

Los efectos de la crisis financiera en los países de Latinoamérica: una aplicación del modelo de proyección mundial

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Introducción

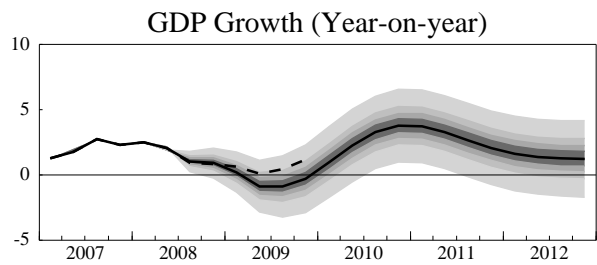
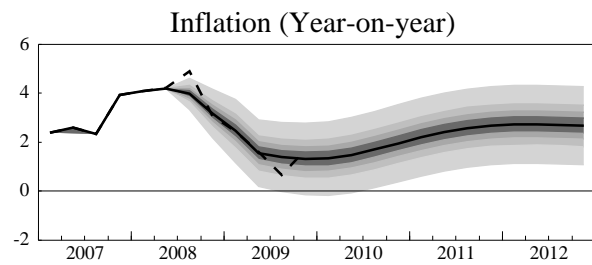
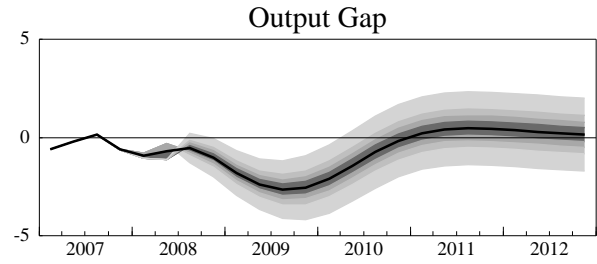
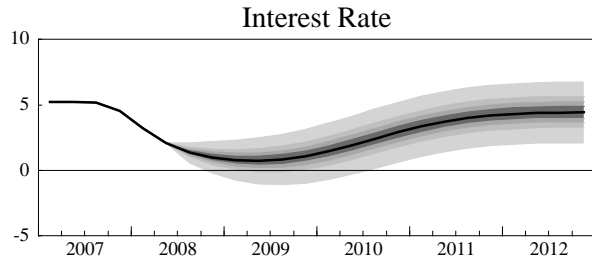
- ¿Cuáles son los efectos macroeconómicos probables de la crisis financiera internacional sobre Latinoamérica?
- Dependerá de los canales de transmisión a las economías de la región
- Es conveniente hacer explícitos los canales posibles para analizar rigurosamente su efecto
- En esta presentación se usará un modelo de proyección mundial elaborado por un equipo del FMI.
- En este se modela de manera estilizada las economías de Estados Unidos, el área Euro, Japón y LA5, una economía imaginaria formada con las cifras de los países de la región que practican política monetaria dentro de un marco de metas de inflación (Brasil, Chile, Colombia, México y Perú).

Resultados

- La desaceleración del nivel de actividad en la economía mundial llevará a una desaceleración de la actividad en la región.
- Esta desaceleración se verá acentuada por las restricciones de crédito que se observan en los Estados Unidos.
- Lo que hará que la recesión internacional sea más prolongada que las observadas en las últimas décadas.
- En Latinoamérica, el modelo anticipa una desaceleración fuerte del crecimiento, sin llegar a ser negativo, acompañado de reducciones en la inflación y tasas de interés
- También anticipa que la recuperación llevará temporalmente a niveles de crecimiento más alto del potencial, en la medida que se recupera parte del tiempo perdido.
- Todas las predicciones del modelo asume que se mantienen las políticas monetarias actuales y que se mantiene la confianza de los agentes económicos, evitando crisis financieras en la región.

United States GPM Conditional Forecast November 25

(Solid line=Conditional Forecast with 30%, 50%, 70% and 95% confidence bands; dashed line=October WEO)

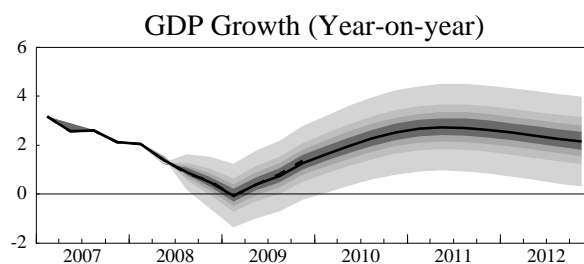
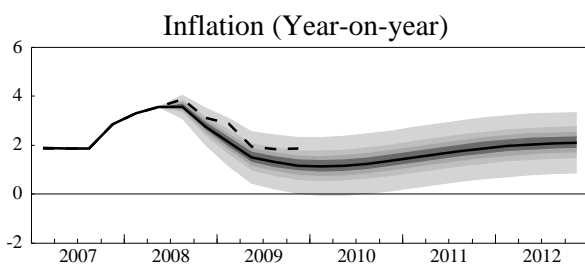
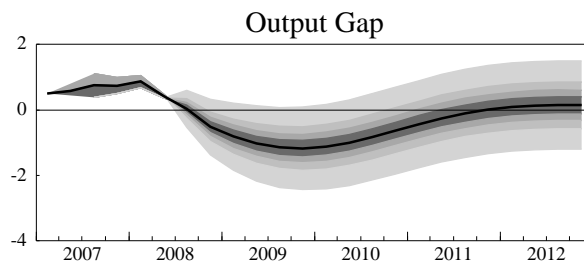
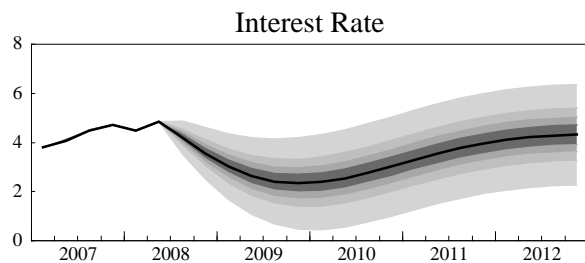


	Quarterly								Annual					
	2008				2009				2007	2008	2009	2010	2011	2012
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
Short-term Interest Rate	3.2	2.1	1.4	1.0	0.8	0.7	0.8	1.1	5.0	1.9	0.8	2.2	3.8	4.4
	[+0.6]	[+0.3]	[-1.4]	[-2.3]	[-1.0]	[-1.0]	[-1.3]	[-1.5]	[+0.0]	[+0.0]	[-1.1]	[-0.0]	[-0.5]	[-1.5]
Bank Lending Tightness	52.4	63.6	70.6	64.9	55.7	42.5	28.4	16.8	19.4	62.9	35.7	5.6	8.2	12.6
Real GDP Growth														
% y-o-y	2.5	2.0	1.0	0.9	0.2	-0.9	-0.9	-0.3	2.0	1.6	-0.5	2.6	2.9	1.4
	[+0.0]	[+0.0]	[+0.1]	[+0.1]	[-0.4]	[-1.0]	[-1.3]	[-1.5]	[+0.0]	[+0.0]	[-1.1]	[-0.0]	[-0.5]	[-1.5]
% q@ar	0.9	2.8	0.2	-0.7	-2.0	-1.1	0.2	1.7						
	[+0.0]	[-0.0]	[-0.1]	[-0.0]	[-2.0]	[-1.8]	[-1.4]	[-0.6]						
Potential GDP Growth														
% y-o-y	2.8	2.5	1.7	1.3	1.2	1.2	1.2	1.3	3.0	2.1	1.2	1.3	1.4	1.5
CPI Inflation														
% y-o-y	4.1	4.2	4.0	3.2	2.5	1.5	1.4	1.3	2.8	3.9	1.7	1.6	2.5	2.7
	[+0.0]	[-0.0]	[-0.9]	[+0.1]	[+0.0]	[-0.1]	[+0.7]	[-0.4]	[-0.0]	[-0.2]	[+0.1]	[-0.2]	[+0.5]	[+0.7]
% q@ar	4.3	4.9	1.8	1.7	1.4	1.3	1.2	1.3						
	[+0.0]	[-0.0]	[-3.7]	[+4.2]	[-0.4]	[-0.2]	[-0.6]	[-0.3]						
Real Effective Exchange Rate Depreciation (y-o-y)			13.9	9.4	5.1	1.8	-0.1	-0.9		11.6	1.5	-1.3	-0.7	-0.1
Output Gap	-0.9	-0.7	-0.5	-1.0	-1.8	-2.4	-2.7	-2.6	-0.3	-0.8	-2.4	-1.1	0.4	0.3
	[-0.4]	[-0.1]	[+0.1]	[+1.1]	[+1.4]	[+0.6]	[+0.6]	[+0.6]	[-0.4]	[-0.1]	[+0.1]	[+1.1]	[+1.4]	[+0.6]

Note: Conditional Forecast as a deviation from October WEO

Euro Area GPM Conditional Forecast November 25

(Solid line=Conditional Forecast with 30%, 50%, 70% and 95% confidence bands; dashed line=October WEO)

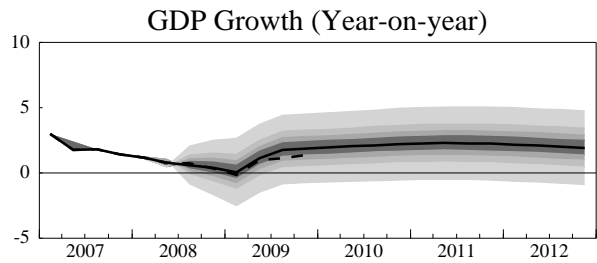
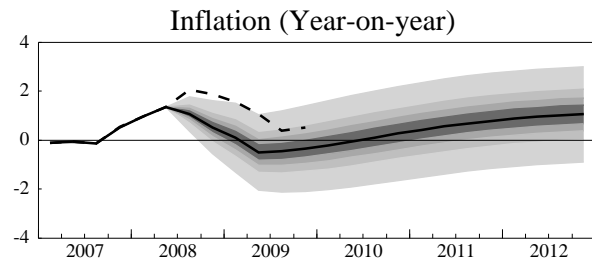
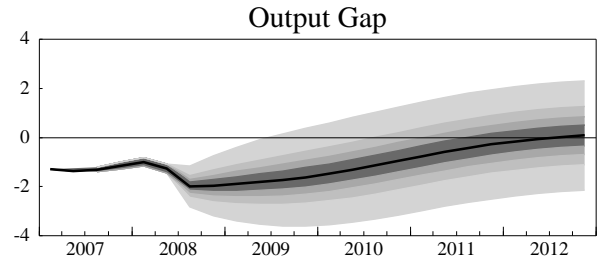
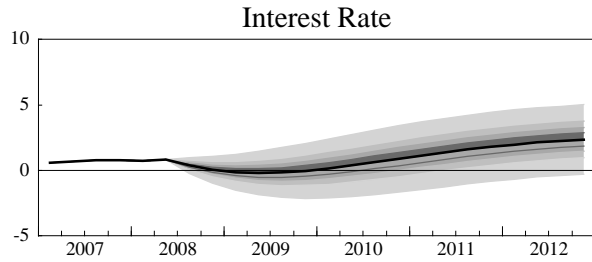


