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A Tabela: Datas das Reuniões do COPOM e Divulgações Macroeconômicas Subsequentes

Data	Reunião COPOM	Divulgações macroeconômicas no dia posterior à decisão do COPOM
18/1/2006	116°	Initial jobless claims, continuing claims, housing starts, building permits (US)
8/3/2006	117°	Produção industrial (BZ), initial jobless claims, continuing claims (US)
19/4/2006	118°	Taxa de desemprego (BZ), initial jobless claims, continuing claims, leading index (US)
31/5/2006	119°	Initial jobless claims, continuing claims, pending home sales ISM manufacturing (US)
19/7/2006	120°	Initial jobless claims, continuing claims, leading index (US)
30/8/2006	121°	PIB (BZ), initial jobless claims, continuing claims (US)
18/10/2006	122°	Initial jobless claims, continuing claims, leading index (US)
29/11/2006	123°	PIB (BZ), initial jobless claims, continuing claims (US)
24/1/2007	124°	Taxa de desemprego (BZ), initial jobless claims, continuing claims (US)
7/3/2007	125°	Initial jobless claims, continuing claims (US)
18/4/2007	126°	Initial jobless claims, continuing claims, leading index (US)
6/6/2007	127°	Initial jobless claims, continuing claims (US)
18/7/2007	128°	Initial jobless claims, continuing claims, leading index (US)
5/9/2007	129°	IPCA (BZ), initial jobless claims, continuing claims (US)
17/10/2007	130°	Vendas no varejo (BZ), initial jobless claims, continuing claims, leading index (US)
5/12/2007	131°	IPCA (BZ), initial jobless claims, continuing claims (US)
23/1/2008	132°	IPCA, taxa de desemprego (BZ), initial jobless claims, continuing claims (US)
5/3/2008	133°	Initial jobless claims, continuing claims, pending home sales (US)
16/4/2008	134°	Initial jobless claims, continuing claims, leading index (US)
4/6/2008	135°	Initial jobless claims, continuing claims (US)
23/7/2008	136°	IPCA, taxa de desemprego (BZ), initial jobless claims, continuing claims (US)
10/9/2008	137°	Initial jobless claims, continuing claims (US)
29/10/2008	138°	IGP (BZ), GDP, initial jobless claims, continuing claims (US)
10/12/2008	139°	Initial jobless claims, continuing claims (US)
21/1/2009	140°	Taxa de desemprego (BZ), housing starts, building permits, initial jobless claims, continuing claims (US)
11/3/2009	141°	Initial jobless claims, continuing claims (US)
29/4/2009	142°	Initial jobless claims, continuing claims (US)
10/6/2009	143°	Initial jobless claims, continuing claims (US)
22/7/2009	144°	Taxa de desemprego (BZ), initial jobless claims, continuing claims (US)
2/9/2009	145°	Initial jobless claims, continuing claims (US)
21/10/2009	146°	Taxa de desemprego (BZ), initial jobless claims, continuing claims, leading index (US)
9/12/2009	147°	PIB (BZ), initial jobless claims, continuing claims (US)
27/1/2010	148°	IGP, taxa de desemprego (BZ), initial jobless claims, continuing claims (US)
17/3/2010	149°	IGP (BZ), CPI, initial jobless claims, continuing claims, leading index (US)
28/4/2010	150°	IGP, taxa de desemprego (BZ), initial jobless claims, continuing claims (US)
9/6/2010	151°	Initial jobless claims, continuing claims (US)
21/7/2010	152°	Taxa de desemprego (BZ), initial jobless claims, continuing claims, leading index (US)
1/9/2010	153°	Initial jobless claims, continuing claims (US)
20/10/2010	154°	Taxa de desemprego (BZ), initial jobless claims, continuing claims, leading index (US)
8/12/2010	155°	IGP, PIB (BZ), initial jobless claims, continuing claims (US)
19/1/2011	156°	Initial jobless claims, continuing claims, leading index (US)
2/3/2011	157°	PIB (BZ), initial jobless claims, continuing claims (US)
20/4/2011	158°	Initial jobless claims, continuing claims (US)
8/6/2011	159°	Initial jobless claims, continuing claims (US)

