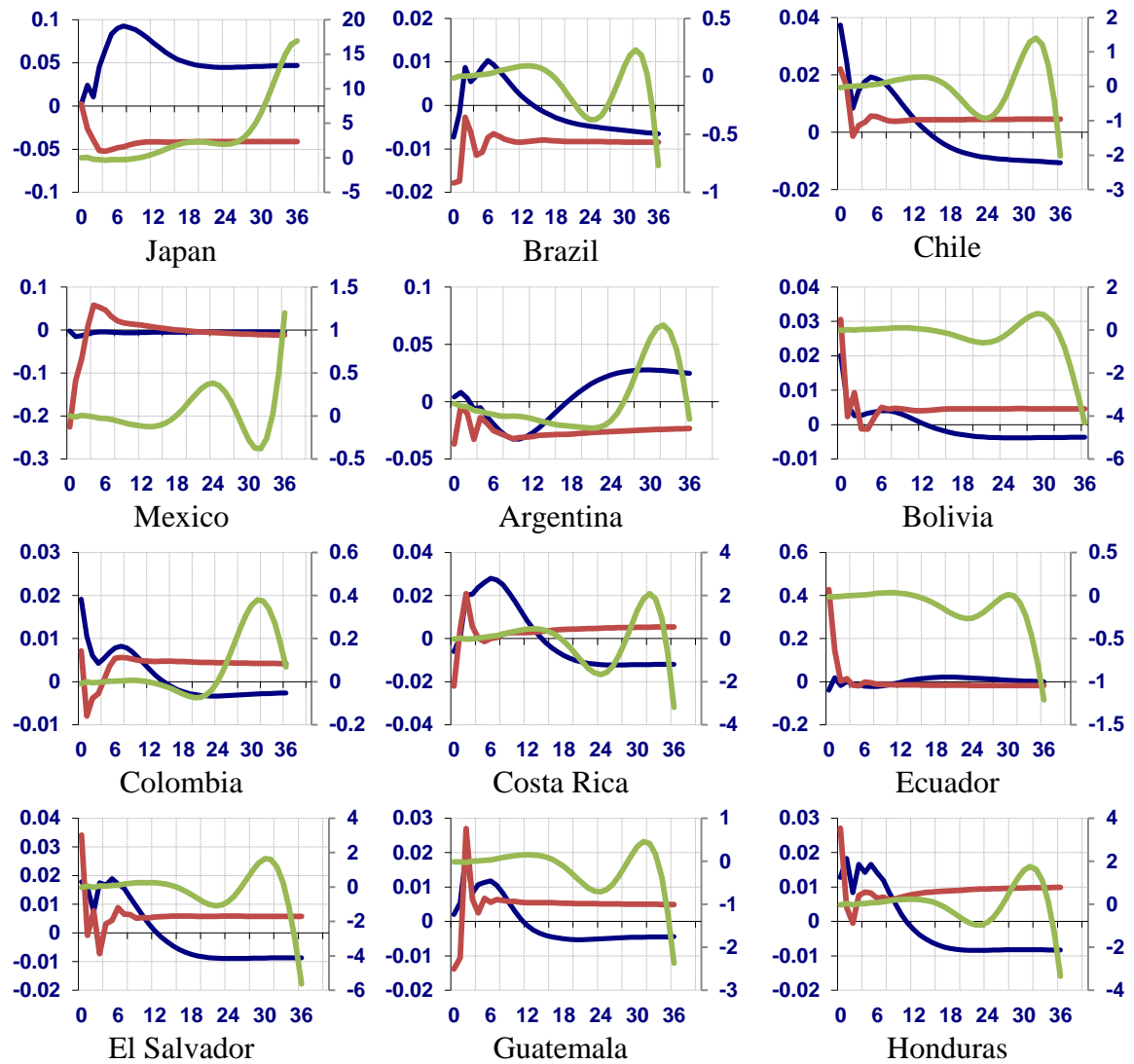
Paraguay

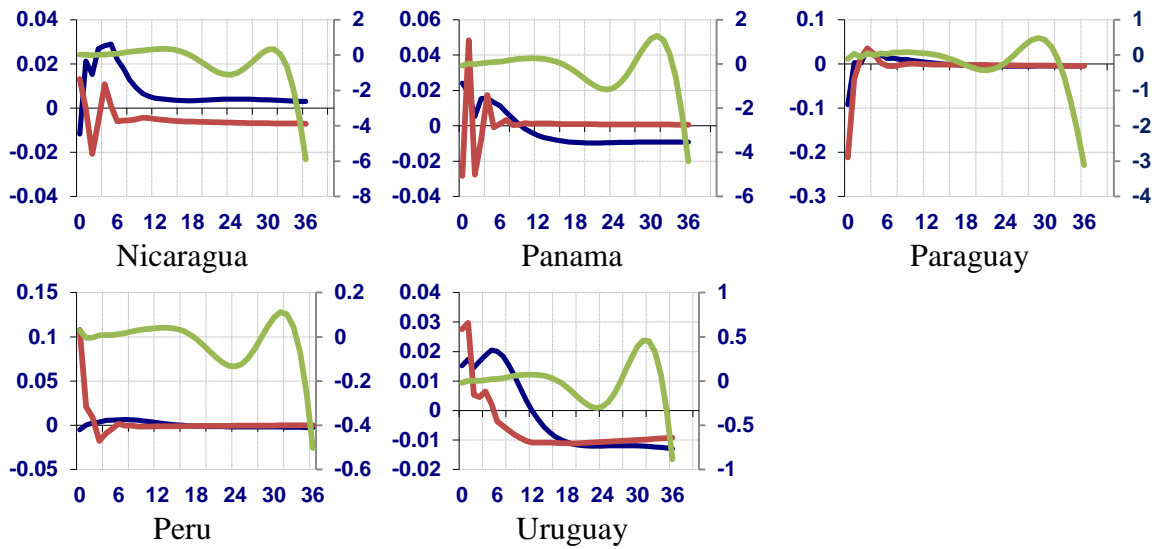


Peru

Japan 1se Negative Shock to Monetary Policy Indicator: CPI

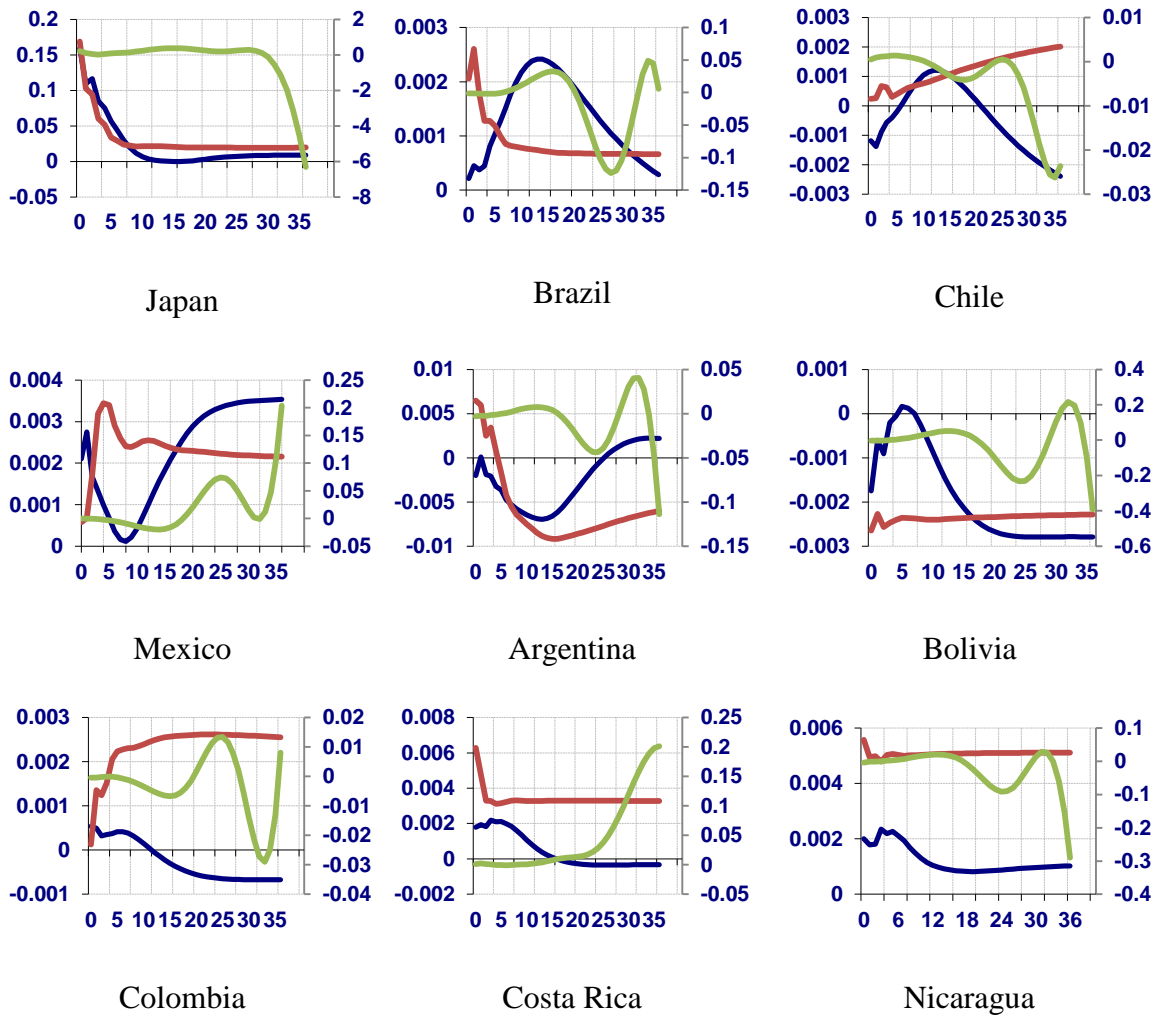
■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)

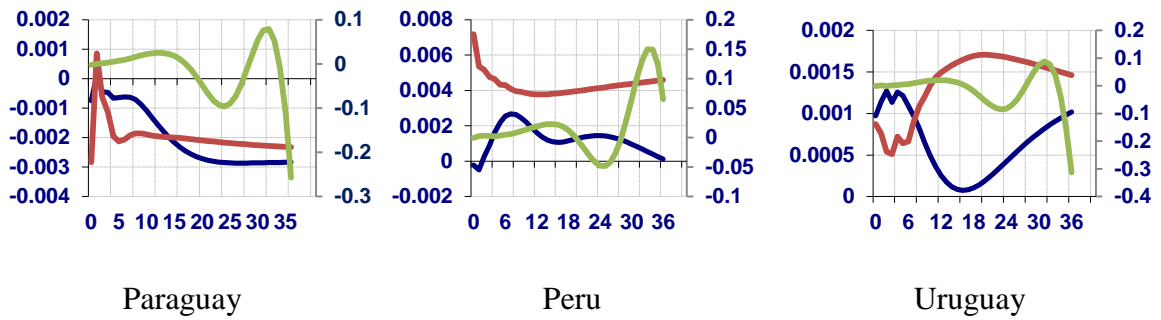




Japan 1se Negative Shock to Monetary Policy Indicator: Money Growth

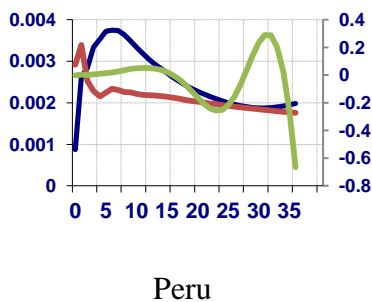
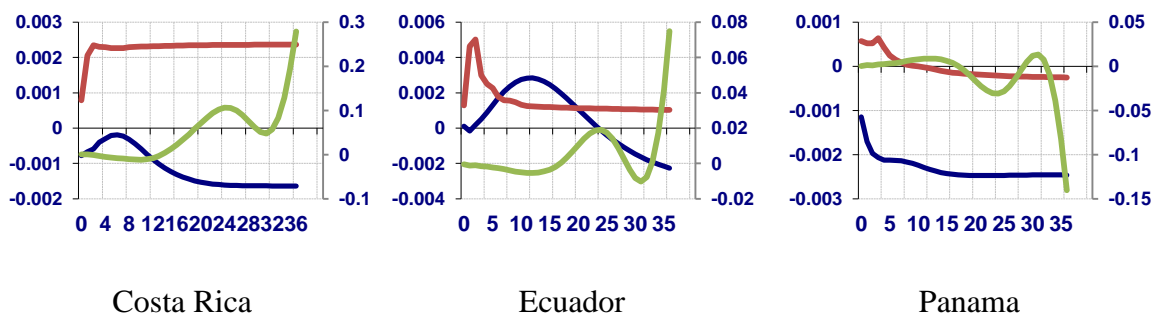
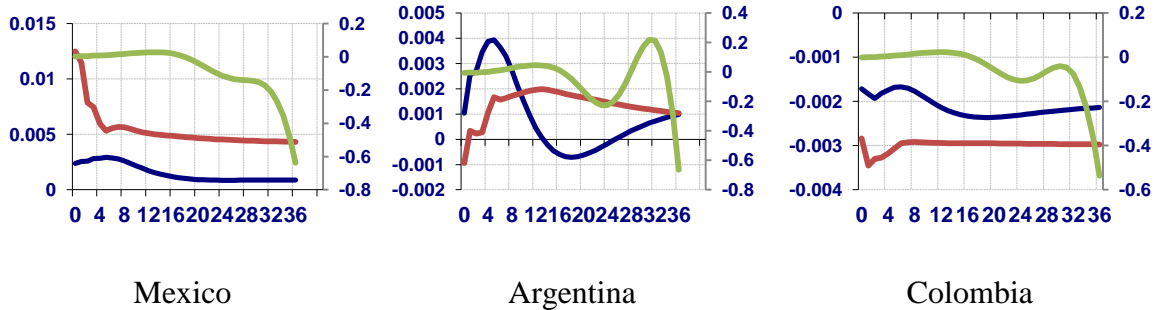
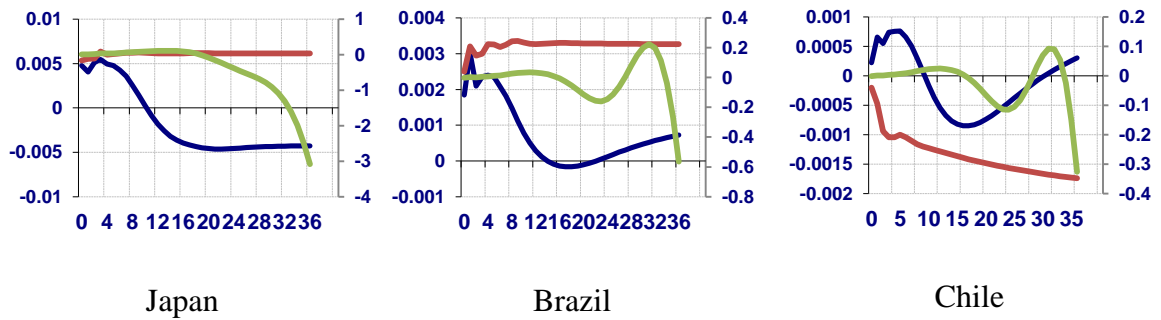
■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)





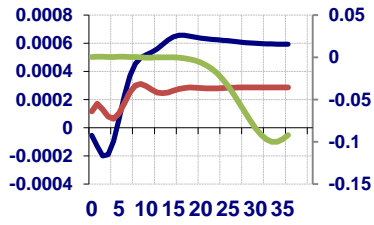
Japan 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)

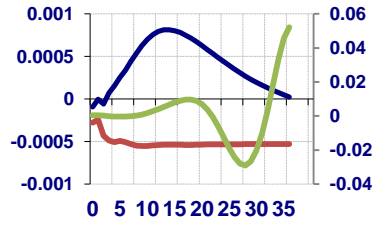


Japan 1se Negative Shock to Monetary Policy Indicator: Credit

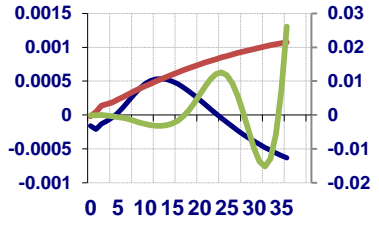
■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)



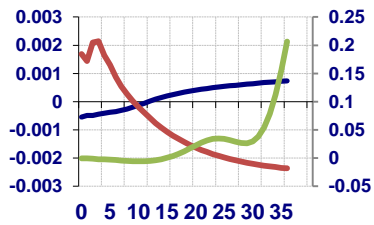
Japan



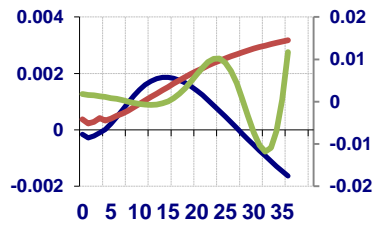
Brazil



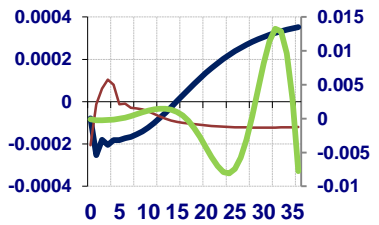
Chile



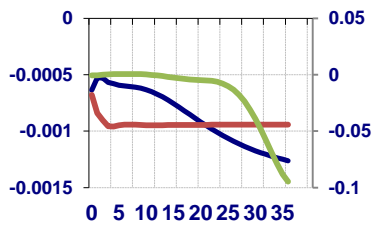
Mexico



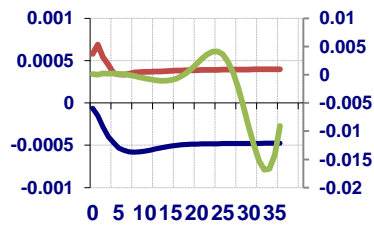
Argentina



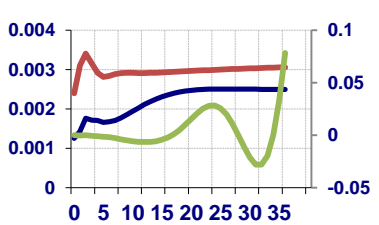
Colombia



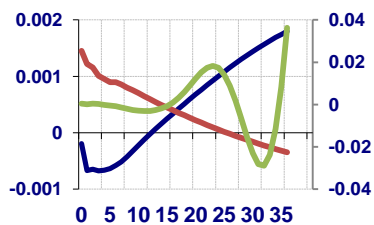
Costa Rica



Honduras



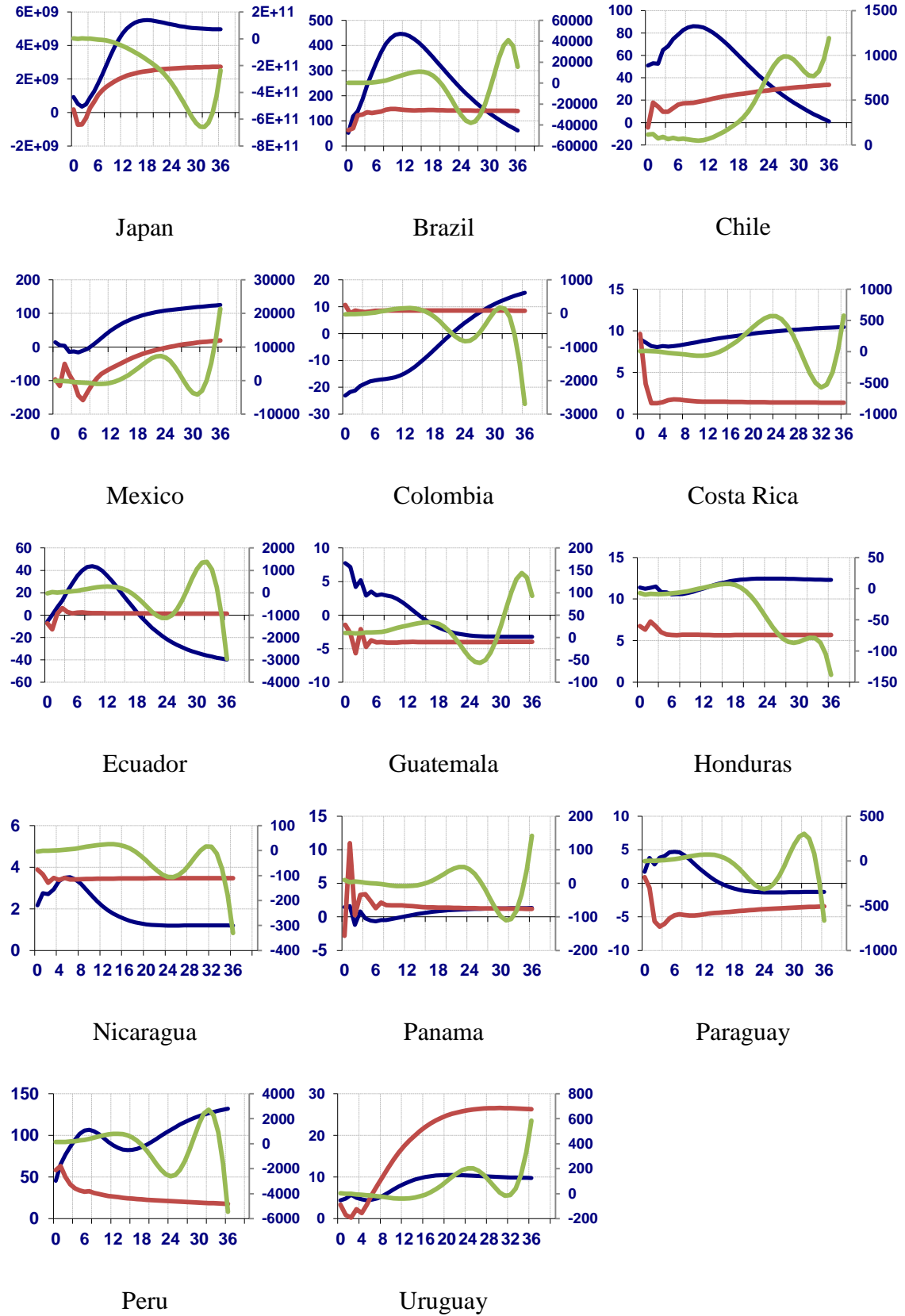
Paraguay



Peru

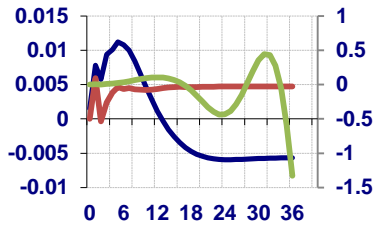
Japan 1se Negative Shock to Monetary Policy Indicator: International Reserves

■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)



Japan 1se Negative Shock to Monetary Policy Indicator: Oil Prices

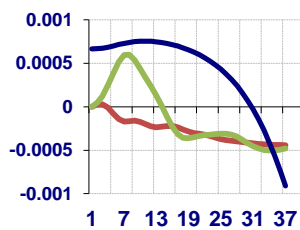
■ Full Sample ■ Pre-crisis ■ Crisis (Secondary axis)



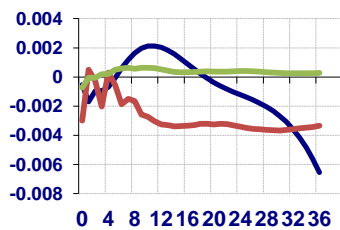
Oil Price

Europe 1se Negative Shock to Monetary Policy Indicator: GDP

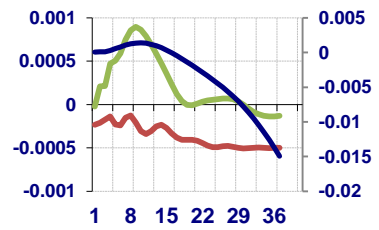
■ Full Sample (Secondary axis) ■ Pre-crisis ■ Crisis



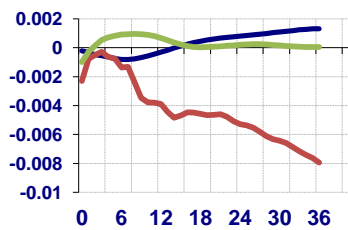
Europe



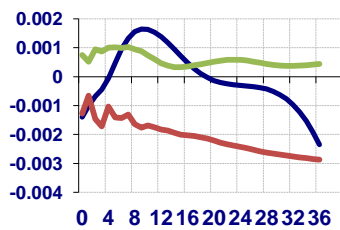
Chile



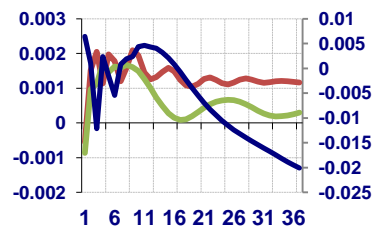
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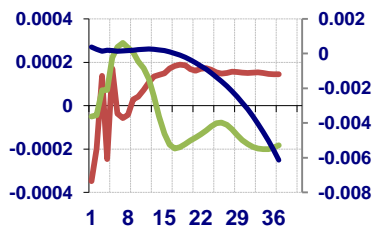
Argentina



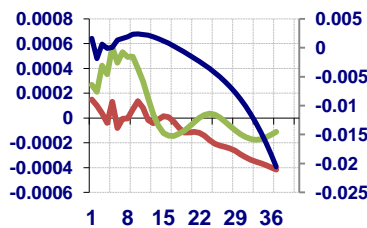
Costa Rica



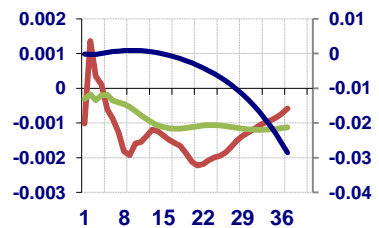
Ecuador



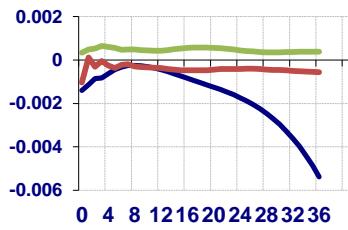
Guatemala



Nicaragua



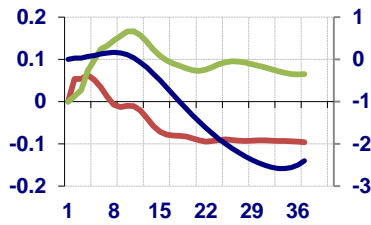
Paraguay



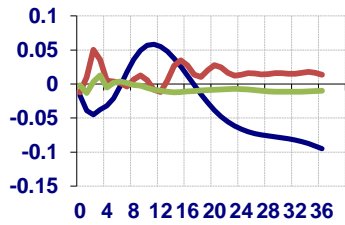
Peru

Europe 1se Negative Shock to Monetary Policy Indicator: CPI

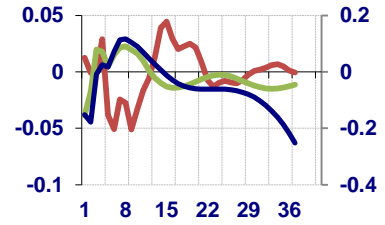
■ Full Sample (Secondary axis) ■ Pre-crisis ■ Crisis



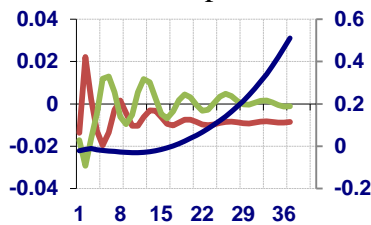
Europe



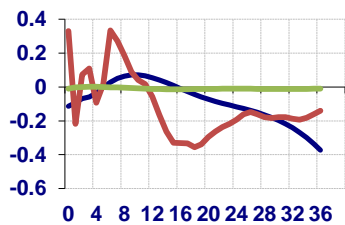
Brazil



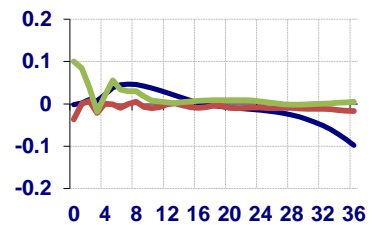
Chile



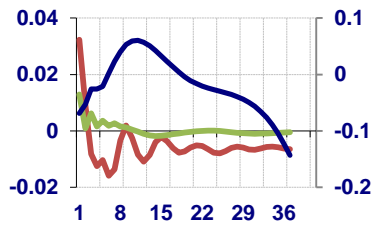
Mexico



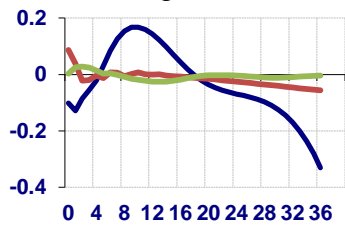
Argentina



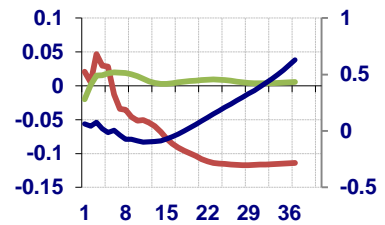
Bolivia



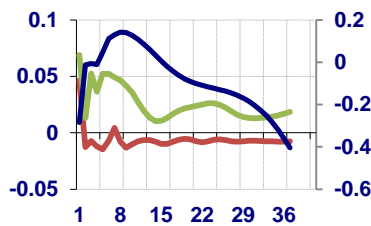
Colombia



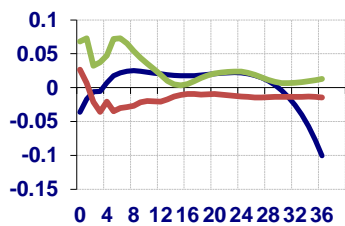
Costa Rica



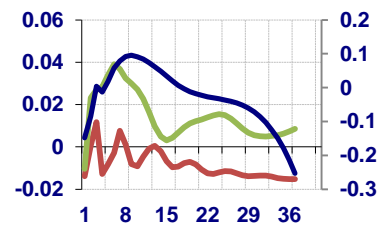
Ecuador



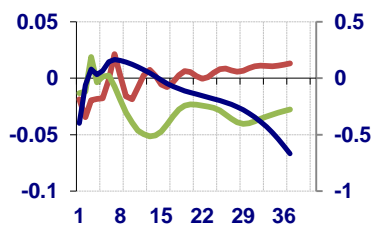
El Salvador



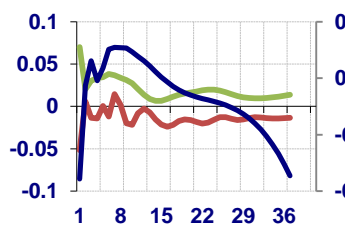
Guatemala



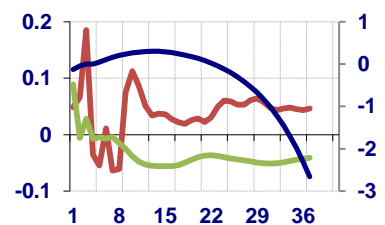
Honduras



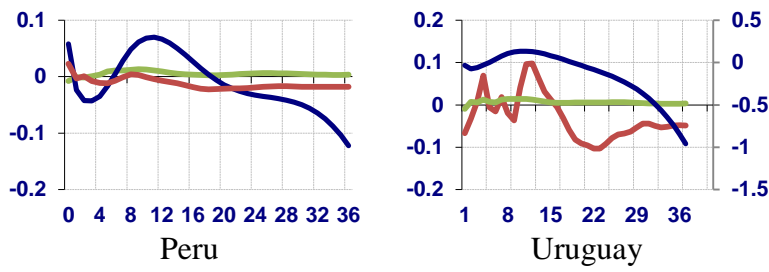
Nicaragua



Panama

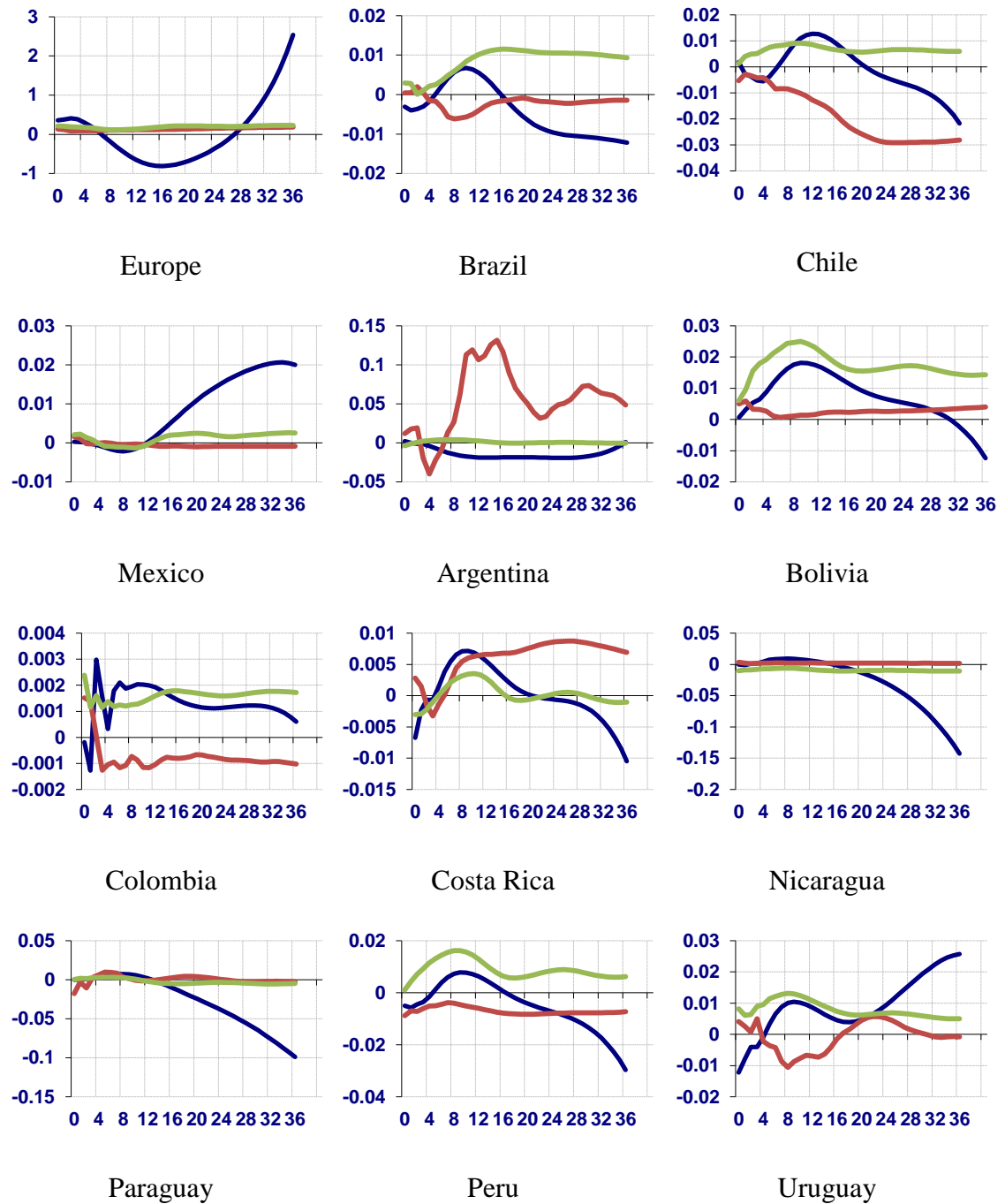


Paraguay



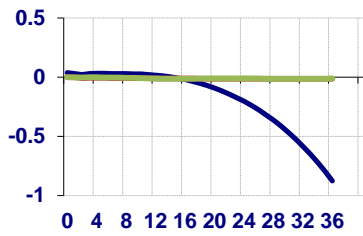
Europe 1se Negative Shock to Monetary Policy Indicator: Money Growth