	Quarterly								Annual					
	2008				2009				2007	2008	2009	2010	2011	2012
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
Short-term Interest Rate	4.5	4.9	4.2	3.6	3.0	2.6	2.4	2.3	4.3	4.3	2.6	2.7	3.6	4.2
	[-0.0]	[-0.5]	[-1.8]	[-1.6]	[-0.7]	[-0.1]								
Real GDP Growth														
% y-o-y	2.0	1.4	0.9	0.5	-0.1	0.4	0.7	1.3	2.6	1.2	0.6	2.1	2.7	2.3
	[+0.0]	[-0.0]	[+0.1]	[-0.1]	[+0.0]	[-0.0]	[-0.1]	[-0.1]	[+0.0]	[-0.1]	[-0.0]	[+0.4]	[+0.7]	[+0.1]
% q@ar	2.6	-0.8	0.1	-0.3	0.7	1.1	1.4	1.8						
	[+0.0]	[-0.0]	[+0.0]	[-0.5]	[+0.5]	[-0.1]	[-0.3]	[-0.5]						
Potential GDP Growth														
% y-o-y	1.7	1.5	2.0	2.0	1.8	1.9	1.9	1.9	1.6	1.8	1.9	2.0	2.0	2.0
CPI Inflation														
% y-o-y	3.3	3.6	3.6	2.8	2.1	1.5	1.3	1.2	2.1	3.3	1.5	1.2	1.7	2.0
	[+0.0]	[-0.0]	[-0.3]	[-0.4]	[-0.8]	[-0.4]	[-0.5]	[-0.7]	[-0.0]	[-0.1]	[-0.6]	[-0.7]	[-0.2]	[+0.1]
% q@ar	3.9	3.7	1.8	1.6	1.3	1.2	1.1	1.1						
	[+1.4]	[-2.9]	[+0.3]	[-0.4]	[-0.2]	[-1.6]	[-0.1]	[-1.0]						
Real Effective Exchange Rate Depreciation (y-o-y)			-8.8	-5.2	-4.0	-0.7	0.5	0.7		-7.0	-0.8	0.8	0.6	0.2
Output Gap	0.9	0.4	0.0	-0.5	-0.8	-1.0	-1.2	-1.2	0.6	0.2	-1.0	-0.9	-0.2	0.1
	[+0.2]	[+0.3]	[+0.1]	[+0.2]	[+0.8]	[+0.7]	[+0.7]	[+0.7]	[+0.2]	[+0.3]	[+0.1]	[+0.2]	[+0.8]	[+0.7]

Note: Conditional Forecast as a deviation from October WEO

Japan GPM Conditional Forecast November 25

(Solid line=Conditional Forecast with 30%, 50%, 70% and 95% confidence bands; dashed line=October WEO)



	Quarterly								Annual					
	2008				2009				2007	2008	2009	2010	2011	2012
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
Short-term Interest Rate	0.7	0.8	0.4	0.0	-0.1	-0.2	-0.2	-0.0	0.7	0.5	-0.1	0.5	1.5	2.2
	[+0.1]	[-0.2]	[-1.1]	[-0.6]	[+0.3]	[+0.9]								
Real GDP Growth														
% y-o-y	1.2	0.8	0.6	0.4	0.1	1.1	1.8	1.9	2.0	0.7	1.2	2.1	2.3	2.0
	[-0.0]	[+0.0]	[-0.2]	[+0.0]	[+0.2]	[+0.2]	[+0.6]	[+0.5]	[-0.1]	[-0.0]	[+0.4]	[+0.3]	[+0.2]	[+0.1]
% q@ar	2.7	-3.0	-0.7	1.6	1.8	1.8	1.9	2.0						
	[-0.0]	[+0.0]	[-1.6]	[+0.9]	[+1.0]	[+0.5]	[+0.3]	[+0.3]						
Potential GDP Growth														
% y-o-y	0.9	0.6	1.2	1.1	0.8	1.5	1.5	1.5	1.5	0.9	1.3	1.5	1.5	1.6
CPI Inflation														
% y-o-y	1.0	1.4	1.1	0.5	0.1	-0.5	-0.5	-0.3	0.1	1.0	-0.3	0.0	0.6	1.0
	[-0.0]	[-0.0]	[-1.0]	[-1.3]	[-1.5]	[-1.6]	[-0.8]	[-0.9]	[+0.1]	[-0.6]	[-1.2]	[-1.2]	[-0.9]	[-0.5]
% q@ar	1.2	2.0	-0.5	-0.6	-0.5	-0.4	-0.3	-0.1						
	[+0.0]	[-0.0]	[-3.9]	[-1.4]	[-0.5]	[-0.4]	[-1.1]	[-1.5]						
Real Effective Exchange Rate Depreciation (y-o-y)			-3.1	-2.6	1.9	-0.2	-0.9	-0.9		-2.9	-0.0	-0.4	-0.3	-0.4
Output Gap	-1.0	-1.3	-2.0	-2.0	-1.9	-1.8	-1.7	-1.6	-1.3	-1.5	-1.8	-1.2	-0.5	-0.0
	[-1.5]	[-0.9]	[-0.4]	[-0.1]	[+0.1]	[+0.2]								

Note: Conditional Forecast as a deviation from October WEO

- Función de reacción de políticas

Regla de Taylor (Cuadro 1).

Forma reducida de la función de reacción (Cuadro 2).

Mecanismos de transmisión

Inflación: curva de Phillips dinámica (Cuadro 3).

Brecha de producto: curva dinámica IS (Cuadro 5).

Crecimiento potencial del producto (Cuadro 4).

Desempleo: Ley de Okun (Cuadro 7).

Vínculos externos

Inflación externa influye en la inflación doméstica (en la curva de Phillips) (Cuadro 3).

Brechas de producto externa y tipo de cambio real afectan el nivel de actividad interno (curva IS) (Cuadro 5).

Condiciones crediticias afectan nivel de actividad en Estados Unidos (Cuadro 6).

Paridad de las tasas de interés (Cuadro 8).

Política Monetaria

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- La política monetaria juega un papel importante en la evolución de las economías de la región, por lo que es importante caracterizarla para analizar los efectos del entorno internacional.
- Las economías de la región han seguido un marco monetario que se puede caracterizar como de metas de inflación...
- ... reaccionando a desviaciones de los pronósticos de inflación respecto de la meta, teniendo en cuenta el impacto de la política monetaria sobre el nivel de actividad, y suavizando los cambios en las tasas de interés, probablemente para evitar situaciones de estrés en el sistema financiero.
- El interés notorio sobre las fluctuaciones del tipo de cambio se puede explicar, en parte, por el impacto del tipo de cambio sobre el nivel de precios..

Table 1: Regla de Taylor

$$I_{i,t} = (1 - \gamma_{i,1}) [\bar{R}_{i,t} + \pi_{4i,t+3} + \gamma_{i,2}(\pi_{4i,t+3} - \pi_i^{tar}) + \gamma_{i,4}y_{i,t}] + \gamma_{i,1}I_{i,t-1} + \varepsilon_{i,t}^I$$

	Brazil	Chile	Colombia	Mexico	Peru	LA5	EU	JA	US
$\gamma_{i,1}$	0.774	0.740	0.695	0.725	0.771	0.626	0.686	0.750	0.711
$\gamma_{i,2}$	1.149	0.923	1.005	1.064	1.133	1.250	1.306	1.058	0.910
$\gamma_{i,4}$	0.150	0.171	0.183	0.143	0.178	0.191	0.201	0.169	0.205
π_i^{tar}	6.289	3.047	4.256	4.020	2.179	4.155	1.900	1.000	2.500
$\varepsilon_{i,t}^I$ (S.E)	1.251	0.455	0.170	1.367	0.076	0.345	0.063	0.055	0.058
Memo items:									
Neutral $I_{i,t}$	10.423	6.527	6.415	6.271	5.660	9.006	3.884	2.379	4.229

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

Por resaltar

- Desviación de la inflación esperada respecto de la objetivo $\gamma_{i,2}(\pi_{4i,t+3} - \pi_i^{tar})$
- Inercia ($\gamma_{i,1}I_{i,t-1}$)
- Brecha de producto ($\gamma_{i,4}y_{i,t}$)
- Componente discrecional de la política monetaria ($\varepsilon_{i,t}^I$)

Figure 1: Parámetros estimados de la regla de Taylor

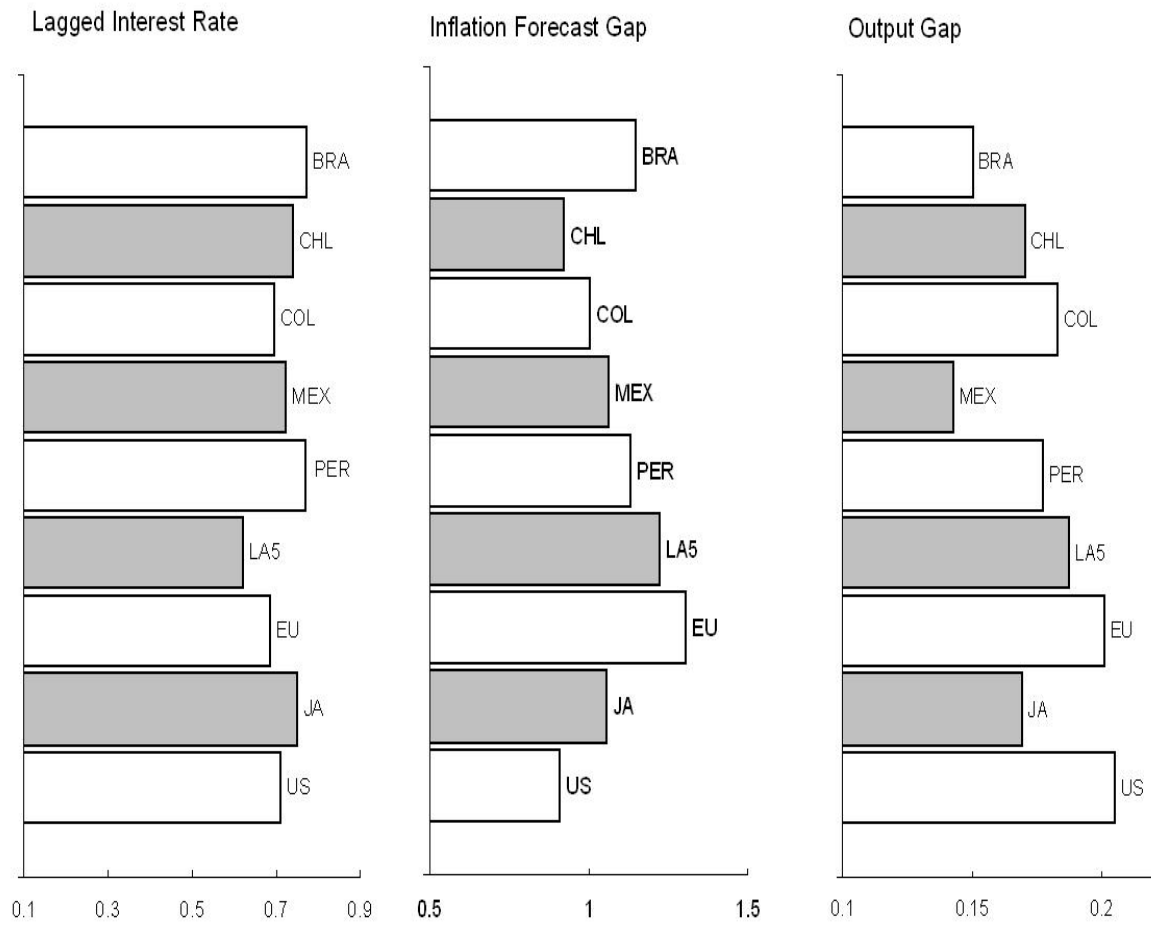
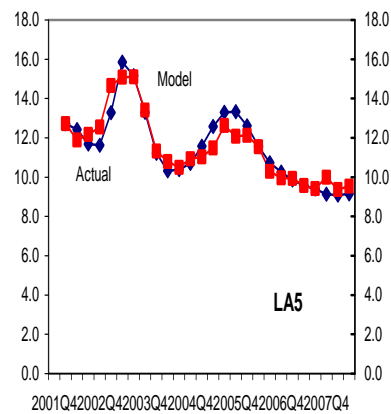
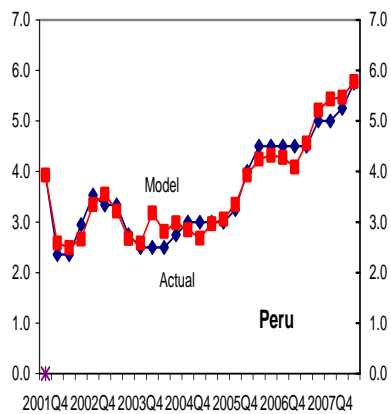
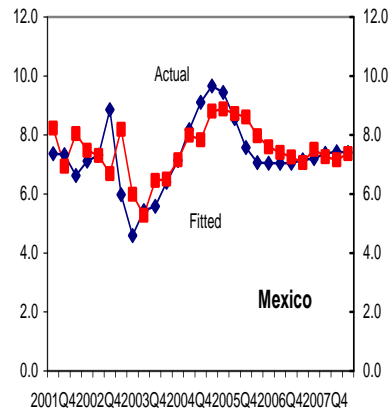
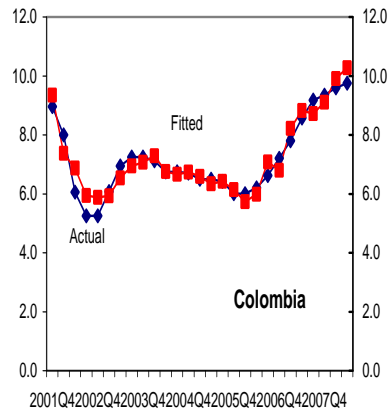
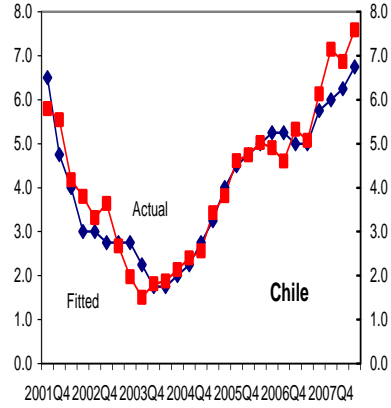
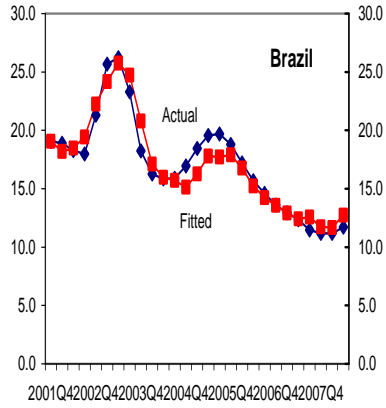