Tabela: continuação		
20/7/2011	160°	Initial jobless claims, continuing claims, leading index (US)
31/8/2011	161°	Initial jobless claims, continuing claims, ISM manufacturing (US)
19/10/2011	162°	IPCA (BZ), initial jobless claims, continuing claims, leading index (US)
30/11/2011	163°	Initial jobless claims, continuing claims, ISM manufacturing (US)
18/1/2012	164°	CPI, housing permits, building permits, initial jobless claims, continuing claims (US)
7/3/2012	165°	Initial jobless claims, continuing claims (US)
18/4/2012	166°	Initial jobless claims, continuing claims, leading index (US)
30/5/2012	167°	Produção industrial (BZ), GDP, initial jobless claims, continuing claims (US)
11/7/2012	168°	Initial jobless claims, continuing claims (US)
29/8/2012	169°	IGP (BZ), initial jobless claims, continuing claims (US)
10/10/2012	170°	Vendas no varejo (BZ), initial jobless claims, continuing claims (US)
28/11/2012	171°	IGP (BZ), GDP, initial jobless claims, continuing claims (US)
16/1/2013	172°	IGP (BZ), housing starts, building permits, initial jobless claims, continuing claims (US)
6/3/2013	173°	Produção industrial (BZ), initial jobless claims, continuing claims (US)
17/4/2013	174°	Initial jobless claims, continuing claims, leading index (US)
29/5/2013	175°	GDP, initial jobless claims, continuing claims (US)
10/7/2013	176°	Vendas no varejo (BZ), initial jobless claims, continuing claims (US)
28/8/2013	177°	IGP (BZ), GDP, initial jobless claims, continuing claims (US)
9/10/2013	178°	Initial jobless claims, continuing claims (US)
27/11/2013	179°	IGP (BZ)
15/1/2014	180°	Vendas no varejo (BZ), CPI, initial jobless claims, continuing claims (US)

B Tabela: Mínimos Quadrados Ordinários com as Variáveis de Controle em Nível

Swap <i>DI X Pré</i>	OLS			OLS com variáveis de controle										
	Constante (d.p.)	MP surp. (d.p.)	R ²	Constante (d.p.)	MP surp. (d.p.)	VIX_nivel (d.p.)	Yield2A_nivel (d.p.)	Yield10A_nivel (d.p.)	IGP_BZ (d.p.)	UNEMP_BZ (d.p.)	LIQnivel_BZ (d.p.)	I.J.C. (d.p.)	Lead_Index (d.p.)	R ²
2 meses	-0.001 (0.002)	1.011*** (0.026)	0.960	-0.010 (0.017)	1.023*** (0.028)	0.000 (0.000)	-0.002 (0.004)	0.003 (0.006)	-0.042 (0.099)	0.000 (0.020)	-0.055 (0.060)	0.000 (0.000)	-0.022 (0.038)	0.963
3 meses	-0.002 (0.006)	1.098*** (0.056)	0.858	-0.068 (0.035)	1.121*** (0.059)	0.001 (0.001)	0.010 (0.008)	0.020 (0.013)	-0.063 (0.208)	-0.018 (0.042)	-0.014 (0.125)	0.000 (0.000)	-0.040 (0.079)	0.876
6 meses	0.005 (0.010)	1.261*** (0.102)	0.709	-0.087 (0.064)	1.295*** (0.110)	0.001 (0.001)	-0.018 (0.015)	0.033 (0.023)	-0.042 (0.385)	-0.011 (0.078)	-0.060 (0.233)	-0.001 (0.001)	-0.093 (0.146)	0.732
1 ano	0.007 (0.014)	1.163*** (0.140)	0.523	-0.093 (0.088)	1.206*** (0.151)	0.001 (0.001)	-0.021 (0.020)	0.034 (0.032)	-0.007 (0.527)	-0.121 (0.107)	0.067 (0.318)	-0.001 (0.001)	-0.137 (0.200)	0.566
2 anos	0.029* (0.017)	0.891*** (0.167)	0.310	-0.133 (0.102)	0.930*** (0.175)	0.0020 (0.002)	-0.035 (0.023)	0.0520 (0.037)	-0.161 (0.610)	-0.168 (0.123)	0.2540 (0.368)	-0.002* (0.001)	-0.093 (0.232)	0.413
3 anos	0.034* (0.018)	0.615*** (0.183)	0.151	-0.172 (0.109)	0.660*** (0.186)	0.003 (0.002)	-0.036 (0.025)	0.055 (0.040)	-0.129 (0.651)	-0.177 (0.132)	0.451 (0.393)	-0.002** (0.001)	-0.014 (0.247)	0.315
5 anos	0.044** (0.019)	0.495** (0.195)	0.092	-0.202* (0.115)	0.539*** (0.198)	0.004* (0.002)	-0.033 (0.026)	0.0540 (0.042)	-0.043 (0.691)	-0.156 (0.140)	0.618 (0.417)	-0.002** (0.001)	0.035 (0.262)	0.274