■ Full Sample ■ Pre-crisis ■ Crisis

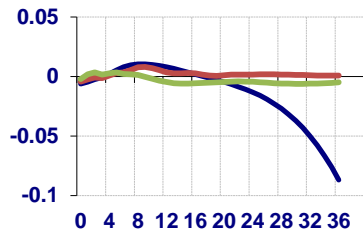


Europe 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

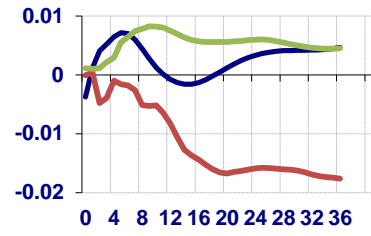
■ Full Sample ■ Pre-crisis ■ Crisis



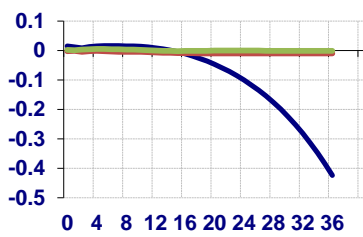
Europe



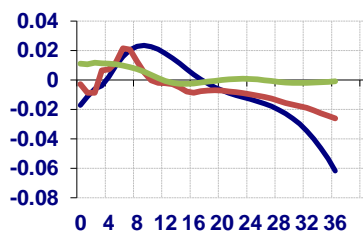
Brazil



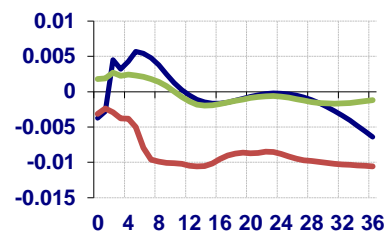
Chile



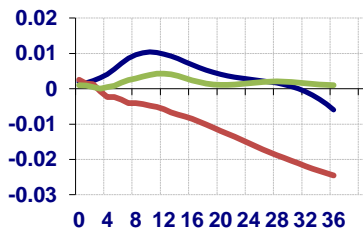
Mexico



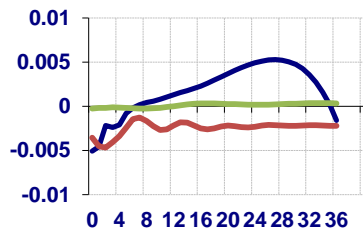
Argentina



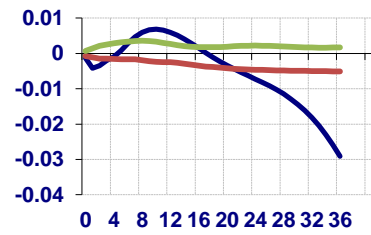
Colombia



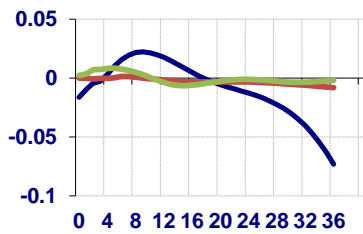
Costa Rica



Ecuador



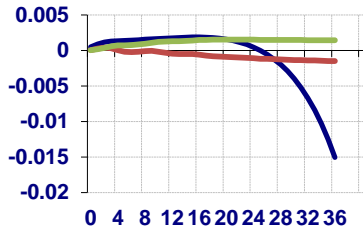
Panama



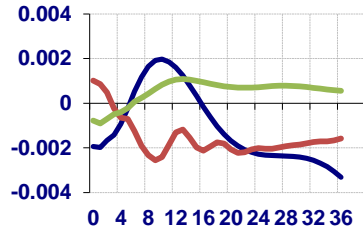
Peru

Europe 1se Negative Shock to Monetary Policy Indicator: Credit

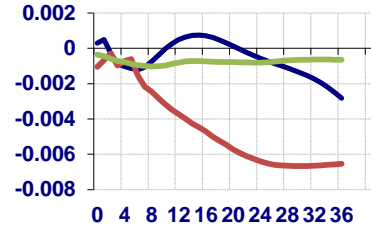
■ Full Sample ■ Pre-crisis ■ Crisis



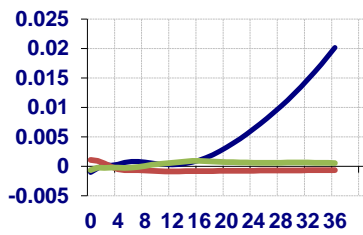
Europe



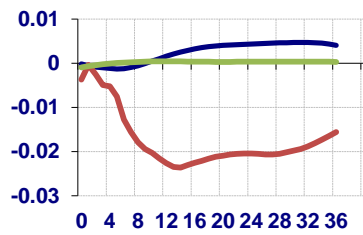
Brazil



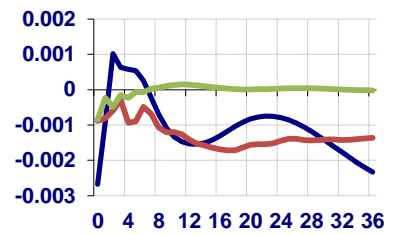
Chile



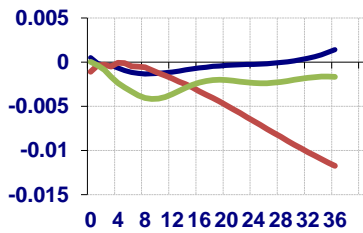
Mexico



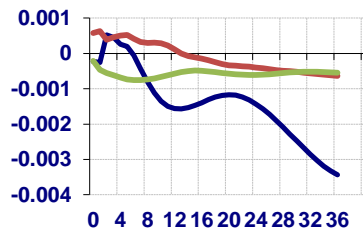
Argentina



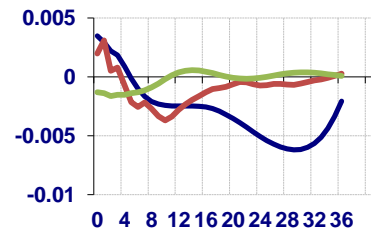
Colombia



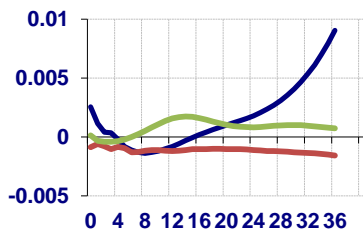
Costa Rica



Honduras



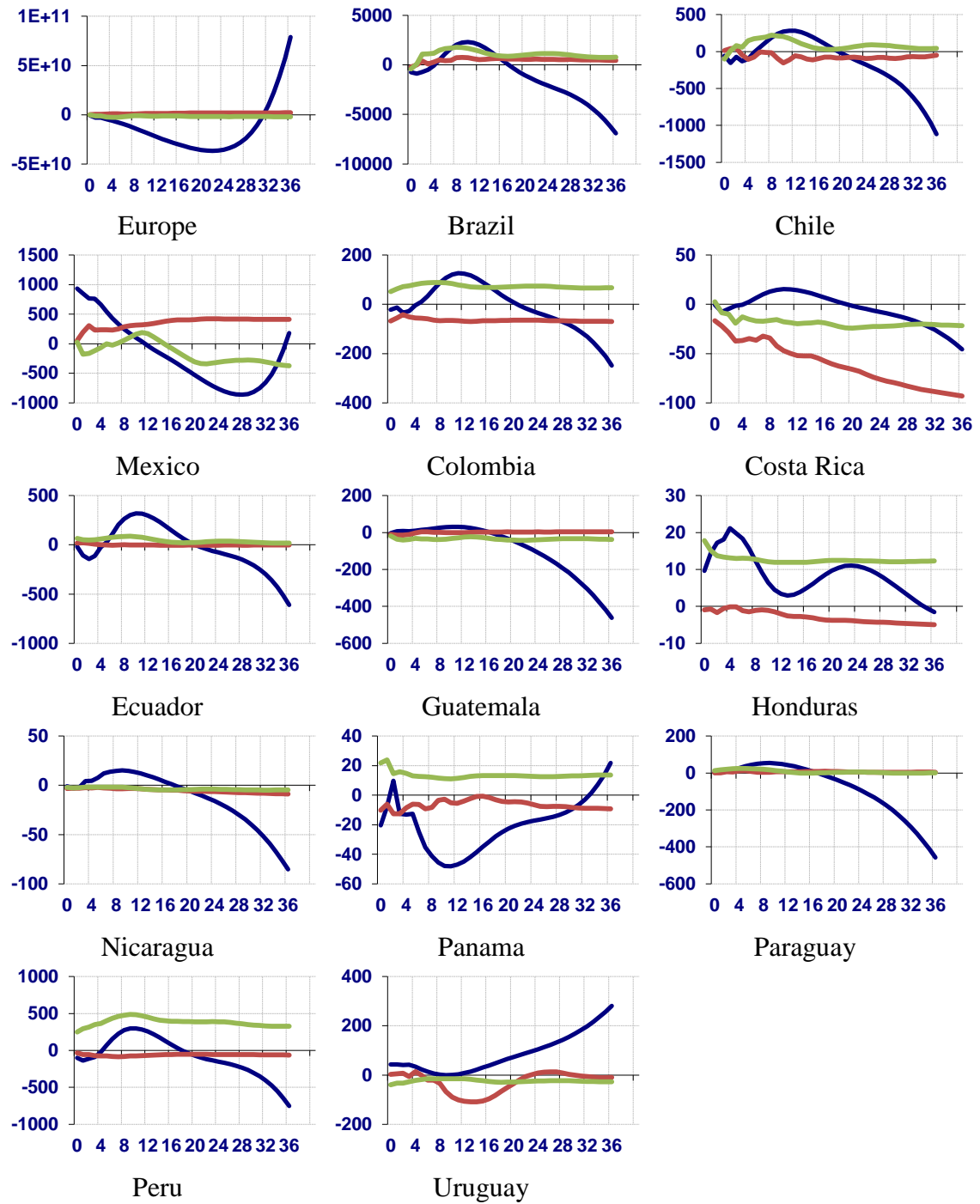
Paraguay



Peru

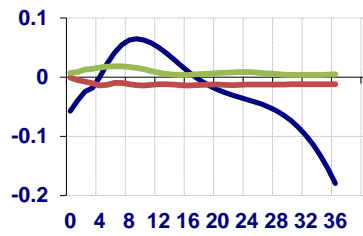
Europe 1se Negative Shock to Monetary Policy Indicator: International Reserves

■ Full Sample ■ Pre-crisis ■ Crisis



Europe 1se Negative Shock to Monetary Policy Indicator: Oil Prices

■ Full Sample ■ Pre-crisis ■ Crisis



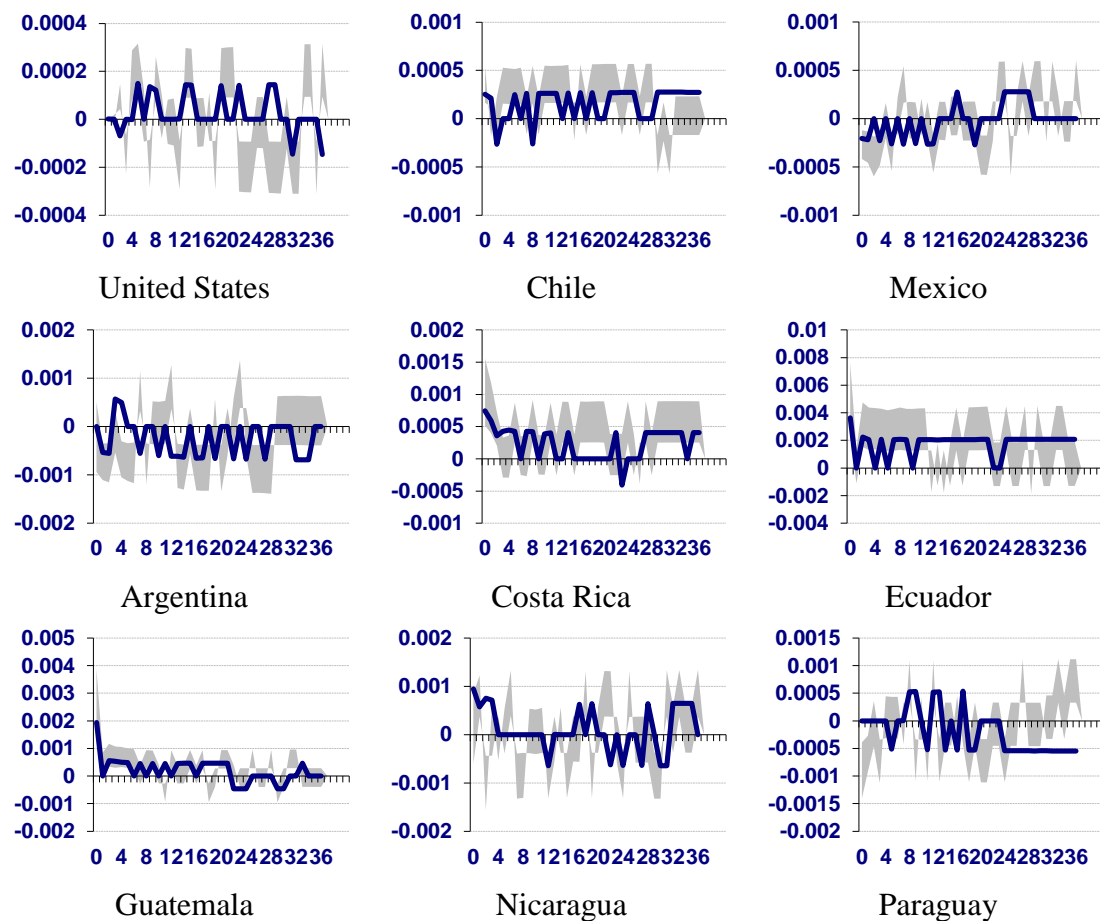
Oil Price

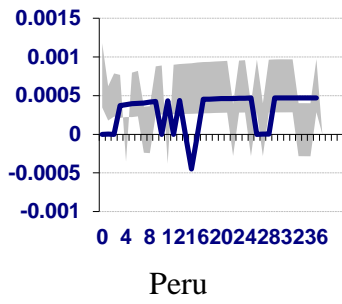
Appendix J: Impulse Response Analysis. Bootstrap Estimates

OIRFs analysis for one standard deviation from a negative shock on monetary policy indicator for the major central bank. Forecast horizon 36 periods. Confidence intervals are at 68% confidence bands constructed by inverse bootstrapping with 1000 replications and standard variance-covariance matrix from residuals of the country specific models is used for the dynamic analysis. Bootstraps for non-stable models are not included.

United States 1se Negative Shock to Monetary Policy Indicator: GDP

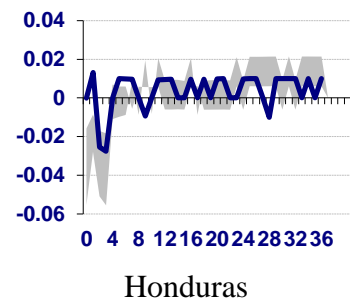
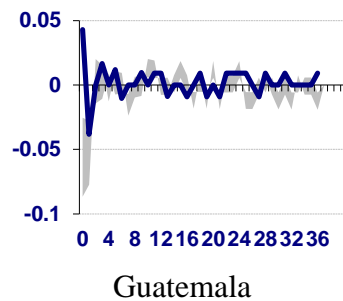
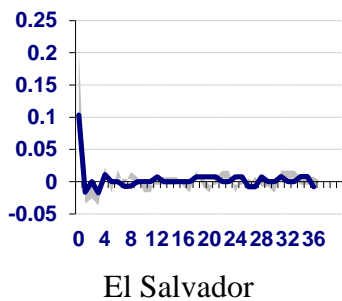
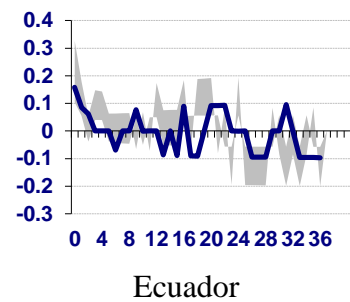
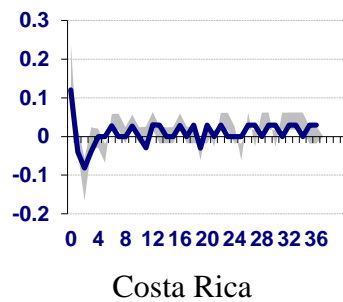
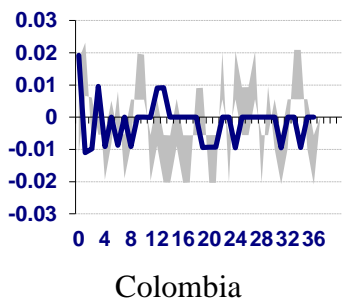
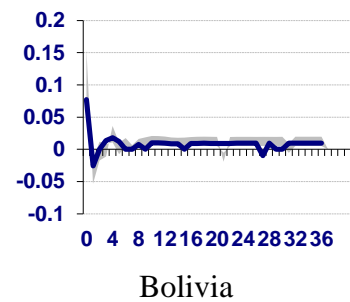
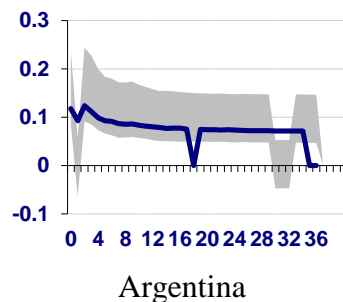
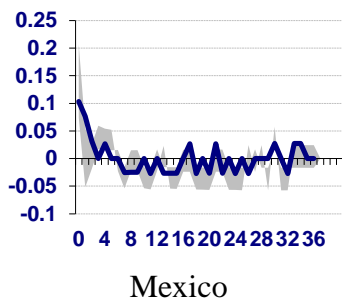
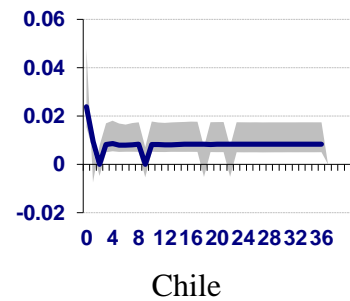
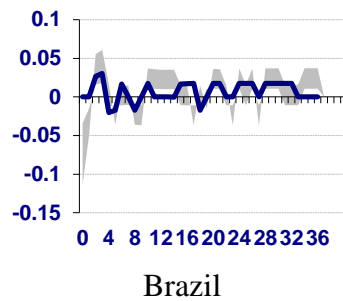
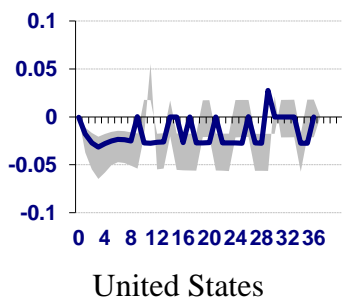
Pre-Crisis Model, ■ Median estimates

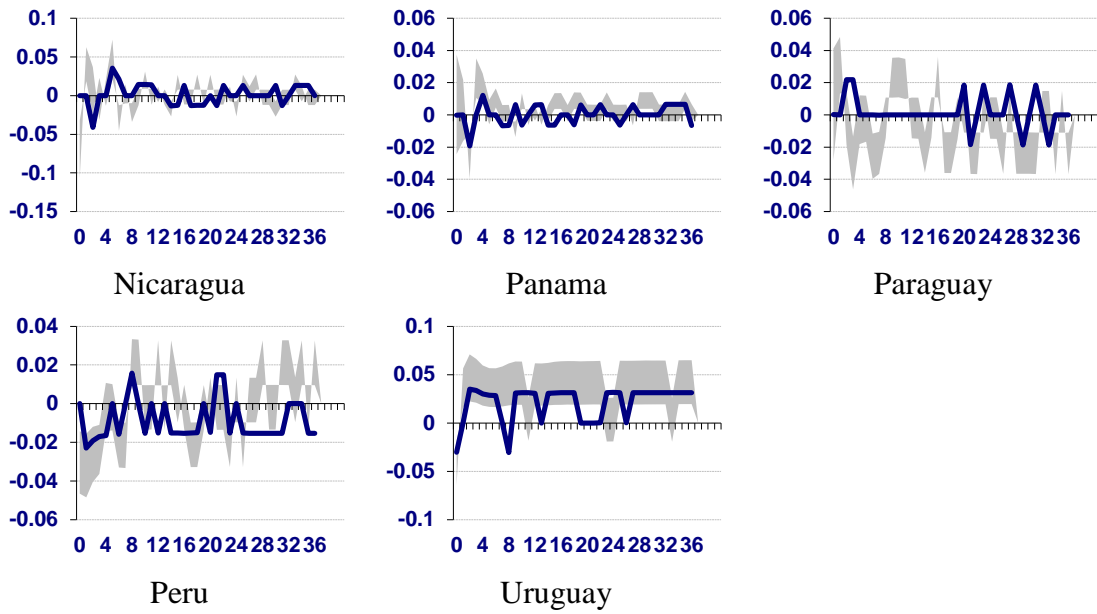




United States 1se Negative Shock to Monetary Policy Indicator: CPI

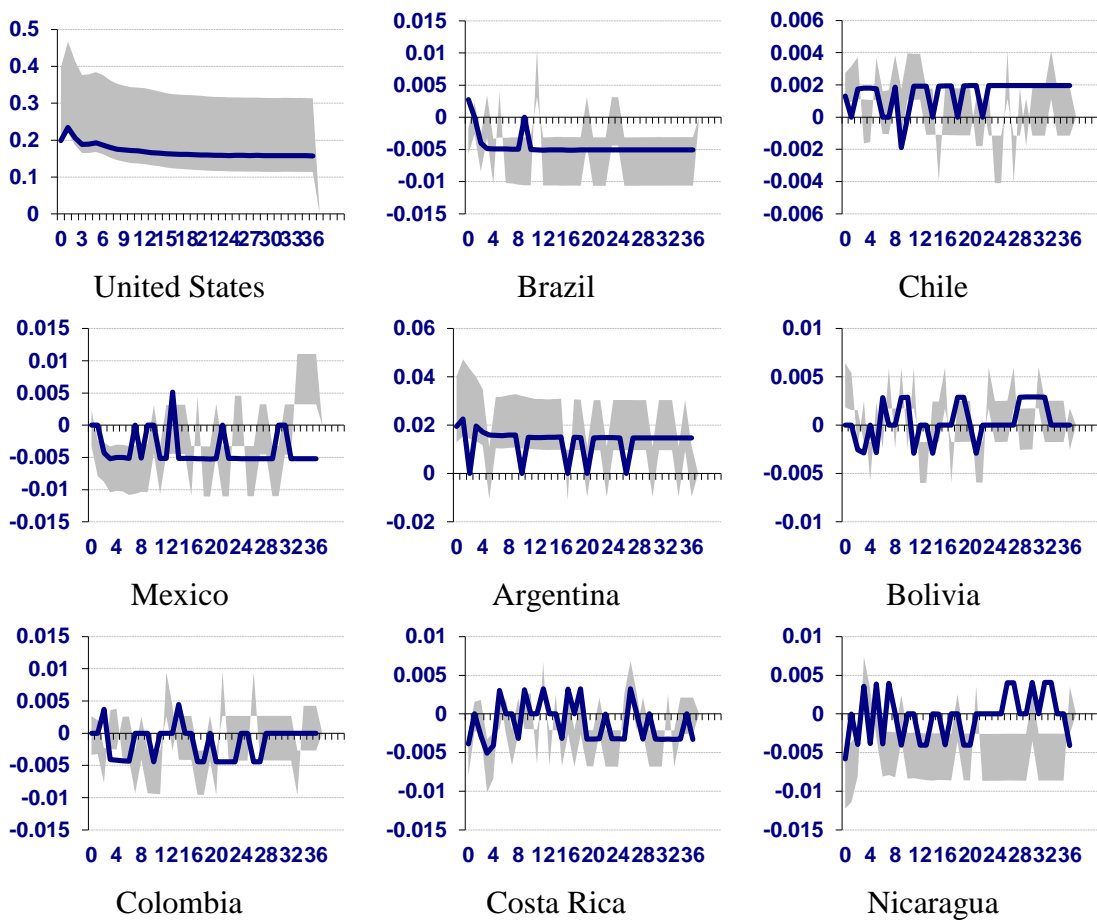
Pre-Crisis Model, ■ Median estimates

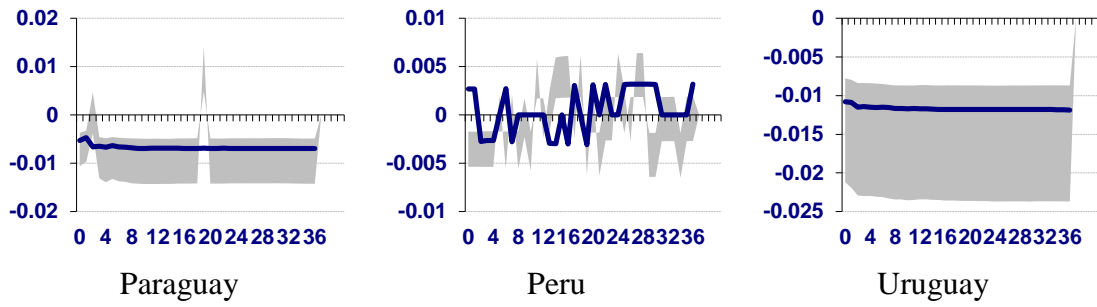




United States 1se Negative Shock to Monetary Policy Indicator: Money Growth

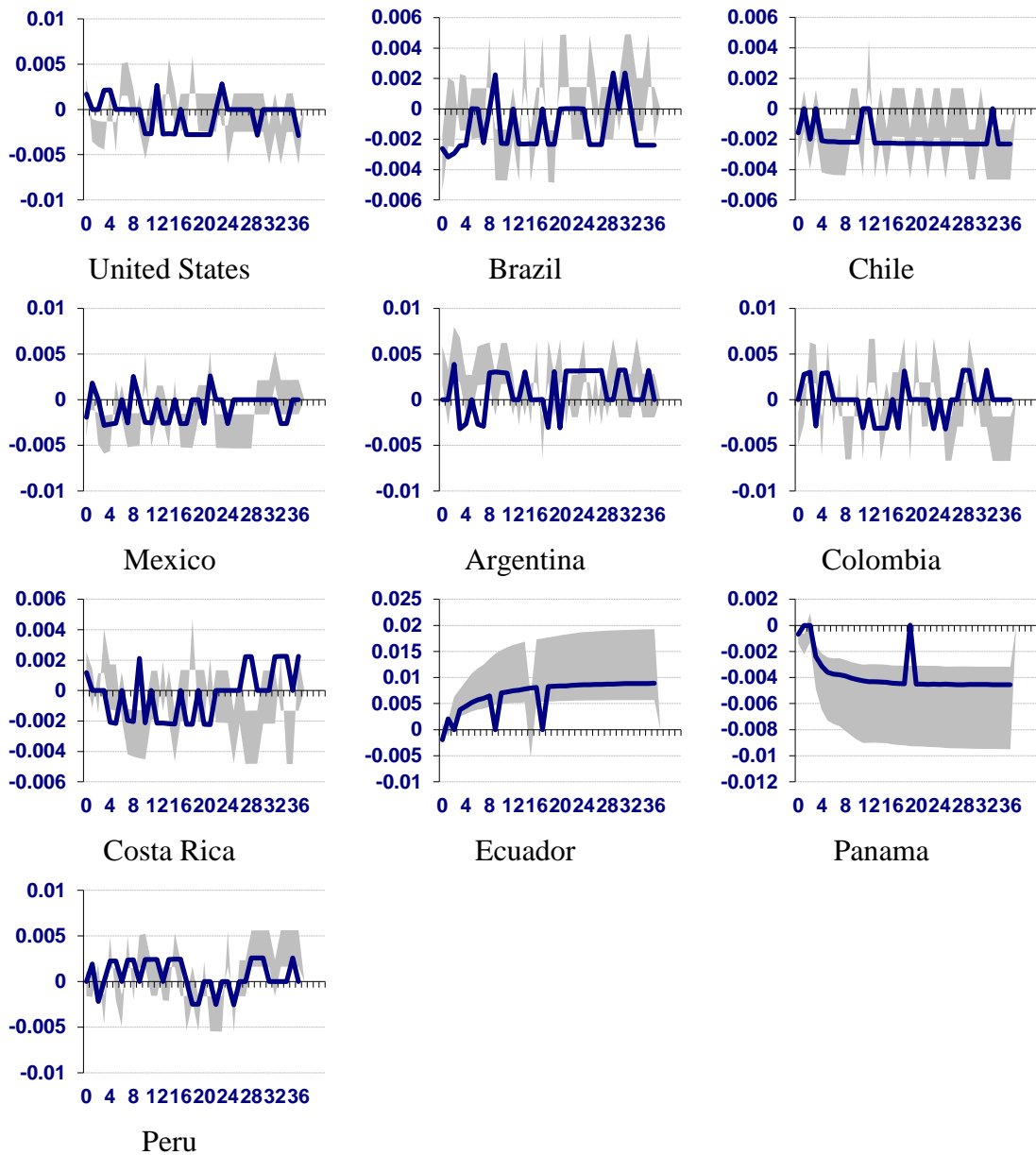
Pre-Crisis Model, ■ Median estimates





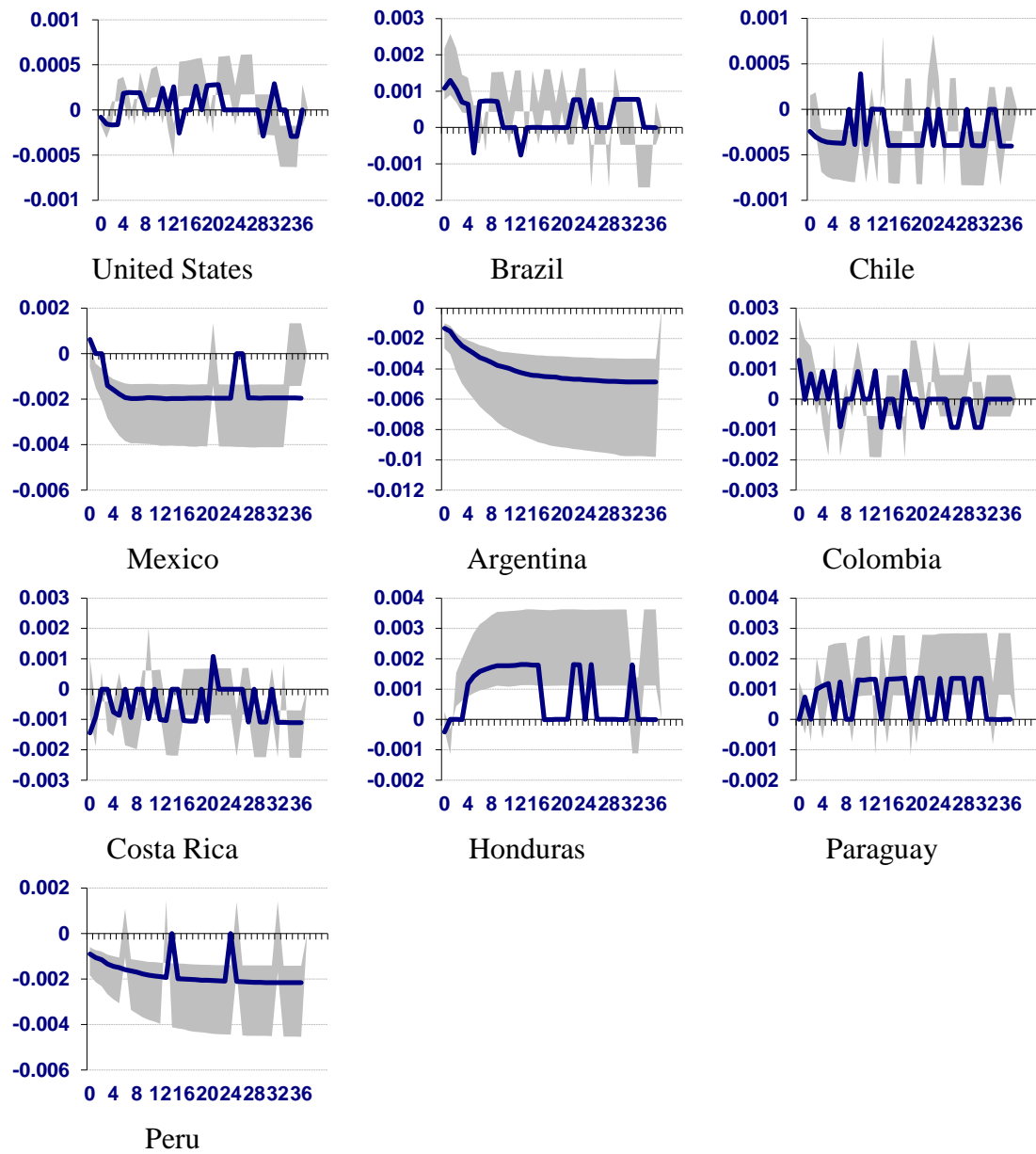
United States 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

Pre-Crisis Model, ■ Median estimates



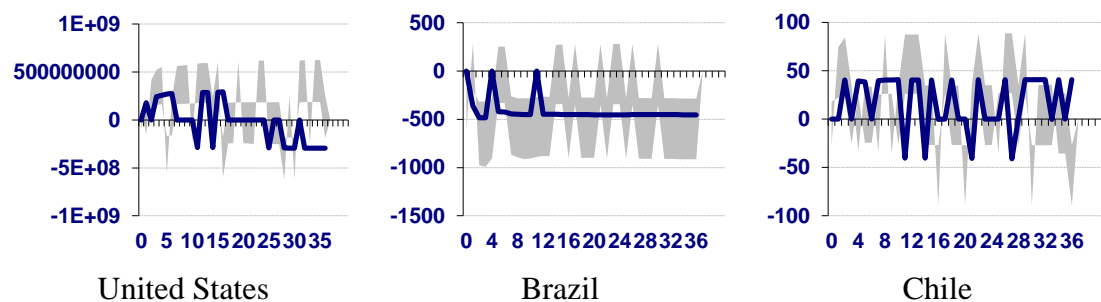
United States 1se Negative Shock to Monetary Policy Indicator: Credit

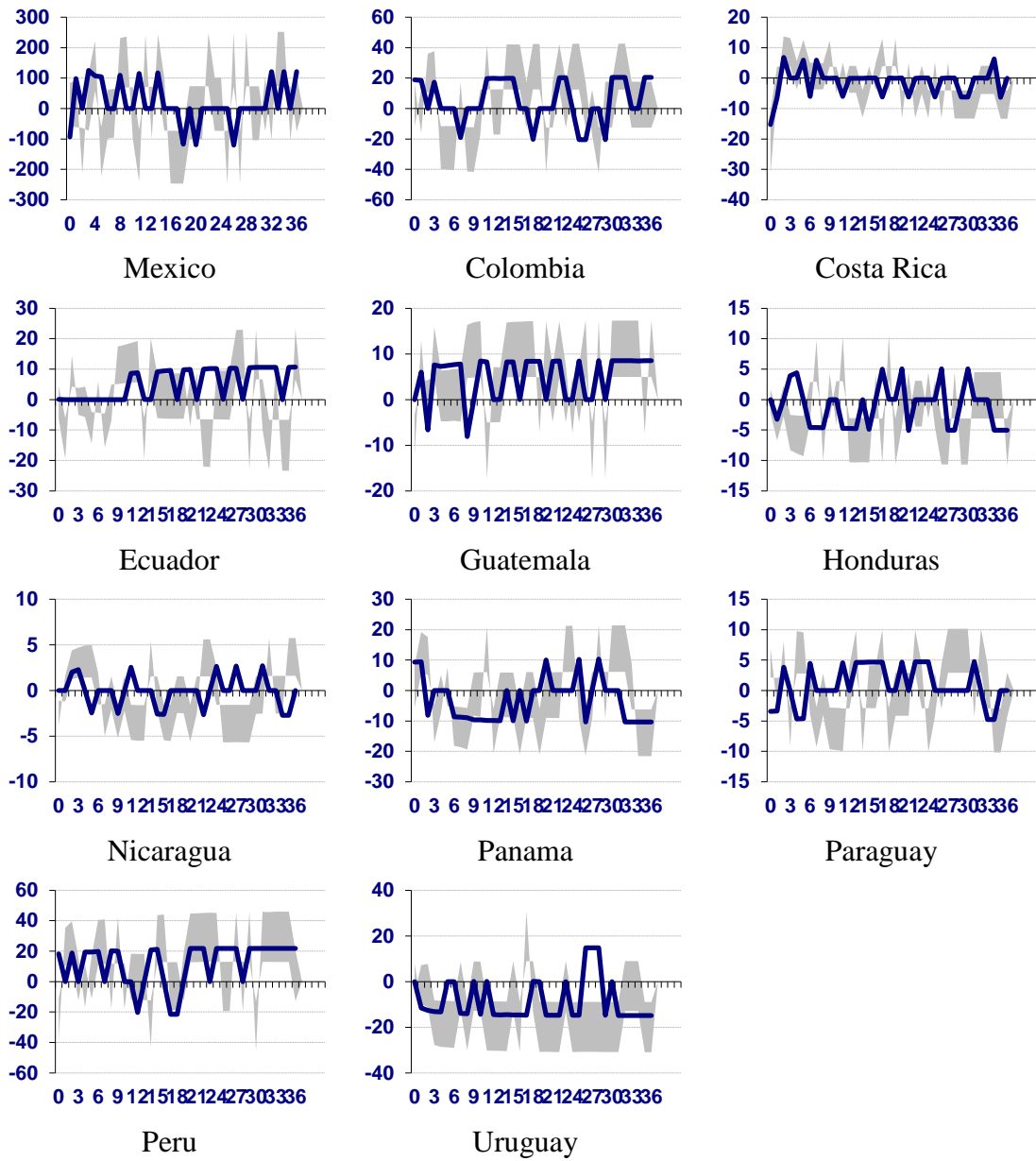
Pre-Crisis Model, ■ Median estimates



United States 1se Negative Shock to Monetary Policy Indicator: International Reserves