Table 2: Forma reducida de la función de reacción de política monetaria.

$$I_{i,t} = function(\varepsilon_{i,t}^I, \varepsilon_{i,t}^\pi, \varepsilon_{i,t}^y, \varepsilon_{i,t}^{\bar{z}}, \varepsilon_{i,t}^{g\bar{Y}}, \varepsilon_{i,t}^{\bar{Y}}, \varepsilon_{US,t}^{BLT}, \varepsilon_{i,t}^u, \varepsilon_{i,t}^{\bar{U}}, \varepsilon_{i,t}^{g\bar{U}}, \varepsilon_{i,t}^{Z-Z^e}, \varepsilon_{i,t}^{\bar{R}})$$

for each i in the model

Figure 2: Tasas de interés de política
Policy Interest Rates



Dinámica Inflacionaria

- Los shocks de oferta jugaron un papel muy importante en la evolución de la inflación en los países de la región en la primera mitad del año.
- Candidatos a estos shocks de oferta son claramente la evolución internacional de los precios de la energía y los alimentos, ...
- ...que impactan a la región porque encarecieron los productos altamente valorados en las canastas familiares, a la vez que aumentaron los ingresos de moneda extranjera generando presiones a la apreciación de las monedas domésticas.
- caída de los precios internacionales debieran dar lugar al efecto contrario: menores precios de los productos importados, pero efecto inflacionario de la depreciación cambiaria.
- a lo que se tendrá que analizar el efecto de la mayor persistencia inflacionaria en los países de la región

Table 3: Curva de Phillips

$$\pi_{i,t} = \lambda_{i,1}\pi_{i,t+4} + (1 - \lambda_{i,1})\pi_{i,t-1} + \lambda_{i,2}y_{i,t-1} + \lambda_{i,3} \sum_j \omega_{i,j,3} \Delta Z_{i,j,t} - \varepsilon_{i,t}^{\pi}$$

where:

$$\pi_{i,t-1} = (\pi_{i,t} + \pi_{i,t-1} + \pi_{i,t-2} + \pi_{i,t-3})/4$$

$$\Delta Z_{i,t} = 100\Delta \log(S_{i,t}) - (\pi_{i,t} - \pi_{us,t})/4$$

$$\log(CPI_{i,t}) = \log(CPI_{i,t-1}) - \pi_{i,t}/400$$

	Brazil	Chile	Colombia	Mexico	Peru	LA5	EU	JA	US
$\lambda_{i,1}$	0.589	0.593	0.397	0.532	0.618	0.561	0.787	0.897	0.848
$\lambda_{i,2}$	0.198	0.181	0.158	0.255	0.196	0.243	0.222	0.184	0.180
$\lambda_{i,3}$	0.276	0.207	0.098	0.094	0.286	0.164	0.106	0.076	0.071
$\omega_{i,EU,3}$	0.512	0.474	0.284	0.093	0.403	0.202	0.000	0.434	0.640
$\omega_{i,JA,3}$	0.076	0.173	0.054	0.038	0.087	0.054	0.297	0.000	0.313
$\omega_{i,US,3}$	0.411	0.354	0.662	0.869	0.510	0.744	0.637	0.000	0.535
$\omega_{EU,i,3}$	0.082	0.028	0.012	0.030	0.004	0.144	0.000	0.281	0.637
$\omega_{JA,i,3}$	0.030	0.033	0.002	0.019	0.006	0.085	0.435	0.000	0.535
$\omega_{US,i,3}$	0.047	0.014	0.018	0.274	0.008	0.319	0.640	0.313	0.000
$\varepsilon_{i,t}^{\pi}$ (S.E)	15.241	5.913	2.525	1.665	4.087	5.846	1.153	1.829	1.571
Memo items:									
π_i^{tar}	6.289	3.047	4.256	4.020	2.179	4.155	1.900	1.000	2.500
Official π_i^{tar} (l.b.)	2.500	2.000	3.500	3.000	1.000				
Official π_i^{tar} (u.b.)	6.500	4.000	4.500	3.000	3.000				

The weights ($\omega_{i,j,3}$) are the ratio of the sum of imports of country i from country j to imports from all the countries in the model.

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

• *Por resaltar*

- componentes dinámicos (pasado y futuro) ($\lambda_{i,1}\pi_{i,t+4} + (1 - \lambda_{i,1})\pi_{i,t-1}$)
- Brecha de producto ($\lambda_{i,2}y_{i,t-1}$)
- Passthrough cambiario ($\lambda_{i,3} \sum_j \omega_{i,j,3} \Delta Z_{i,j,t}$)
- Shock de oferta ($\varepsilon_{i,t}^{\pi}$)

Figure 3: Parámetros estimados de la curva de Phillips

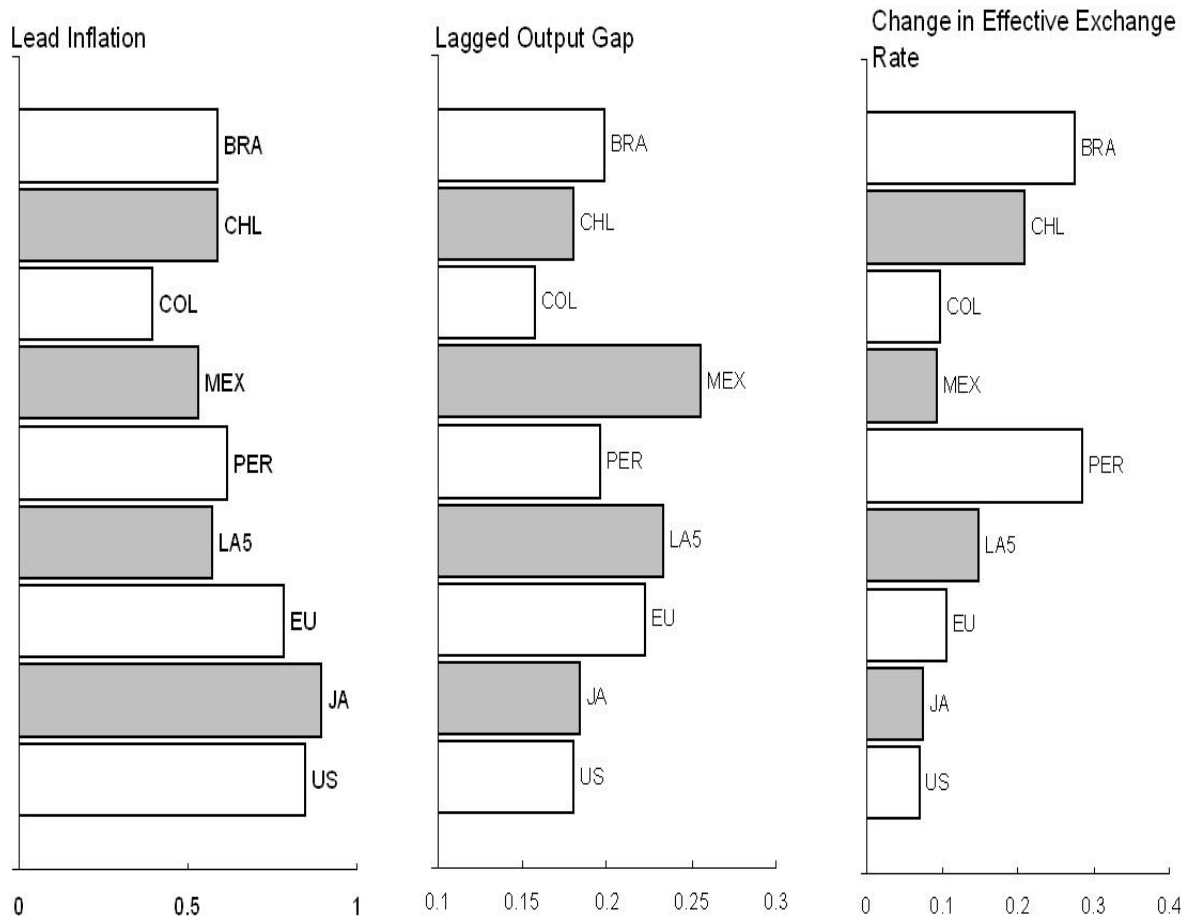


Figure 4: Inflación en LA5: Efecto de los shocks de oferta
 Inflation: Actual vs. Target