Notas: Resultados utilizando dados de janeiro de 2006 (116ª reunião) a janeiro de 2014 (180ª reunião). *, ** e *** representam significância estatística a 10%, 5% e 1%, respectivamente.

C Tabela: Datas das Atas do COPOM, Método dos Componentes Principais

Swap <i>DIX Pré</i> (<i>pós-controles</i>)	Constante	F1 MCP	R ²	Constante	F1 MCP	F2 MCP	F3 MCP	R ²
	(d.p.)	(d.p.)		(d.p.)	(d.p.)	(d.p.)	(d.p.)	
2 meses	0.000 (0.001)	0.159*** (0.022)	0.442	0.000 (0.000)	0.159*** (0.007)	0.007*** (0.000)	0.009*** (0.001)	0.951
3 meses	0.000 (0.002)	0.328*** (0.036)	0.567	0.000 (0.001)	0.328*** (0.017)	0.013*** (0.001)	0.003** (0.002)	0.897
6 meses	0.000 (0.003)	0.875*** (0.058)	0.780	0.000 (0.001)	0.875*** (0.019)	0.015*** (0.001)	-0.029*** (0.002)	0.977
1 ano	0.000 (0.004)	1.429*** (0.068)	0.878	0.000 (0.002)	1.429*** (0.031)	0.002 (0.002)	-0.042*** (0.003)	0.974
2 anos	0.000 (0.005)	1.691*** (0.083)	0.864	0.000 (0.002)	1.691*** (0.035)	-0.031*** (0.002)	-0.015*** (0.003)	0.976
3 anos	0.000 (0.007)	1.770*** (0.109)	0.795	0.000 (0.002)	1.770*** (0.028)	-0.045*** (0.002)	0.022*** (0.002)	0.987
5 anos	0.000 (0.010)	1.723*** (0.175)	0.598	0.000 (0.002)	1.723*** (0.037)	-0.065*** (0.002)	0.056*** (0.003)	0.982