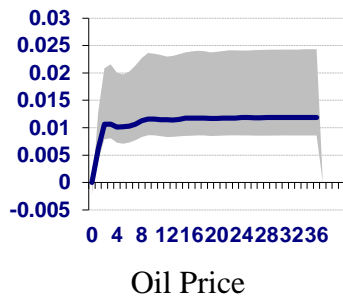
Pre-Crisis Model, ■ Median estimates





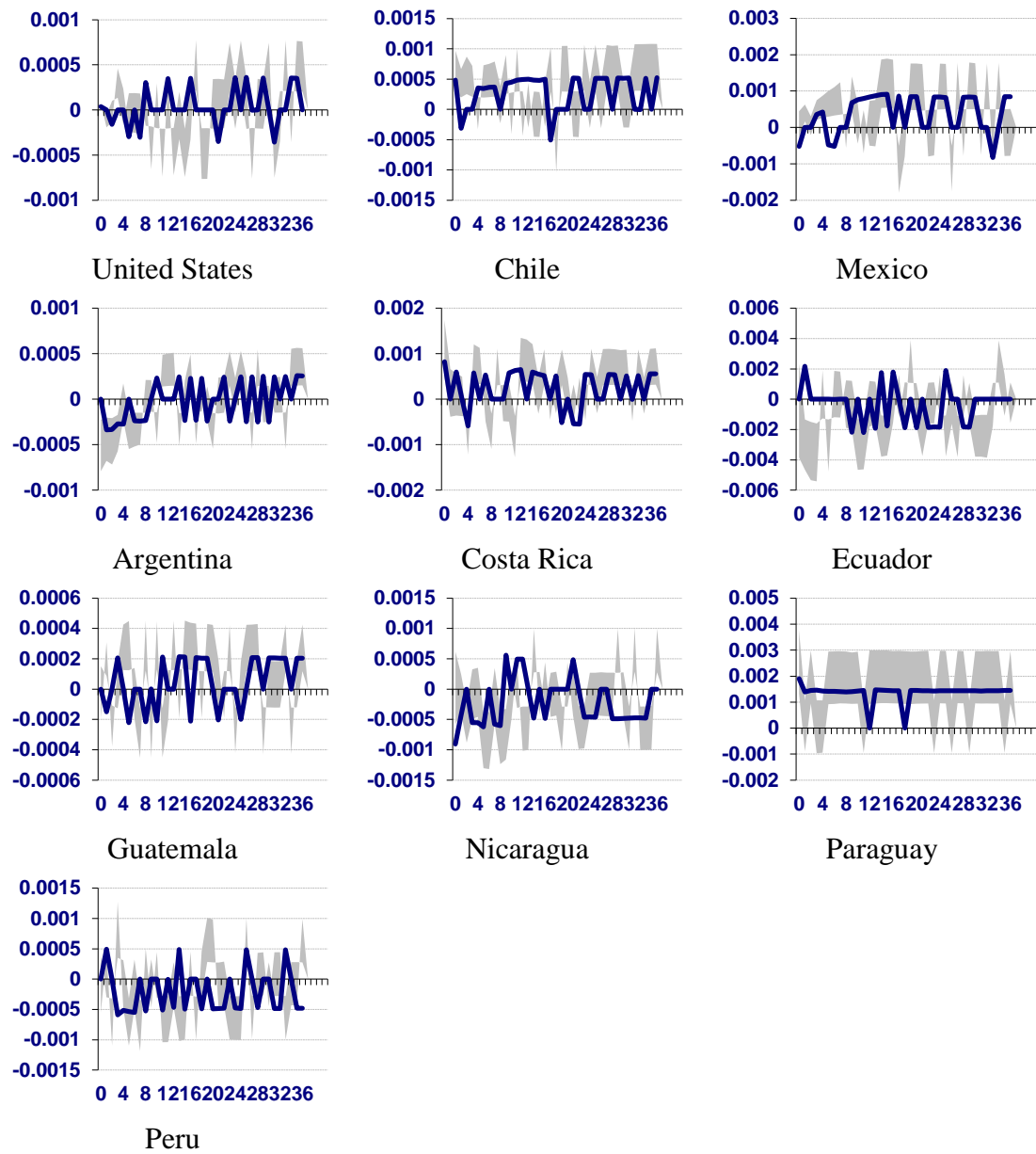
United States 1se Negative Shock to Monetary Policy Indicator: Oil

Pre-Crisis Model, ■ Median estimates



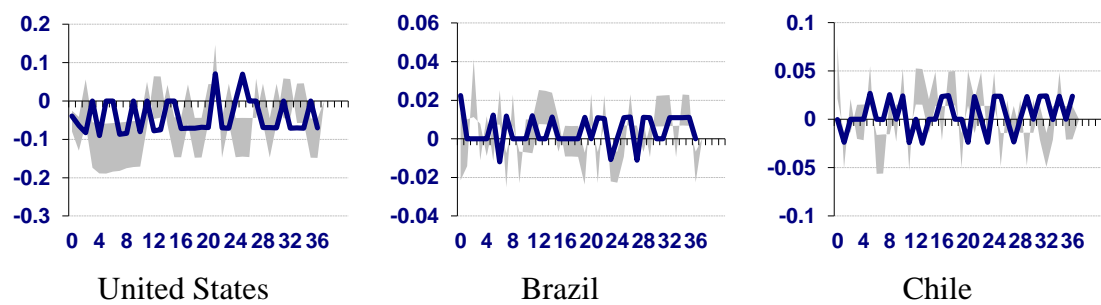
United States 1se Negative Shock to Monetary Policy Indicator: GDP

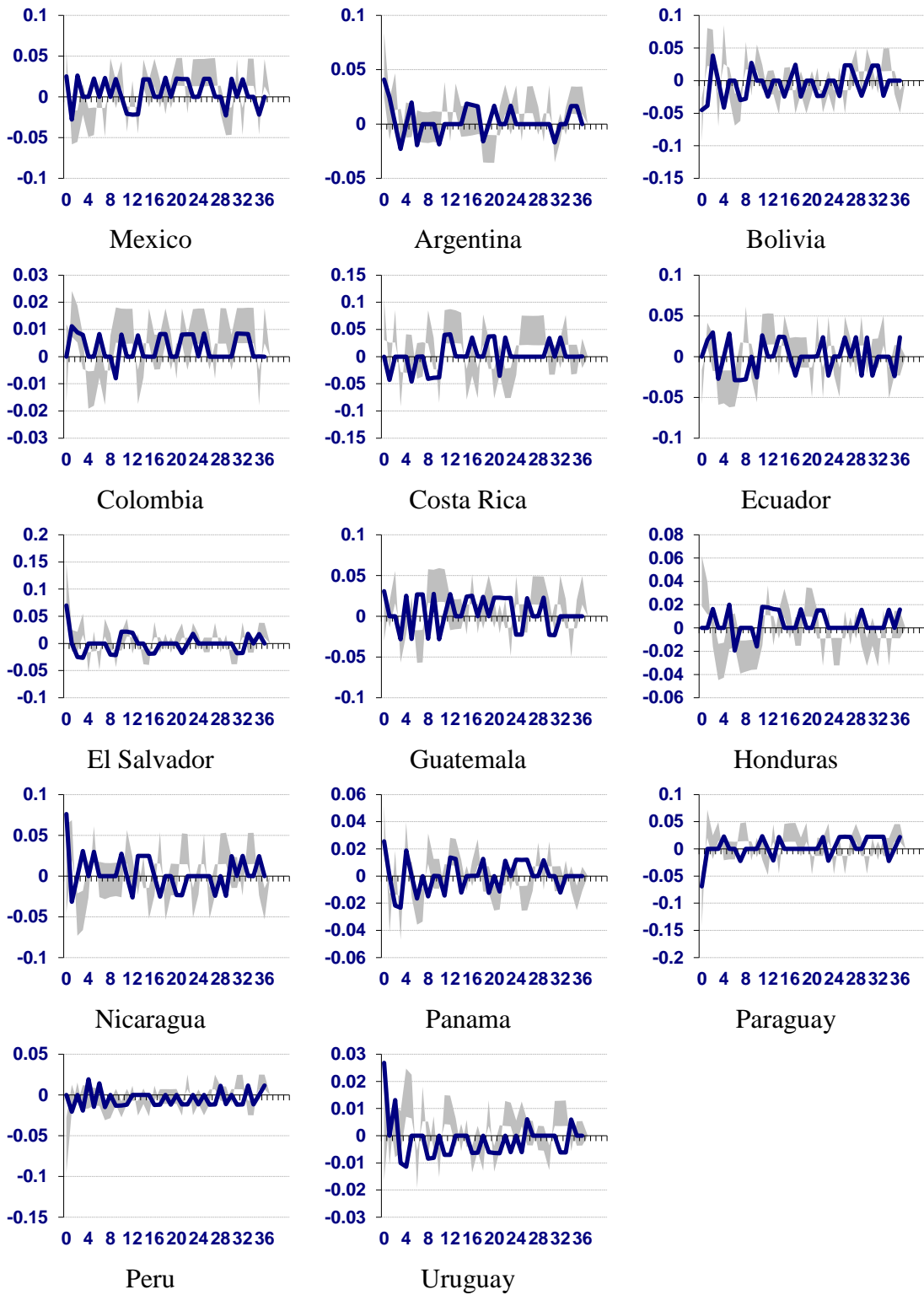
Crisis Model, ■ Median estimates



United States 1se Negative Shock to Monetary Policy Indicator: CPI

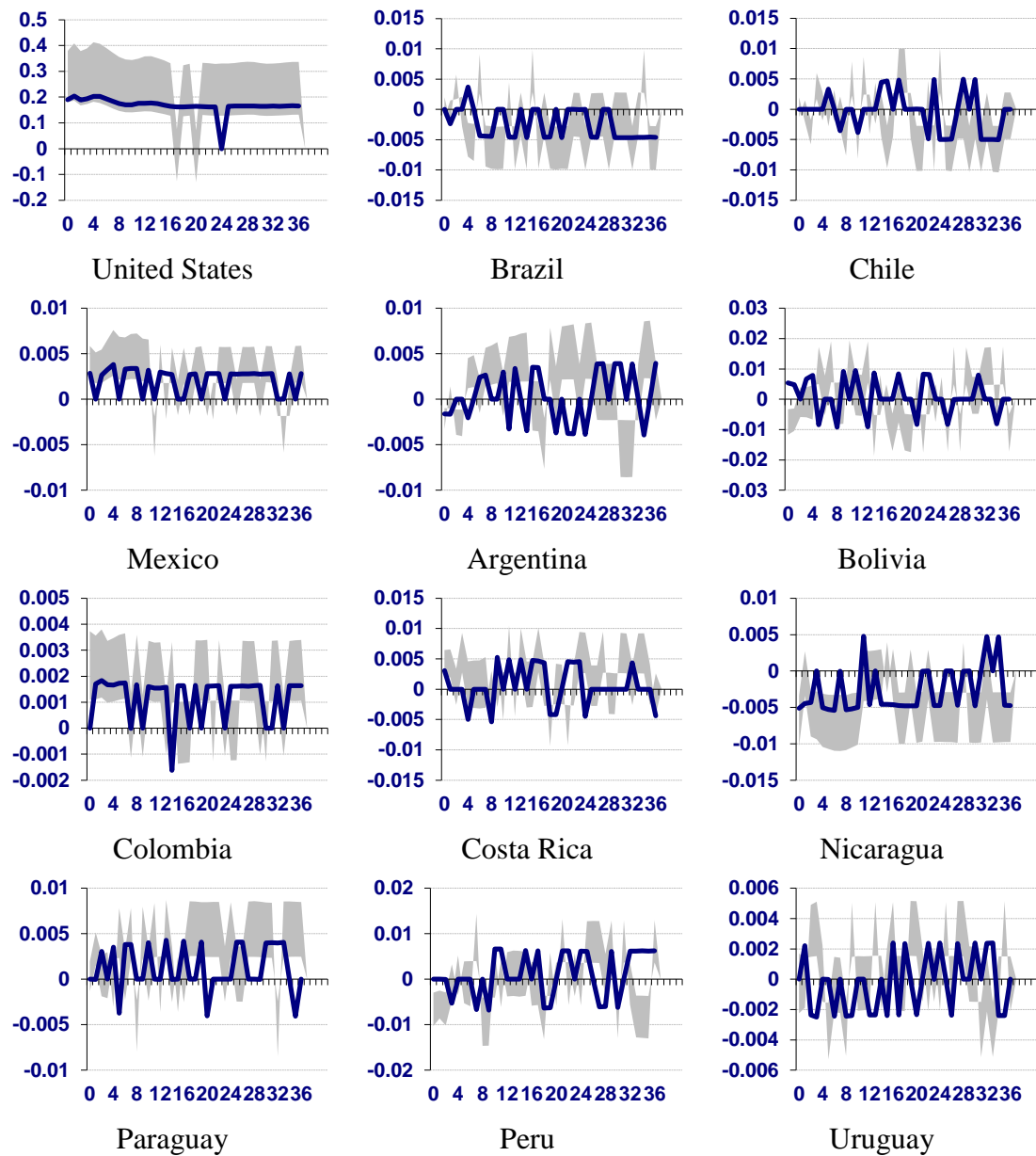
Crisis Model, ■ Median estimates





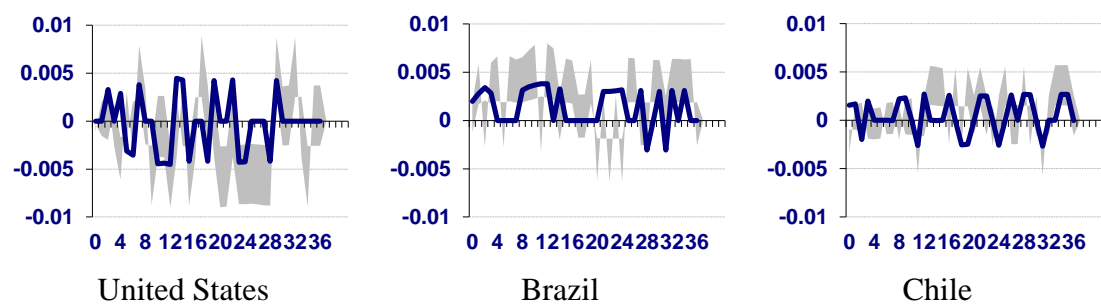
United States 1se Negative Shock to Monetary Policy Indicator: Money Growth

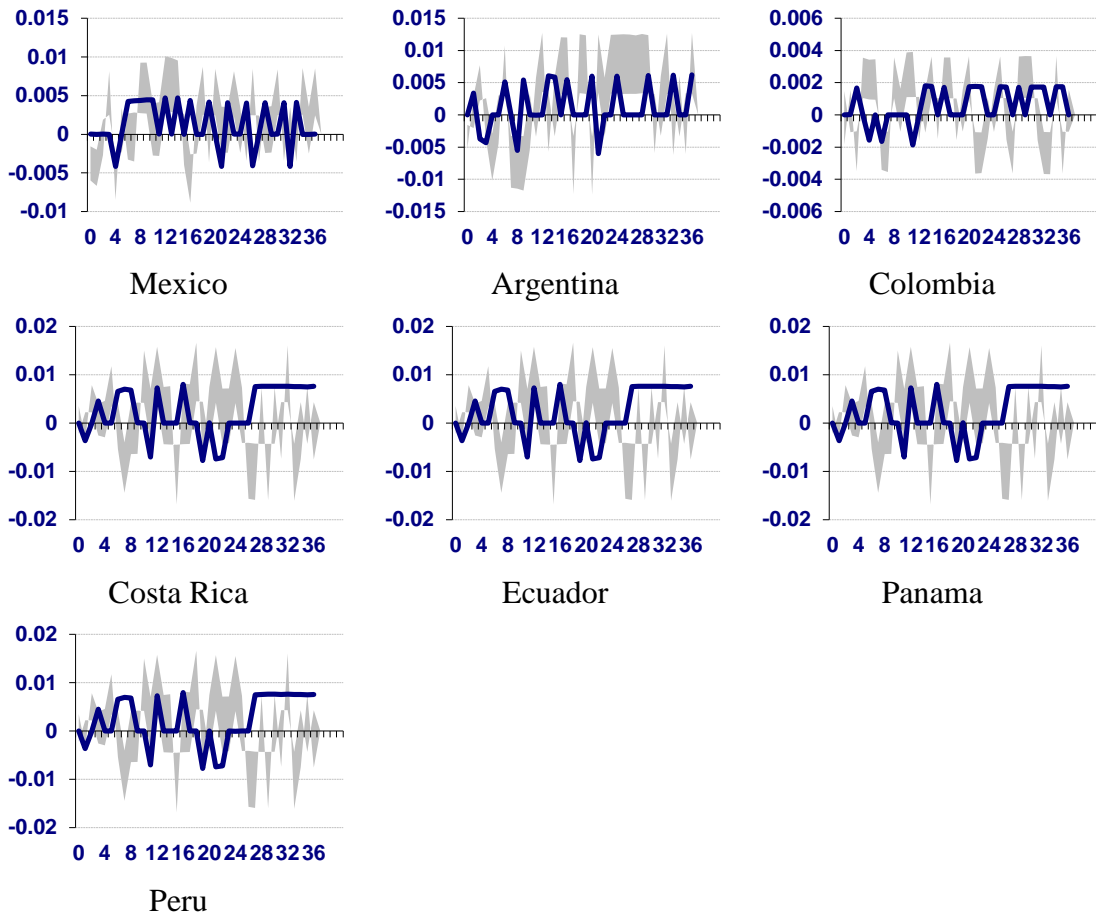
Crisis Model, ■ Median estimates



United States 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

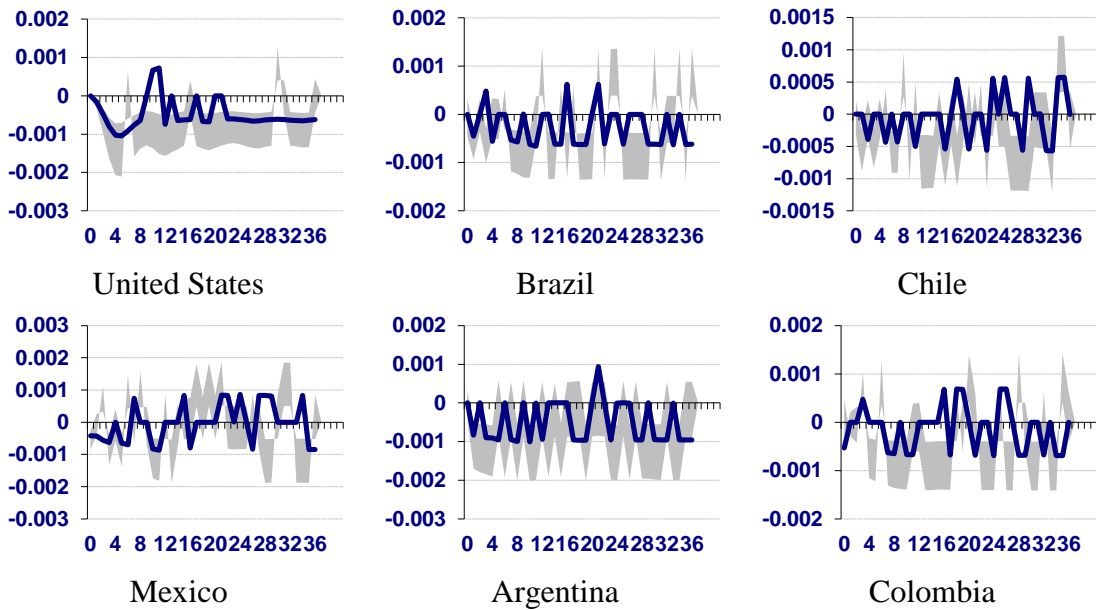
Crisis Model, ■ Median estimates

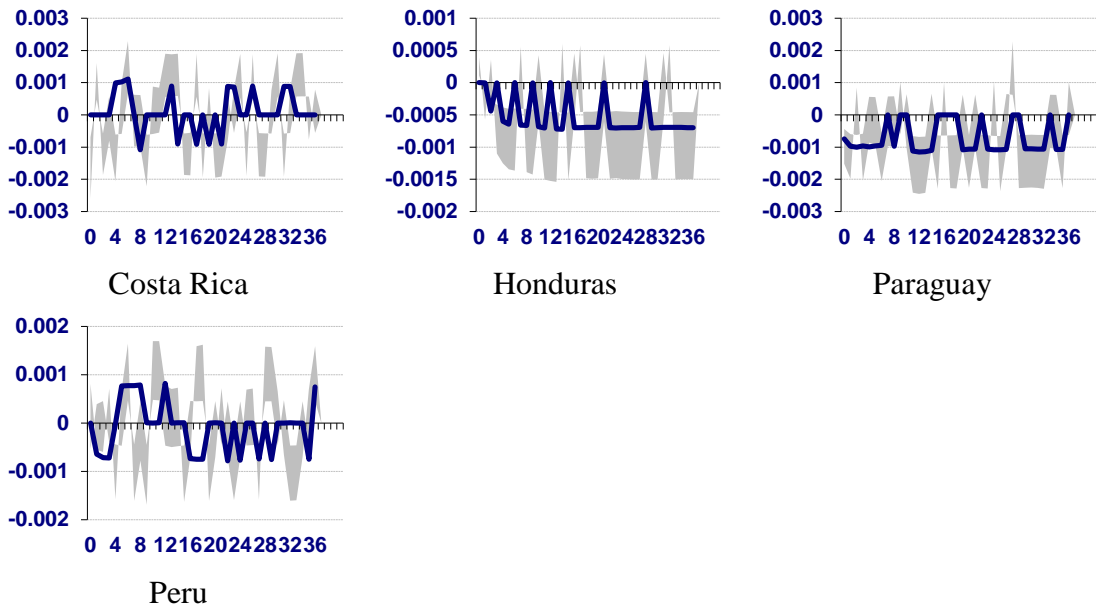




United States 1se Negative Shock to Monetary Policy Indicator: Credit

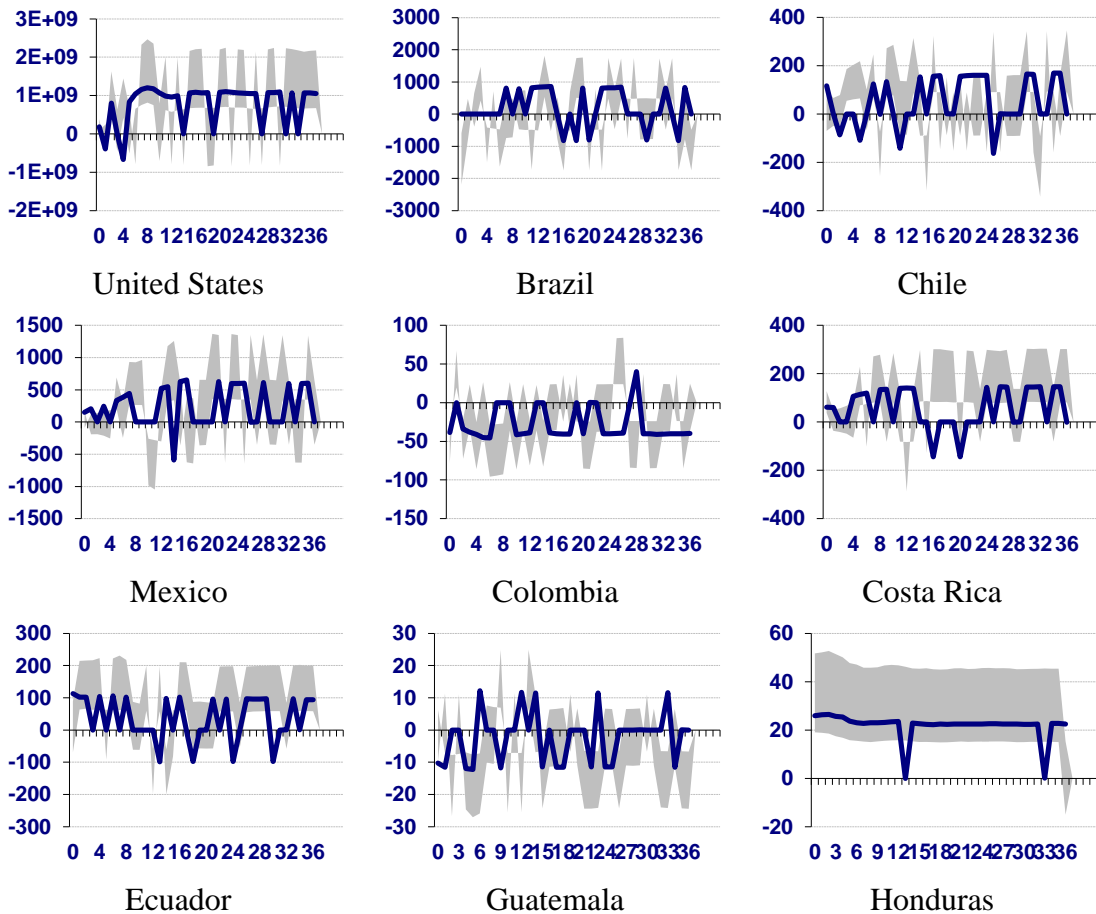
Crisis Model, ■ Median estimates

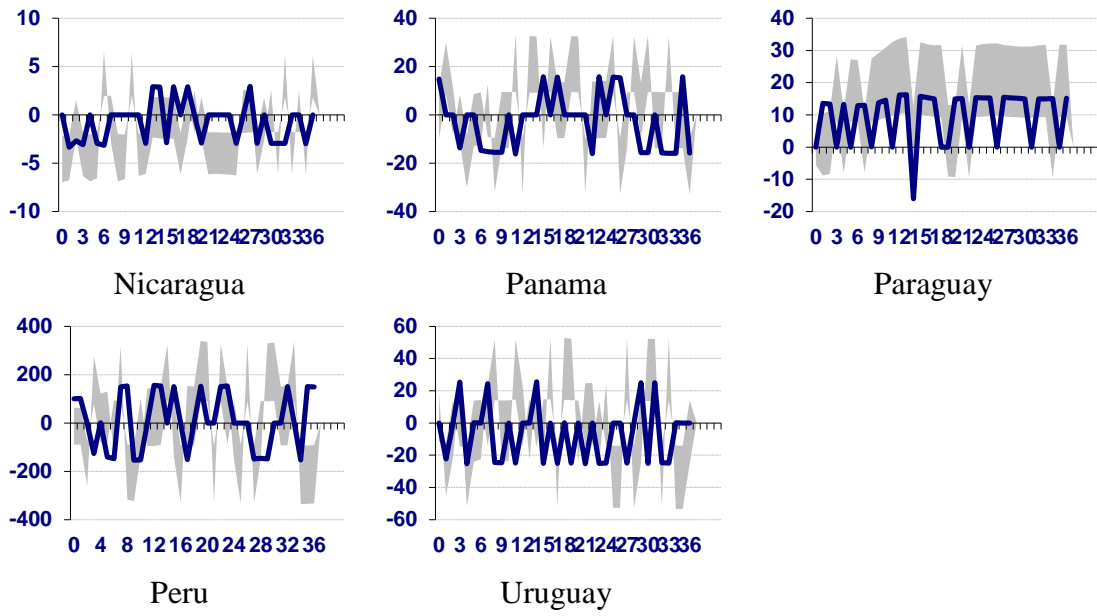




United States 1se Negative Shock to Monetary Policy Indicator: International Reserves

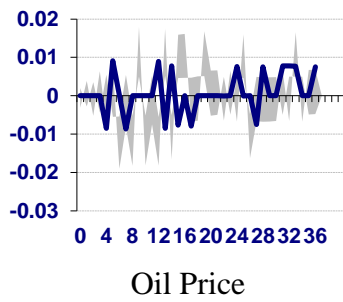
Crisis Model, — Median estimates





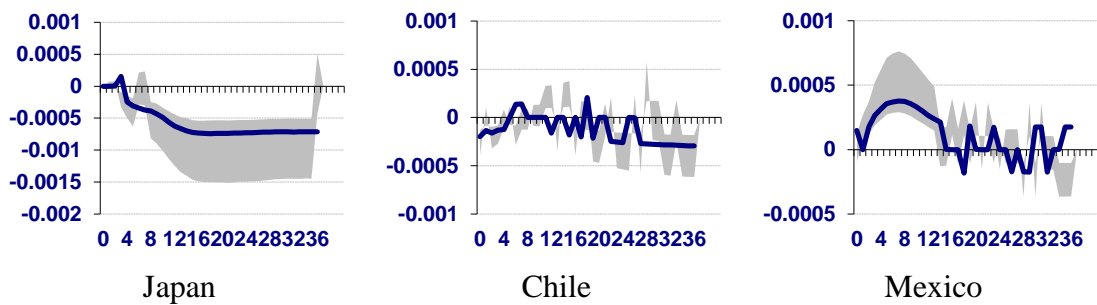
United States 1se Negative Shock to Monetary Policy Indicator: Oil