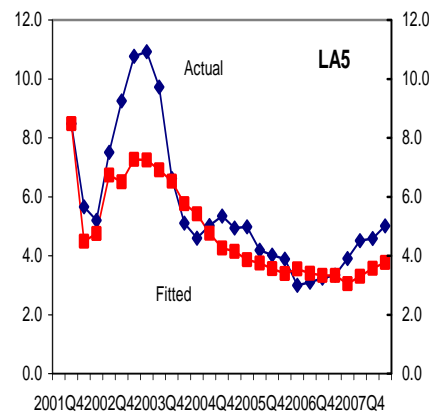
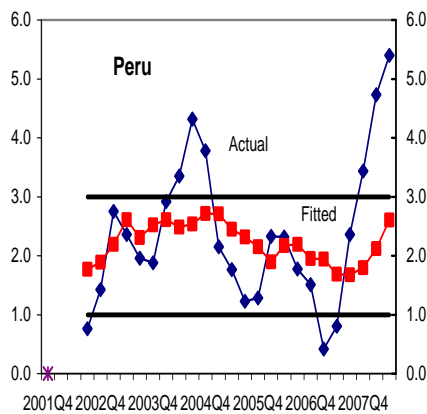
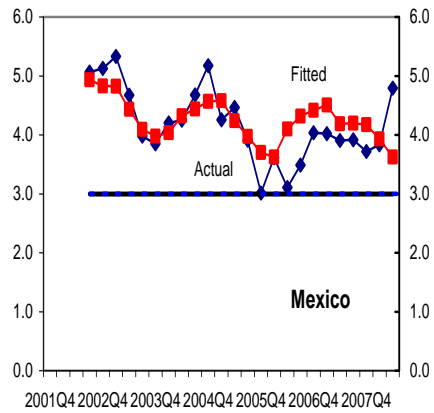
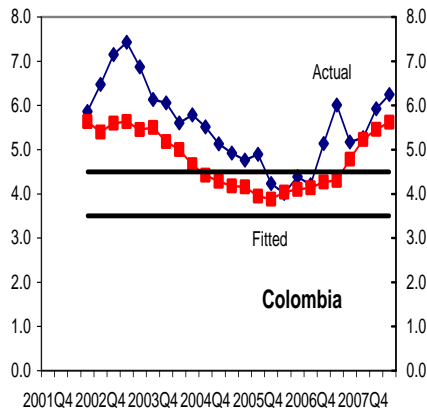
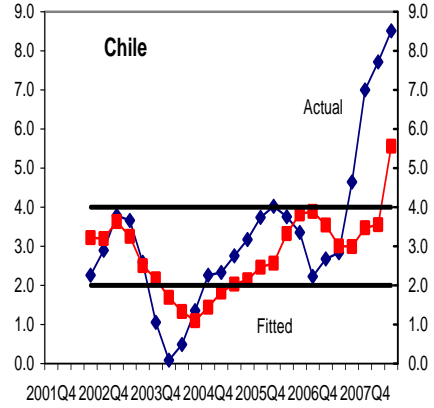
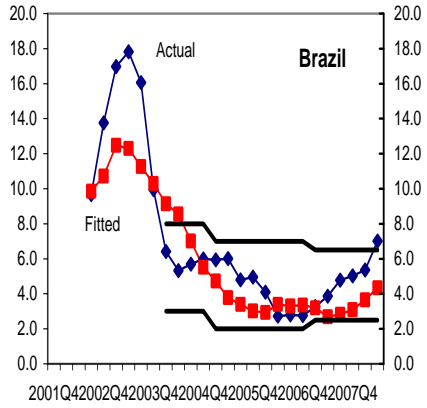
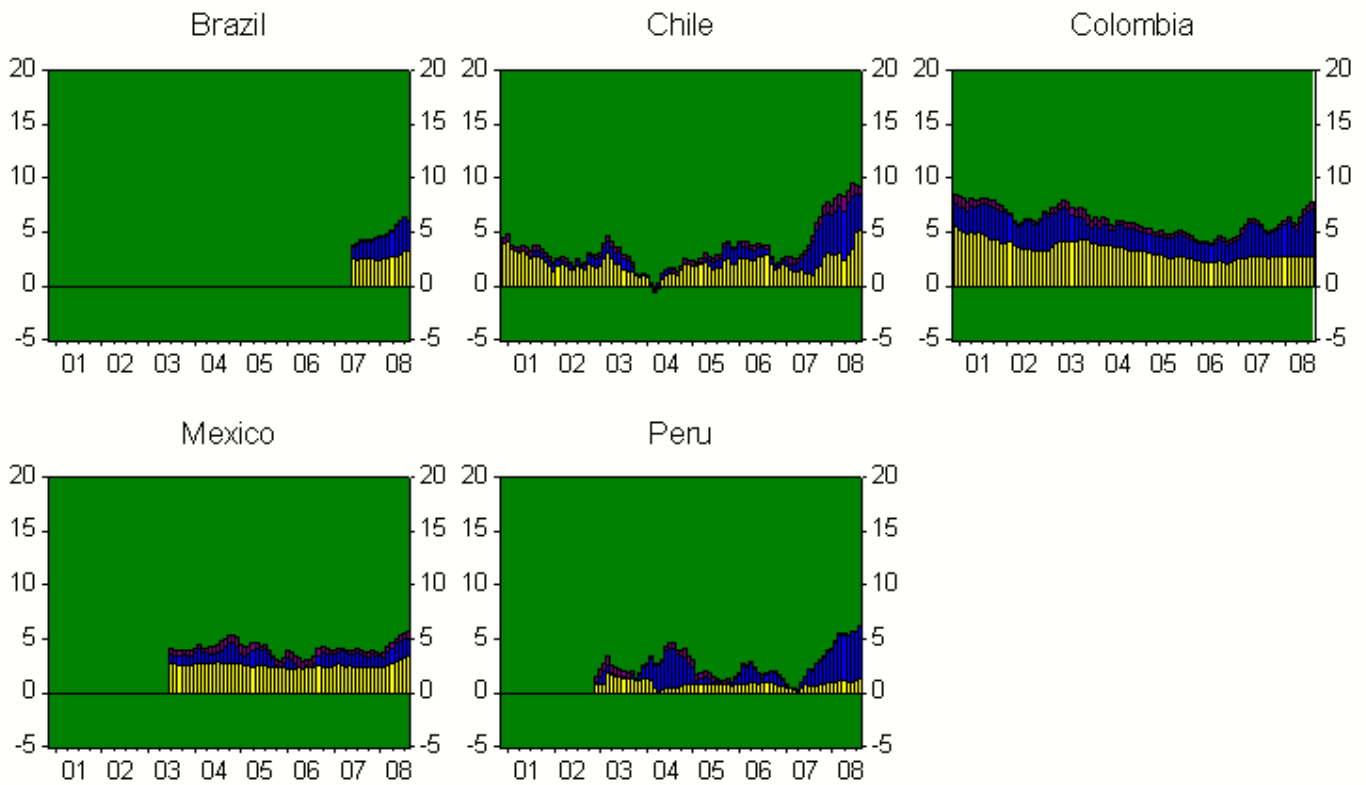


Figure 5: Inflación subyacente en LA5

WHD: Food, Energy and other Inflation Components (in pp of y/y inflation) 2000:12-2008:8



* Background: Orange = Fixed to the U.S. dollar; Red = US dollar; Green = Inflation targeting; White = Other.

Figure 6: Efecto desagregado de distintos factores inflacionarios en LA5: 2002-2008Q2
 LA5: Historical Decomposition of Inflation 2004-08

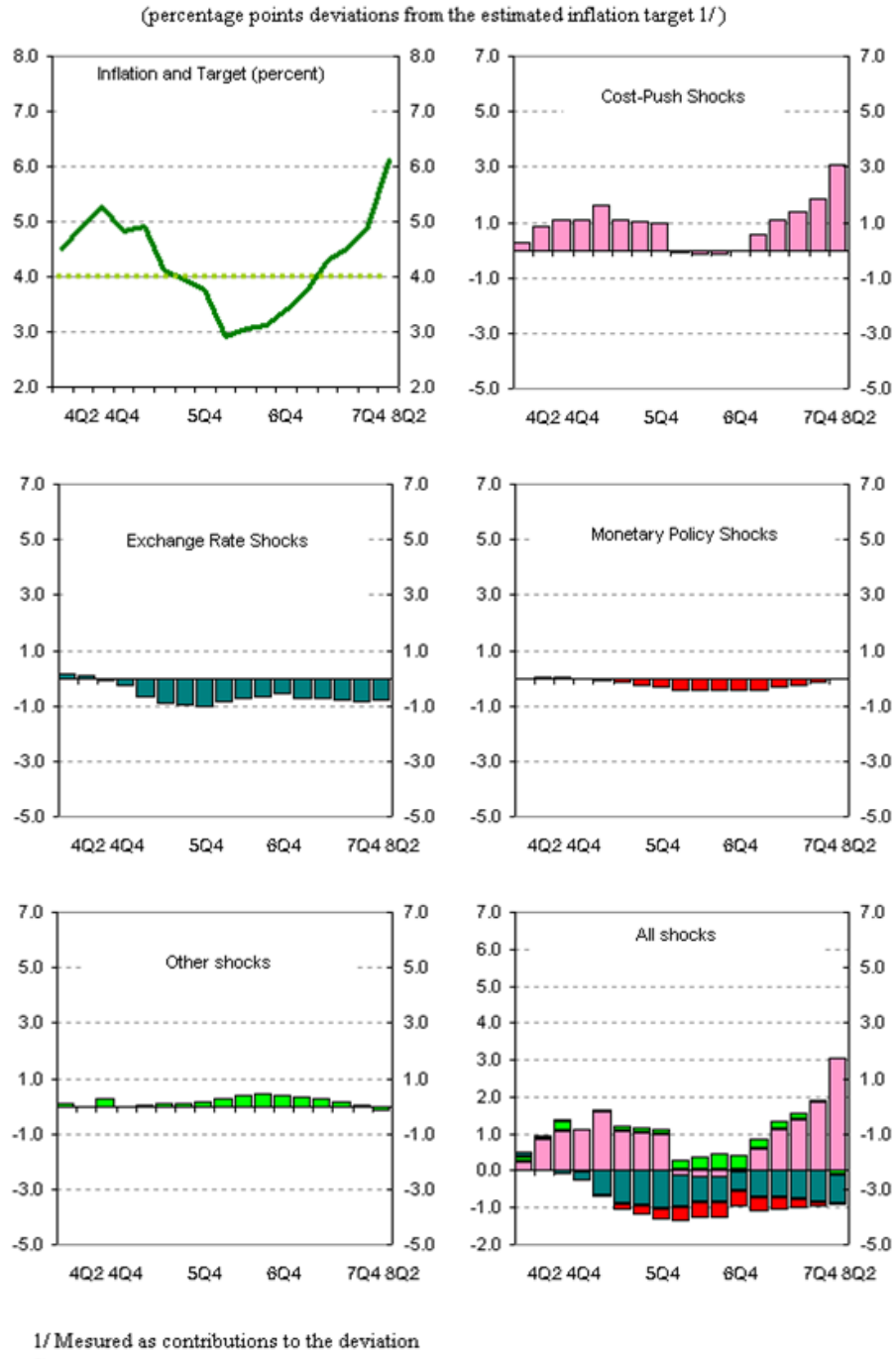


Figure 7:

Figure 8: Efecto desagregado de los distintos factores inflacionarios en Perú: 2002-2008Q2
 Peru: Historical Decomposition of Inflation 2004-08