D Tabela: Z1 e Z2 em Subamostras

Swap DI X Pré	Constante	Z1	Z2	VIX_dif	Yield2A_dif	Yield10A_dif	IGP_BZ	UNEMP_BZ	LIQdif_BZ	I.J.C.	Lead_Index	R ²
	(d.p.)	até jul/2011 (d.p.)	até jul/2011 (d.p.)									
1 mês (surp. Polít. Monet.)	-0.024*** (0.004)	1.000*** (0.042)	0.009 (0.059)	0.016*** (0.002)	0.148** (0.088)	0.197** (0.085)	-0.068 (0.163)	0.070*** (0.024)	0.590*** (0.104)	0.001*** (0.000)	0.094** (0.039)	0.938
2 meses	-0.027*** (0.003)	1.040*** (0.031)	0.073* (0.043)	0.014*** (0.002)	0.097 (0.064)	0.220*** (0.063)	-0.114 (0.122)	0.069*** (0.018)	0.566*** (0.077)	0.001*** (0.000)	0.074** (0.029)	0.966
3 meses	-0.035*** (0.003)	1.104*** (0.028)	0.203*** (0.040)	0.005*** (0.002)	-0.167*** (0.058)	0.341*** (0.058)	-0.074 (0.112)	0.037** (0.016)	0.661*** (0.071)	0.001*** (0.000)	0.086** (0.027)	0.975
6 meses	-0.025*** (0.005)	1.196*** (0.047)	0.518*** (0.065)	0.001 (0.003)	-0.184** (0.098)	0.096 (0.096)	-0.198 (0.182)	0.005 (0.026)	0.758*** (0.115)	0 (0.000)	0.089** (0.044)	0.946
1 ano	-0.027*** (0.007)	0.994*** (0.071)	0.994*** (0.100)	0.002 (0.004)	-0.378*** (0.146)	0.262* (0.144)	-0.175 (0.276)	-0.128*** (0.040)	0.900*** (0.175)	-0.001* (0.000)	0.020 (0.065)	0.890
2 anos	-0.007** (0.003)	0.570*** (0.033)	1.883*** (0.047)	-0.005** (0.002)	-0.626*** (0.069)	0.433*** (0.067)	-0.098 (0.131)	-0.191*** (0.019)	0.663*** (0.082)	-0.001*** (0.000)	0.075** (0.031)	0.982
3 anos	-0.001 (0.004)	0.313*** (0.042)	2.241*** (0.059)	-0.017*** (0.002)	-0.908*** (0.087)	0.554*** (0.086)	-0.250 (0.169)	-0.208*** (0.024)	0.526*** (0.103)	-0.001*** (0.000)	0.141*** (0.040)	0.977
5 anos	0.007 (0.005)	0.200*** (0.054)	2.405*** (0.077)	-0.025*** (0.003)	-1.237*** (0.114)	0.727*** (0.112)	-0.340 (0.214)	-0.195*** (0.031)	0.583*** (0.136)	-0.001*** (0.000)	0.161*** (0.051)	0.968
Swap DI X Pré	Constante	Z1	Z2	VIX_dif	Yield2A_dif	Yield10A_dif	IGP_BZ	UNEMP_BZ	LIQdif_BZ	I.J.C.	Lead_Index	R ²
(d.p.)	pós jul/2011 (d.p.)	pós jul/2011 (d.p.)										
1 mês (surp. Polít. Monet.)	-0.017*** (0.006)	1.000*** (0.063)	-0.004 (0.218)	0.017* (0.010)	0.447 (0.657)	0.160 (0.225)	-0.090 (0.163)		0.780*** (0.232)	0.001*** (0.000)	0.058 (0.132)	0.948
2 meses	-0.018*** (0.003)	1.078*** (0.028)	0.034 (0.097)	0.022*** (0.005)	0.204 (0.291)	0.237** (0.100)	-0.028 (0.072)		0.653*** (0.103)	0.001*** (0.000)	0.143** (0.057)	0.991
3 meses	-0.029*** (0.002)	1.387*** (0.015)	0.362** (0.050)	0.007*** (0.002)	0.117 (0.153)	0.195** (0.052)	-0.138*** (0.038)		0.550*** (0.054)	0.001*** (0.001)	0.054* (0.030)	0.998
6 meses	-0.029*** (0.006)	1.874*** (0.062)	1.006*** (0.215)	-0.001 (0.010)	-0.462 (0.648)	0.282 (0.220)	-0.133 (0.162)		0.526** (0.229)	0 (0.000)	0.027 (0.129)	0.985
1 ano	-0.016 (0.010)	1.961*** (0.105)	1.961*** (0.364)	-0.022 (0.017)	-0.914 (1.094)	0.225 (0.378)	-0.148 (0.274)		0.725** (0.386)	0 (0.001)	0.008 (0.216)	0.978
2 anos	0.013 (0.007)	1.641*** (0.073)	2.278*** (0.258)	-0.010 (0.012)	-1.718** (0.754)	0.549** (0.259)	-0.409* (0.191)		0.703** (0.270)	-0.001* (0.000)	0.159 (0.155)	0.978
3 anos	0.023*** (0.002)	1.210*** (0.019)	3.012*** (0.065)	-0.021*** (0.003)	-0.718** (0.195)	0.437** (0.066)	-0.239*** (0.048)		0.516*** (0.069)	-0.002*** (0.000)	0.116** (0.038)	0.998
5 anos	0.040*** (0.006)	0.968*** (0.064)	2.987*** (0.224)	-0.011 (0.010)	-0.708 (0.669)	0.717*** (0.229)	-0.189 (0.167)		0.739*** (0.239)	-0.002*** (0.000)	0.136 (0.134)	0.970

Nota: *, ** e *** representam significância estatística a 10%, 5% e 1%, respectivamente, a partir de desvios-padrão calculados por *bootstrap*.