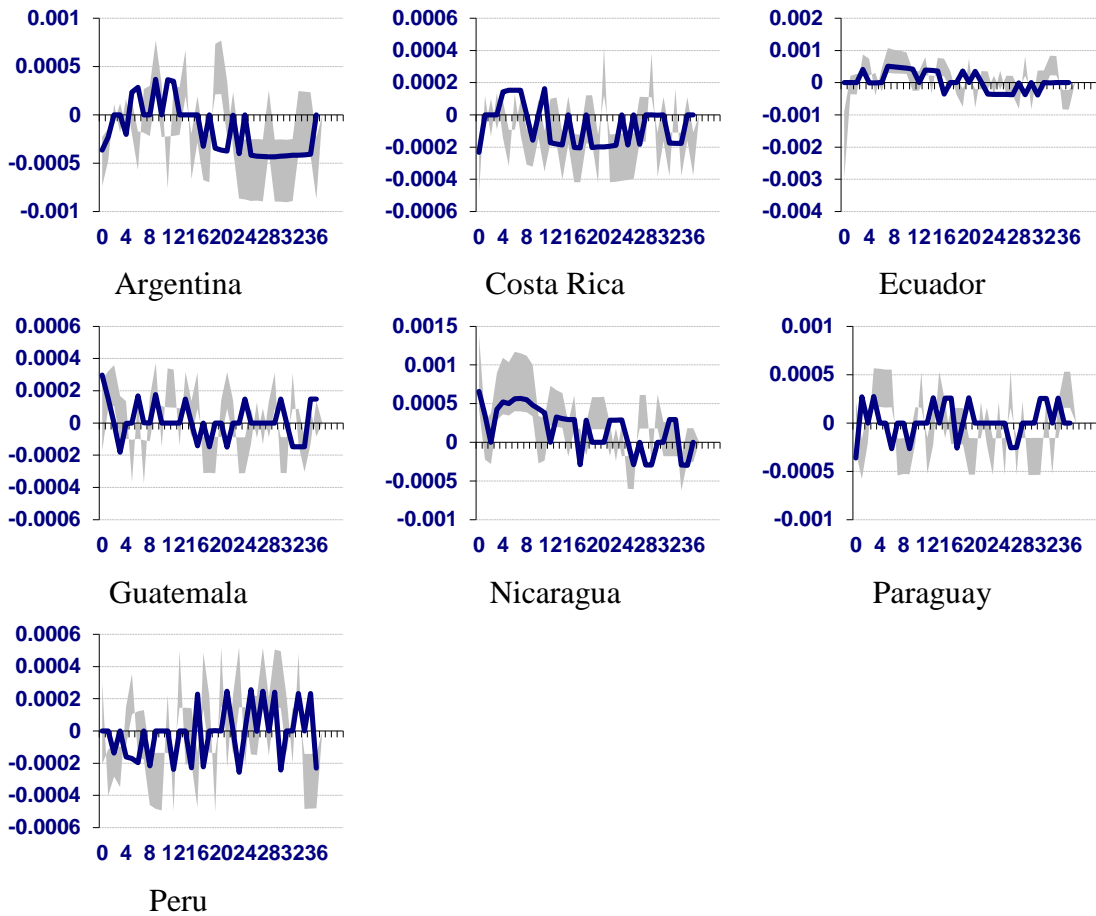
Crisis Model, ■ Median estimates



Japan 1se Negative Shock to Monetary Policy Indicator: GDP

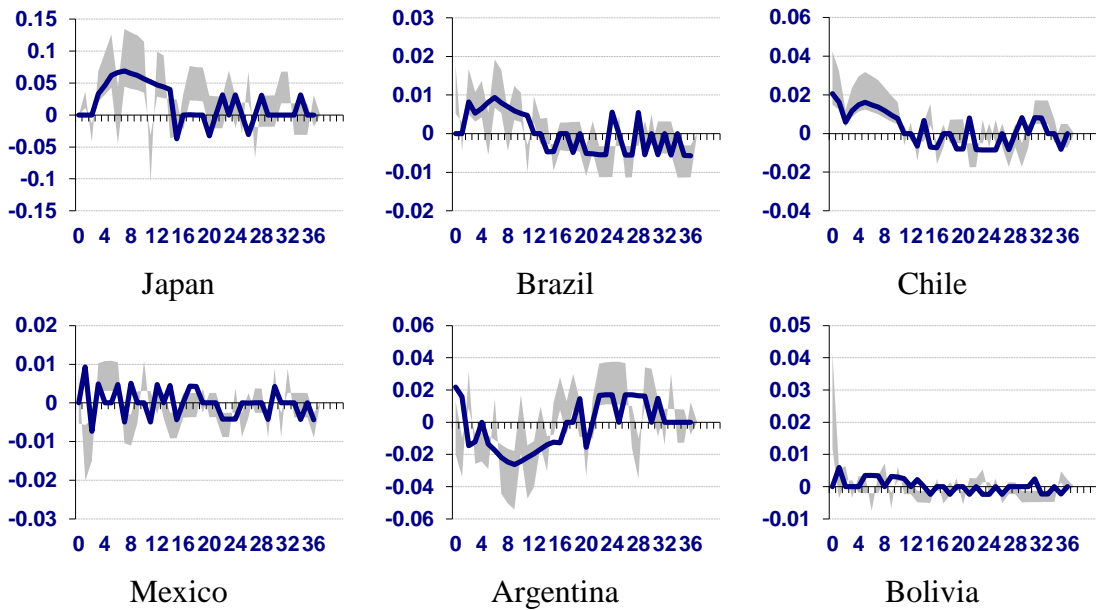
Full Sample Model, ■ Median estimates

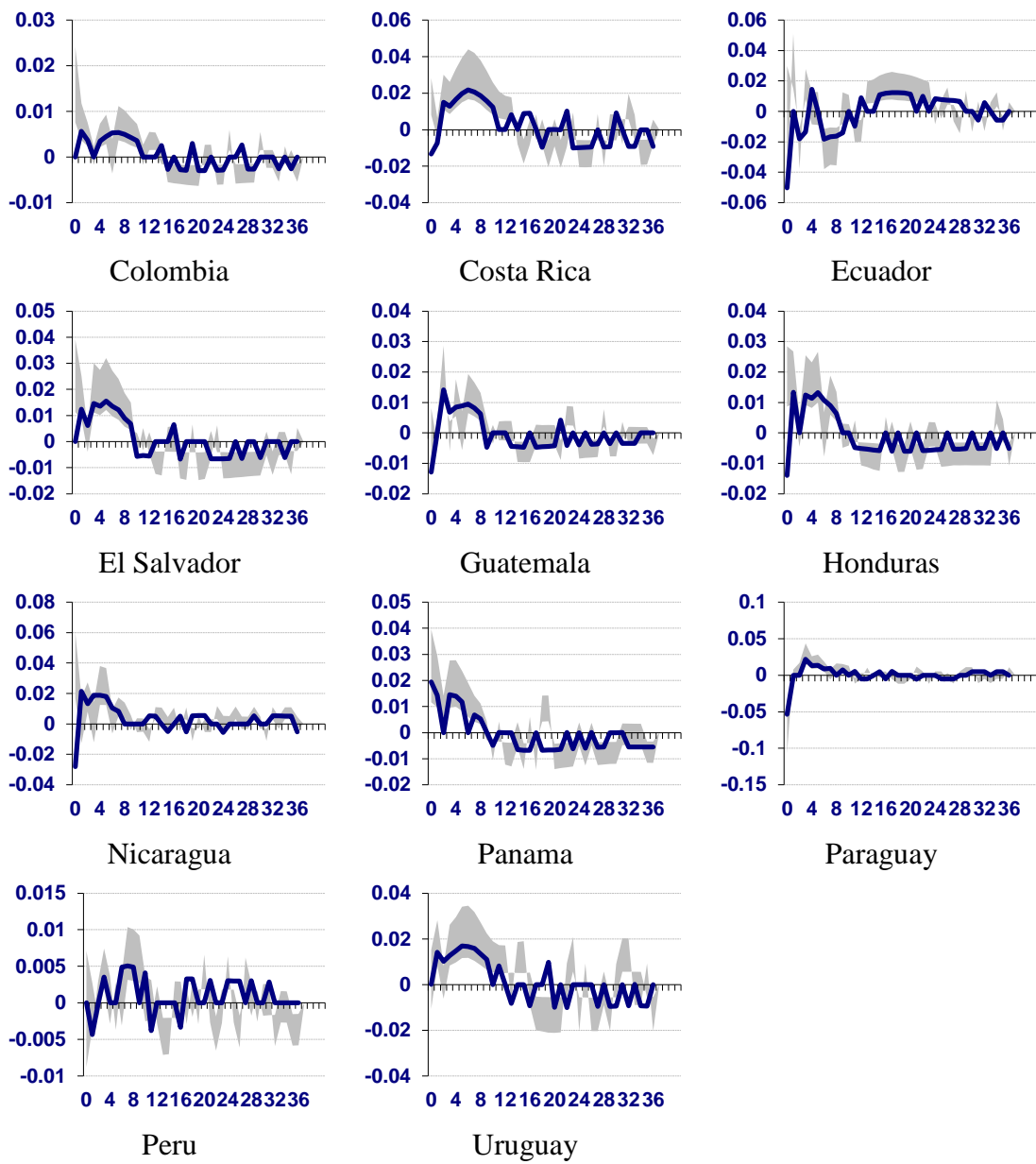




Japan 1se Negative Shock to Monetary Policy Indicator: CPI

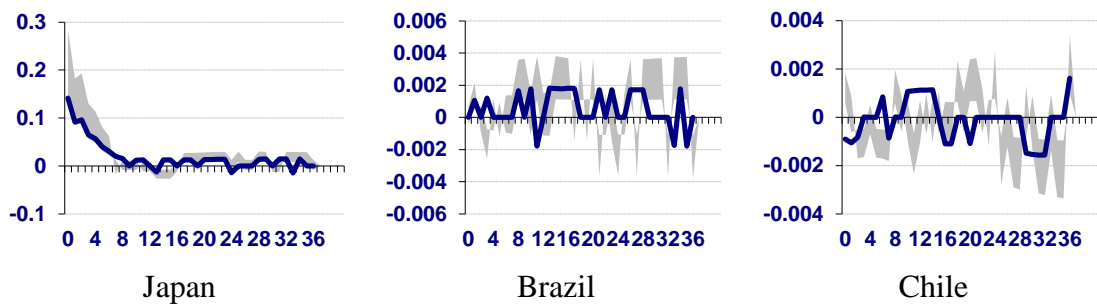
Full Sample Model, — Median estimates

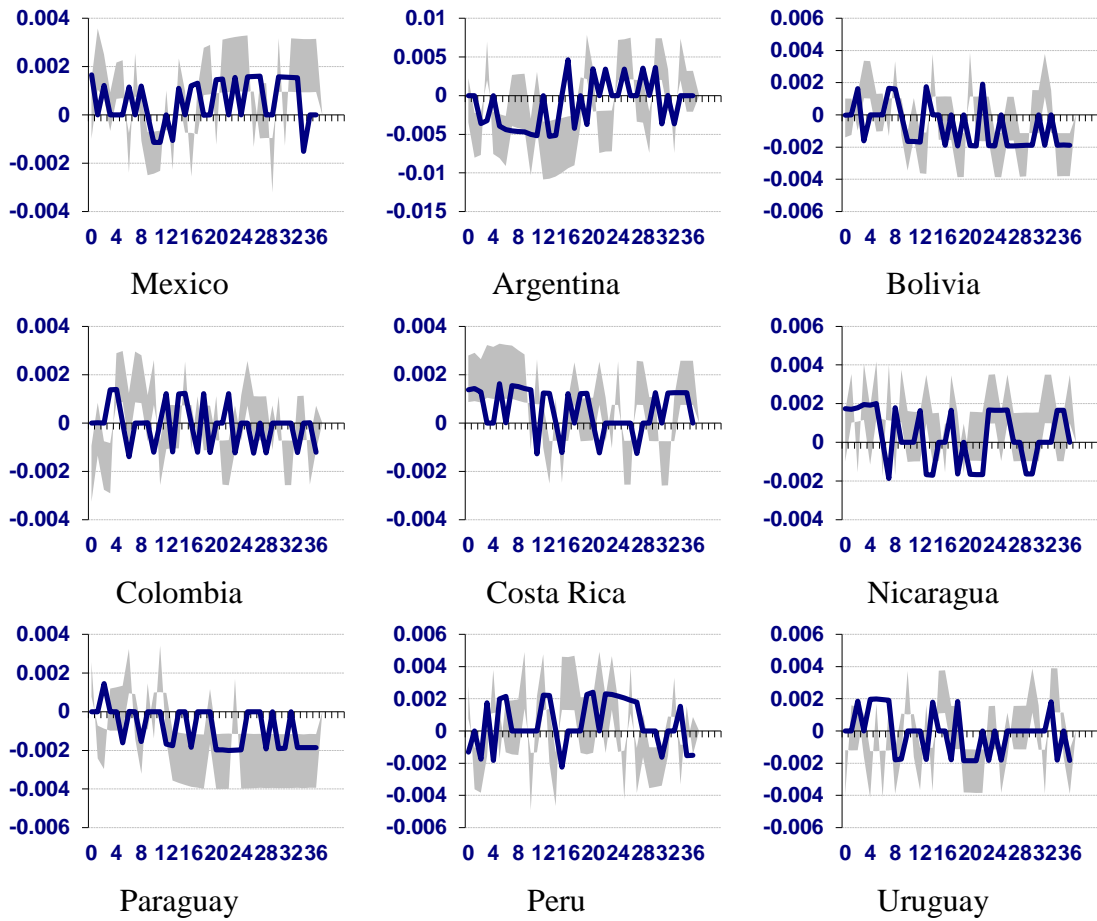




Japan 1se Negative Shock to Monetary Policy Indicator: Money Growth

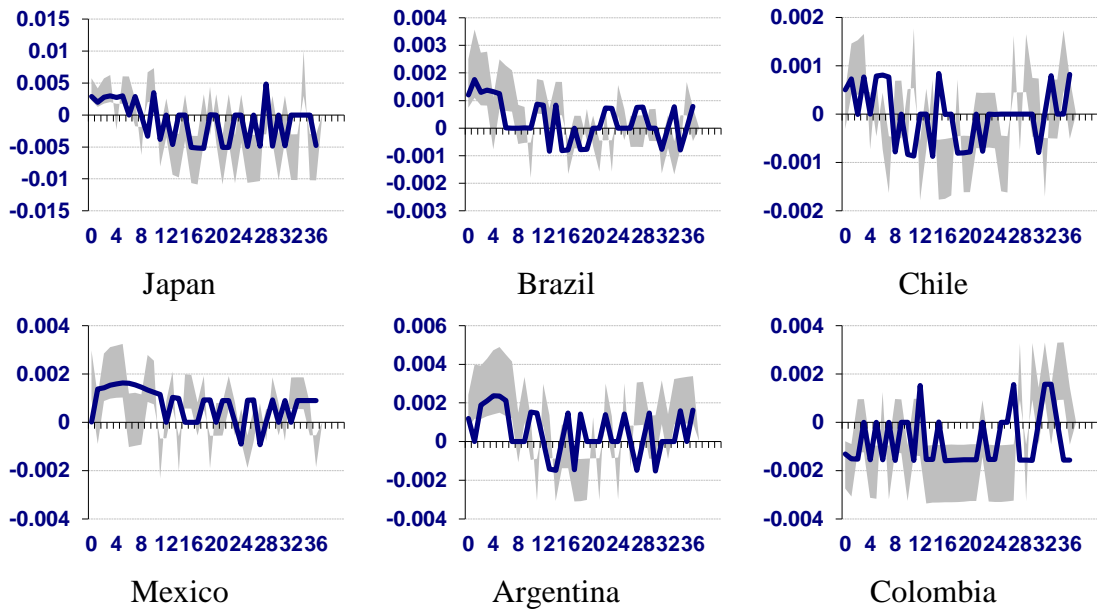
Full Sample Model, ■ Median estimates

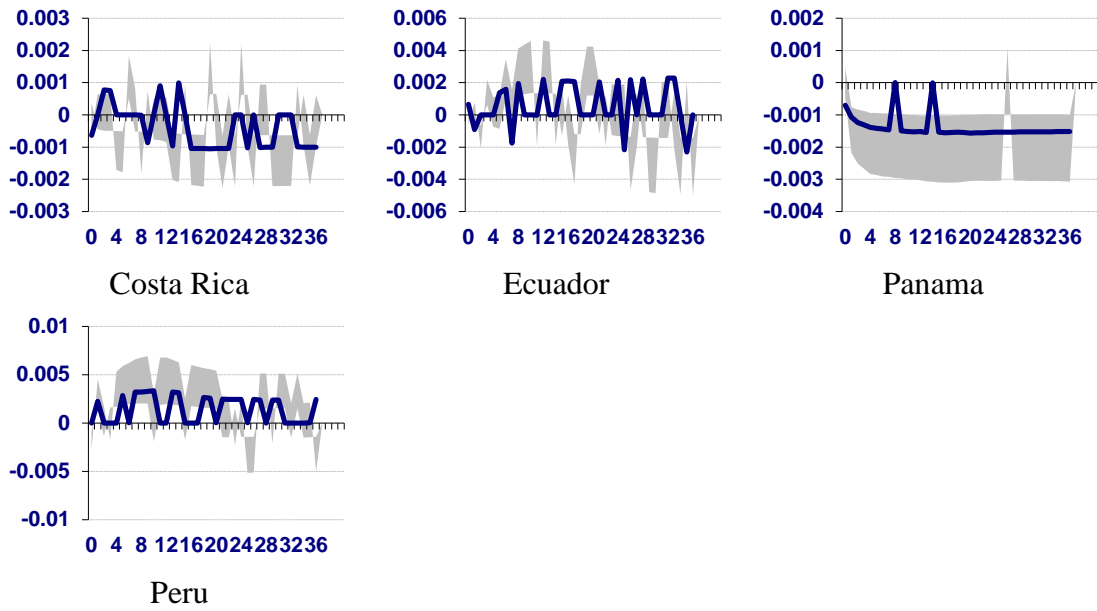




Japan 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

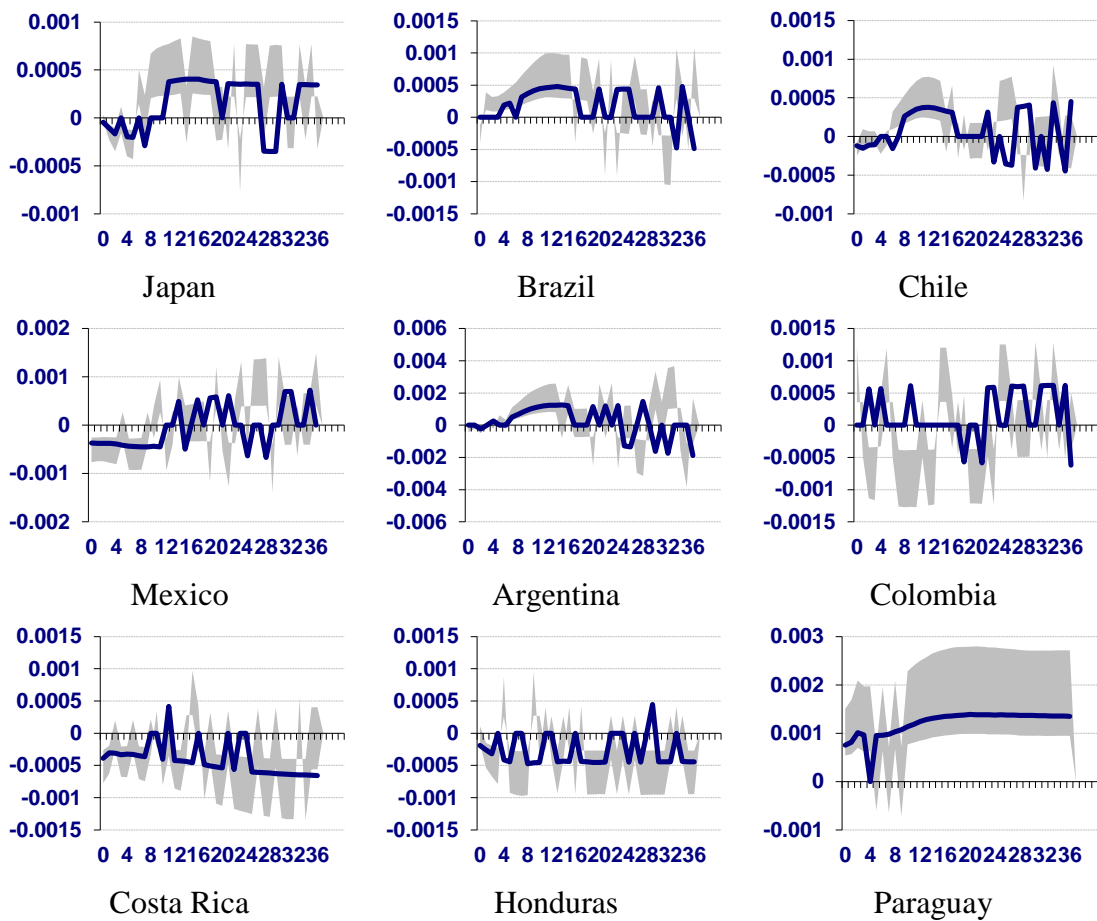
Full Sample Model, — Median estimates

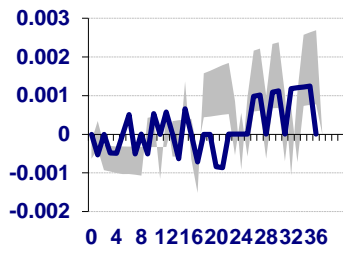




Japan 1se Negative Shock to Monetary Policy Indicator: Credit

Full Sample Model, , ■ Median estimates

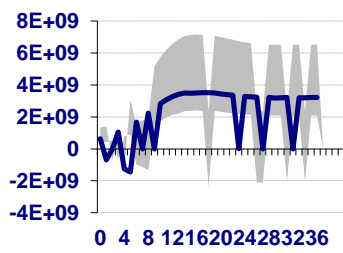




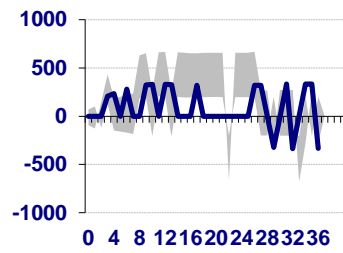
Peru

Japan 1se Negative Shock to Monetary Policy Indicator: International Reserves

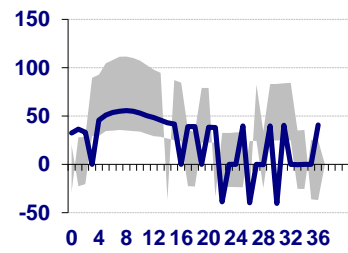
Full Sample Model, ■ Median estimates



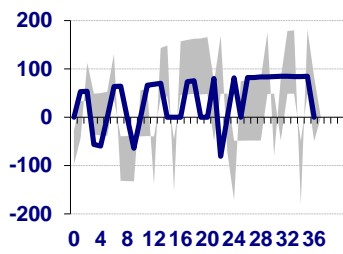
Japan



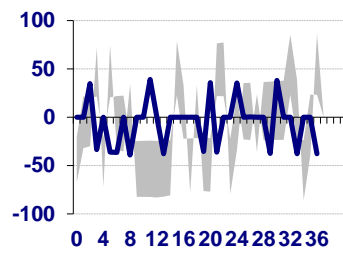
Brazil



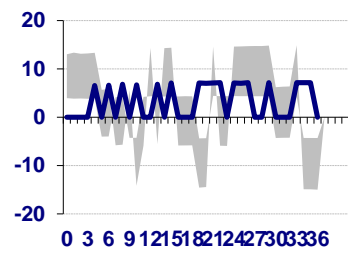
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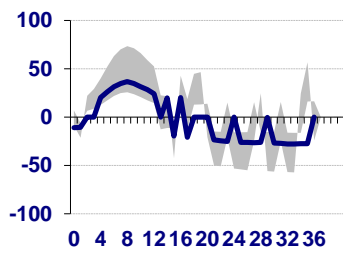
Mexico



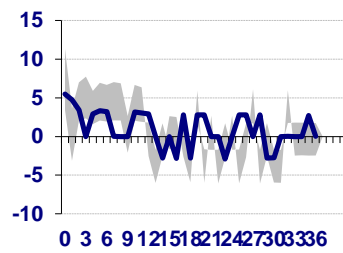
Colombia



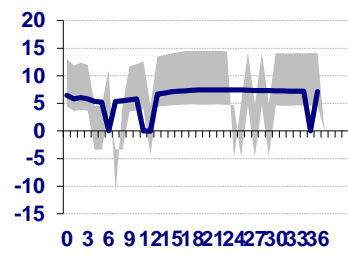
Costa Rica



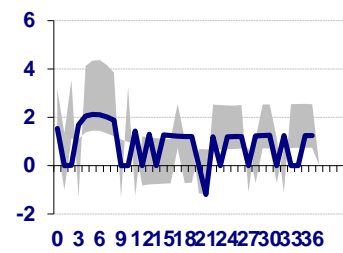
Ecuador



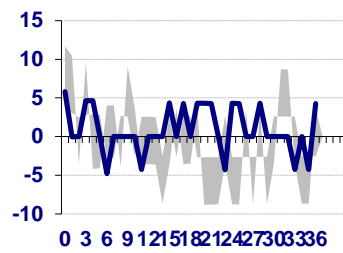
Guatemala



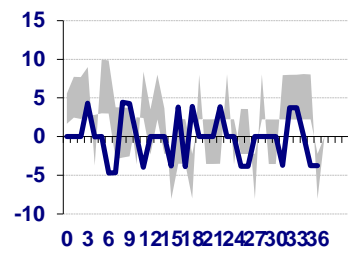
Honduras



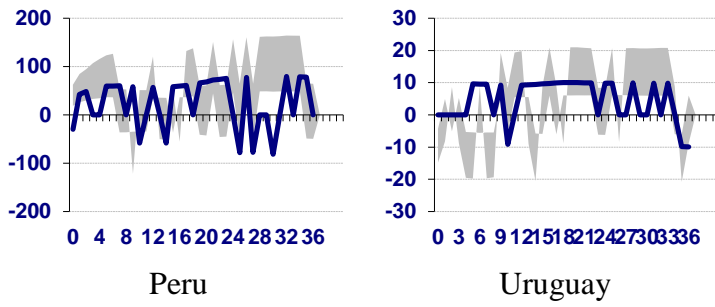
Nicaragua



Panama

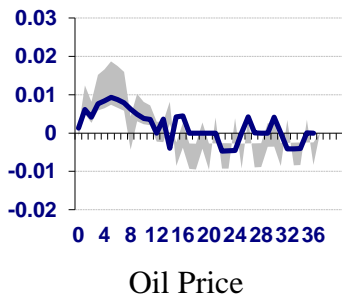


Paraguay



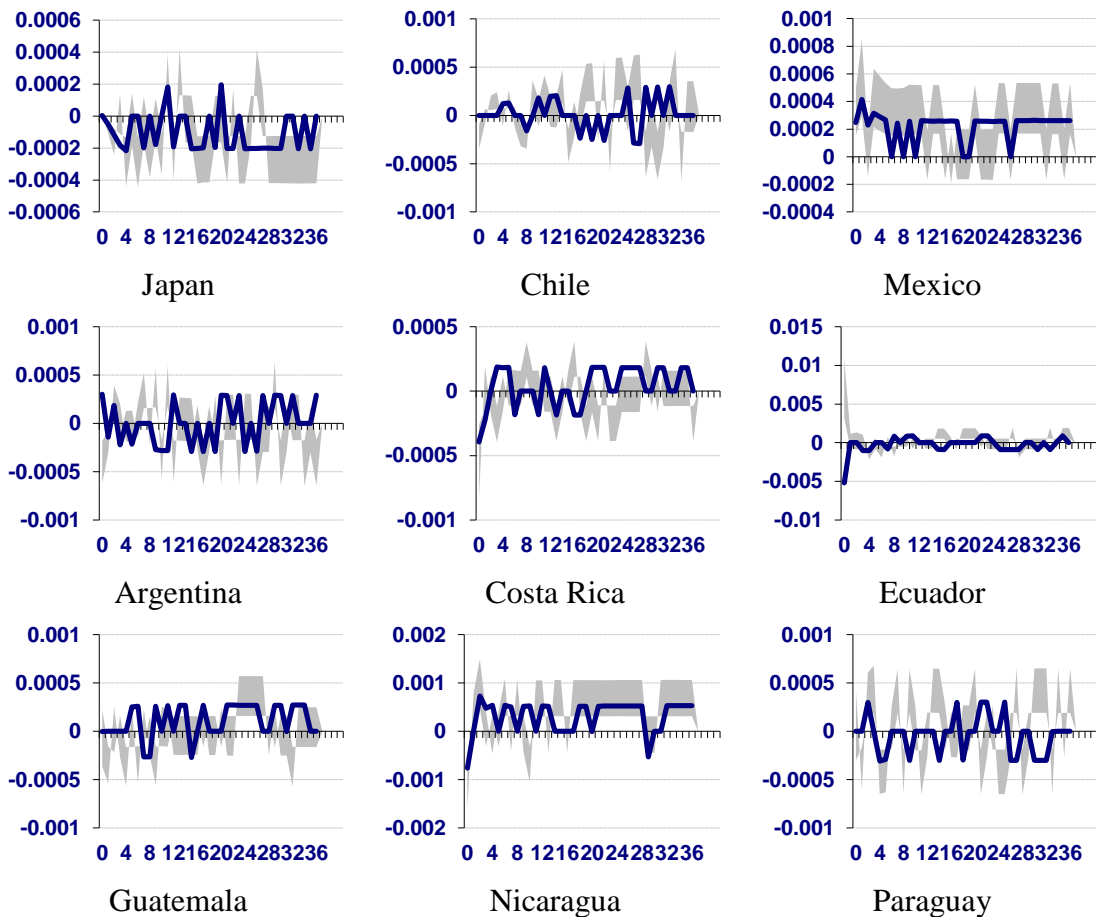
Japan 1se Negative Shock to Monetary Policy Indicator: Oil

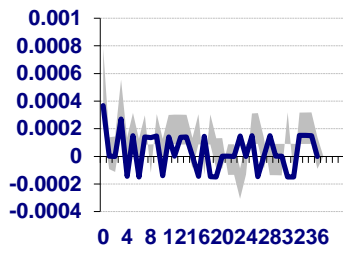
Full Sample Model, ■ Median estimates



Japan 1se Negative Shock to Monetary Policy Indicator: GDP

Pre-Crisis Model, ■ Median estimates

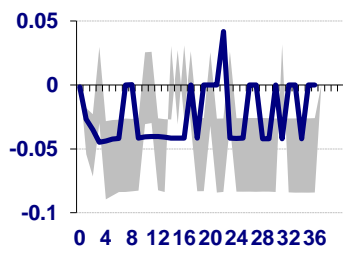




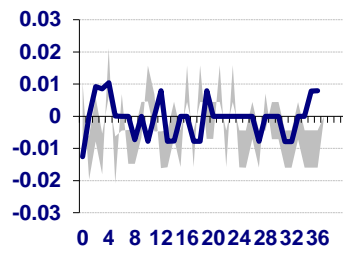
Peru

Japan 1se Negative Shock to Monetary Policy Indicator: CPI

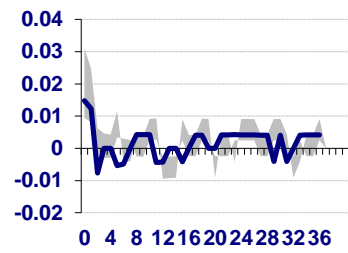
Pre-Crisis Model, ■ Median estimates



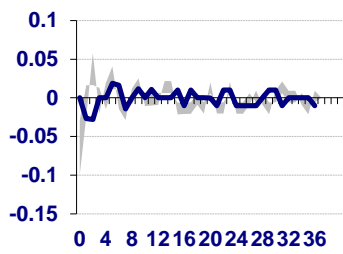
Japan



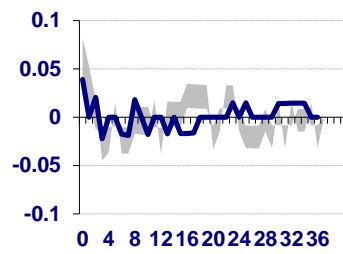
Brazil



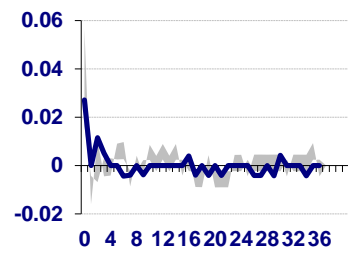
Chile



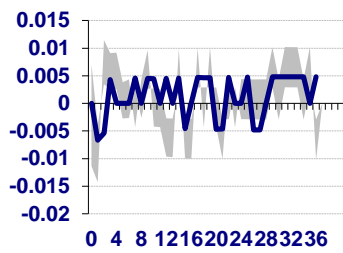
Mexico



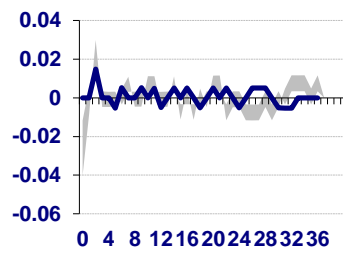
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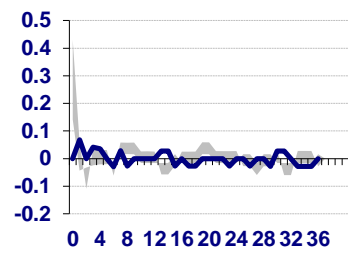
Bolivia