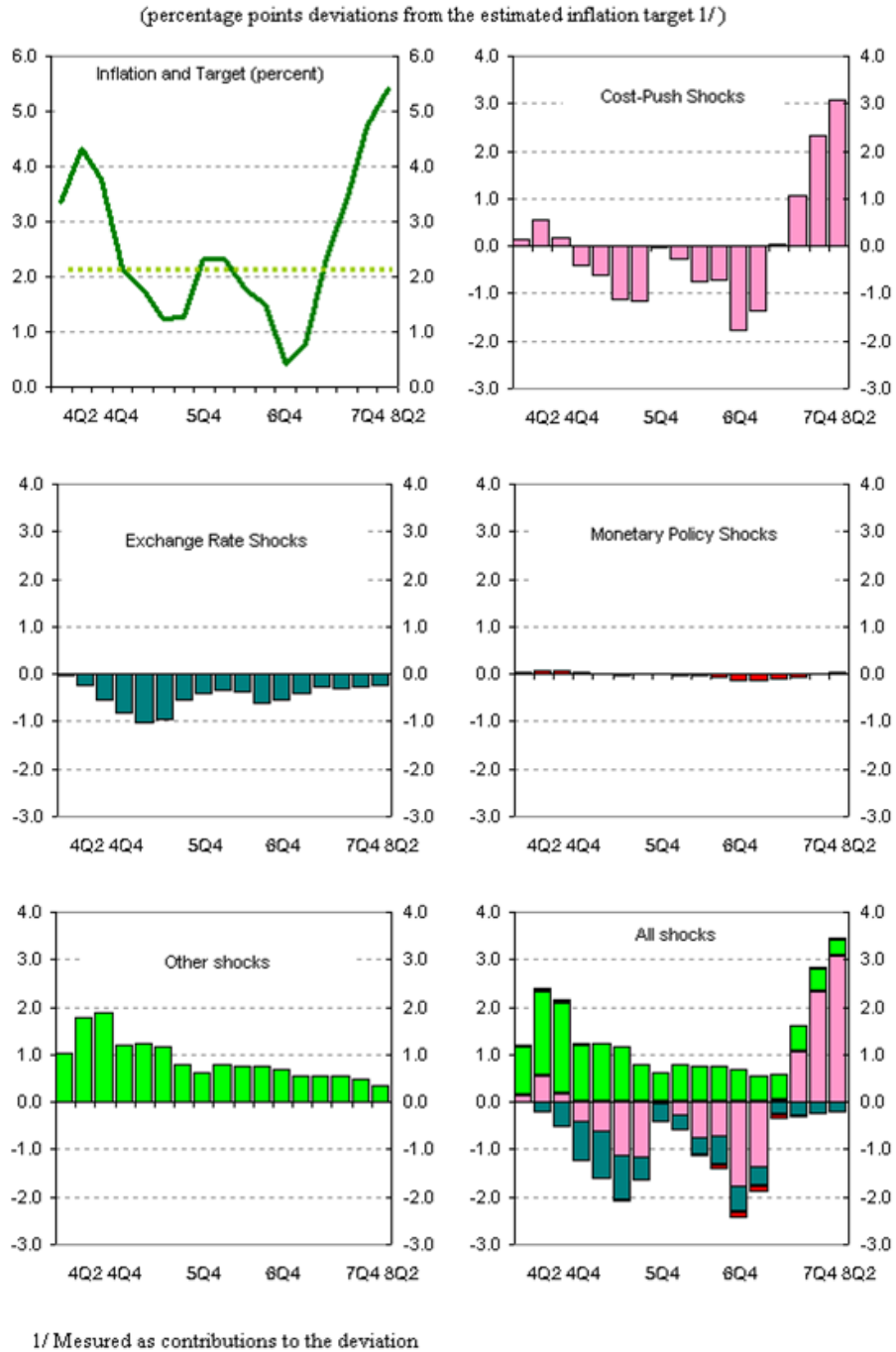
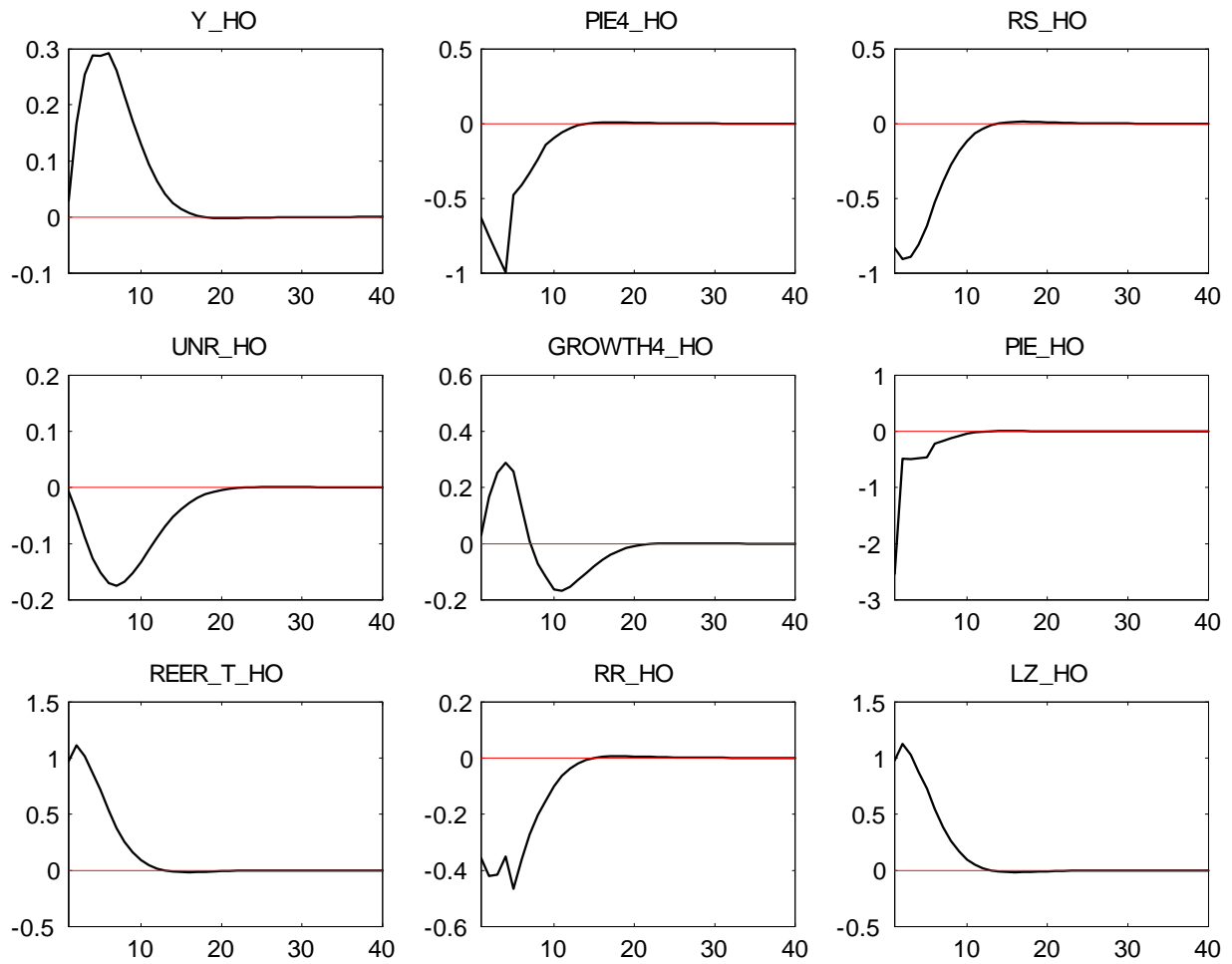


Figure 9:

Figure 10: Funciones de impulso respuesta a un shock de oferta



Dinámica del nivel de actividad

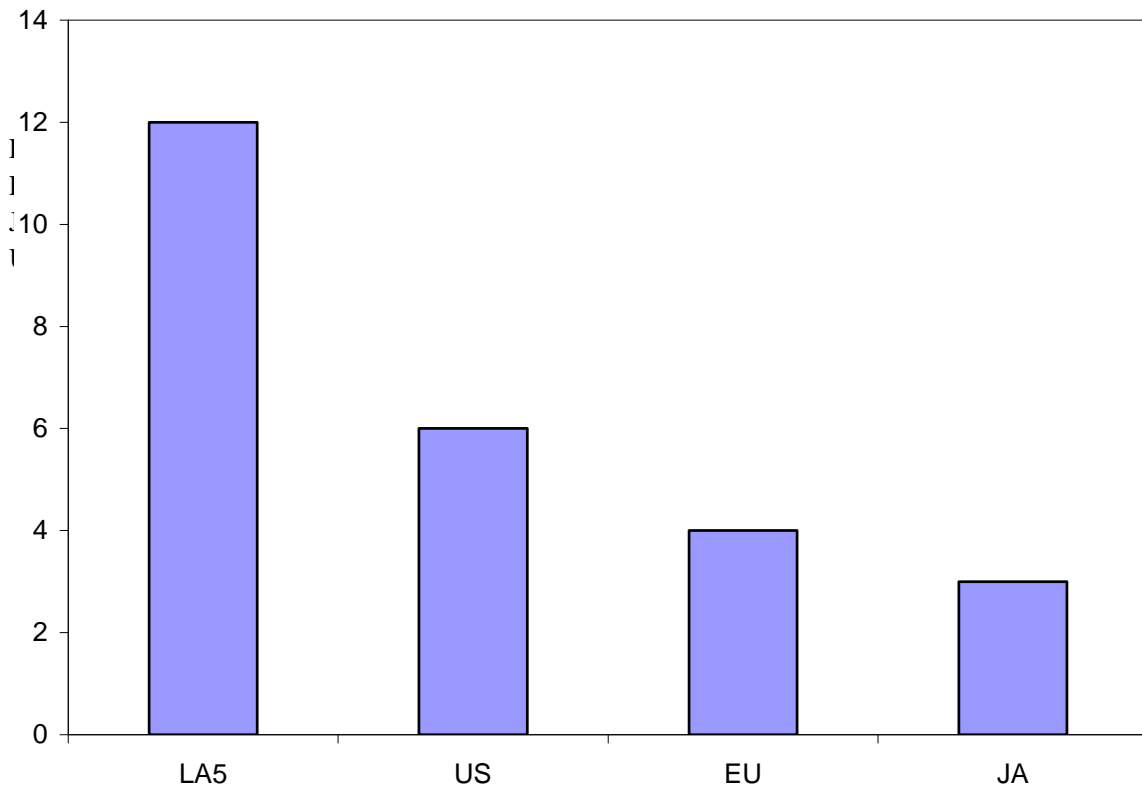
- El crecimiento de la demanda agregada experimentado por la región llevó a una brecha de producto positiva hacia principios del 2008.
- El nivel de actividad en Latinoamérica tiene relaciones estrechas con los desarrollos de la economía mundial, por lo que la desaceleración internacional tendrá repercusiones en la región.
- La restricción crediticia en los Estados Unidos tiene un impacto sobre las economías estadounidenses, del área euro y Japón. En su conjunto, los impactos sobre todas estas economías tiene un impacto sobre las economías latinoamericanas.
- Las ecuaciones de desempleo no parecen aportar mucho a la dinámica del nivel de actividad en la forma como se modela tradicionalmente.

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Figure 11: Persistencia de la inflación

Inflation Persistence

(Quarters needed for inflation to return to trend 1/)



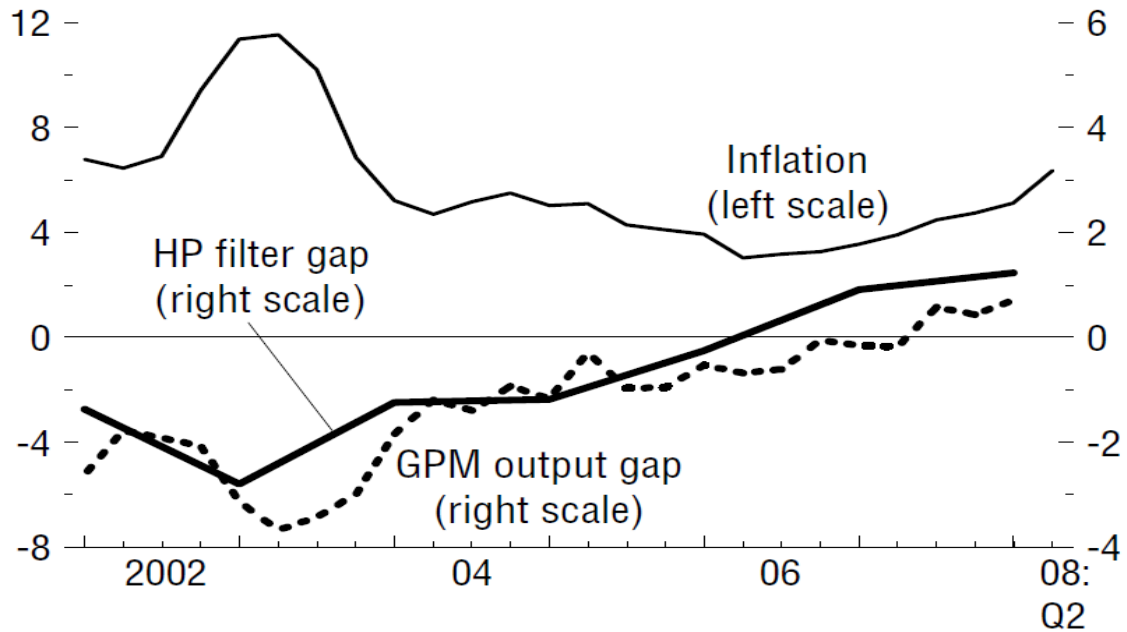
Source: IMF staff calculations

1/ Estimated from impulse response functions of annual inflation to a one s.d. shock to own quarterly inflation.

Figure 12:

Output Gap in Selected Latin American Countries¹

(Percent)



Source: IMF staff calculations.

¹For the aggregate of Brazil, Chile, Colombia, Mexico, and Peru.

- – Los estimados de la brecha de producto consistentes con el modelo, presentados en la figura ?? muestran que en el periodo 2003–04, las economías latinoamericanas estaban operando debajo de su potencial, lo que ayudo a controlar la inflación.