E Fixação de Preços Ótima (1)

Cada firma, quando autorizada a ajustar seu preço, escolhe o preço $P_t^*(i)$ que maximiza o lucro esperado descontado para t períodos:

$$\max_{P_t^*(i)} E_t \left\{ \sum_{t=0}^{\infty} \theta^k Q_{t,t+k} [P_t^*(i) Y_{t,t+k}(i) - \Psi_{t,t+k}(Y_{t,t+k}(i))] \right\}.$$

Temos $Y_{t,t+k}(i) = \left(\frac{P_t^*(i)}{P_{t+k}}\right)^{-\epsilon} Y_{t+k}$, o que gera

$$\max_{P_t^*(i)} E_t \left\{ \sum_{t=0}^{\infty} \theta^k Q_{t,t+k} \left[P_t^*(i) Y_{t+k} \left(\frac{P_t^*(i)}{P_{t+k}}\right)^{-\epsilon} - \Psi_{t,t+k}(Y_{t,t+k}(i)) \right] \right\}.$$

A condição de primeira ordem para a solução implica que todas as firmas que revisam seus preços no período t escolherão o mesmo nível de preço ótimo P_t^* . Portanto, a solução de primeira ordem gera

$$E_t \left\{ \sum_{t=0}^{\infty} \theta^k Q_{t,t+k} \left[Y_{t+k} P_{t+k}^{\epsilon} (1 - \epsilon) P_t^{*-\epsilon} - W_{t+k} A_{t+k}^{-\frac{1}{1-\alpha}} Y_{t+k}^{\frac{1}{1-\alpha}} \left(\frac{-\epsilon}{1-\alpha}\right) P_{t+k}^{\frac{\epsilon}{1-\alpha}} P_t^{*[-\frac{\epsilon}{1-\alpha}-1]} \right] \right\} = 0$$

$$E_t \left\{ \sum_{t=0}^{\infty} \theta^k Q_{t,t+k} \left[Y_{t+k} P_{t+k}^{\epsilon} (1 - \epsilon) P_t^{*-\epsilon} + \epsilon P_{t+k} Y_{t+k} M C_{t+k} P_{t+k}^{\frac{[\epsilon]}{1-\alpha}} P_t^{*[-\frac{\epsilon}{1-\alpha}-1]} \right] \right\} = 0$$

Note que $M C_{t+k} = \left(\frac{1}{1-\alpha}\right) \frac{W_{t+k}}{P_{t+k}} A_{t+k}^{-\frac{1}{1-\alpha}} Y_{t+k}^{\frac{\alpha}{1-\alpha}}$ representa o custo marginal real.

Multiplicando-o por $-\frac{1}{\epsilon-1}$ temos

$$E_t \left\{ \sum_{t=0}^{\infty} \theta^k Q_{t,t+k} Y_{t+k} P_{t+k}^{\epsilon} \left[P_t^{*-\epsilon} - \frac{\epsilon}{\epsilon-1} M C_{t+k} P_{t+k}^{1-\epsilon} P_{t+k}^{\frac{[\epsilon]}{1-\alpha}} P_t^{*[-\frac{\epsilon}{1-\alpha}-1]} \right] \right\} = 0$$

Multiplicando a equação por $\frac{1}{P_t^{*-\epsilon/(1-\alpha)-1}}$, temos

$$E_t \left\{ \sum_{t=0}^{\infty} \theta^k Q_{t,t+k} Y_{t+k} P_{t+k}^{\epsilon} \left[P_t^{*[\frac{1-\alpha+\epsilon\alpha}{1-\alpha}]} - \frac{\epsilon}{\epsilon-1} M C_{t+k} P_{t+k}^{\frac{[1-\alpha+\epsilon\alpha]}{1-\alpha}} \right] \right\} = 0$$

Defina $\frac{1}{\theta} = \frac{1-\alpha+\epsilon\alpha}{1-\alpha}$. Da subseção 2.2.1 sabemos que $Q_{t,t+k} =$