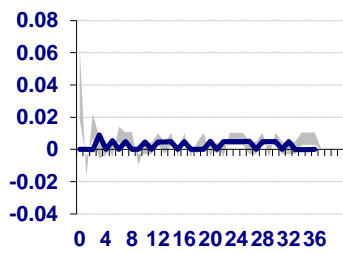
Colombia



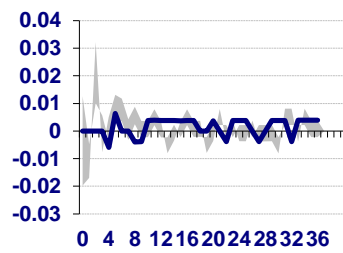
Costa Rica



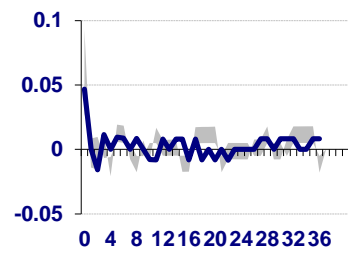
Ecuador



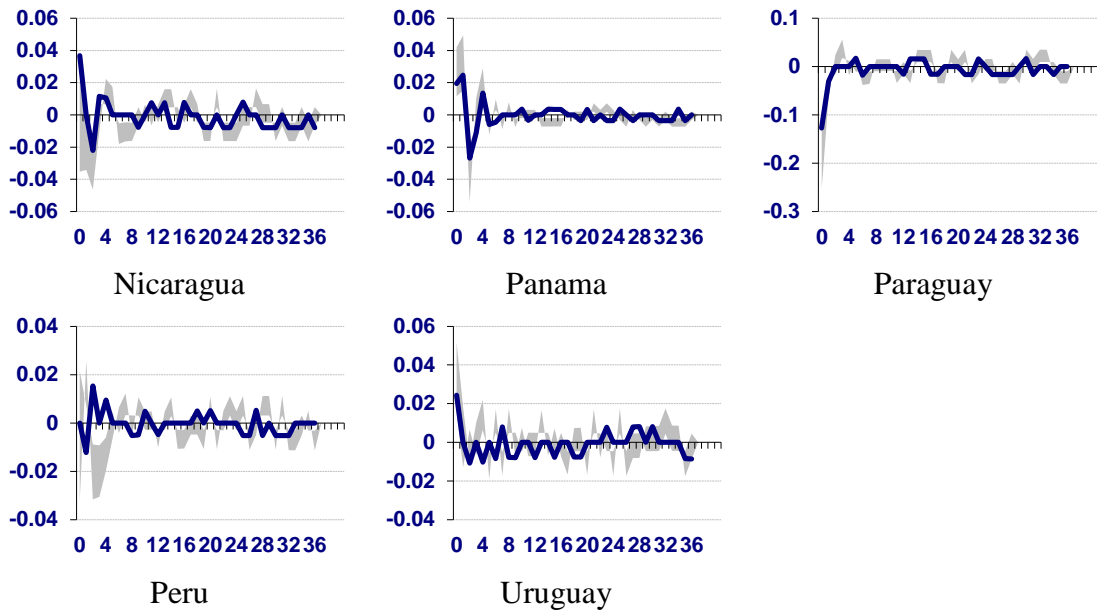
El Salvador



Guatemala

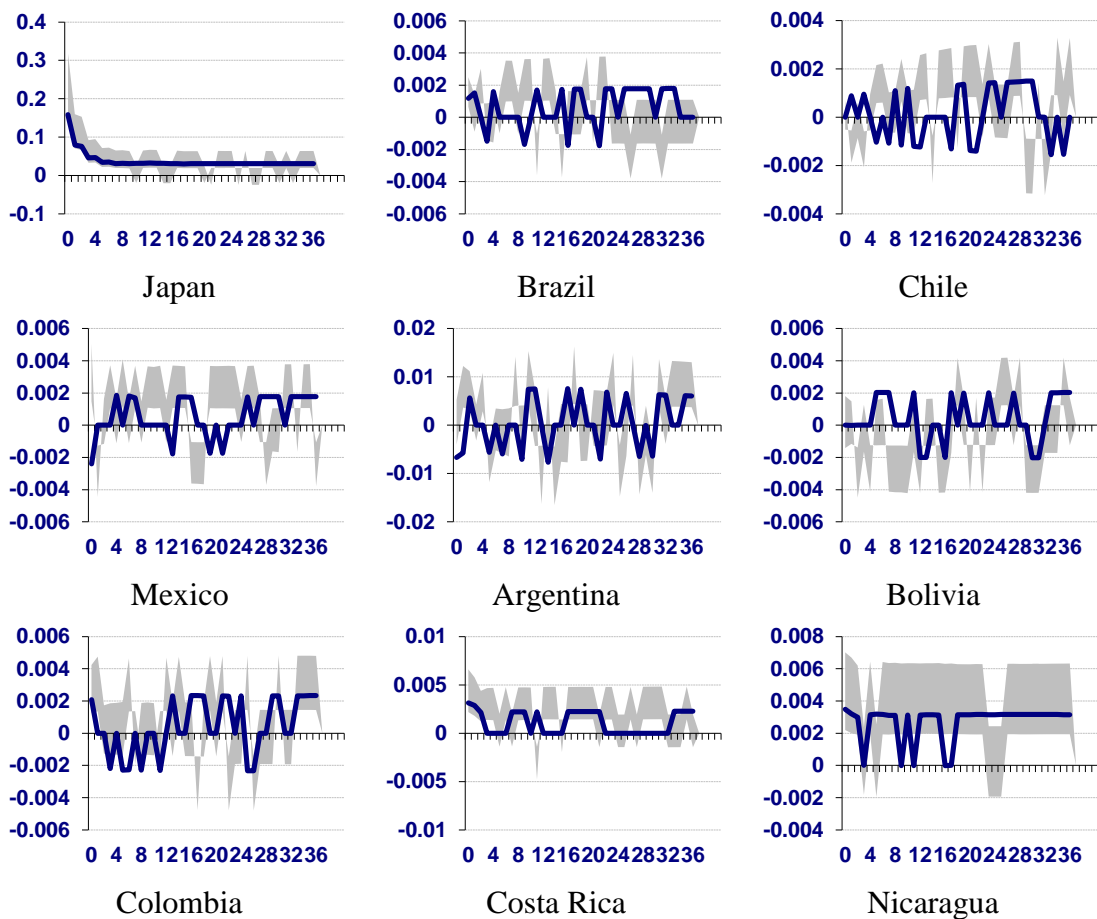


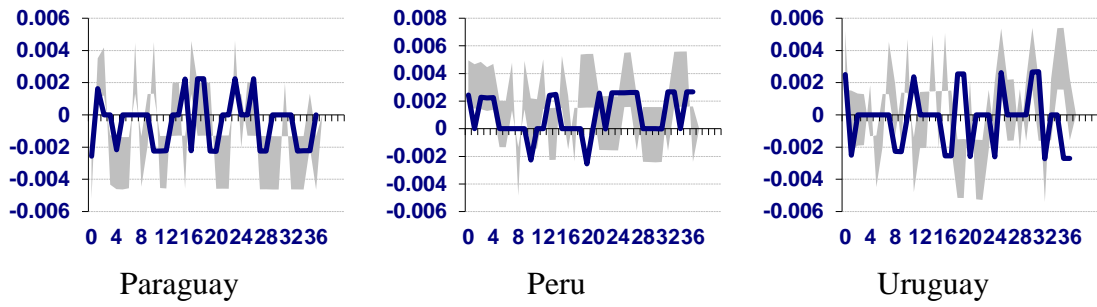
Honduras



Japan 1se Negative Shock to Monetary Policy Indicator: Money Growth

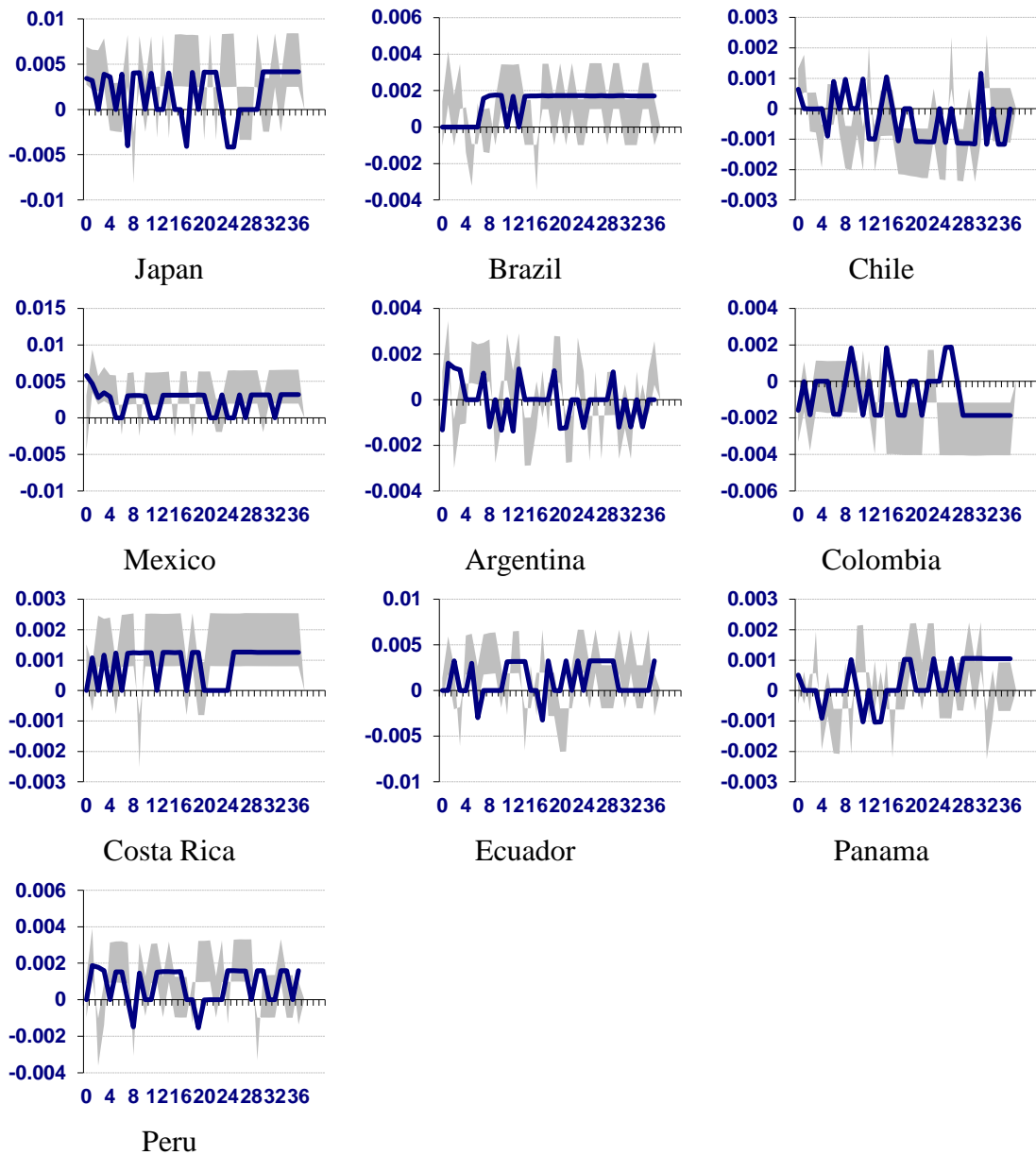
Pre-Crisis Model, ■ Median estimates





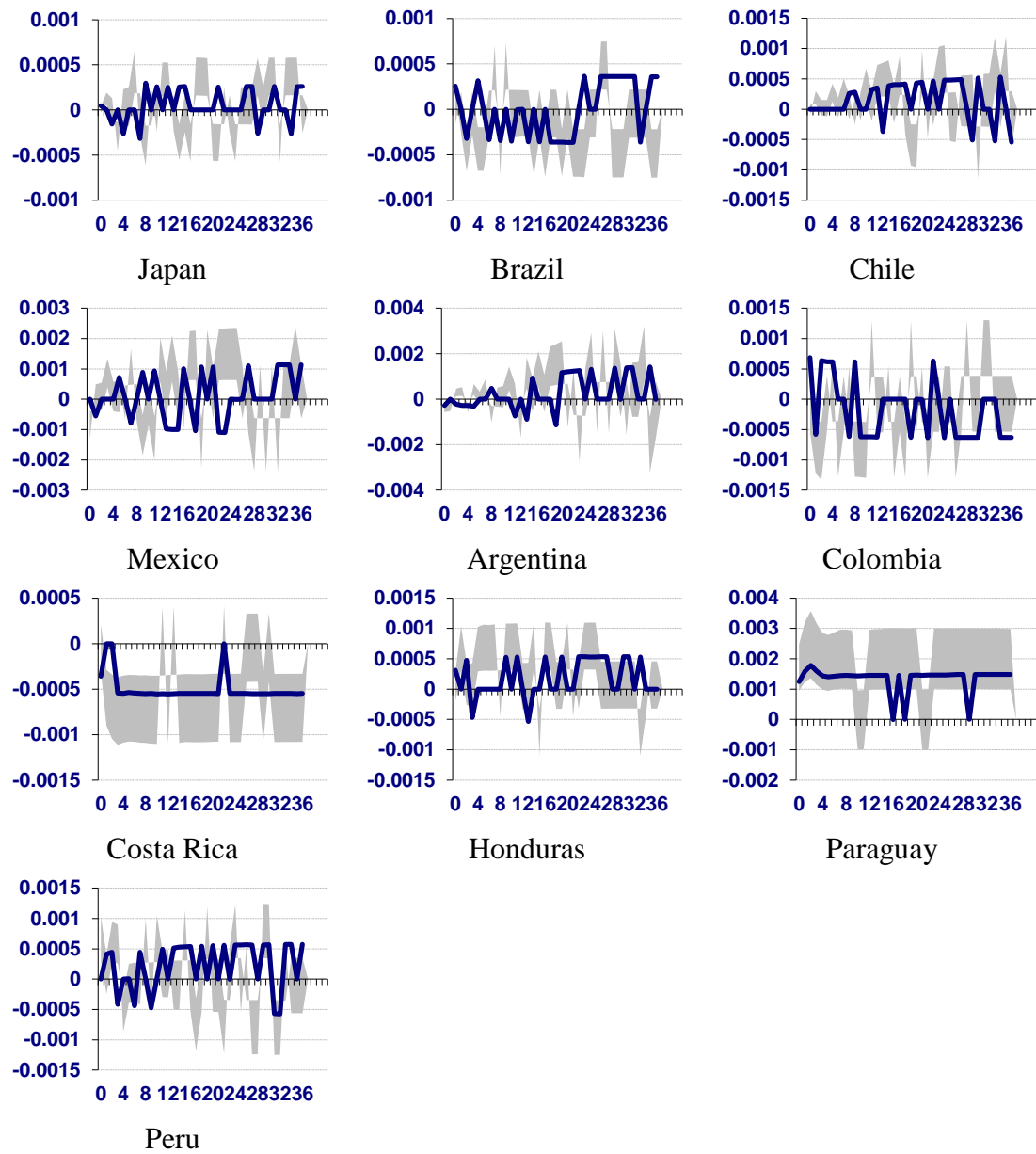
Japan 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

Pre-Crisis Model, ■ Median estimates



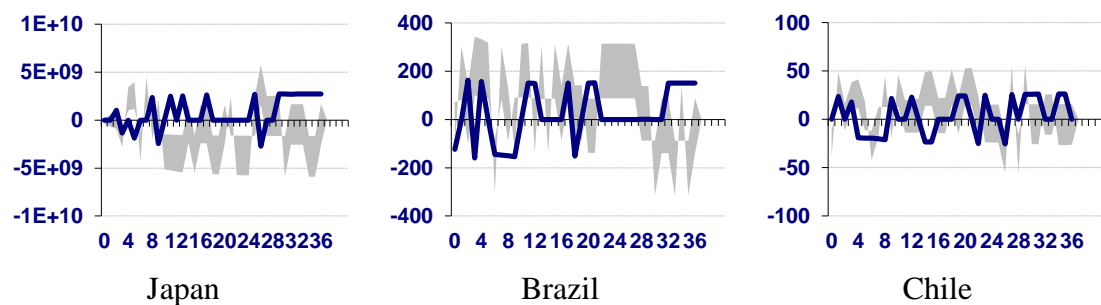
Japan 1se Negative Shock to Monetary Policy Indicator: Credit

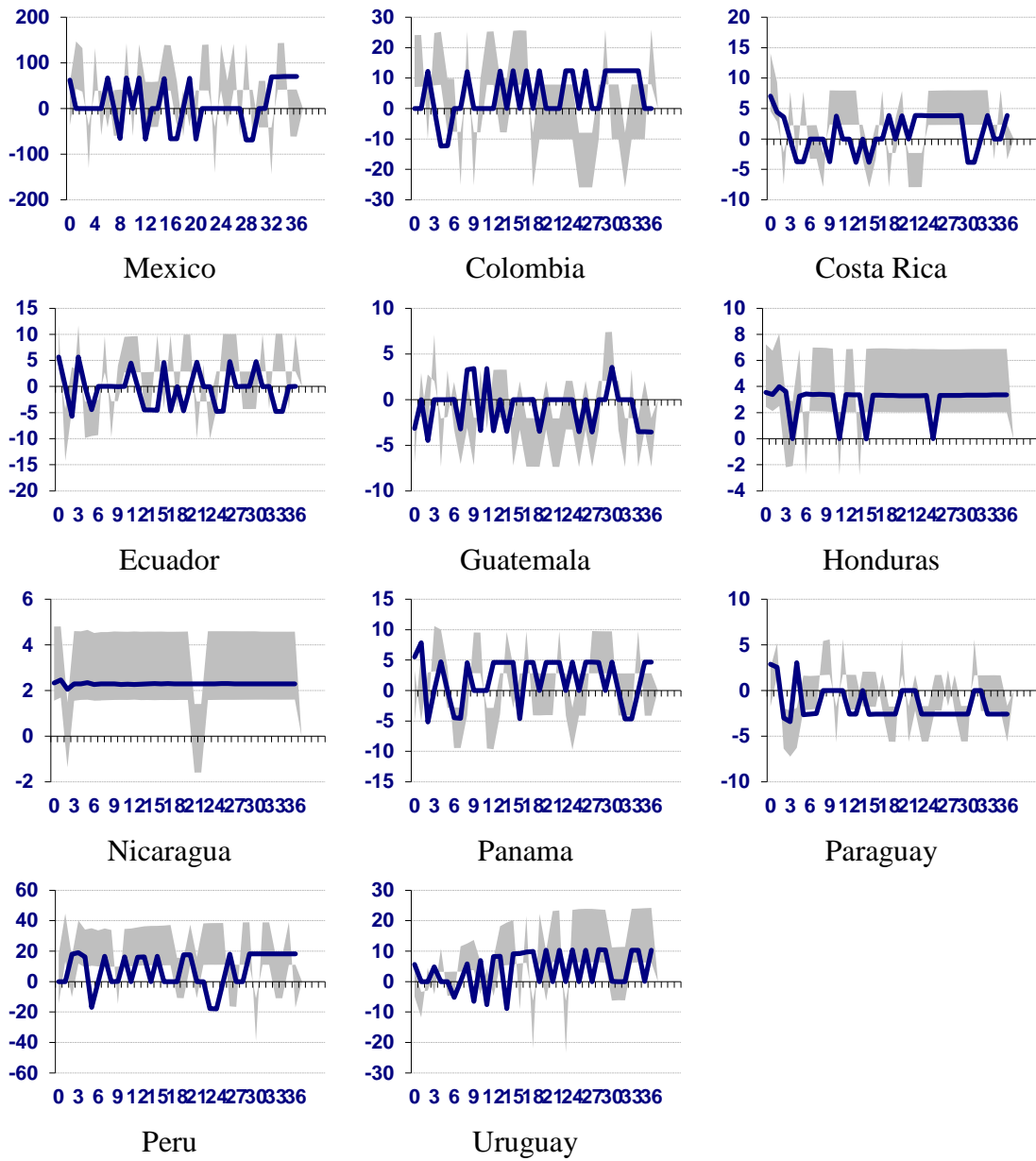
Pre-Crisis Model, ■ Median estimates



Japan 1se Negative Shock to Monetary Policy Indicator: International Reserves

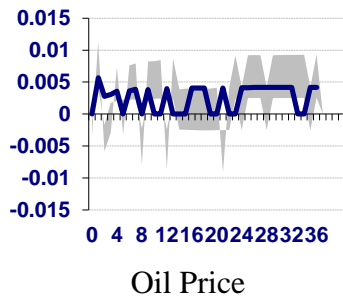
Pre-Crisis Model, ■ Median estimates





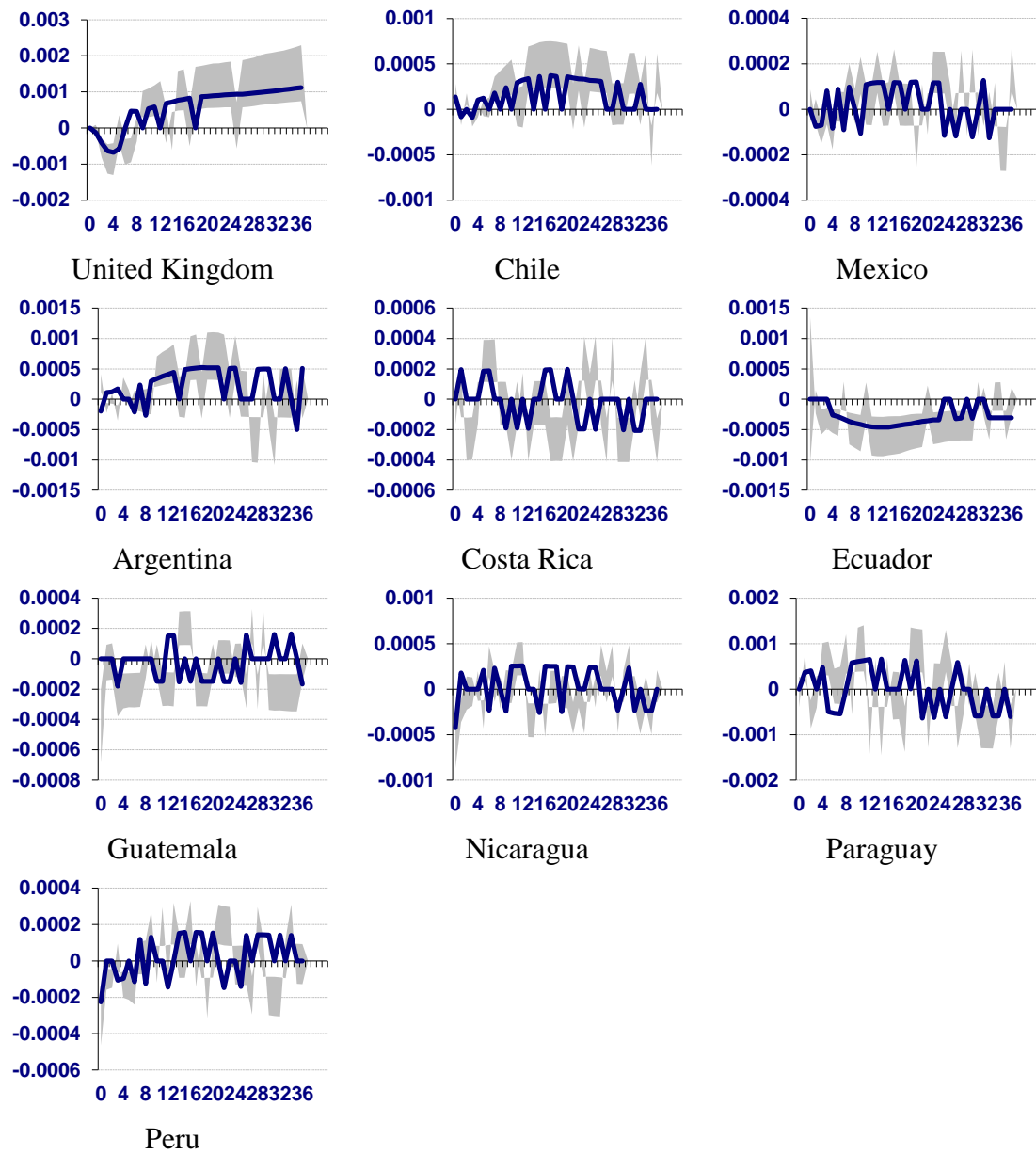
Japan 1se Negative Shock to Monetary Policy Indicator: Oil

Pre-Crisis Model, ■ Median estimates



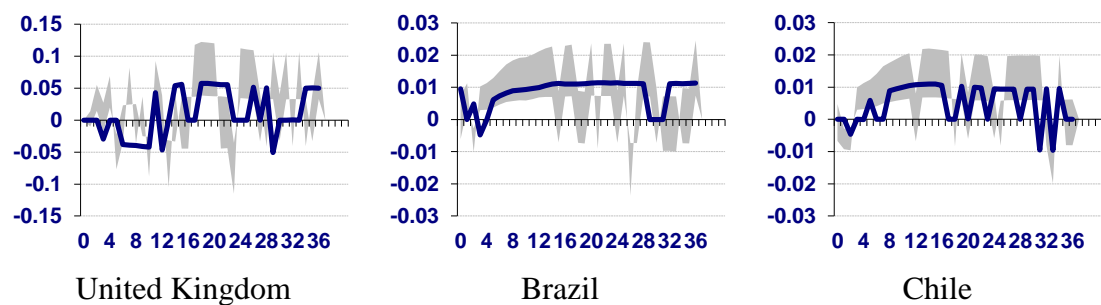
United Kingdom 1se Negative Shock to Monetary Policy Indicator: GDP

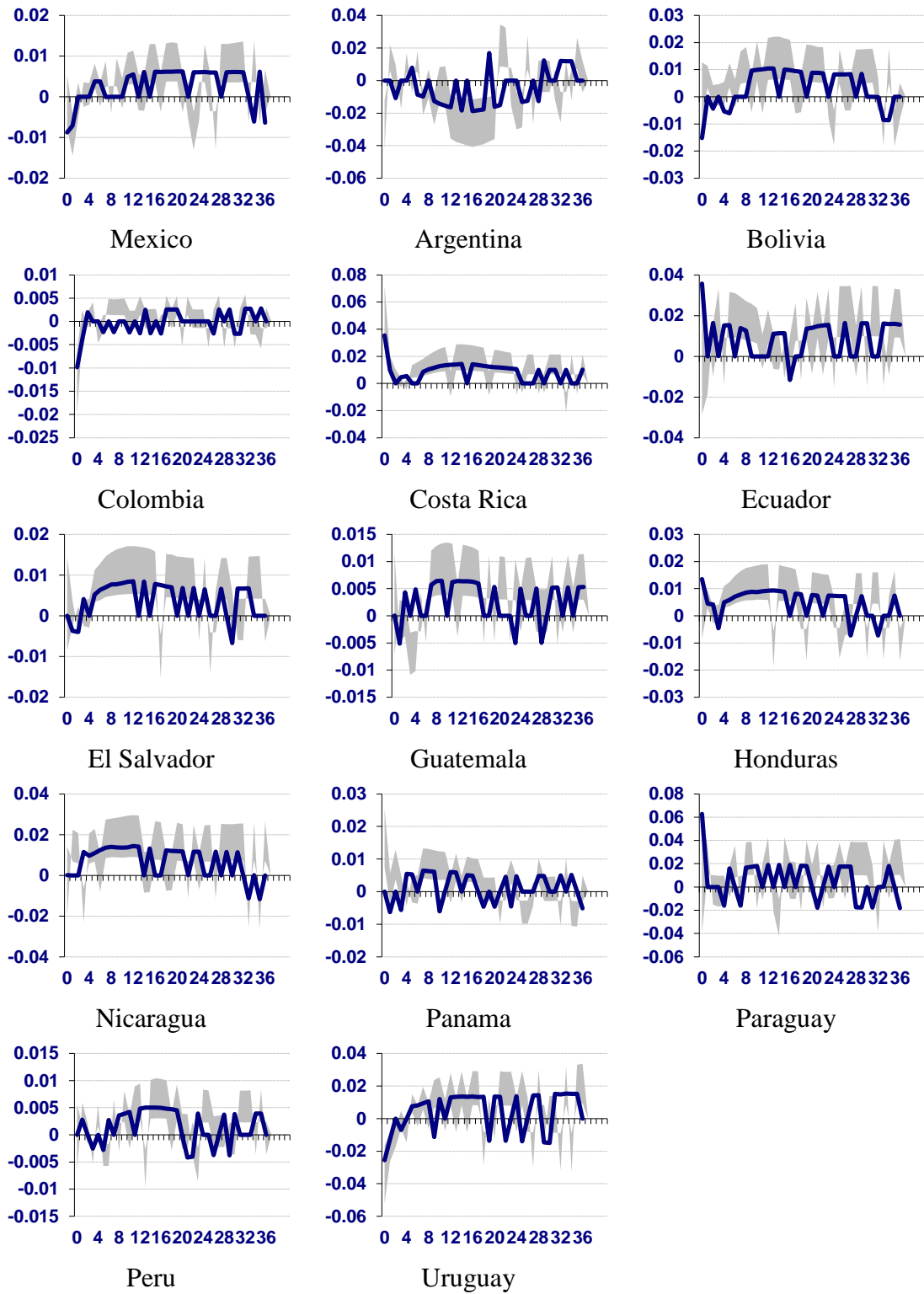
Full Sample Model, — Median estimates



United Kingdom 1se Negative Shock to Monetary Policy Indicator: CPI

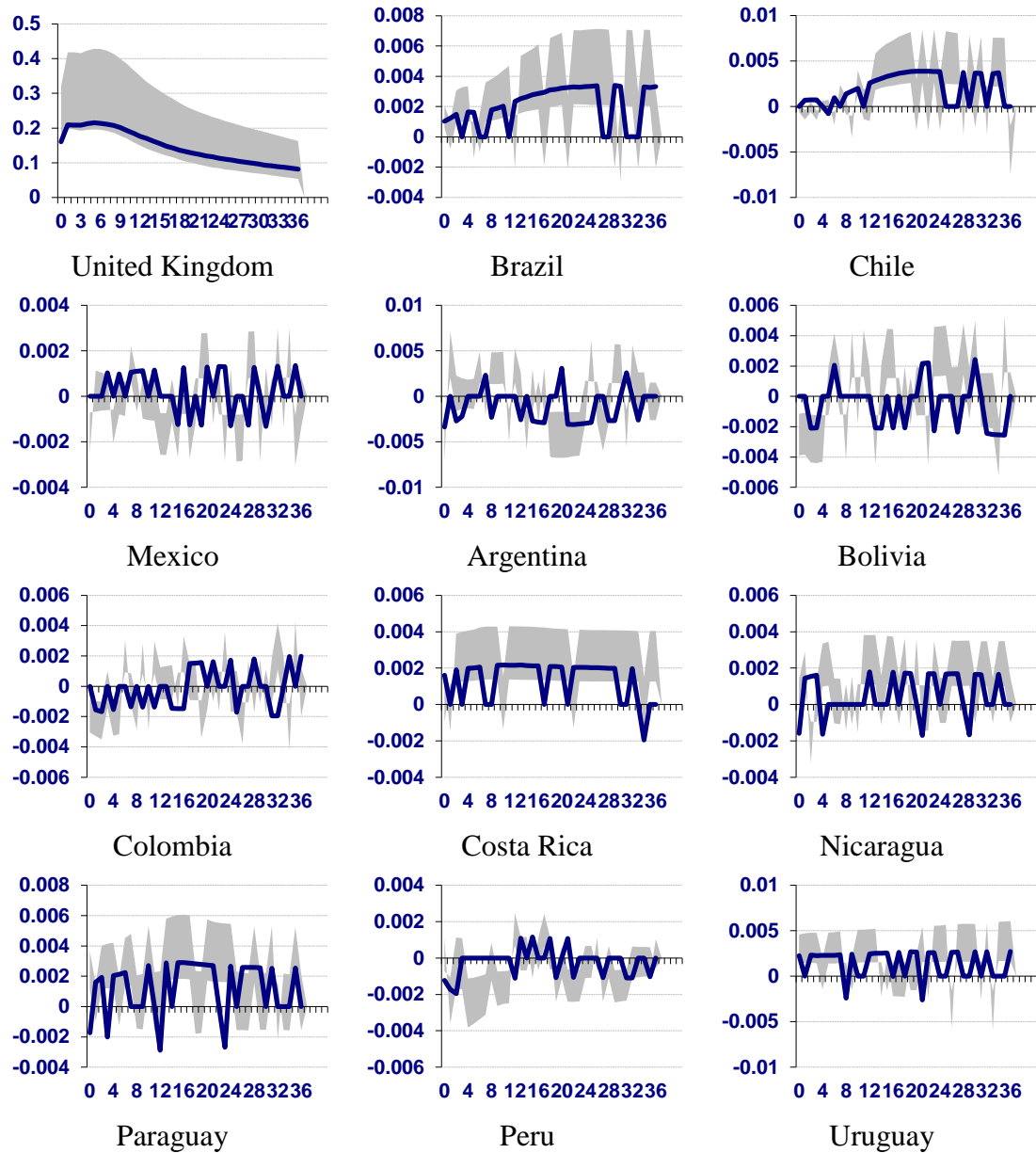
Full Sample Model, — Median estimates





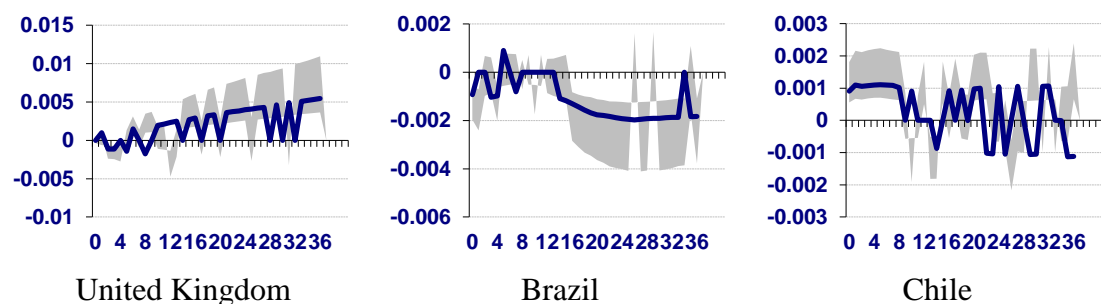
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Money Growth

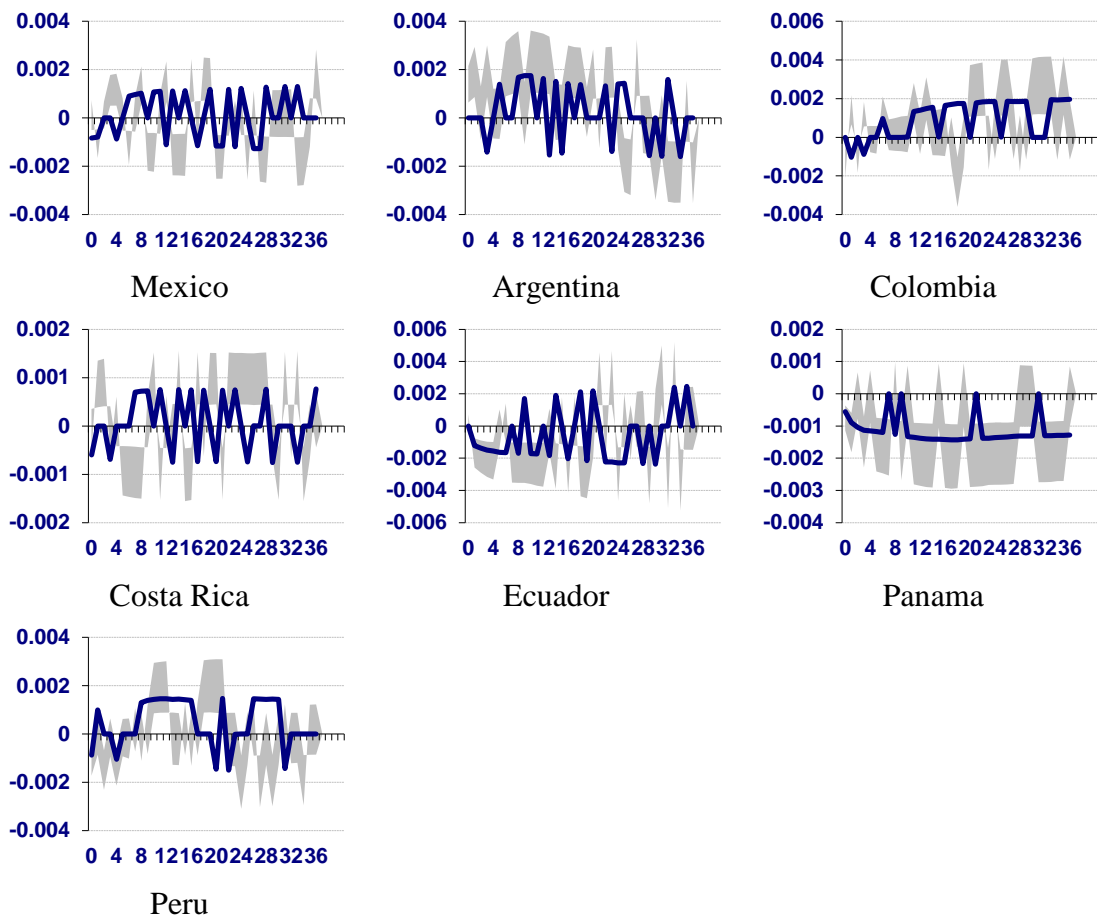
Full Sample Model, ■ Median estimates



United Kingdom 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

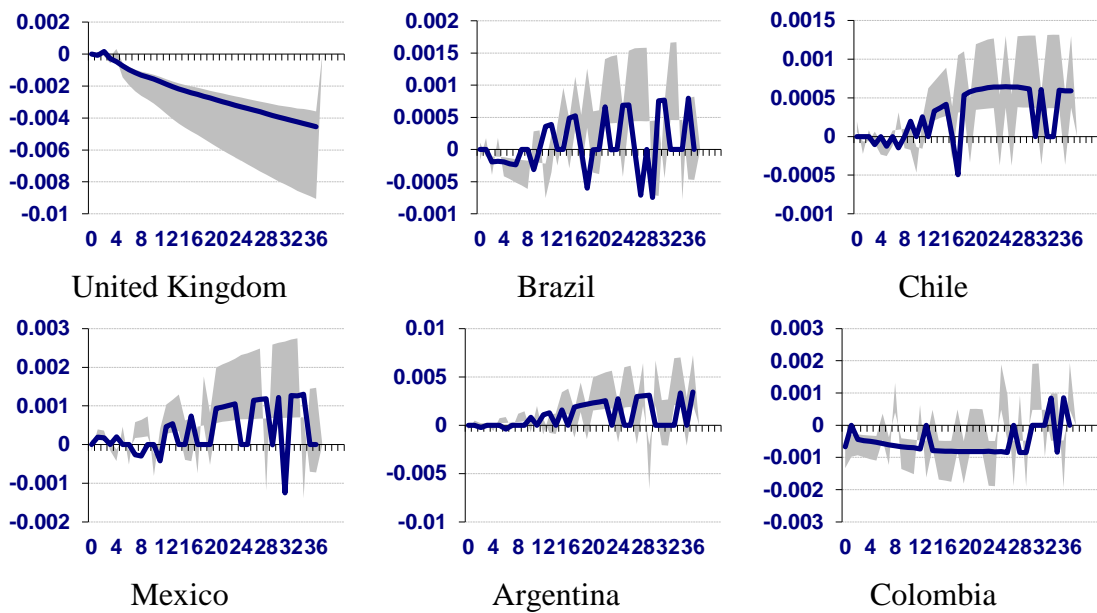
Full Sample Model, ■ Median estimates

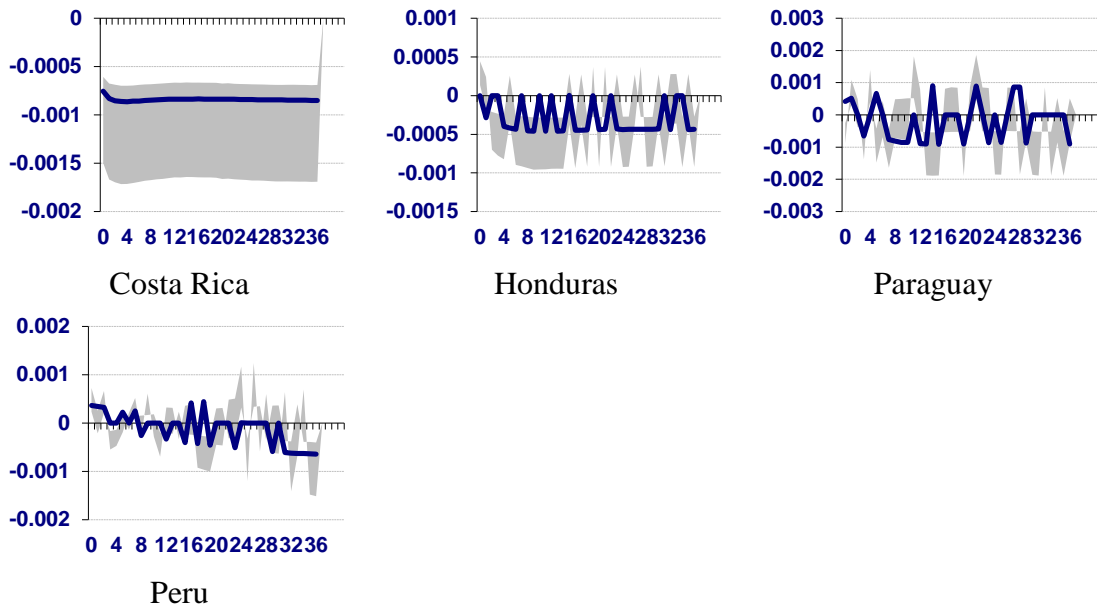




United Kingdom 1se Negative Shock to Monetary Policy Indicator: Credit

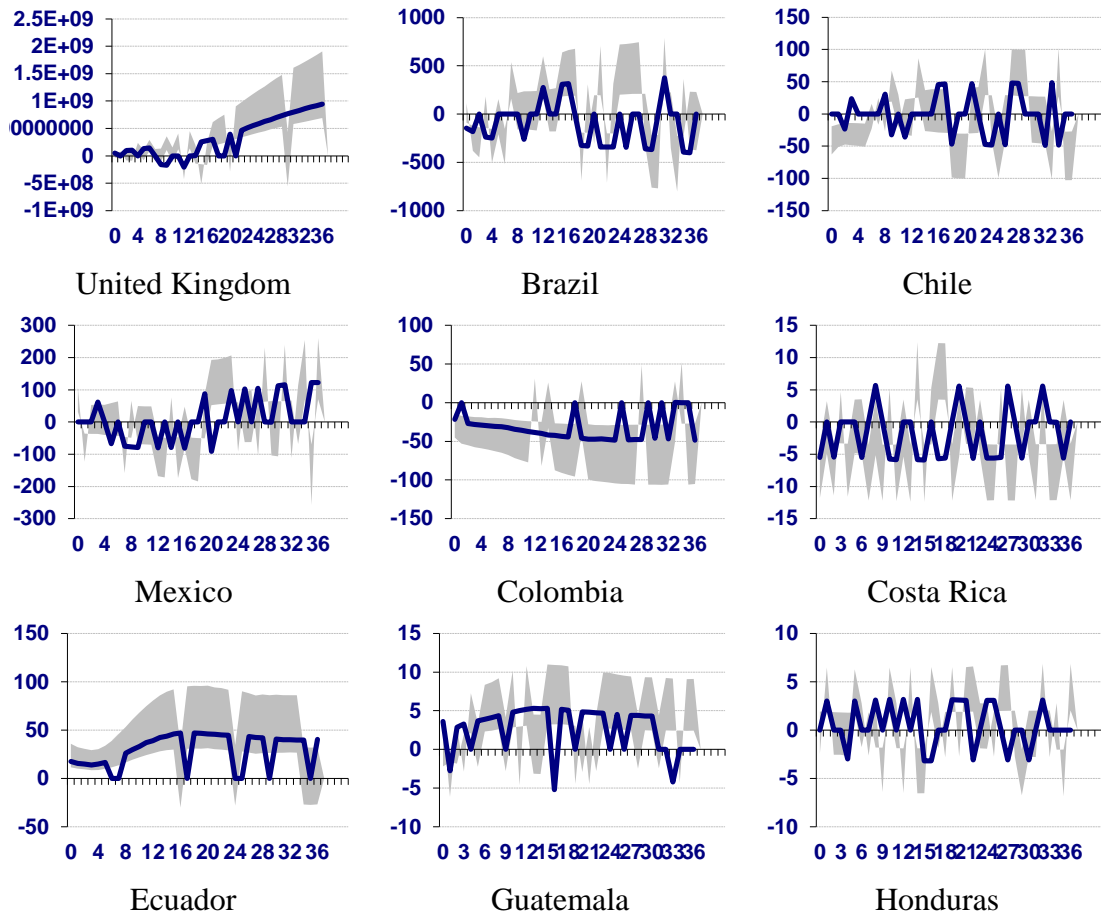
Full Sample Model, \square Median estimates