Table 4: Ecuaciones de crecimiento

$$g_{i,t}^{\bar{Y}} = \tau_i g_i^{\bar{Y}ss} + (1 - \tau_i) g_{i,t-1}^{\bar{Y}} + \varepsilon_{i,t}^{g^{\bar{Y}}}$$

$$\bar{Y}_{i,t} = \bar{Y}_{i,t-1} + g_{i,t}^{\bar{Y}}/4 + \varepsilon_{i,t}^{\bar{Y}}$$

where:

$$\log(GDP_{i,t}) = y_{i,t} + \bar{Y}_{i,t}$$

	Brazil	Chile	Colombia	Mexico	Peru	LA5	EU	JA	US
τ_i	0.035	0.038	0.026	0.032	0.025	0.064	0.029	0.038	0.027
$g_i^{\bar{Y}ss}$	3.172	4.393	4.235	3.337	4.107	3.641	2.261	1.444	2.273
$\varepsilon_{i,t}^{g^{\bar{Y}}}$ (S.E)	0.005	0.006	0.005	0.007	0.318	0.006	0.013	0.005	0.086
$\varepsilon_{i,t}^{\bar{Y}}$ (S.E)	0.038	0.034	0.032	0.038	0.031	0.096	0.033	0.364	0.001

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

Por resaltar

- Shocks de nivel al crecimiento potencial ($\varepsilon_{i,t}^{\bar{Y}}$)
- Desviaciones persistentes del nivel de crecimiento potencial de largo plazo ($\tau_i g_i^{\bar{Y}ss} + (1 - \tau_i) g_{i,t-1}^{\bar{Y}}$)

Table 5: Brecha de Producto

$$y_{i,t} = \beta_{i,1}y_{i,t-1} + \beta_{i,2}y_{i,t+1} - \beta_{i,3}r_{i,t-1} + \beta_{i,4} \sum_j \omega_{i,j,4} z_{i,j,t-1} + \beta_{i,5} \sum_j \omega_{i,j,5} y_{j,t-1} + \varepsilon_{i,t}^y$$

where:

$$\begin{aligned} r_{i,t} &= R_{i,t} - \bar{R}_{i,t} \\ z_{i,t} &= Z_{i,t} - \bar{Z}_{i,t} \\ \bar{Z}_{i,t} &= \bar{Z}_{i,t-1} + \varepsilon_{i,t}^{\bar{z}} \end{aligned}$$

	Brazil	Chile	Colombia	Mexico	Peru	LA5	EU	JA	US
$\beta_{i,1}$	0.366	0.455	0.650	0.720	0.425	0.485	0.954	0.965	0.655
$\beta_{i,2}$	0.143	0.181	0.231	0.273	0.179	0.176	0.148	0.073	0.069
$\beta_{i,3}$	0.129	0.157	0.106	0.121	0.159	0.142	0.201	0.148	0.187
$\beta_{i,4}$	0.110	0.137	0.259	0.189	0.127	0.307	0.051	0.040	0.024
$\beta_{i,5}$	0.049	0.050	0.050	0.049	0.051	0.049	0.051	0.030	0.042
θ_{US}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.071
$\omega_{i,EU,4}$	0.514	0.465	0.309	0.145	0.374	0.230	0.000	0.434	0.640
$\omega_{i,JA,4}$	0.092	0.096	0.085	0.071	0.080	0.076	0.297	0.000	0.313
$\omega_{i,US,4}$	0.393	0.438	0.606	0.784	0.546	0.694	0.637	0.000	0.535
$\omega_{EU,i,4}$	0.082	0.028	0.012	0.030	0.009	0.144	0.000	0.281	0.637
$\omega_{JA,i,4}$	0.030	0.033	0.002	0.019	0.006	0.085	0.435	0.000	0.535
$\omega_{US,i,4}$	0.047	0.014	0.018	0.274	0.008	0.319	0.640	0.313	0.000
$\omega_{i,EU,5}$	0.511	0.475	0.263	0.045	0.425	0.177	0.000	0.381	0.711
$\omega_{i,JA,5}$	0.064	0.214	0.026	0.008	0.094	0.035	0.149	0.000	0.227
$\omega_{i,US,5}$	0.425	0.311	0.712	0.947	0.481	0.788	0.804	0.000	0.610
$\omega_{EU,i,5}$	0.054	0.012	0.008	0.053	0.004	0.120	0.000	0.142	0.804
$\omega_{JA,i,5}$	0.012	0.004	0.004	0.027	0.001	0.046	0.378	0.000	0.610
$\omega_{US,i,5}$	0.062	0.018	0.020	0.322	0.009	0.370	0.711	0.227	0.000
$\varepsilon_{i,t}^y$ (S.E)	0.368	0.322	0.510	0.129	0.384	0.052	0.067	0.154	0.124

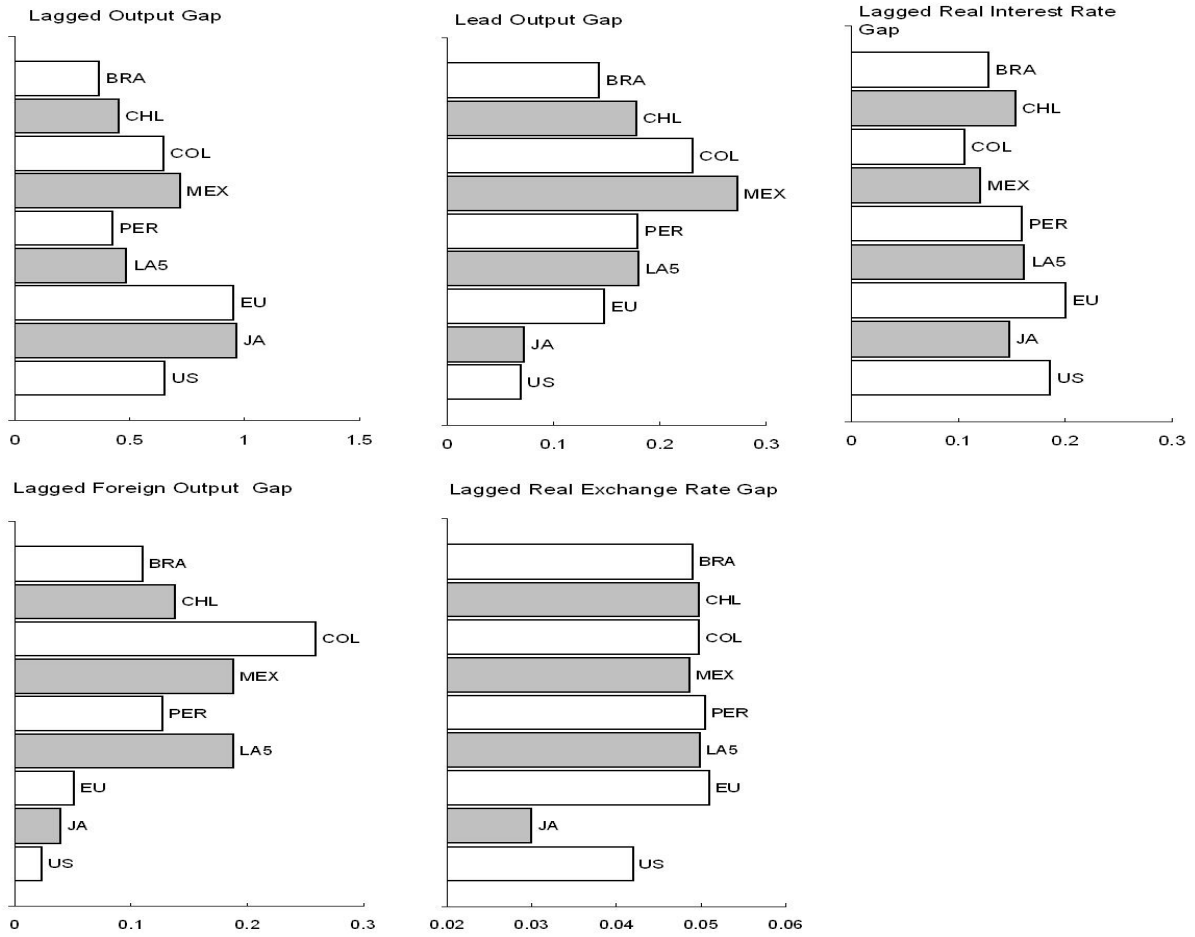
For the US, the dynamic IS curve also includes the term $-\theta_{US}\eta_{US,t}$ (see Table 6). The weights ($\omega_{i,j,4}$) are the ratio of the sum of exports and imports of country i with country j to the sum of exports and imports with all the countries in the model. The weights ($\omega_{i,j,5}$) are the ratios of the exports of country i to country j to total exports of country i to all the countries in the model.

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

Por resaltar

- dinámica del producto ($\beta_{i,1}y_{i,t-1} + \beta_{i,2}y_{i,t+1}$)
- brecha de la tasa de interés real ($\beta_{i,3}r_{i,t-1}$)
- Shock de demanda interna ($\varepsilon_{i,t}^y$)

Figure 13: Parámetros estimados de la ecuacion de brecha de producto (IS dinámica)