$\beta^k E_t \left(\frac{P_t C_t}{P_{t+k} C_{t+k}}\right)$. Separando e rearranjando os termos temos

$$P_t^{*\frac{1}{\theta}} = \frac{\epsilon}{\epsilon - 1} \left(\frac{E_t \left\{ \sum_{t=0}^{\infty} \theta^k \beta^k \frac{Y_{t+k}}{P_{t+k} C_{t+k}} P_{t+k}^{[\epsilon + (\frac{1}{\theta})]} M C_{t+k} \right\}}{E_t \left\{ \sum_{t=0}^{\infty} \theta^k \beta^k \frac{Y_{t+k}}{P_{t+k} C_{t+k}} P_{t+k}^{\epsilon} \right\}} \right).$$

F Fixação de Preços Ótima (2)

Temos

$$\Lambda_t = \frac{Y_t}{C_t} MC_t P_t^{\frac{\epsilon}{1-\alpha}} + \theta\beta E_t(\Lambda_{t+1})$$

$$\Xi_t = \frac{Y_t}{C_t} P_t^{\epsilon-1} + \theta\beta E_t(\Xi_{t+1})$$

Defina $\tilde{\Lambda}_t = \frac{\Lambda_t}{P_t^{\frac{\epsilon}{1-\alpha}}}$ e $\tilde{\Xi}_t = \frac{\Xi_t}{P_t^{\epsilon-1}}$. Então

$$\tilde{\Lambda}_t = \frac{Y_t}{C_t} MC_t + \frac{\theta\beta}{P_t^{\frac{\epsilon}{1-\alpha}}} E_t \left(\Lambda_{t+1} \frac{P_{t+1}^{\frac{\epsilon}{1-\alpha}}}{P_{t+1}^{\frac{\epsilon}{1-\alpha}}} \right)$$

$$\tilde{\Lambda}_t = \frac{Y_t}{C_t} MC_t + \theta\beta E_t \left(\Pi_{t+1}^{\frac{\epsilon}{1-\alpha}} \tilde{\Lambda}_{t+1} \right)$$

e

$$\tilde{\Xi}_t = \frac{Y_t}{C_t} + \frac{\theta\beta}{P_t^{\epsilon-1}} E_t \left(\Xi_{t+1} \frac{P_{t+1}^{\epsilon-1}}{P_{t+1}^{\epsilon-1}} \right)$$

$$\tilde{\Xi}_t = \frac{Y_t}{C_t} + \theta\beta E_t(\Pi_{t+1}^{\epsilon-1} \tilde{\Xi}_{t+1}),$$

o que gera

$$P_t^{*\frac{1}{\theta}} = \frac{\epsilon}{\epsilon-1} \left(\frac{\tilde{\Lambda}_t P_t^{\frac{\epsilon}{1-\alpha}}}{\tilde{\Xi}_t P_t^{\epsilon-1}} \right)$$

$$\left(\frac{P_t^*}{P_{t+1}^*} \right)^{\frac{1}{\theta}} \left(\frac{P_{t-1}}{P_t} \right)^{\frac{1}{\theta}} = \frac{\epsilon}{\epsilon-1} \left(\frac{\tilde{\Lambda}_t}{\tilde{\Xi}_t} \right)$$

$$\Pi^{*\frac{1}{\theta}} = \frac{\epsilon}{\epsilon-1} \Pi^{\frac{1}{\theta}} \left(\frac{\tilde{\Lambda}_t}{\tilde{\Xi}_t} \right).$$

G Equilíbrio no Mercado de Trabalho

Definimos o índice de preços como $P_t = \left[\int_0^1 P_t^{1-\epsilon}(i) di \right]^{\frac{1}{1-\epsilon}}$. Então

$$1 = \int_0^1 \left(\frac{P_t(i)}{P_t} \right)^{1-\epsilon} di = \int_0^1 \exp\{(1-\epsilon)(p_t(i) - p_t)\} di$$

A aproximação de Taylor de segunda ordem de $\exp\{(1-\epsilon)(p_t(i) - p_t)\}$ em $\exp\{p_t(i) - p_t\}$ em torno do steady state de inflação zero $\pi_t = 0$ gera

$$\exp\{(1-\epsilon)(p_t(i) - p_t)\} = 1 + (1-\epsilon)(p_t(i) - p_t) + \frac{1}{2}(1-\epsilon)^2(p_t(i) - p_t)^2.$$