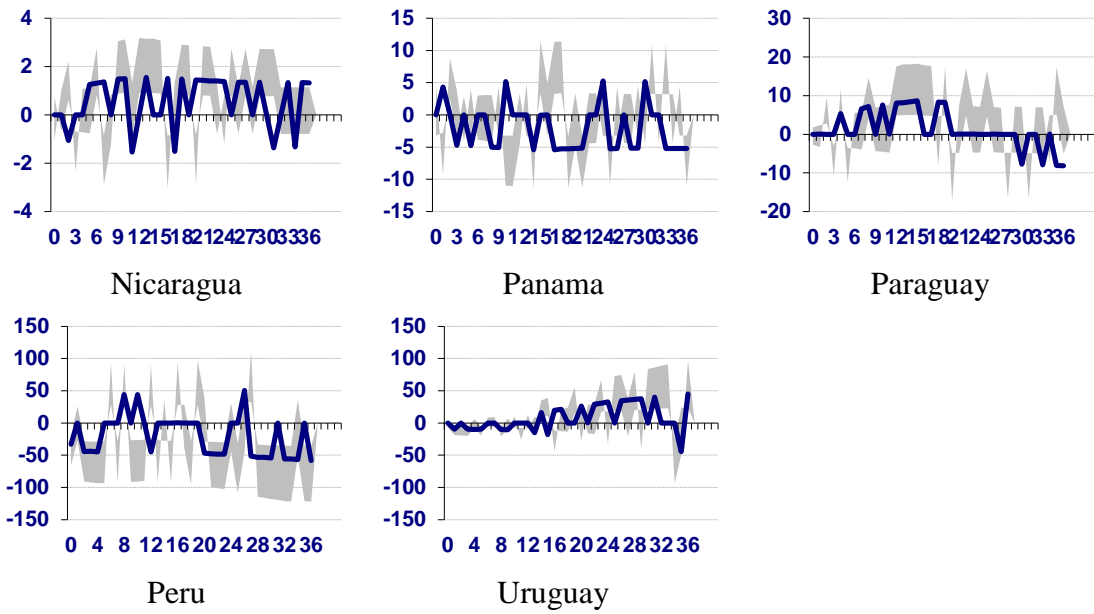




United Kingdom 1se Negative Shock to Monetary Policy Indicator: International Reserves

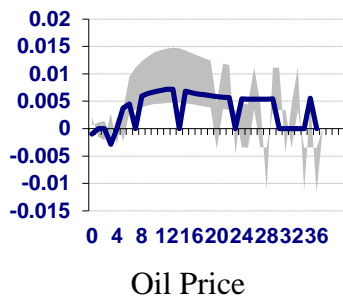
Full Sample Model, ■ Median estimates





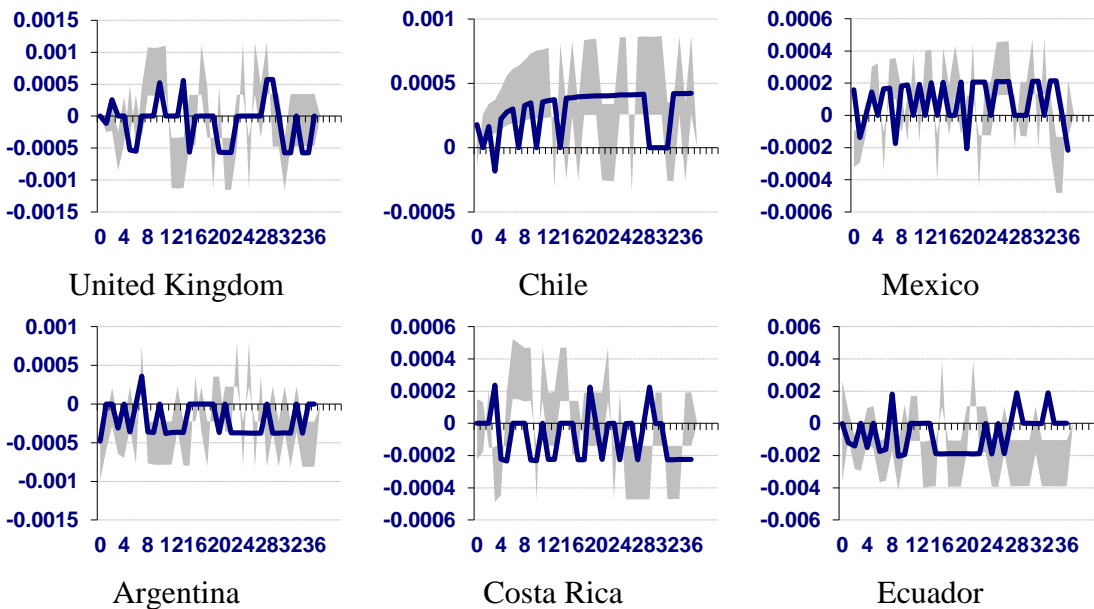
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Oil

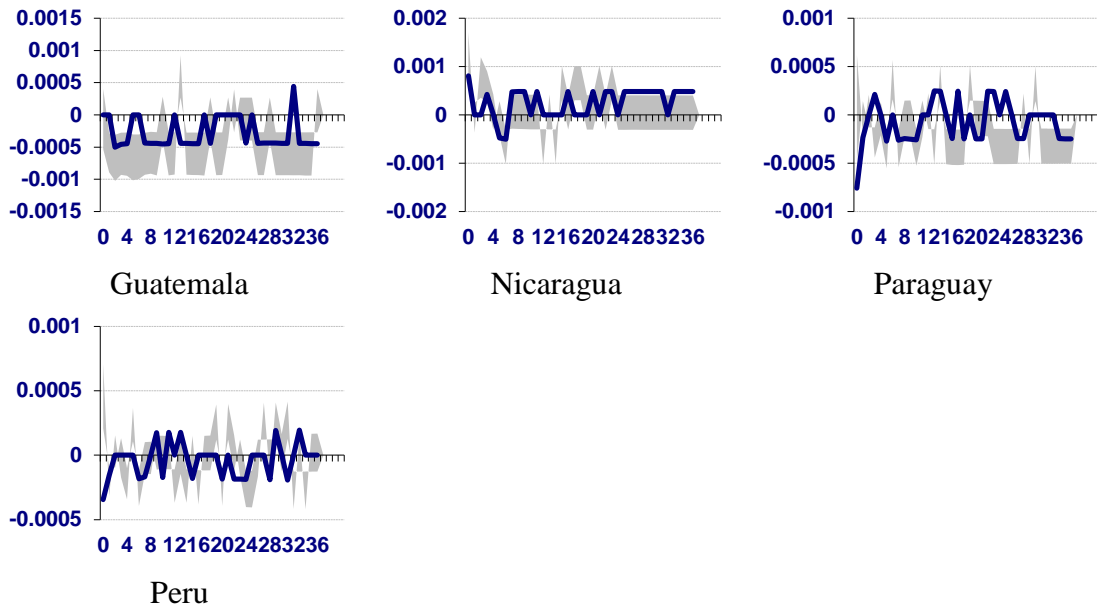
Full Sample Model, ■ Median estimates



United Kingdom 1se Negative Shock to Monetary Policy Indicator: GDP

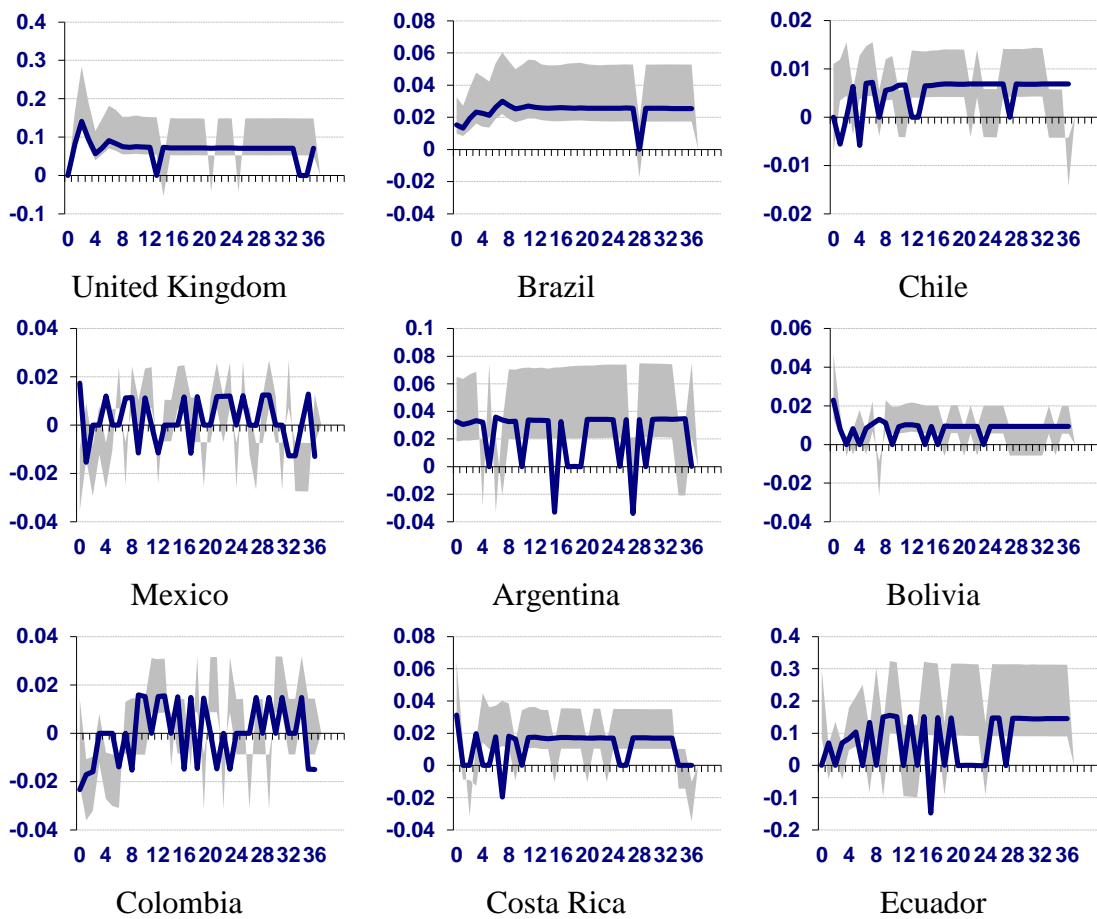
Pre-Crisis Model, ■ Median estimates

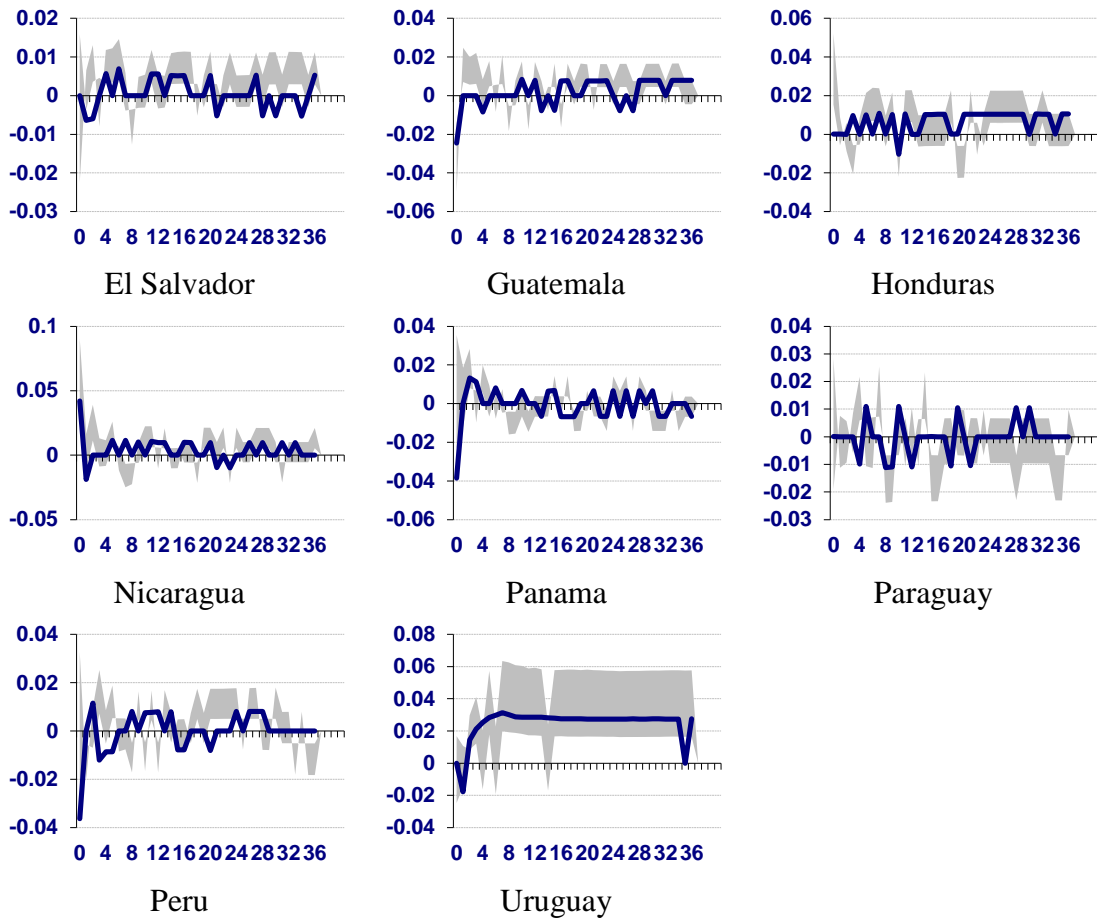




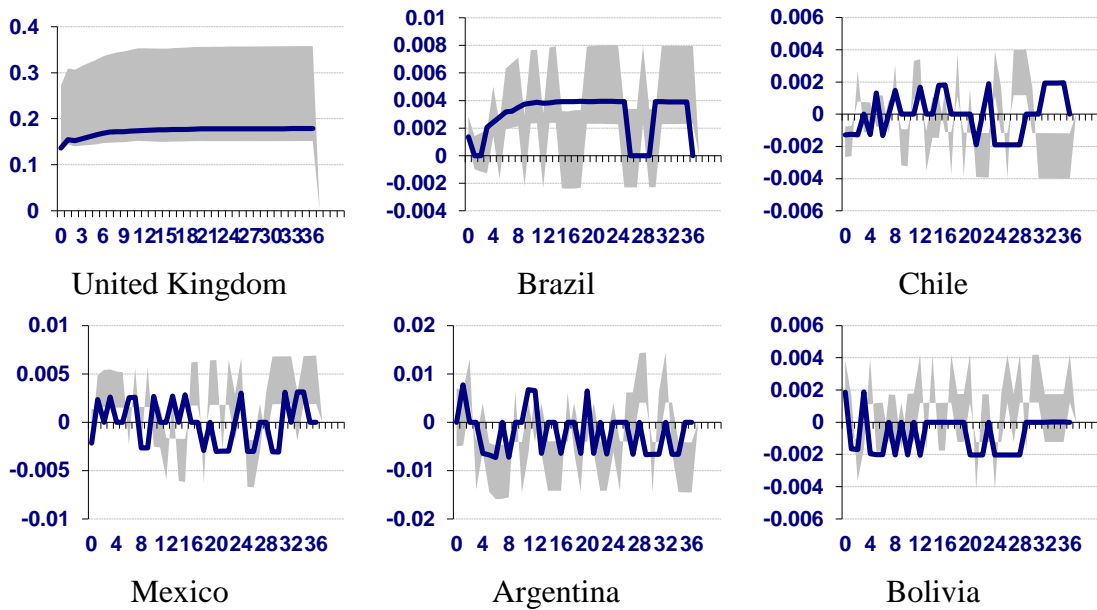
United Kingdom 1se Negative Shock to Monetary Policy Indicator: CPI

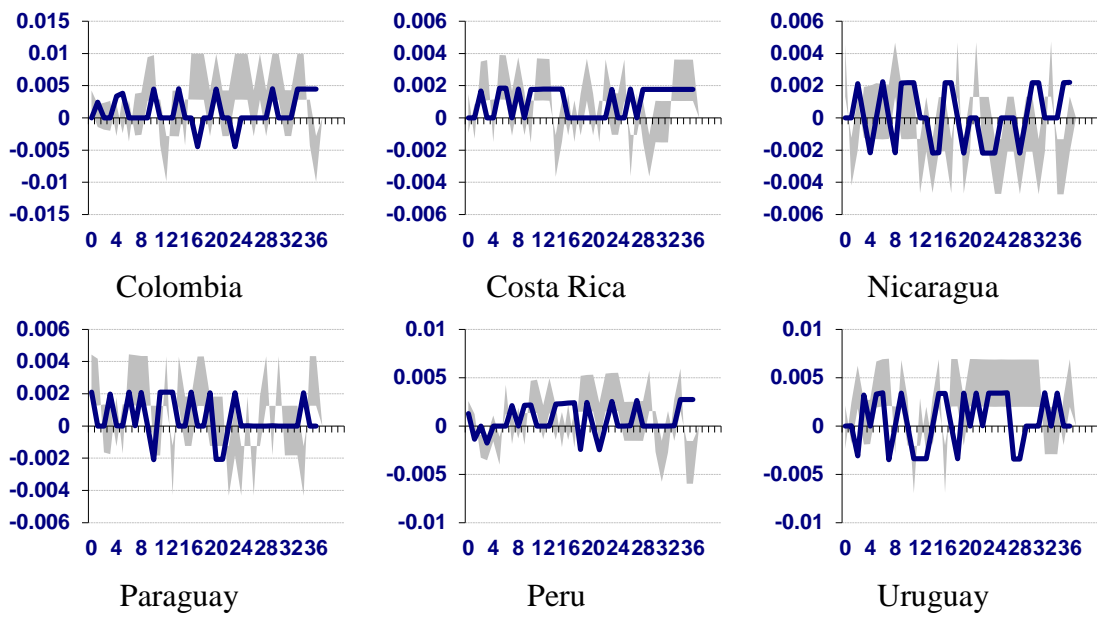
Pre-Crisis Model, ■ Median estimates





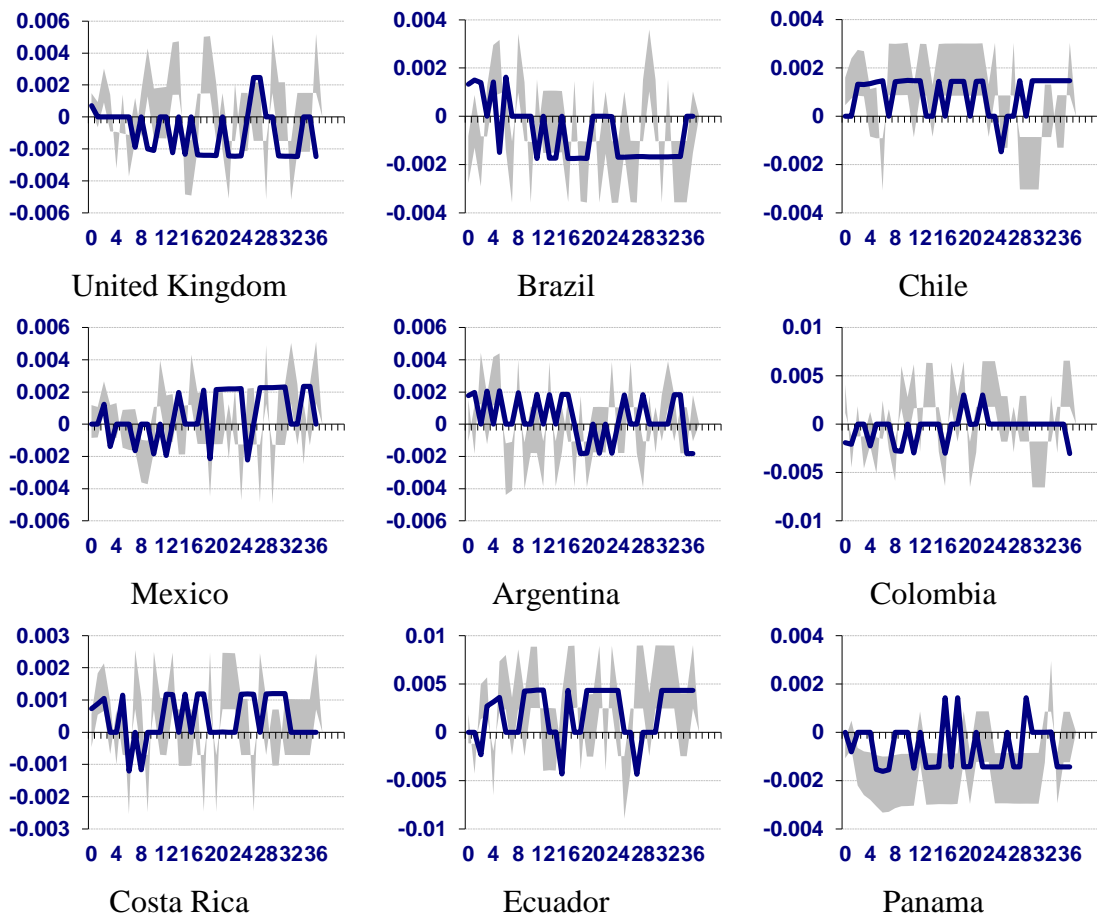
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Money Growth
Pre-Crisis Model, ■ Median estimates

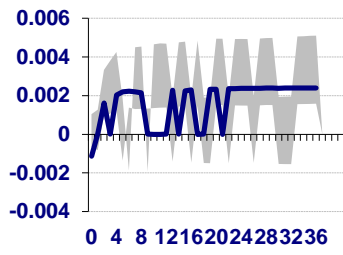




United Kingdom 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

Pre-Crisis Model, ■ Median estimates

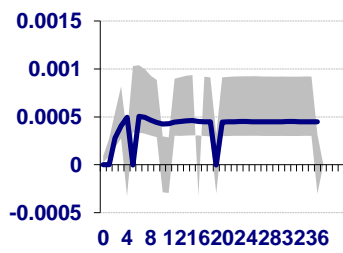




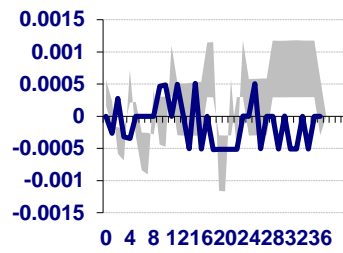
Peru

United Kingdom 1se Negative Shock to Monetary Policy Indicator: Credit

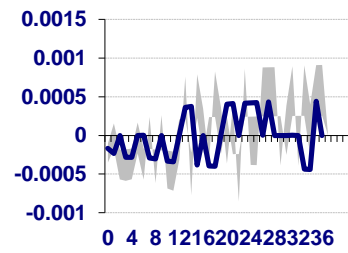
Pre-Crisis Model, ■ Median estimates



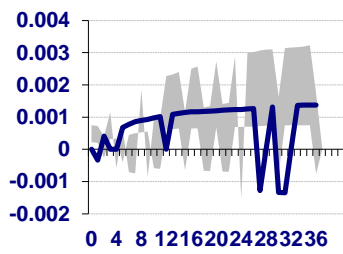
United Kingdom



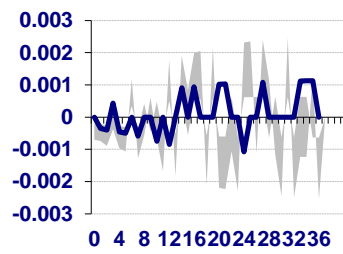
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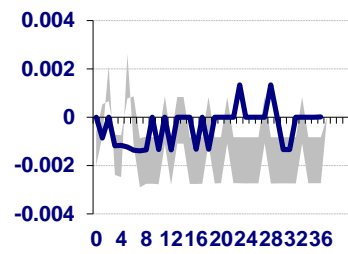
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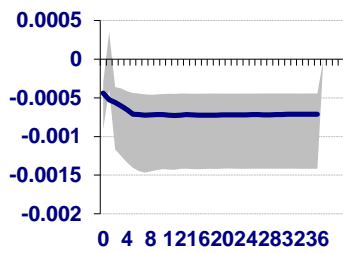
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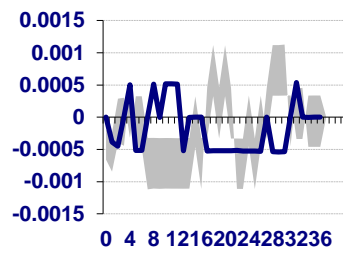
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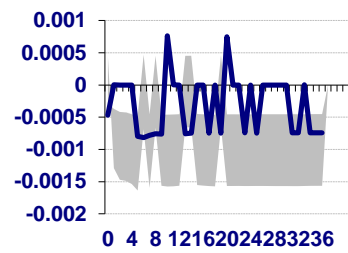
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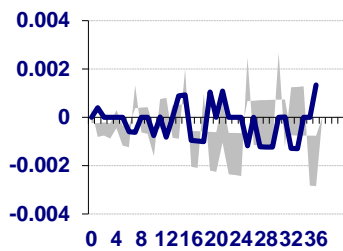
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Honduras



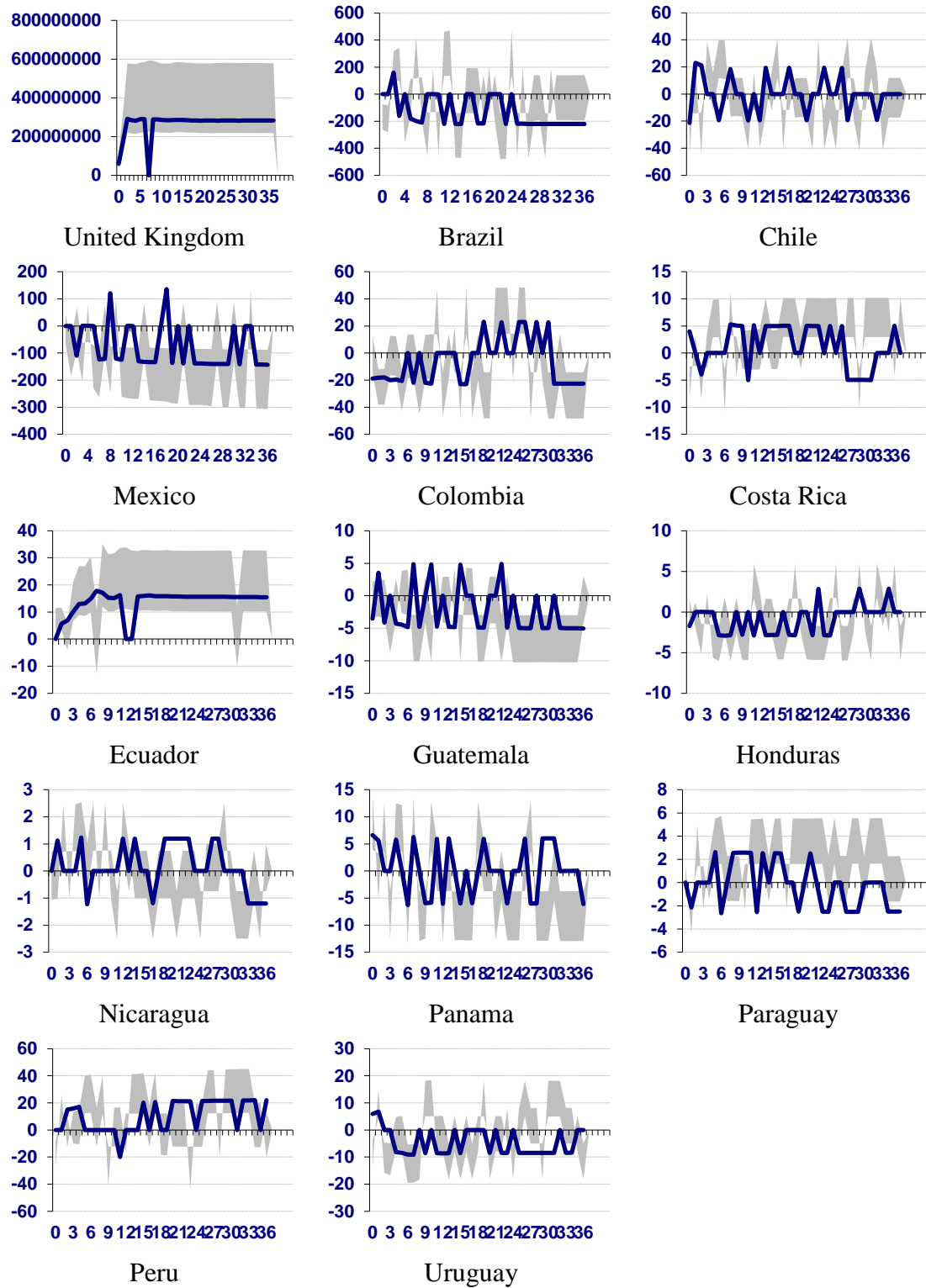
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Peru

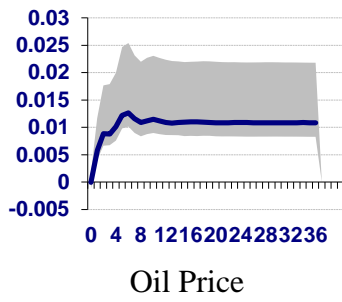
United Kingdom 1se Negative Shock to Monetary Policy Indicator: International Reserves

Pre-Crisis Model, ■ Median estimates



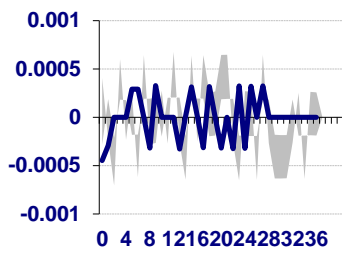
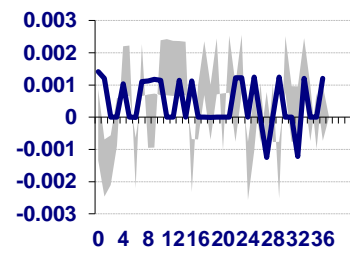
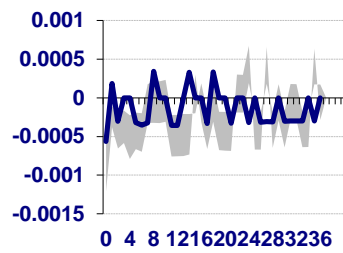
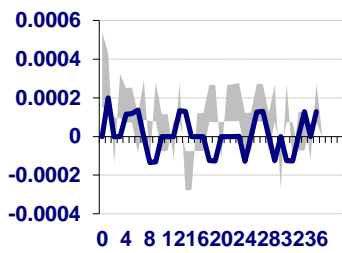
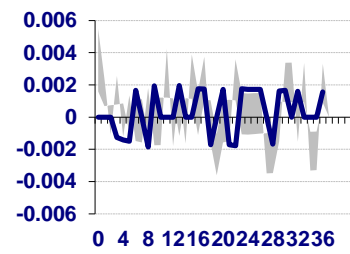
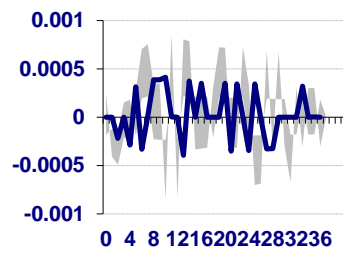
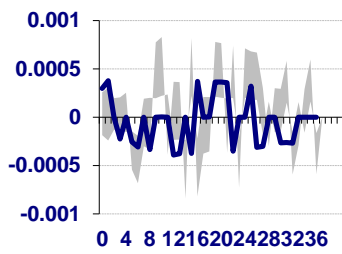
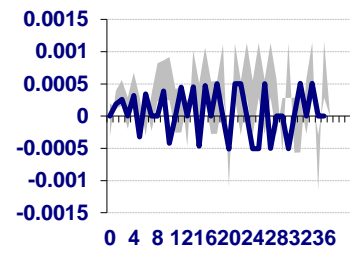
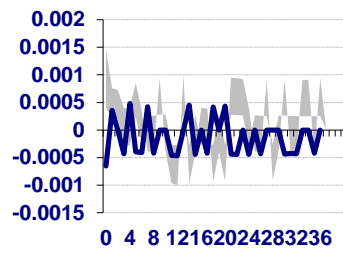
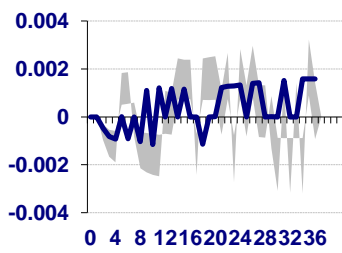
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Oil

Pre-Crisis Model, ■ Median estimates



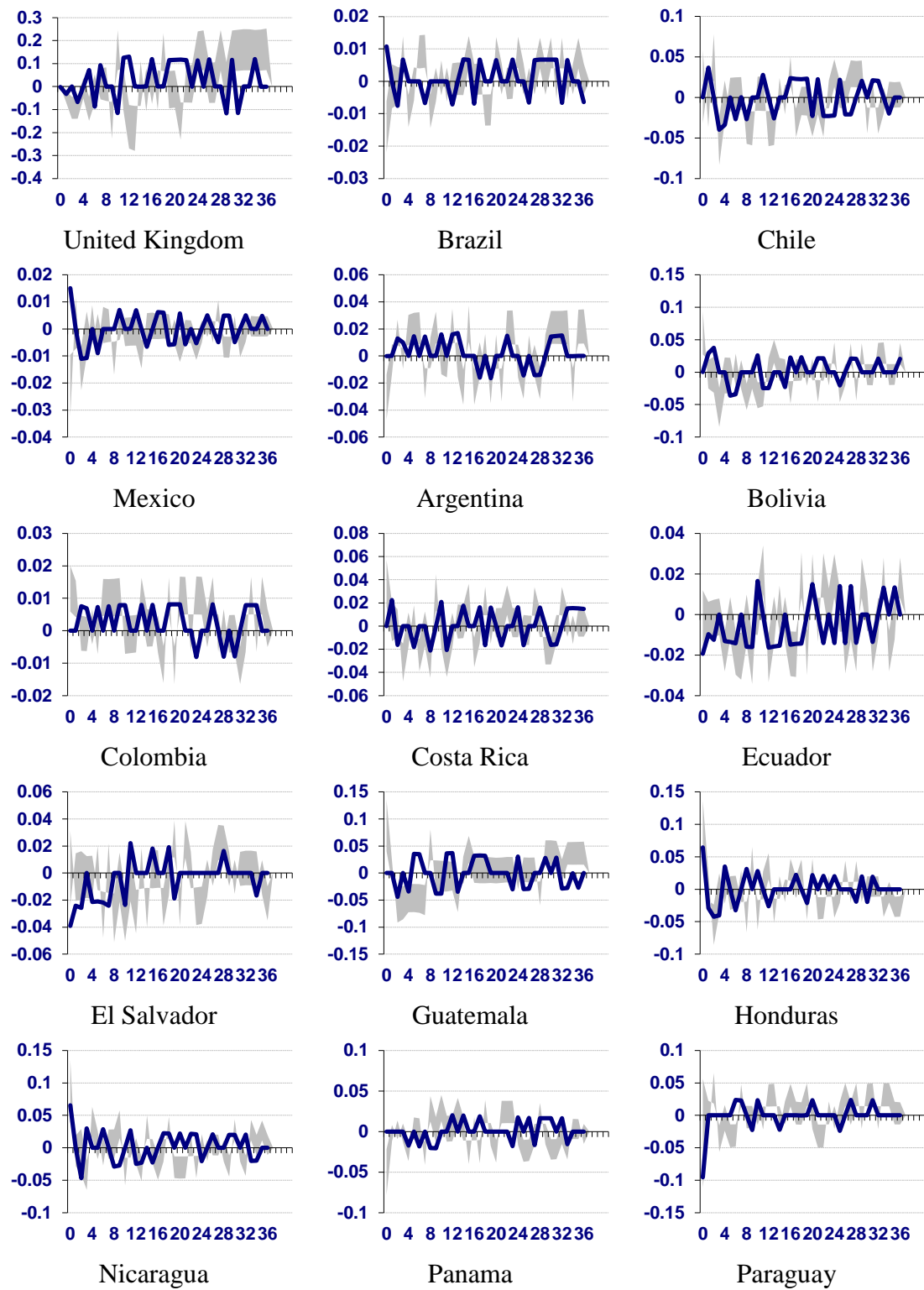
United Kingdom 1se Negative Shock to Monetary Policy Indicator: GDP

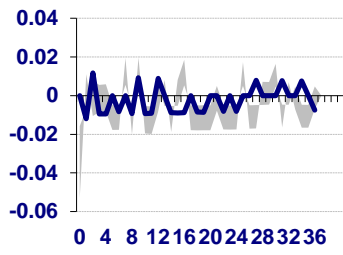
Crisis Model, — Median estimates



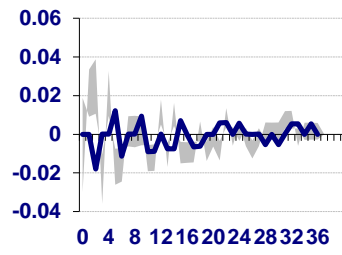
United Kingdom 1se Negative Shock to Monetary Policy Indicator: CPI