● —

Figure 14: Shock a la demanda interna

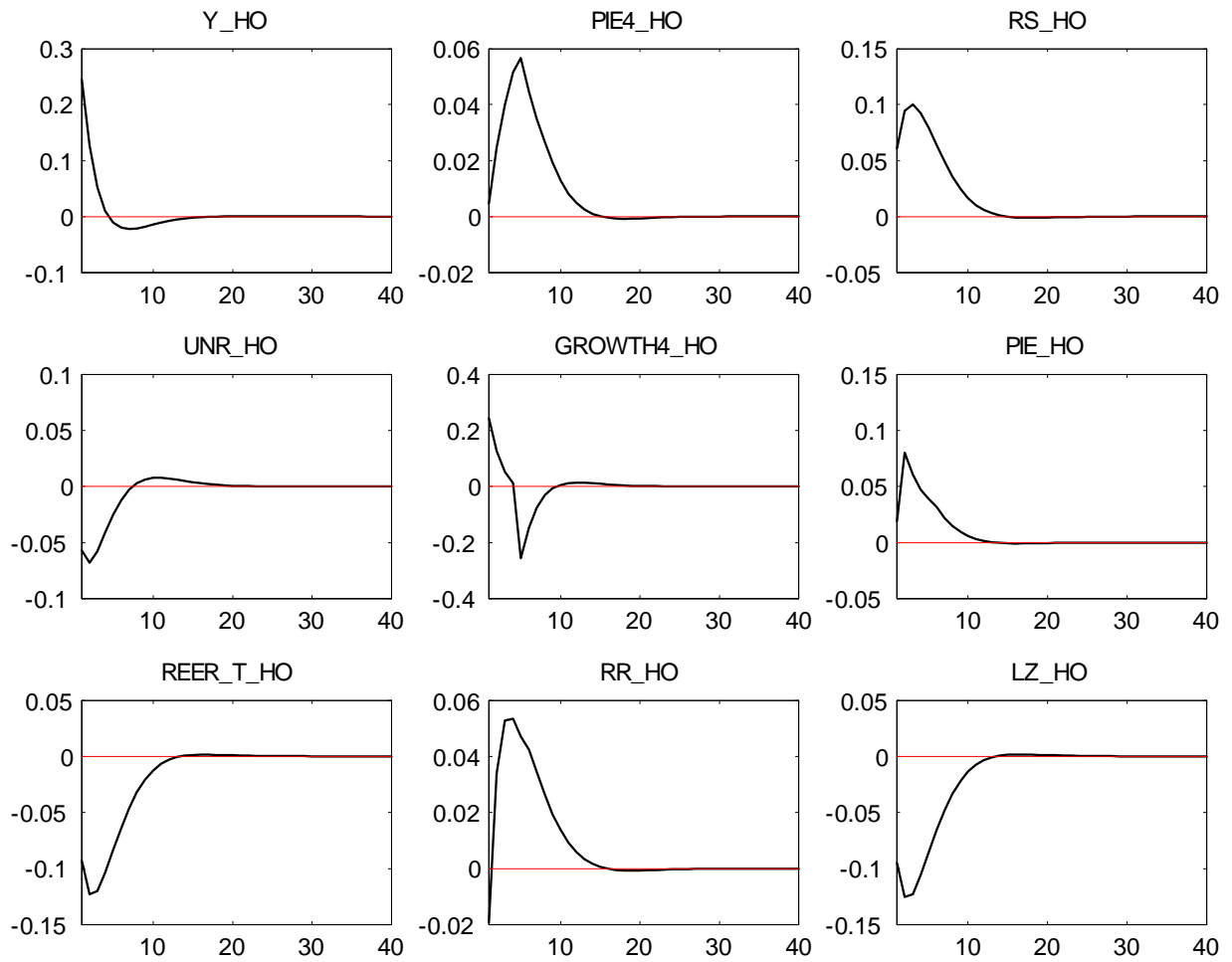


Figure 15: Shock a la demanda americana

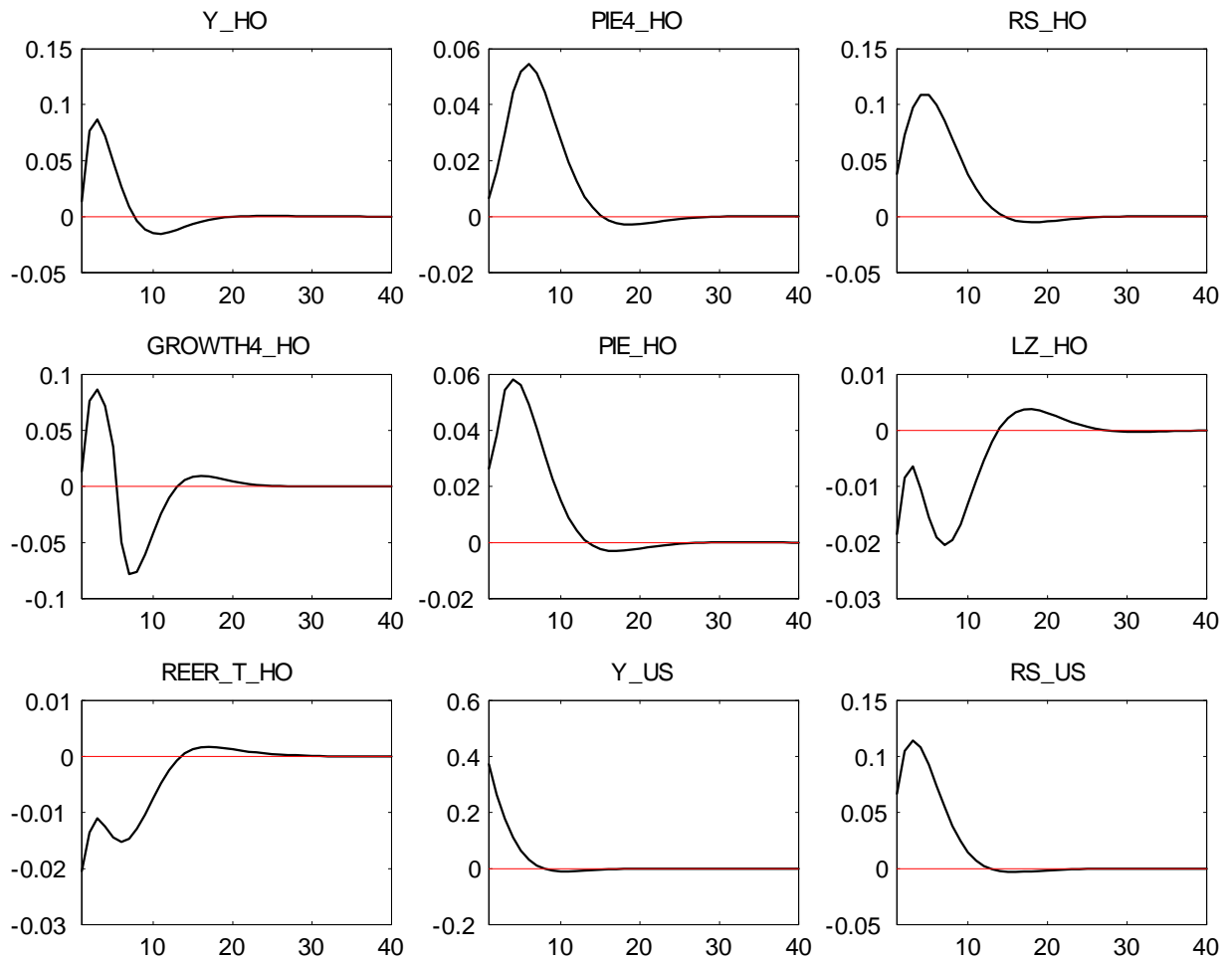


Table 6: BLT Equation

$$BLT_{US,t} = \overline{BLT}_{US,t} - \kappa_{US} y_{US,t+4} - \varepsilon_{US,t}^{BLT}$$

$$\overline{BLT}_{US} = \overline{BLT}_{US,t-1} + \varepsilon_{US,t}^{\overline{BLT}}$$

where:

$$\eta_{US,t} = 0.04\varepsilon_{US,t-1}^{BLT} + 0.08\varepsilon_{US,t-2}^{BLT} + 0.12\varepsilon_{US,t-3}^{BLT} + 0.16\varepsilon_{US,t-4}^{BLT} + 0.20\varepsilon_{US,t-5}^{BLT} + 0.16\varepsilon_{US,t-6}^{BLT}$$

$$+ 0.12\varepsilon_{US,t-7}^{BLT} + 0.08\varepsilon_{US,t-8}^{BLT} + 0.04\varepsilon_{US,t-9}^{BLT}$$

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

Figure 16: BLT shock in the US

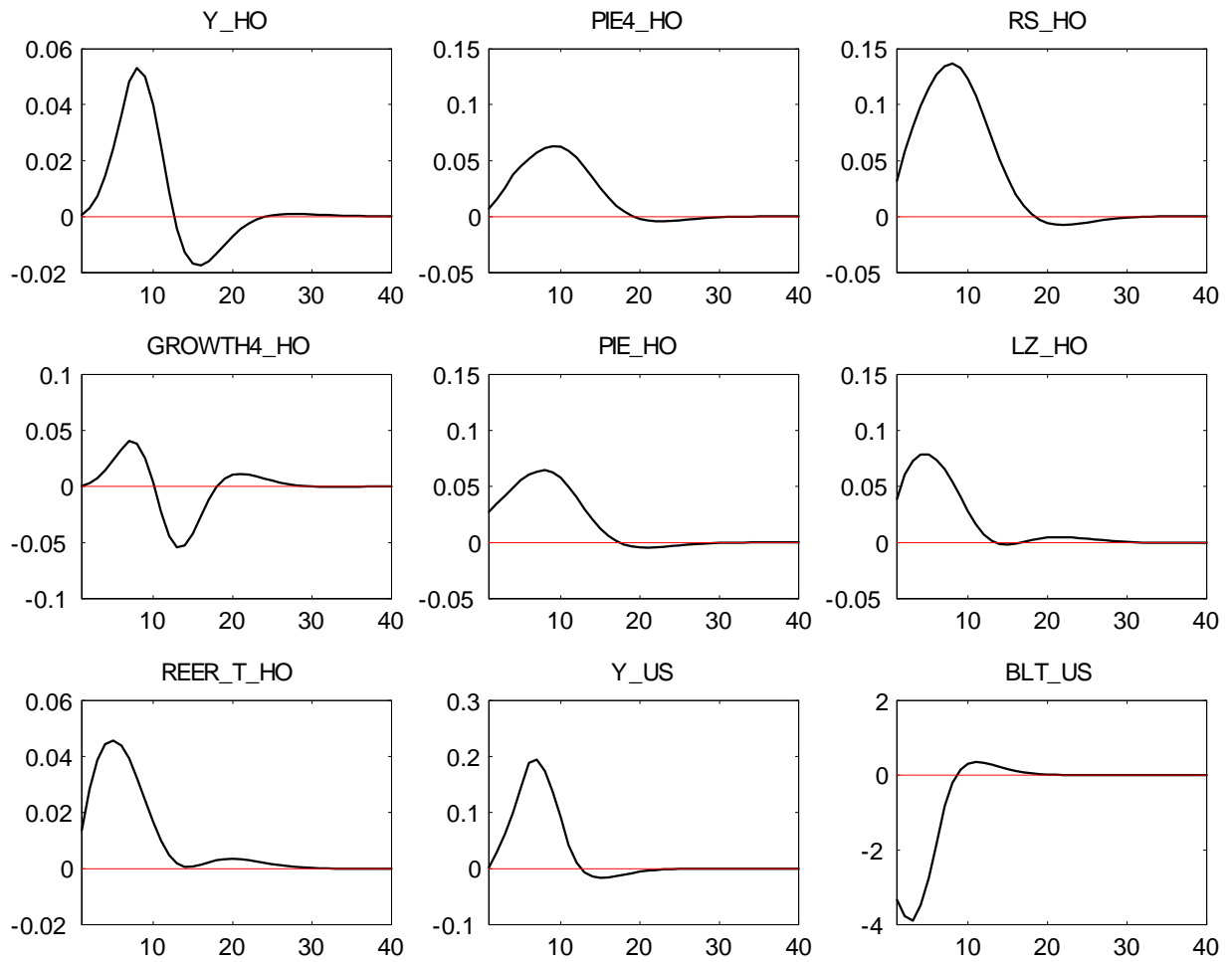


Table 7: Ecuacion de la brecha de desempleo (Ley dinámica de Okun)

$$u_{i,t} = \alpha_{i,1}u_{i,t-1} + \alpha_{i,2}y_{i,t} + \varepsilon_{i,t}^u$$

$$\bar{g}_{i,t} = (1 - \alpha_{i,3})\bar{g}_{i,t-1} + \varepsilon_{i,t}^{g\bar{U}}$$

$$\bar{U}_{i,t} = \bar{U}_{i,t-1} + \bar{g}_{i,t} + \varepsilon_{i,t}^{\bar{U}}$$

where:

$$U_{i,t} = u_{i,t} - \bar{U}_{i,t}$$

	Brazil	Chile	Colombia	Mexico	Peru	LA5	EU	JA	US
$\alpha_{i,1}$	0.664	0.831	0.584	0.867	0.815	0.661	20.077	3.172	1.444
$\alpha_{i,2}$	0.260	0.066	0.018	0.067	0.075	0.220	0.140	0.060	0.182
$\alpha_{i,3}$	0.675	0.510	0.012	0.603	0.451	0.553	0.101	0.221	0.365
$\varepsilon_{i,t}^u$ (S.E)	0.133	0.002	0.781	0.021	0.136	0.046	0.002	0.005	0.009
$\varepsilon_{i,t}^{g\bar{U}}$ (S.E)	0.002	0.093	0.002	0.002	0.002	0.002	0.002	0.003	0.086
$\varepsilon_{i,t}^{\bar{U}}$ (S.E)	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.003	0.002

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

- – *Por resaltar*

- * Inercia $\alpha_{i,1}u_{i,t-1}$

- * Brecha de producto $\alpha_{i,2}y_{i,t}$

- * Shock $\varepsilon_{i,t}^u$

- * Shocks de nivel a la tasa de desempleo natural NAIRU ($\varepsilon_{i,t}^{\bar{U}}$)

- * Shock a la tasa de crecimiento del NAIRU ($\varepsilon_{i,t}^{g\bar{U}}$)

Table 8: Paridad de las tasas de interes

$$4(Z_{i,t+1}^e - Z_{i,t}) = (R_{i,t} - R_{us,t}) - (\bar{R}_{i,t} - \bar{R}_{us,t}) + \varepsilon_{i,t}^{Z-Z^e}$$

where:

$$Z_{i,t+1}^e = \phi_i Z_{i,t+1} + (1 - \phi_i) Z_{i,t-1}$$

$$R_{i,t} = I_{i,t} - \pi_{i,t+1}$$

$$\bar{R}_{i,t} = \rho_i \bar{R}_i^{ss} + (1 - \rho_i) \bar{R}_{i,t-1} + \varepsilon_{i,t}^{\bar{R}}$$

$$Z_{i,t} = 100 * \log(S_{i,t} CPI_{us,t} / CPI_{i,t})$$

	Brazil	Chile	Colombia	Mexico	Peru	LA5	EU	JA	US
\bar{R}_i^{ss}	4.134	3.480	2.159	2.251	3.481	4.851	1.984	1.379	1.729
ρ_i	0.017	0.053	0.140	0.058	0.066	0.166	0.467	0.497	0.290
ϕ_i	0.781	0.774	0.807	0.953	0.729	0.775	0.834	0.856	0.467
$\varepsilon_{i,t}^{Z-Z^e}$ (S.E)	0.211	0.213	0.211	0.213	0.213	0.211	0.213	0.006	0.000
$\varepsilon_{i,t}^{\bar{R}}$ (S.E)	0.242	0.260	0.246	0.239	0.294	0.289	0.036	0.006	0.894

Source: Canales-Kriljenko, Freedman, Garcia-Saltos, Johnson, and Laxton (2008)