Então, até a segunda ordem,

$$1 \cong \int_0^1 \left[1 + (1-\epsilon)(p_t(i) - p_t) + \frac{1}{2}(1-\epsilon)^2(p_t(i) - p_t)^2 \right] di$$

$$1 \cong 1 + (1-\epsilon) \int_0^1 (p_t(i) - p_t) di + \frac{(1-\epsilon)^2}{2} \int_0^1 (p_t(i) - p_t)^2 di$$

$$- \int_0^1 (p_t(i) - p_t) di \cong \frac{(1-\epsilon)}{2} \int_0^1 (p_t(i) - p_t)^2 di$$

(G1)

$$p_t \cong E_i\{p_t(i)\} + \frac{(1-\epsilon)}{2} \int_0^1 (p_t(i) - p_t)^2 di$$

(G2)

Adicionalmente, o termo na equação (2.28) pode ser escrito como

$$\begin{aligned} & \int_0^1 \left(\frac{P_t(i)}{P_t} \right)^{-\frac{\epsilon}{1-\alpha}} di \\ &= \int_0^1 \exp\left\{ \left(\frac{-\epsilon}{1-\alpha} \right) (p_t(i) - p_t) \right\} di \\ &\cong 1 - \left(\frac{\epsilon}{1-\alpha} \right) \int_0^1 (p_t(i) - p_t) di + \frac{1}{2} \left(\frac{\epsilon}{1-\alpha} \right)^2 \int_0^1 (p_t(i) - p_t)^2 di \end{aligned}$$

Usando a equação (B1),

$$\begin{aligned}
& \int_0^1 \left(\frac{P_t(i)}{P_t} \right)^{-\frac{\epsilon}{1-\alpha}} di \\
& \cong 1 + \left(\frac{\epsilon}{1-\alpha} \right) \left(\frac{1-\epsilon}{2} \right) \int_0^1 (p_t(i) - p_t)^2 di \\
& + \frac{1}{2} \left(\frac{\epsilon}{1-\alpha} \right)^2 \int_0^1 (p_t(i) - p_t)^2 di \\
& = 1 + \frac{1}{2} \left(\frac{\epsilon}{1-\alpha} \right) \left(\frac{1}{\Theta} \right) \int_0^1 (p_t(i) - p_t)^2 di \\
& \cong 1 + \frac{1}{2} \left(\frac{\epsilon}{1-\alpha} \right) \left(\frac{1}{\Theta} \right) \text{var}_i\{p_t(i)\} > 1,
\end{aligned}$$

como em Gali (2008), cap. 3.

Até a segunda ordem, a última igualdade segue da equação (B2). Portanto, utilizando *logs* na equação (2.28):

$$\begin{aligned}
(1-\alpha)n_t &= y_t - a_t + (1-\alpha) \log \left[\int_0^1 \left(\frac{P_t(i)}{P_t} \right)^{-\frac{\epsilon}{1-\alpha}} di \right] \\
&\cong y_t - a_t + \frac{1}{2} \left(\frac{\epsilon}{\Theta} \right) \text{var}_i\{p_t(i)\}
\end{aligned}$$

H Modelo e *Steady State*

Consumidores:

$$\begin{aligned}
 Y_t &= C_t \\
 \Omega_t &= Y_t - \frac{W_t}{P_t} N_t \\
 C_t &= \frac{W_t}{P_t} (1 - N_t) \\
 \left[E_t(\Gamma_{t+1}) + \frac{\gamma}{\beta(1-\gamma)} b_t \right] C_t &= \frac{1}{\beta} E_t(\Gamma_{t+1} Q_{t,t+1} \Pi_{t+1} C_{t+1}) + \frac{\gamma}{\beta(1-\gamma)} S_t \\
 b_t &= b_0 C_t^{-1} \\
 \Gamma_t &= 1 + b_t + \beta(1-\gamma) E_t(\Gamma_{t+1}) \\
 S_t &= \frac{1}{R_t^f (1 + \chi_t)} E_t(\Pi_{t+1} (S_{t+1} + \Omega_{t+1})) + \frac{b_t C_t}{(1 + \chi_t)} \\
 \chi_t &= \bar{\chi} + e_{\chi_t} \\
 e_{\chi_t} &= \rho_{\chi} e_{\chi_{t-1}} + u_t
 \end{aligned}$$