Crisis Model, ■ Median estimates





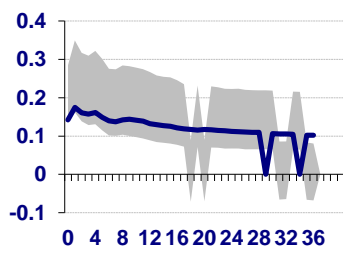
Peru



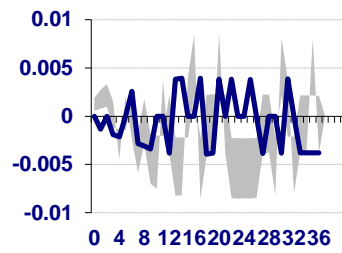
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United Kingdom 1se Negative Shock to Monetary Policy Indicator: Money Growth

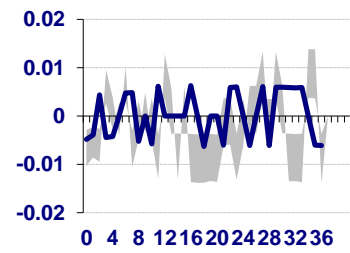
Crisis Model, — Median estimates



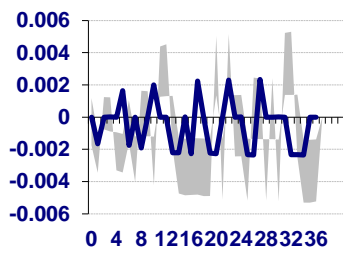
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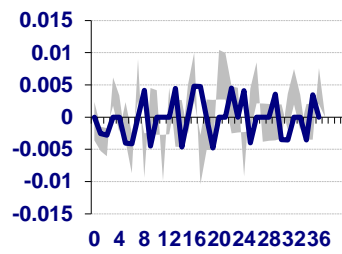
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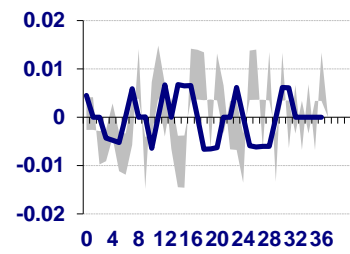
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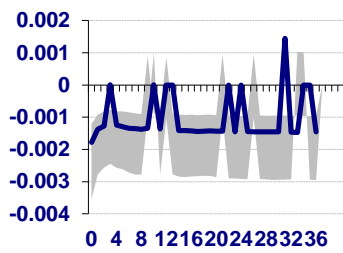
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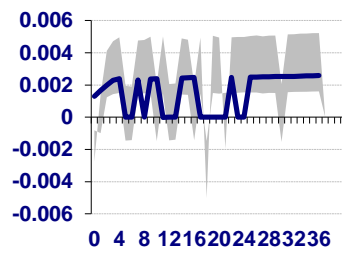
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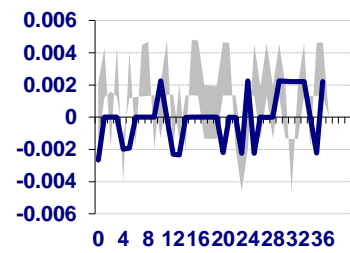
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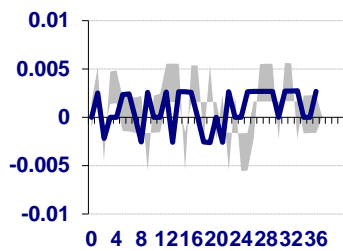
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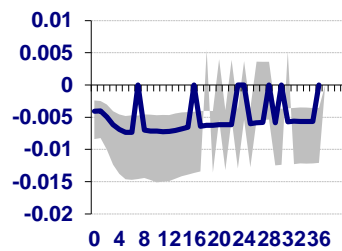
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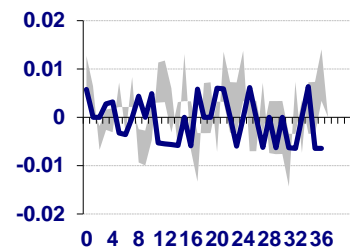
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Paraguay

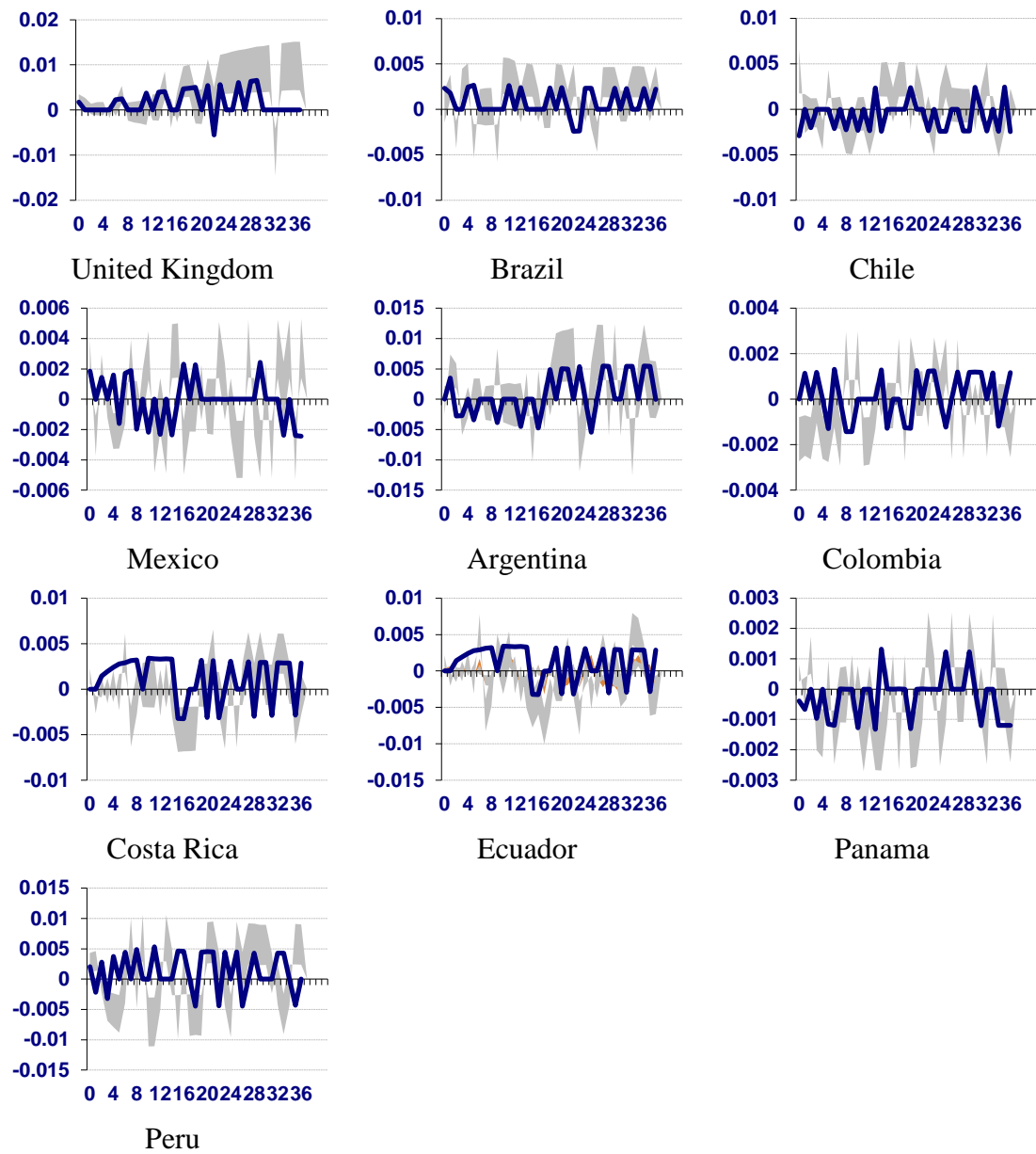


Peru



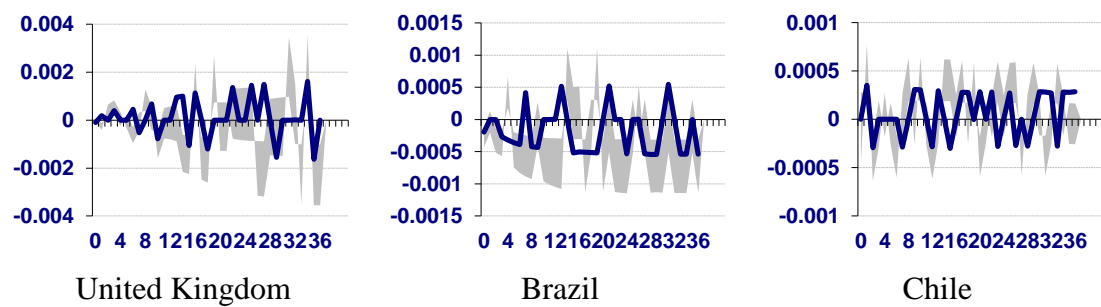
Uruguay

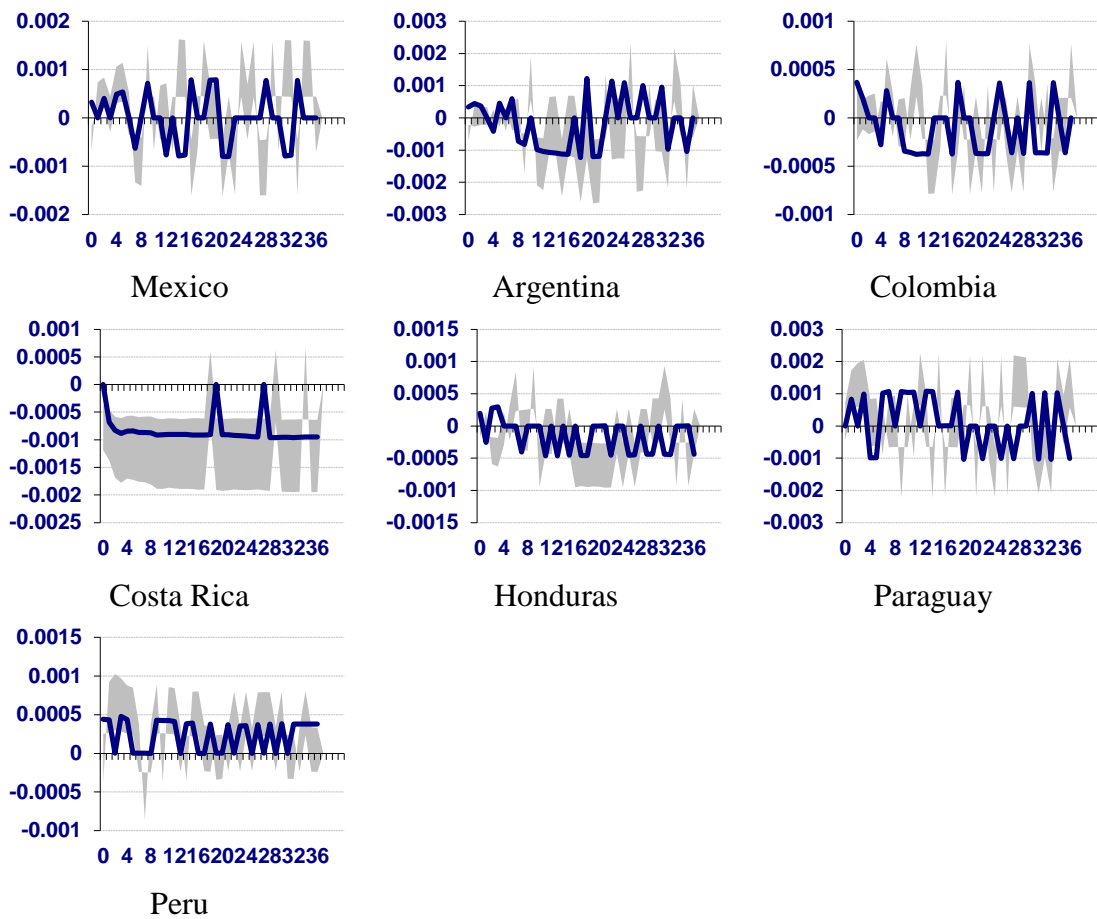
United Kingdom 1se Negative Shock to Monetary Policy Indicator: Stock Price Index
 Crisis Model, ■ Median estimates



United Kingdom 1se Negative Shock to Monetary Policy Indicator: Credit

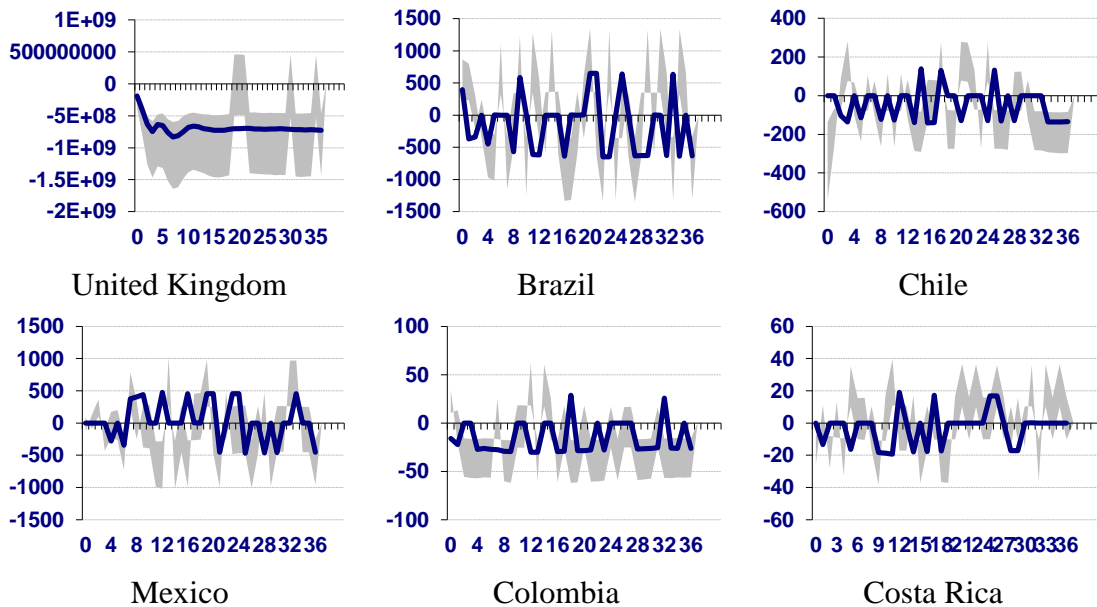
Crisis Model, ■ Median estimates

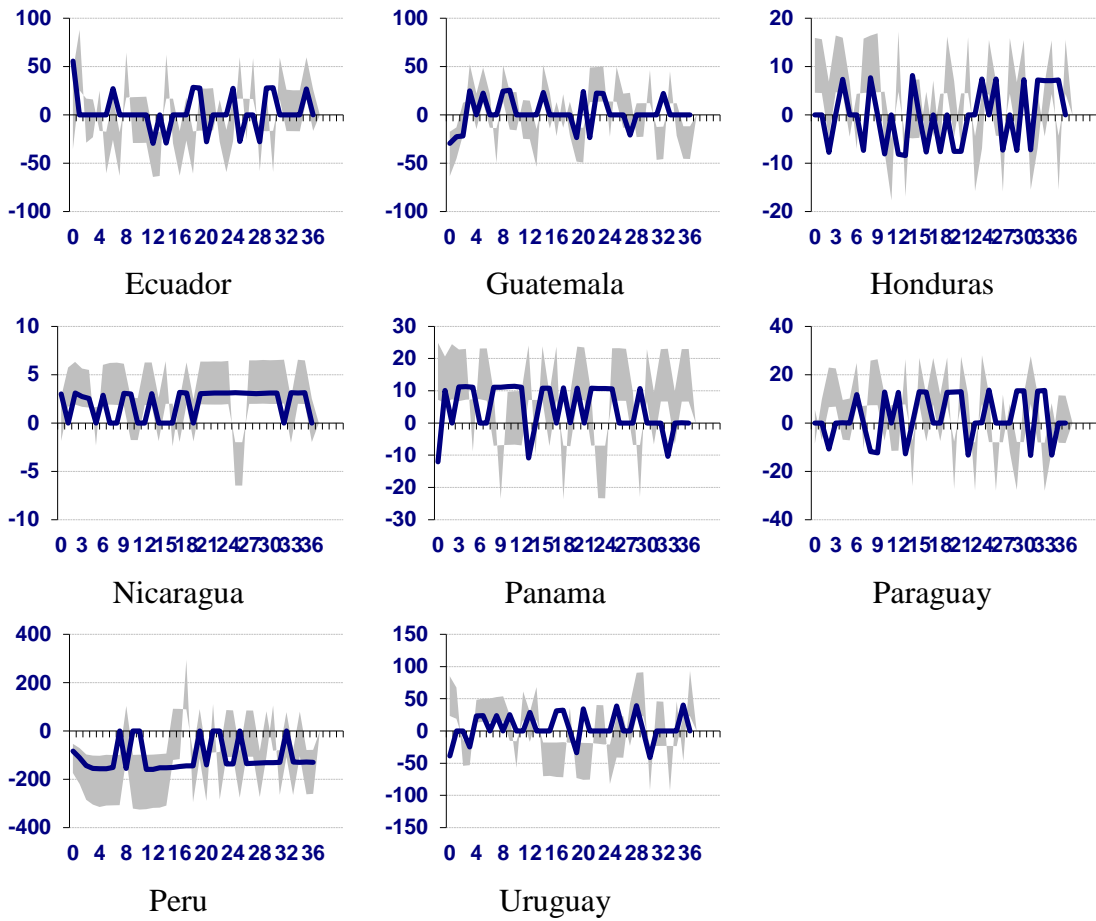




United Kingdom 1se Negative Shock to Monetary Policy Indicator: International Reserves

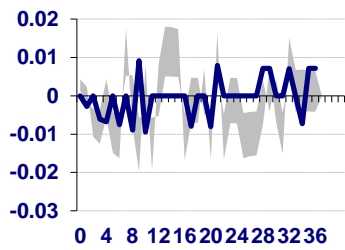
Crisis Model, ■ Median estimates





United Kingdom 1se Negative Shock to Monetary Policy Indicator: Oil

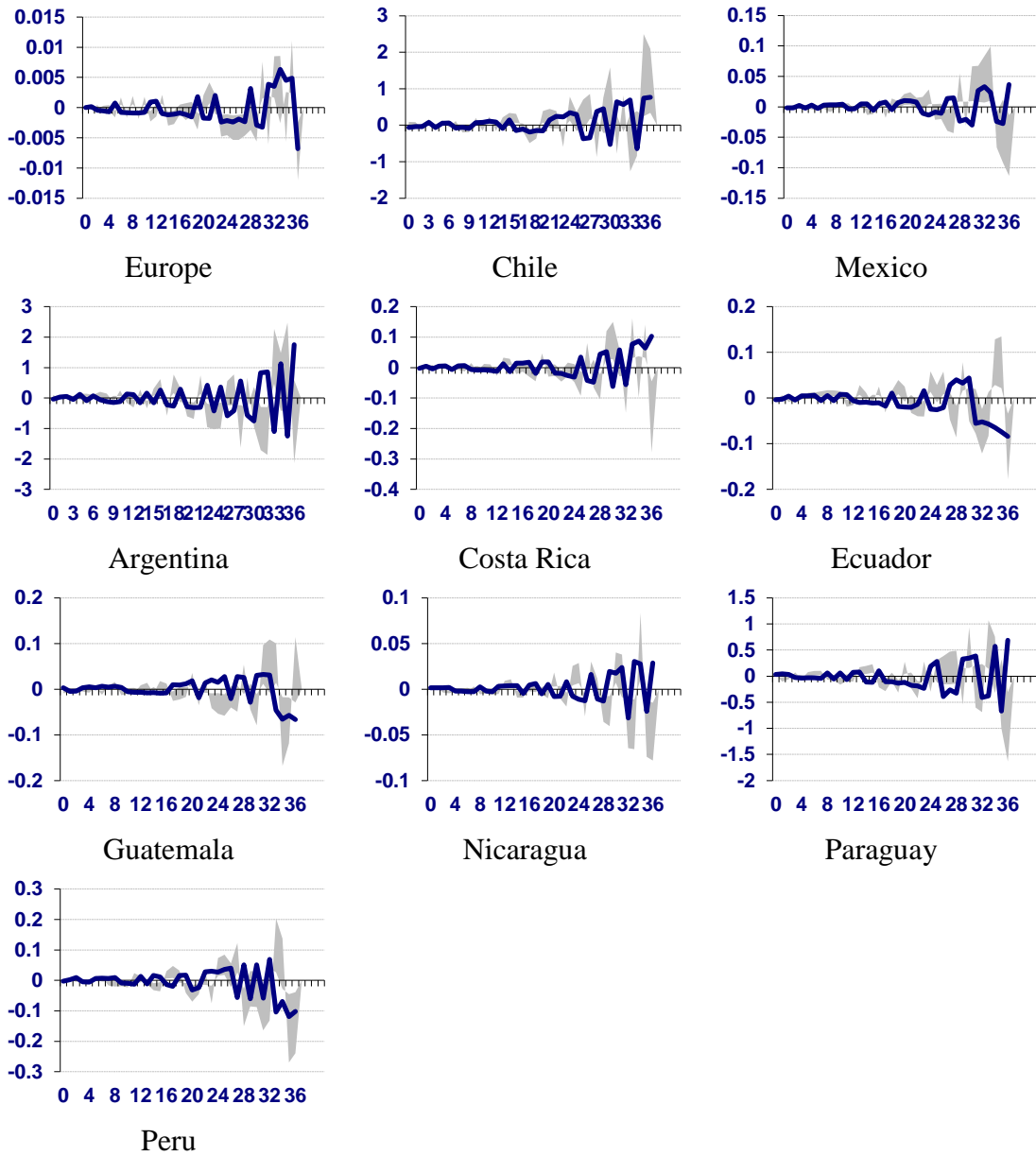
Crisis Model, ■ Median estimates



Oil Price

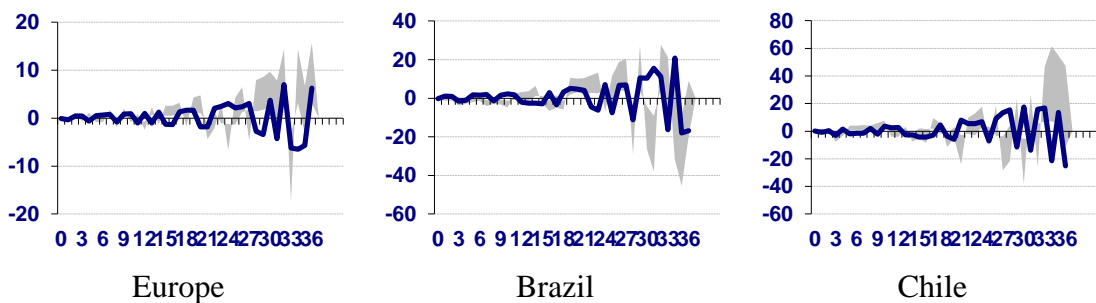
Europe 1se Negative Shock to Monetary Policy Indicator: GDP

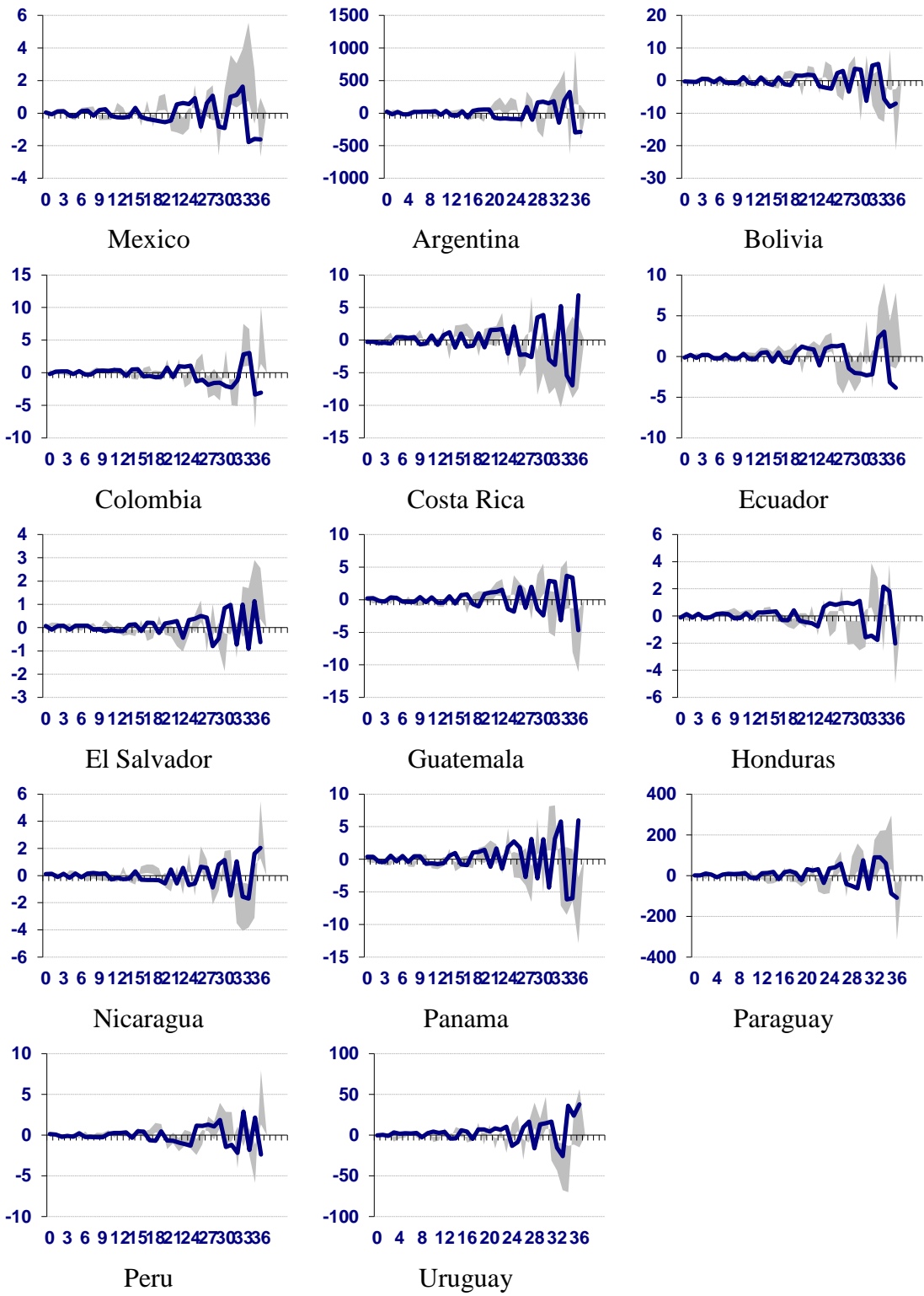
Pre-Crisis Model, ■ Median estimates



Europe 1se Negative Shock to Monetary Policy Indicator: CPI

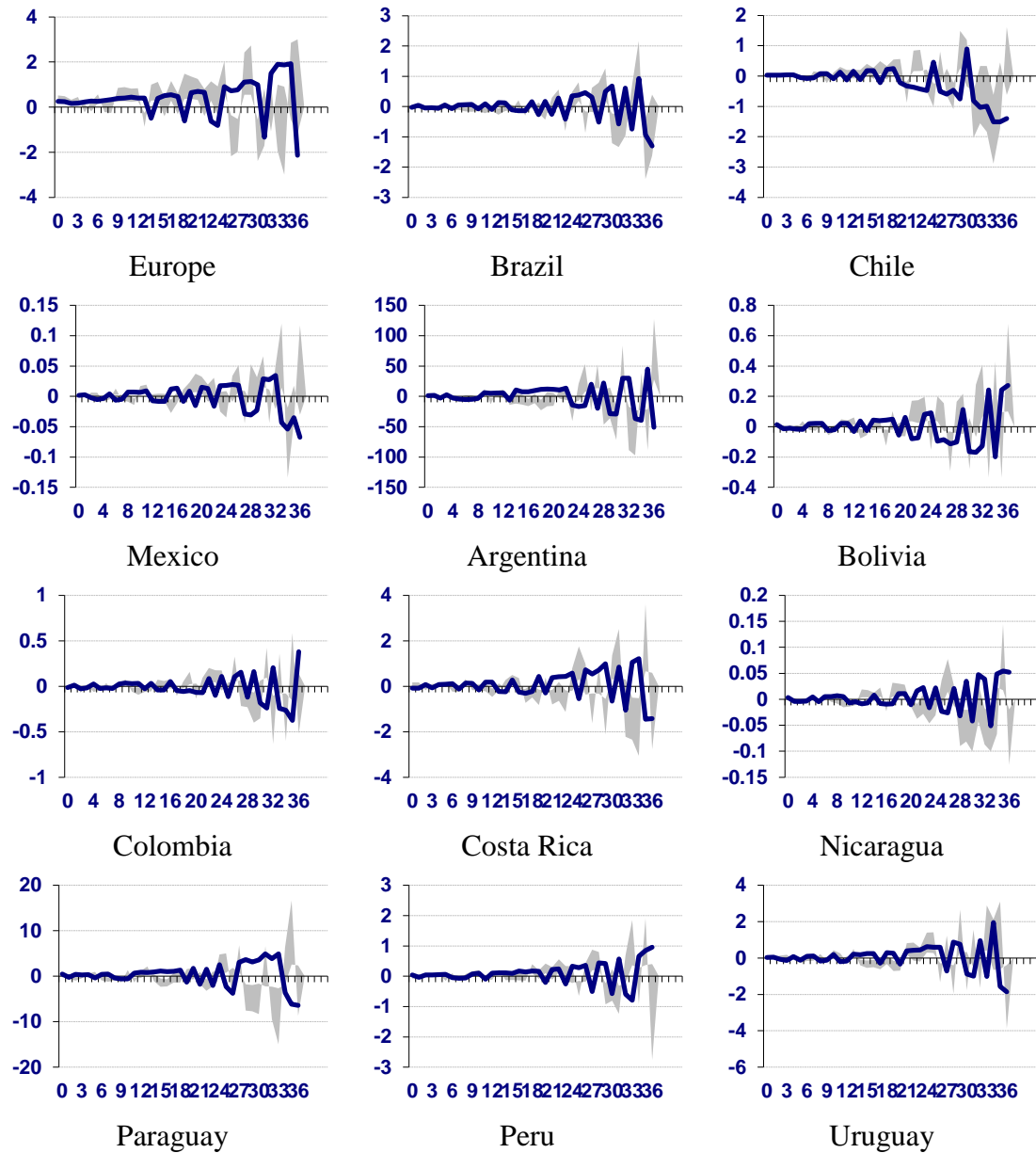
Pre-Crisis Model, ■ Median estimates





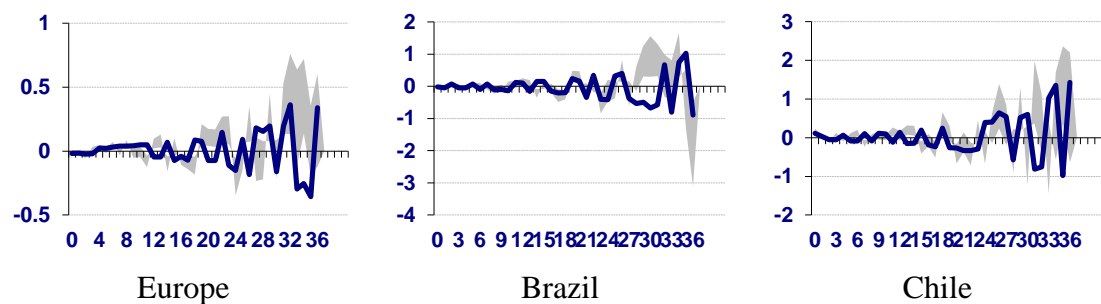
Europe 1se Negative Shock to Monetary Policy Indicator: Money Growth