Table 9: Results from posterior maximization

	Prior distribution	Prior mean	Prior s.d.	Posterior mode	s.d.
$\alpha_{la5,1}$	beta	0.750	0.1000	0.6711	0.0845
$\alpha_{la5,2}$	gamm	0.300	0.1000	0.2331	0.0565
$\alpha_{la5,3}$	beta	0.500	0.2000	0.5446	0.2564
$\beta_{la5,1}$	gamm	0.600	0.1000	0.4875	0.0655
$\beta_{la5,2}$	beta	0.200	0.0500	0.1796	0.0455
$\beta_{la5,3}$	gamm	0.200	0.0500	0.1622	0.0399
$\beta_{la5,4}$	gamm	0.050	0.0040	0.0499	0.0040
$\beta_{la5,5}$	gamm	0.250	0.1000	0.1886	0.0736
$\gamma_{la5,1}$	beta	0.500	0.0500	0.6216	0.0398
$\gamma_{la5,2}$	gamm	1.500	0.2000	1.2244	0.1680
$\gamma_{la5,4}$	gamm	0.200	0.0500	0.1877	0.0488
π_{la5}^{tar}	gamm	3.000	0.5000	4.2185	0.6995
\bar{Y}_{la5}^{ss}	norm	4.000	1.0000	3.6824	0.3073
$\lambda_{la5,1}$	beta	0.500	0.1000	0.5730	0.0703
$\lambda_{la5,2}$	gamm	0.250	0.0500	0.2331	0.0476
$\lambda_{la5,3}$	gamm	0.150	0.0500	0.1488	0.0482
ϕ_{la5}	beta	0.500	0.2000	0.7923	0.0704
ρ_{la5}	beta	0.300	0.1000	0.1539	0.0688
\bar{T}_{la5}	norm	4.000	0.5000	4.7678	0.5233
τ_{la5}	beta	0.075	0.0300	0.0643	0.0279

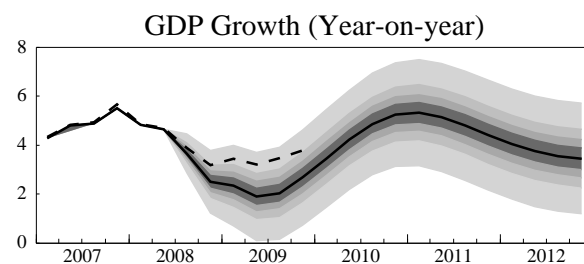
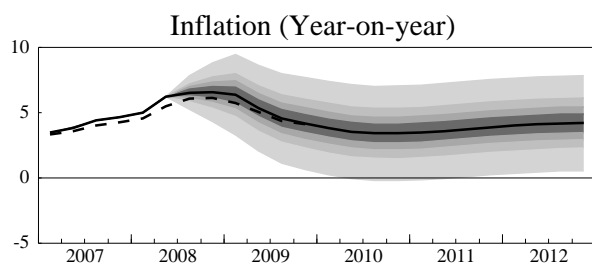
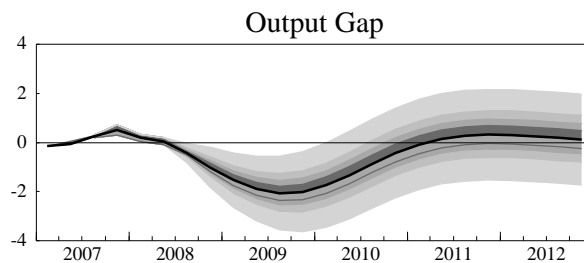
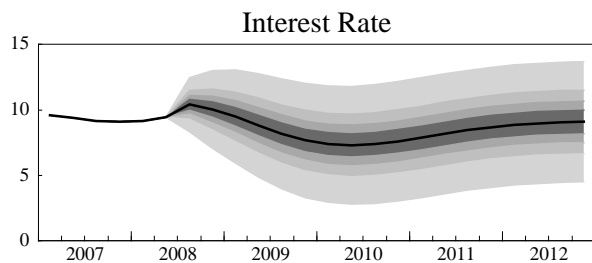
Table 10: Errores medios de proyección (LA5)

	1 Q Ahead	4 Q Ahead	8 Q Ahead	12 Q Ahead
$\pi_{4,i,t}$	0.698	2.41	1.05	0.893
$y_{i,t}$	0.273	0.817	0.871	0.513
$4(Y_{i,t} - Y_{i,t-1})$	1.95	2.67	2.11	1.84
$Y_{i,t} - Y_{i,t-4}$	0.504	1.42	1.3	0.995
$U_{i,t}$	0.266	0.411	0.372	0.287
$I_{i,t}$	0.886	2.58	2.16	2.31

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LA5 GPM Conditional Forecast November 25

(Solid line=Conditional Forecast with 30%, 50%, 70% and 95% confidence bands; dashed line=October WEO)



	Quarterly								Annual					
	2008				2009				2007	2008	2009	2010	2011	2012
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4						
Short-term Interest Rate	9.2	9.5	10.4	10.0	9.5	8.8	8.2	7.7	9.3	9.8	8.5	7.4	8.3	9.0
Real GDP Growth														
% y-o-y	4.8	4.6	3.7	2.5	2.3	1.9	2.0	2.7	4.9	3.9	2.2	4.5	4.9	3.7
[]	[-0.0]	[-0.0]	[-0.2]	[-0.7]	[-1.1]	[-1.3]	[-1.4]	[-1.1]	[-0.0]	[-0.2]	[-1.0]	[+0.0]	[+0.5]	[-0.7]
% q@ar	2.3	4.0	2.4	1.3	1.6	2.3	2.9	3.9						
[]	[+7.5]	[-8.9]	[+0.9]	[-2.2]	[+5.7]	[-9.6]	[+0.4]	[-0.9]						
Potential GDP Growth														
% y-o-y	4.5	4.5	4.3	3.8	3.9	3.7	3.7	3.7	4.4	4.3	3.7	3.7	3.7	3.6
CPI Inflation														
% y-o-y	5.0	6.2	6.5	6.5	6.4	5.3	4.5	4.2	4.1	6.1	5.1	3.5	3.7	4.1
[]	[+0.4]	[+0.7]	[+0.5]	[+0.4]	[+0.6]	[+0.3]	[+0.2]	[+0.0]	[+0.3]	[+0.5]	[+0.3]	[-0.4]	[+0.0]	[+0.5]
% q@ar	5.5	8.6	7.0	5.0	4.8	4.5	3.9	3.5						
[]	[-0.5]	[+1.4]	[+0.4]	[+0.4]	[+0.3]	[-0.0]	[+0.1]	[-0.2]						
Real Effective Exchange Rate Depreciation (y-o-y)			-10.1	-8.1	-6.0	-2.6	0.4	1.7		-9.1	-1.6	2.0	0.9	0.2
Output Gap	0.2	0.0	-0.4	-1.0	-1.5	-1.9	-2.1	-2.0	0.1	-0.3	-1.9	-1.1	0.2	0.2

Note: Conditional Forecast as a deviation from October WEO

FIN

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Table 11: Results from posterior parameters (standard deviation of structural shocks)

	Prior distribution	Prior mean	Prior s.d.	Posterior mode	s.d.
$\varepsilon_{la5}^{g\bar{Y}}$	invg	0.100	0.0500	0.0747	0.0251
$\varepsilon_{la5}^{\bar{Y}}$	invg	0.200	0.0500	0.3095	0.1446
$\varepsilon_{la5}^{\bar{Z}}$	invg	1.000	Inf	5.3902	0.9493
ε_{la5}^{π}	invg	1.000	Inf	2.4179	0.3770
$\varepsilon_{la5}^{\bar{R}}$	invg	0.500	0.0500	0.5376	0.0820
$\varepsilon^{R_{la5}-R_{us}}$	invg	1.000	Inf	0.4591	0.1861
ε_{la5}^{rs}	invg	0.500	Inf	0.5871	0.1504
$\varepsilon_{la5}^{\bar{U}}$	invg	0.100	Inf	0.0438	0.0164
$\varepsilon_{la5}^{g\bar{U}}$	invg	0.100	Inf	0.0435	0.0162
ε_{la5}^u	invg	0.100	Inf	0.2143	0.0333
ε_{la5}^y	invg	0.300	Inf	0.2275	0.1440

Table 12: Results from posterior parameters (correlation of structural shocks)

	Prior distribution	Prior mean	Prior s.d.	Posterior mode	s.d.
$\varepsilon_{la5}^{\bar{Y}}, \varepsilon_{la5}^{\pi}$	beta	0.100	0.0300	0.0909	0.0289
$\varepsilon_{la5}^y, \varepsilon_{la5}^{\bar{Y}}$	beta	0.250	0.1000	0.2185	0.1042

Appendix I: GPM Data Definitions

United States

$GDP_{i,t}$	Gross Domestic Product (SAAR, Bil.Chn.2000.Dollars)
$I_{i,t}$	Fed Funds Target Rate(percent) (period average)
$CPI_{i,t}$	Consumer Price Index (SA, 1982-84=100)
$U_{i,t}$	Civilian Unemployment Rate (SA, percent)
Bank lending tightening (BLT)	Average of: FRB Sr Officers Survey: Banks Tightening C.I Loans to Large Firms (percent) FRB Sr Officers Survey: Banks Tightening C.I Loans to Small Firms (percent) FRB Sr Loan Off Survey: Tightening Standards for Commercial Real Estate (percent) FRB Sr Loan Survey: Res Mortgages: Net Share, Banks Tightening (Haver Est, percent)

Euro Area

$GDP_{i,t}$	Gross Domestic Product (SA/WDA, Mil.Chn.00.Euros)
$I_{i,t}$	3-Month EURIBOR Rate (AVG, percent)
$CPI_{i,t}$	Monetary Union Index of Consumer Prices (SA, 2005=100)
$U_{i,t}$	Unemployment Rate (SA,percent)
$S_{i,t}$	Period averages; increase is depreciation

Japan

$GDP_{i,t}$	Gross Domestic Product (SAAR, Bil.Chn.2000.Yen)
$I_{i,t}$	Call Rate: Uncollateralized 3-Month (EOP, percent)
$CPI_{i,t}$	Consumer Price Index (SA, 2005=100)
$U_{i,t}$	Unemployment Rate (SA, percent)
$S_{i,t}$	Period averages; increase is depreciation

Brazil

$GDP_{i,t}$	Gross Domestic Product, Chained Index (SA, 1995=100)
$I_{i,t}$	Overnight Rate: Overnight Rate: Over/Selic (AVG, percent)
$CPI_{i,t}$	Consumer Price Index (SA, 2005=100)
$U_{i,t}$	Unemployment Rate, all metropolitan regions (SA, percent)
$S_{i,t}$	Period averages; increase is depreciation

Appendix: GPM Data Definitions (continuation)

Chile

$GDP_{i,t}$	Gross Domestic Product (SA, Mil.2003.Ch Pesos)
$I_{i,t}$	Monetary Policy Rate (EOP, percent)
$CPI_{i,t}$	Consumer Price Index, quarterly average (SA, Dec 1998=100)
$U_{i,t}$	Unemployment Rate: Quarterly moving average (SA, percent)
$S_{i,t}$	Period averages; increase is depreciation

Colombia

$GDP_{i,t}$	Gross Domestic Product (SA, Mil.2000.Pesos)
$I_{i,t}$	Lending Interbank Rate (AVG, Percent)
$CPI_{i,t}$	Consumer Price Index, quarterly average (SA, Dec. 1998=100)
$U_{i,t}$	Unemployment Rate (SA, percent)
$S_{i,t}$	Period averages; increase is depreciation

Mexico

$GDP_{i,t}$	Gross Domestic Product (SAAR, Mil.1993 NewPesos)
$I_{i,t}$	3-month Treasury Bill (AVG, percent)
$CPI_{i,t}$	Consumer Price Index (SA, Jun 16-30, 2002=100)
$U_{i,t}$	Unemployment Rate (SA, percent)
$S_{i,t}$	Period averages; increase is depreciation

Peru

$GDP_{i,t}$	Real Gross Domestic Product (SA, Mil.1994.NewSoles)
$I_{i,t}$	Reference Rate (EoP, percent)
$CPI_{i,t}$	Consumer Price Index (SA, Dec. 2001=100)
$U_{i,t}$	Unemployment Rate (SA, percent)
$S_{i,t}$	Period averages; increase is depreciation

LA5 Aggregate	Aggregation used PPP-based GDP weights. Weights applied to quarterly changes in GDP growth, CPI, real exchange rate, levels of unemployment and of interest rates.
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