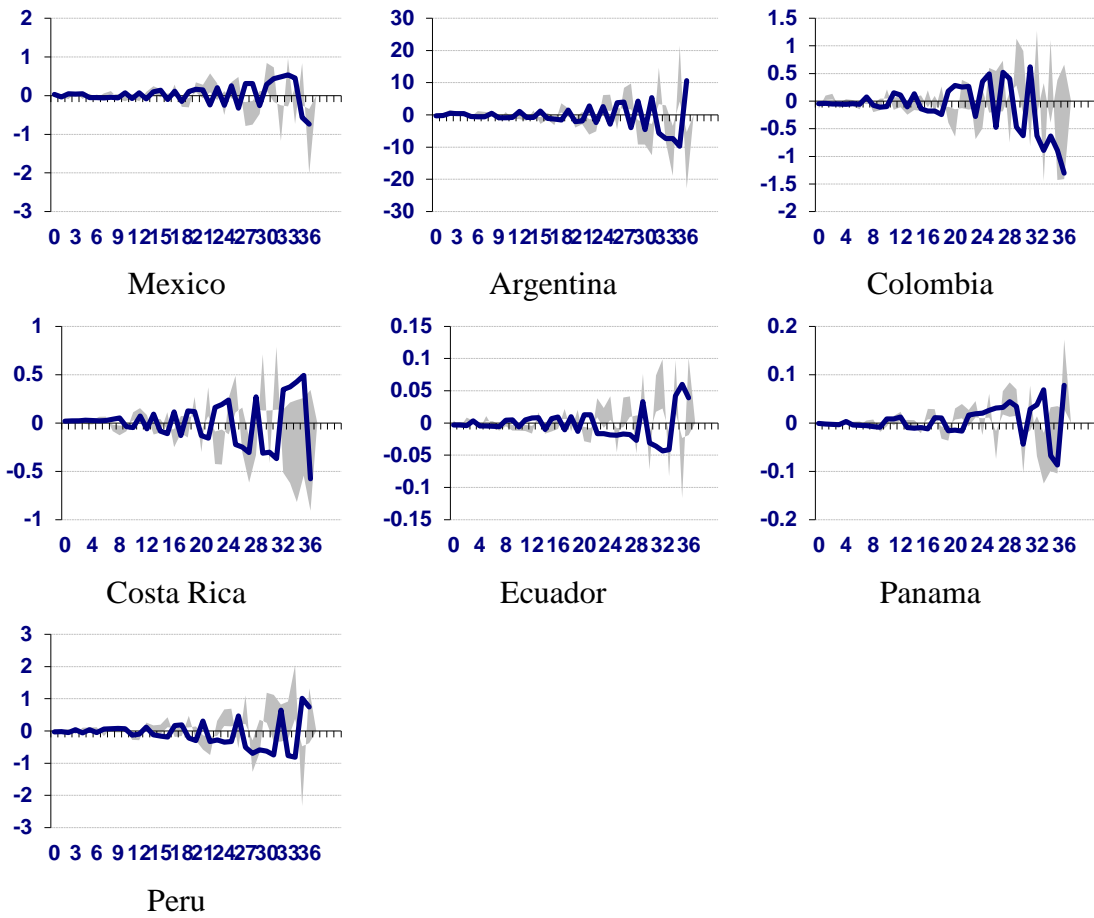
Pre-Crisis Model, ■ Median estimates



Europe 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

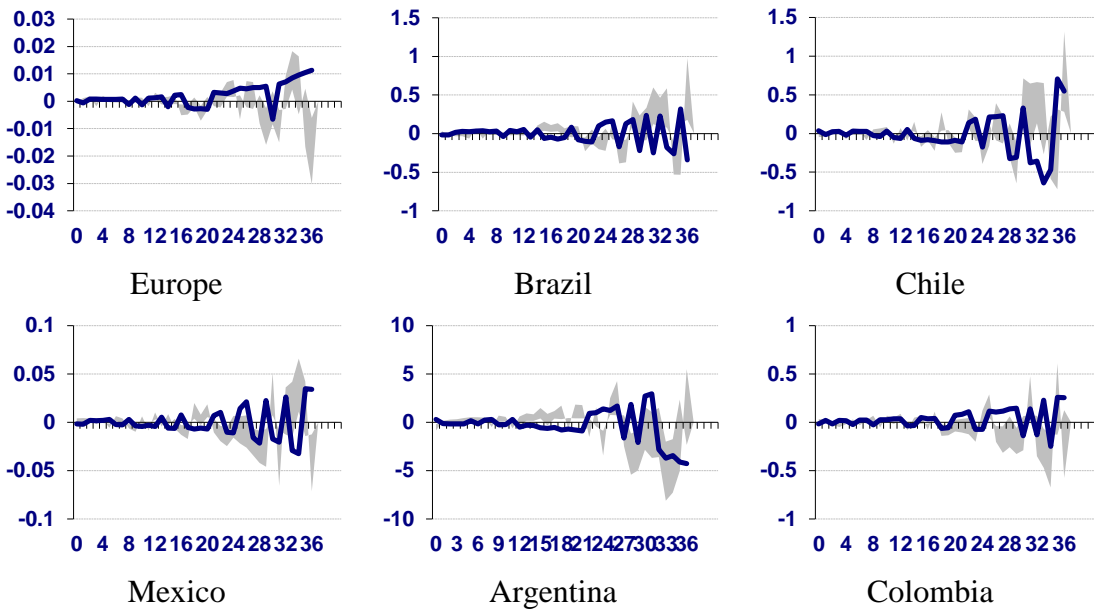
Pre-Crisis Model, ■ Median estimates

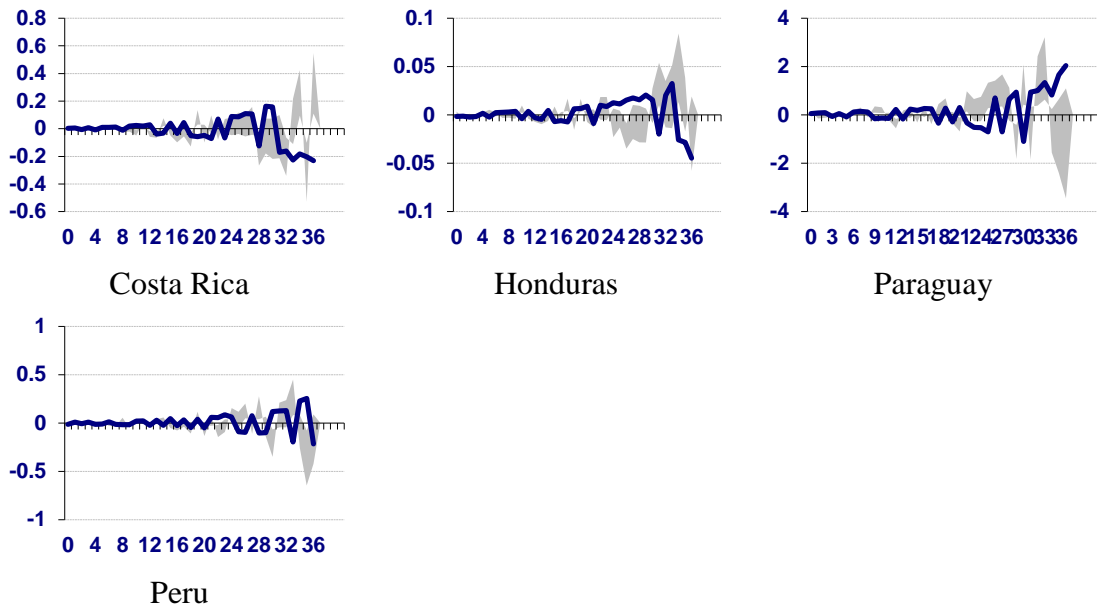




Europe Ise Negative Shock to Monetary Policy Indicator: Credit

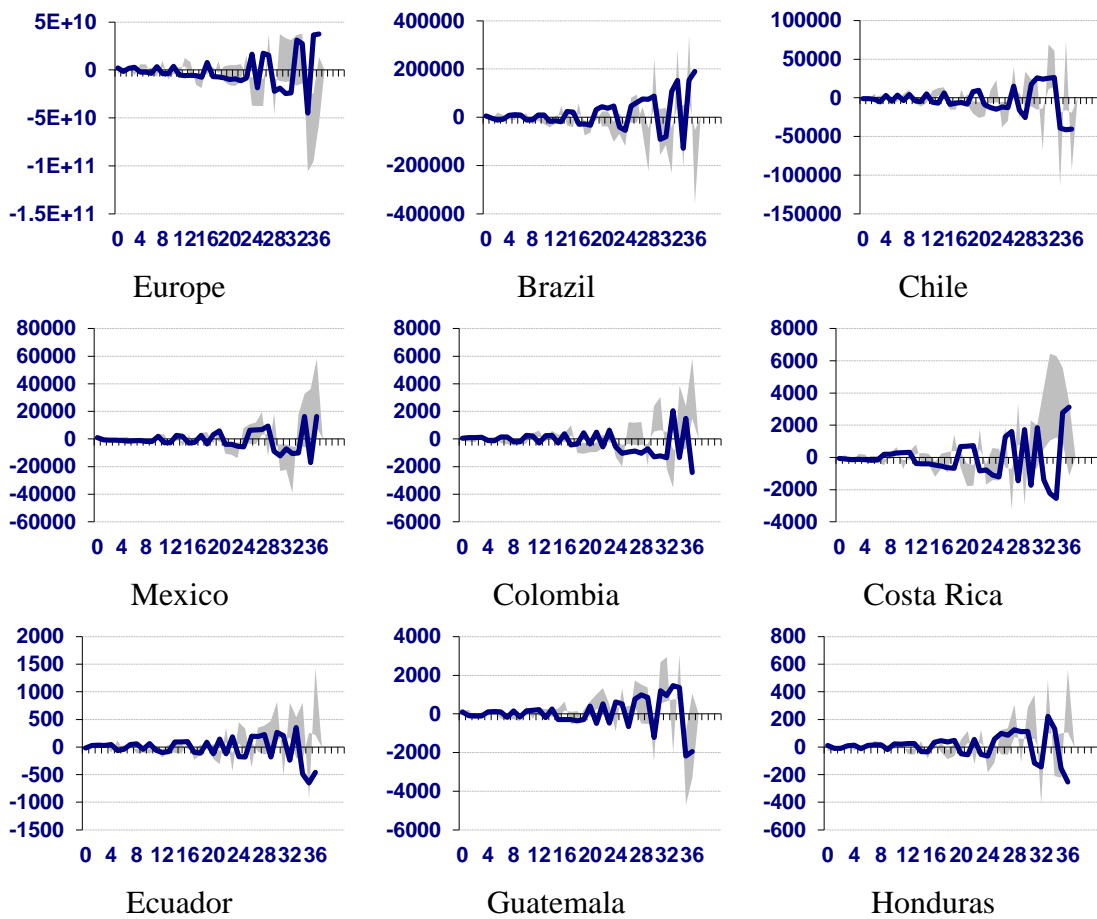
Pre-Crisis Model, ■ Median estimates

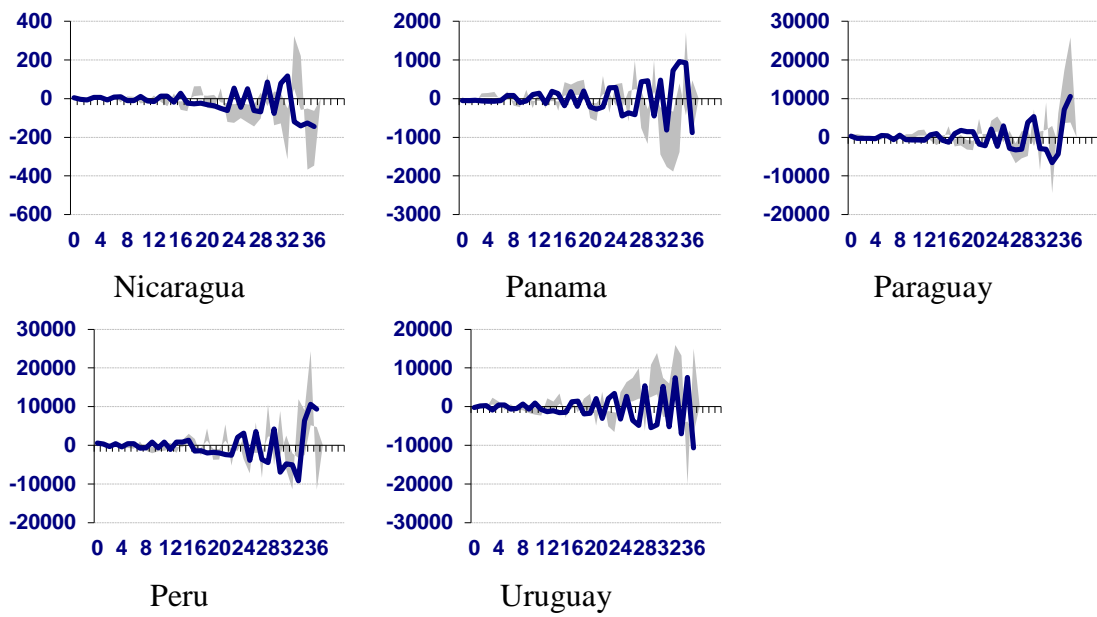




Europe 1se Negative Shock to Monetary Policy Indicator: International Reserves

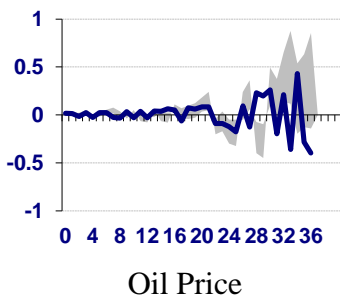
Pre-Crisis Model, ■ Median estimates





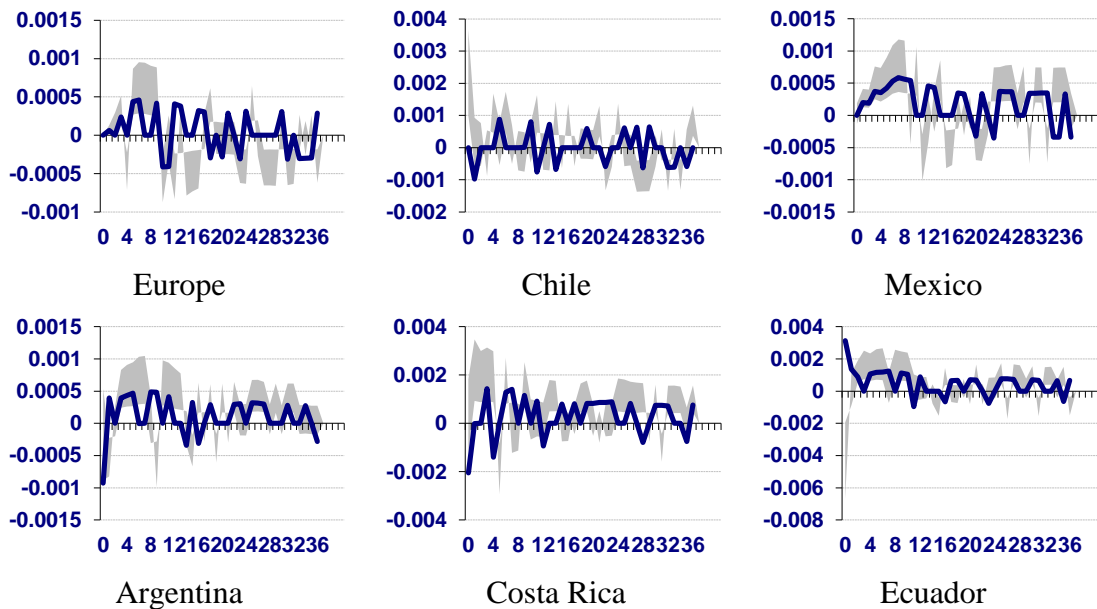
Europe 1se Negative Shock to Monetary Policy Indicator: Oil

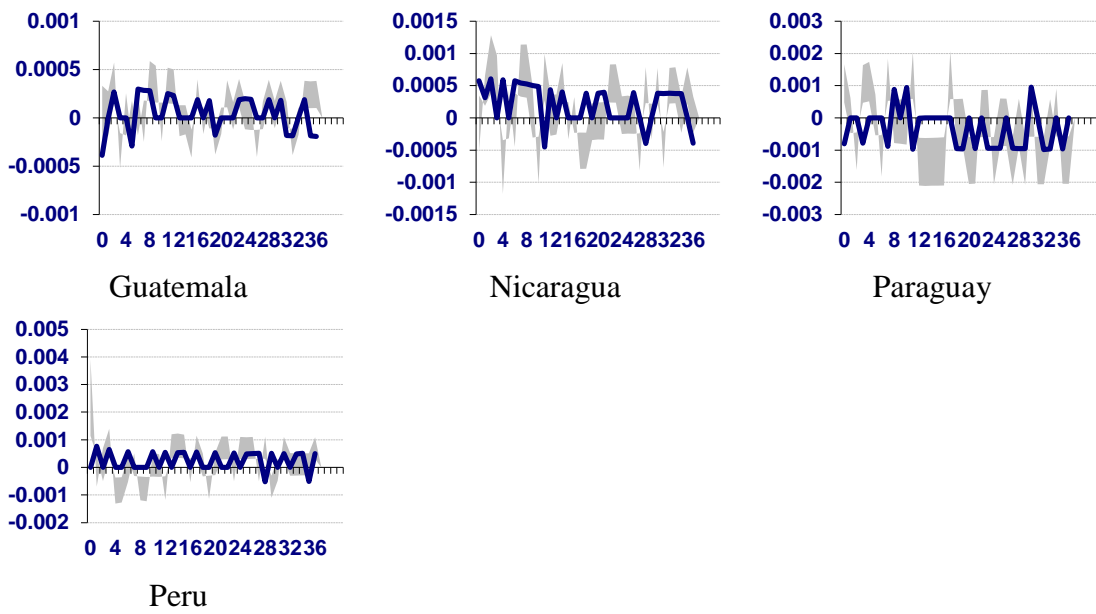
Pre-Crisis Model, ■ Median estimates



Europe 1se Negative Shock to Monetary Policy Indicator: GDP

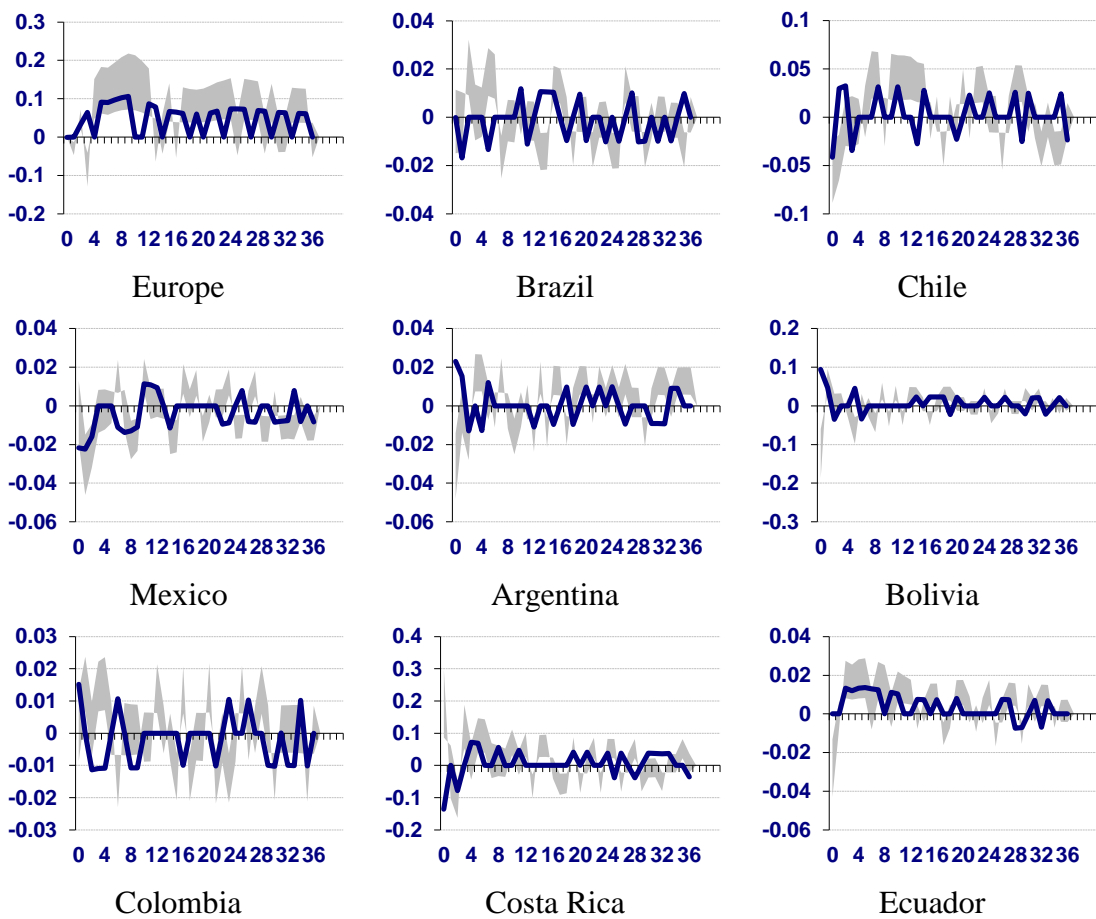
Crisis Model, ■ Median estimates

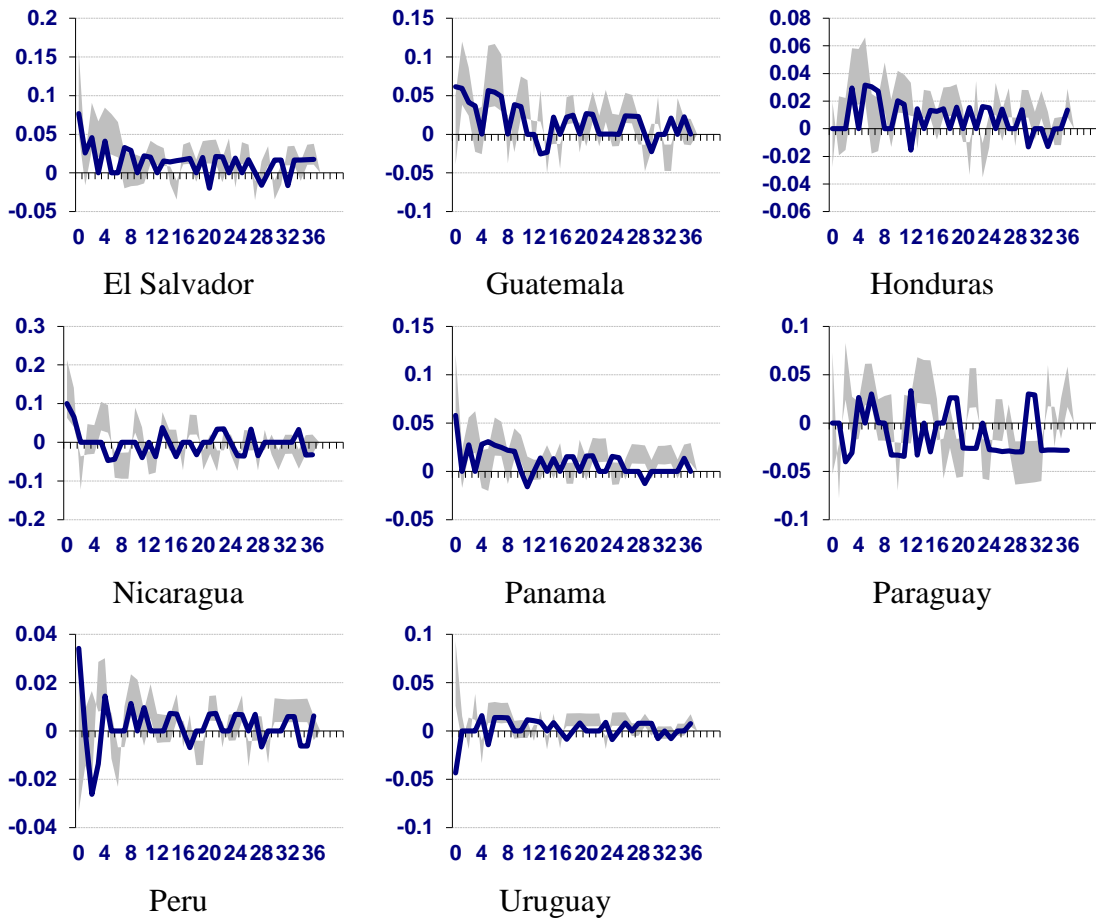




Europe 1se Negative Shock to Monetary Policy Indicator: CPI

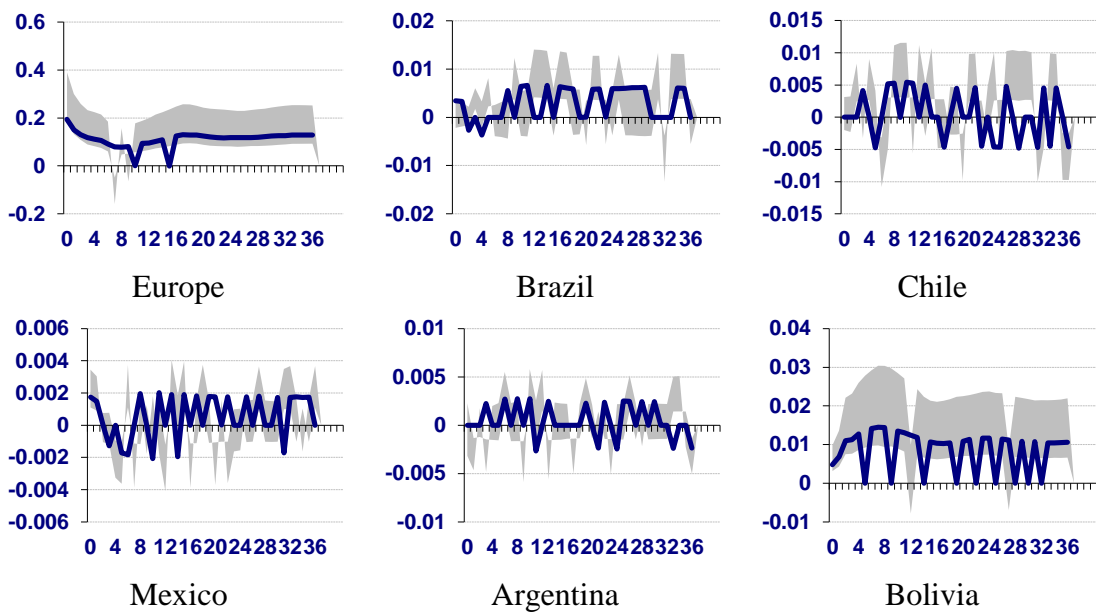
Crisis Model, — Median estimates

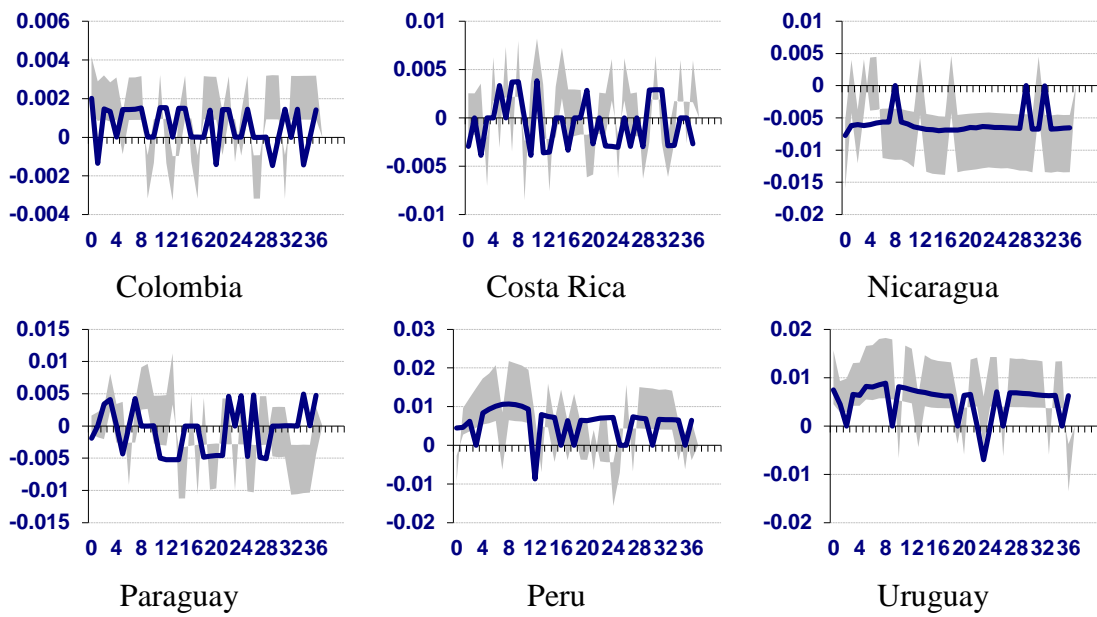




Europe Ise Negative Shock to Monetary Policy Indicator: Money Growth

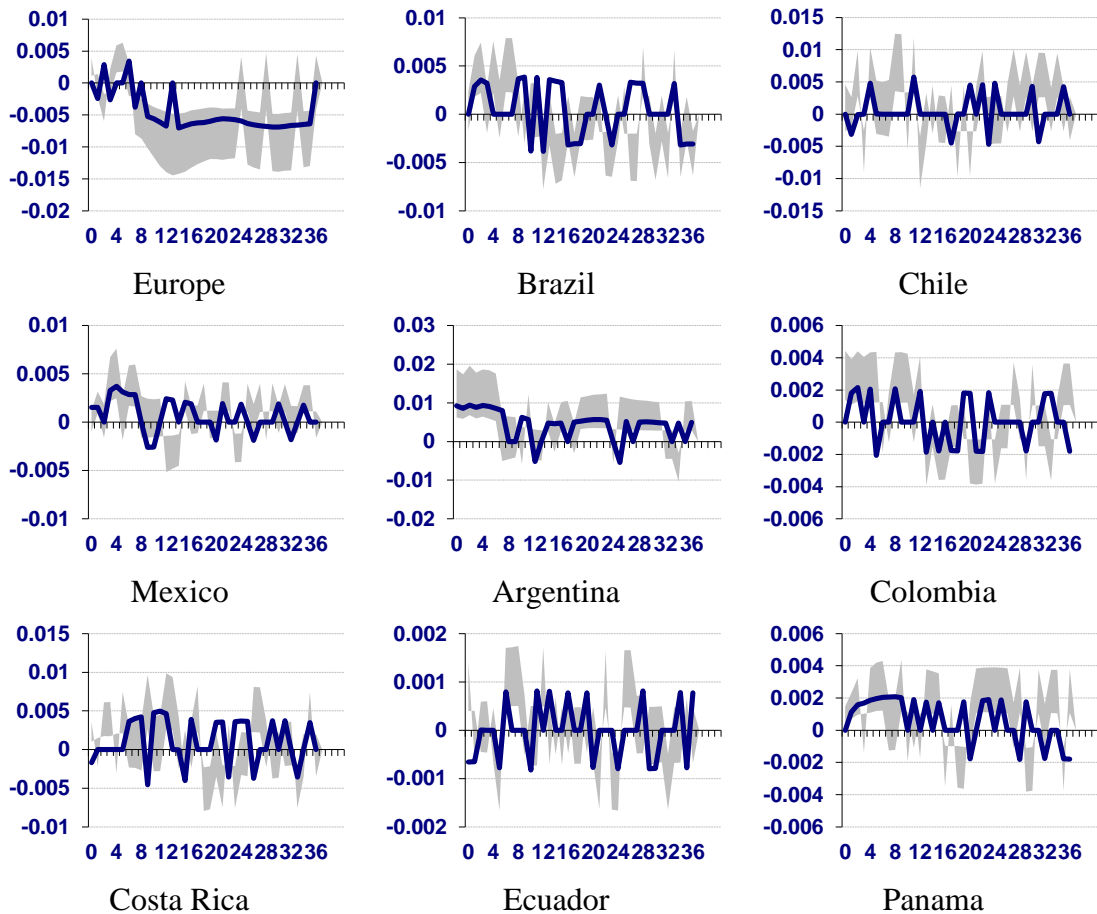
Crisis Model, ■ Median estimates

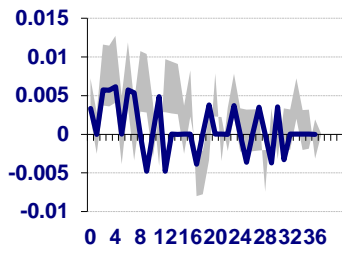




Europe 1se Negative Shock to Monetary Policy Indicator: Stock Price Index

Crisis Model, ■ Median estimates

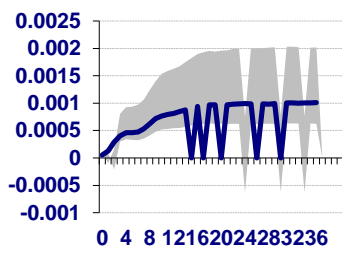




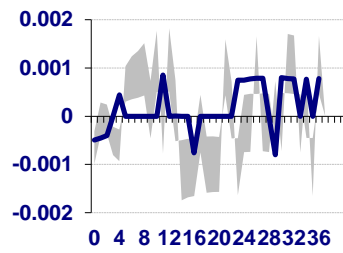
Peru

Europe 1se Negative Shock to Monetary Policy Indicator: Credit

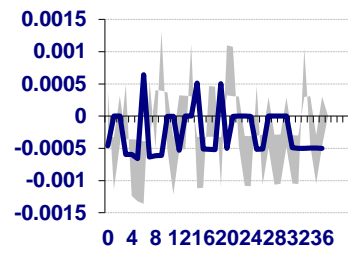
Crisis Model, - Median estimates



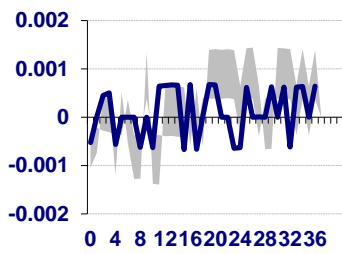
Europe



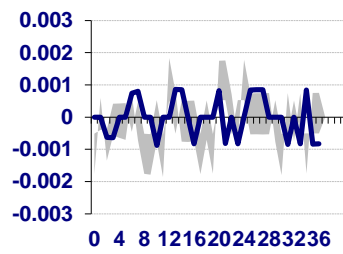
Brazil



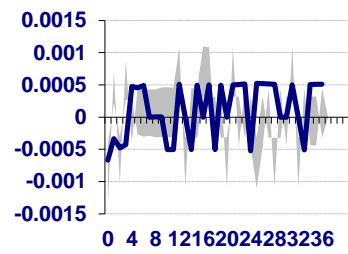
Chile



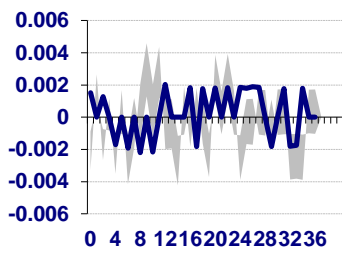
Mexico



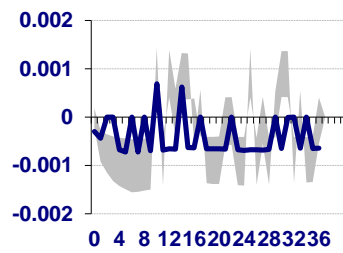
Argentina



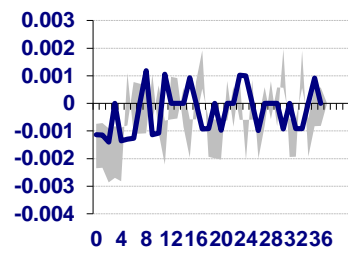
Colombia



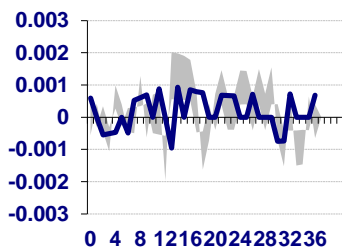
Costa Rica



Honduras



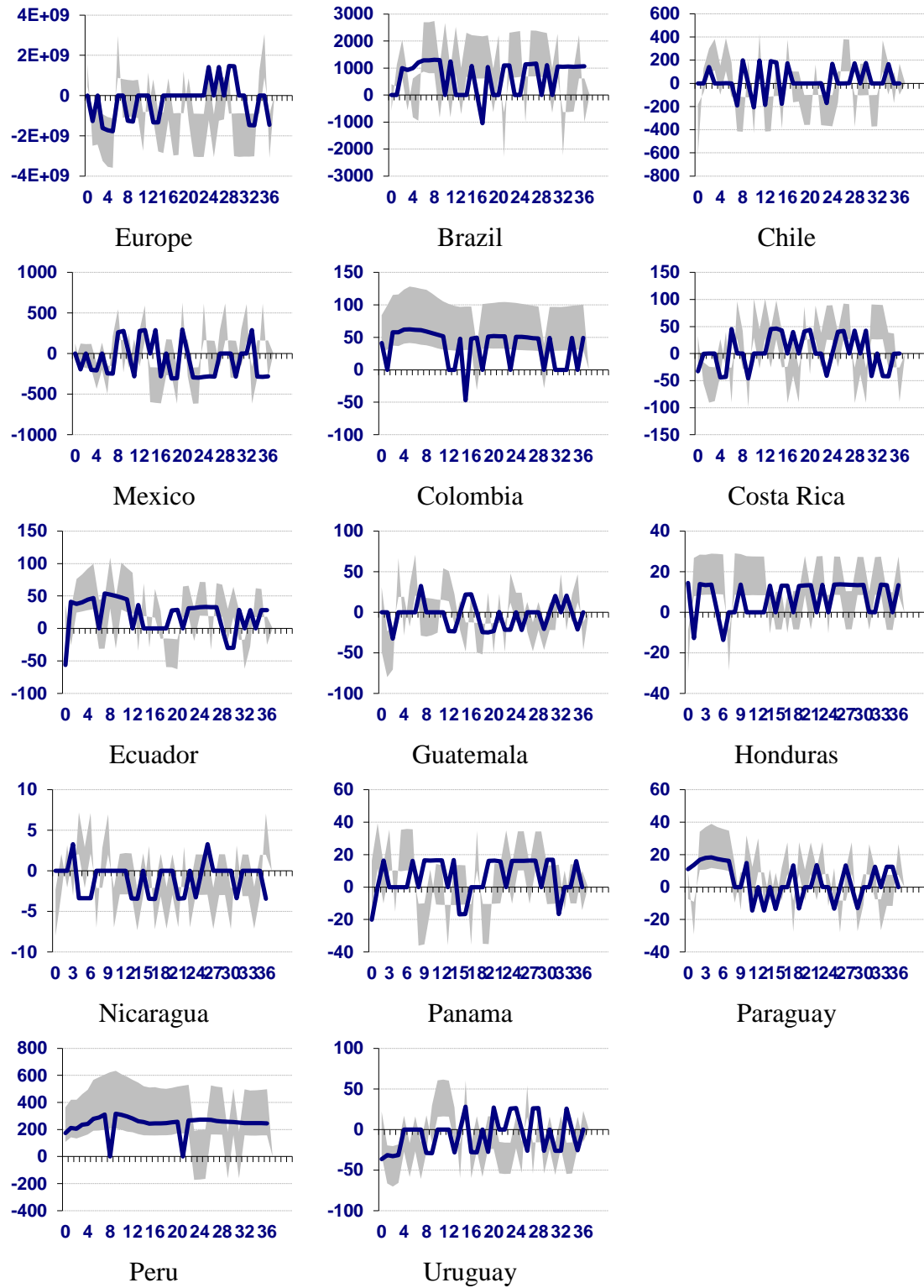
Paraguay



Peru

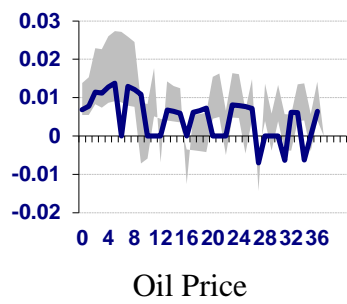
Europe 1se Negative Shock to Monetary Policy Indicator: International Reserves

Crisis Model, ■ Median estimates



Europe 1se Negative Shock to Monetary Policy Indicator: Oil

Crisis Model, ■ Median estimates



Appendix K: Electronic Files Index

File 1: Data

File 2: Results

- Weight matrix
- Unit root test
- VARX order and cointegration rank
- Rank test statistic
- Weak exogeneity test

Folder 3: Orthogonalized Impulse Responses

Folder 4: Orthogonalized Impulse Responses. Bootstrap results