Firmas:

$$\begin{aligned}
 \Pi_t^{1-\epsilon} &= \theta + (1 - \theta) \Pi_t^{*1-\epsilon} \\
 \Pi_t^{*\frac{1}{\Theta}} &= \frac{\epsilon}{\epsilon - 1} \Pi_t^{\frac{1}{\Theta}} \frac{\tilde{\Lambda}_t}{\tilde{\Xi}_t} \\
 \tilde{\Lambda}_t &= \frac{Y_t M C_t}{C_t} + \theta \beta E_t \left(\Pi_{t+1}^{\frac{\epsilon}{1-\alpha}} \tilde{\Lambda}_{t+1} \right) \\
 \tilde{\Xi}_t &= \frac{Y_t}{C_t} + \theta \beta E_t (\Pi_{t+1}^{\epsilon-1} \tilde{\Xi}_{t+1}) \\
 M C_t &= \left(\frac{1}{1-\alpha} \right) \frac{W_t}{P_t} A_t^{-\frac{1}{1-\alpha}} Y_t^{\frac{1}{1-\alpha}} \\
 A_t &= A_{t-1}^{\rho_a} \exp(e_{a_t}) \Rightarrow a_t = \rho_a a_{t-1} + e_{a_t} \\
 (1 - \alpha) n_t &= y_t - a_t + \frac{\epsilon}{2\Theta} \text{var}_i \{ p_t(i) \} \\
 \text{var}_i \{ p_t(i) \} &= \theta \text{var}_i \{ p_{t-1}(i) \} + \frac{\theta}{1-\theta} \pi_t^2
 \end{aligned}$$

Cumprer lembrar que as letras minúsculas representam o *log* da variável:

$$x_t = \log(X_t).$$

Política Monetária:

$$i = \tilde{\rho}_r + \phi_r(i_{t-1} - \tilde{\rho}_r) + (1 - \phi_r)[\phi_\Pi(\pi_t - \log(\bar{\Pi})) + \phi_Y(y_t - \log(\bar{Y})) + \phi_S(s_t - \log(\bar{S}))] + e_{R_t}$$

$$e_{R_t} = \rho_{er}e_{R_{t-1}} + uu_t$$

Salienta-se, também, que $i = \log(R_t^f)$ e que $\tilde{\rho}_r$ é o valor de *steady state* da taxa de juros i .

As equações que representam o *steady state* do modelo estão apresentadas a seguir:

$$\overline{var\{p\}} = 0$$

$$\bar{\Pi} = \bar{\Pi}^* = 1$$

$$\bar{A} = 1$$

$$\bar{N} = \frac{1 - \alpha}{1 - \alpha + Markup}$$

$$\bar{Y} = \bar{A}\bar{N}^{1-\alpha}$$

$$\bar{C} = \bar{Y}$$

$$\left(\frac{\bar{W}}{\bar{P}}\right) = \frac{\bar{C}}{1 - \bar{N}}$$

$$\bar{MC} = \left(\frac{1}{1 - \alpha}\right) \left(\frac{\bar{W}}{\bar{P}}\right) \bar{A}^{-\frac{1}{1-\alpha}} \bar{Y}^{\frac{1}{1-\alpha}}$$

$$\bar{\Omega} = \bar{Y} - \left(\frac{\bar{W}}{\bar{P}}\right) \bar{N}$$

$$\bar{b} = \left(\frac{b_0}{\bar{C}}\right)^{\frac{1}{1-\rho_b}}$$

$$\bar{S} = \frac{\tilde{\beta}\bar{\Omega} + b_0}{1 + \tilde{\chi} - \tilde{\beta}}$$

$$\bar{\Gamma} = \frac{1 + \frac{b_0}{\bar{C}} + \tilde{\beta}\gamma \left(\frac{\bar{S} + \bar{\Omega}}{\bar{C}}\right)}{1 - \tilde{\beta}(1 - \gamma)}$$

$$\varphi = \left(\frac{\gamma}{1 - \gamma}\right) \left(\frac{\bar{S} + \bar{\Omega}}{\bar{\Gamma}\bar{C}}\right)$$

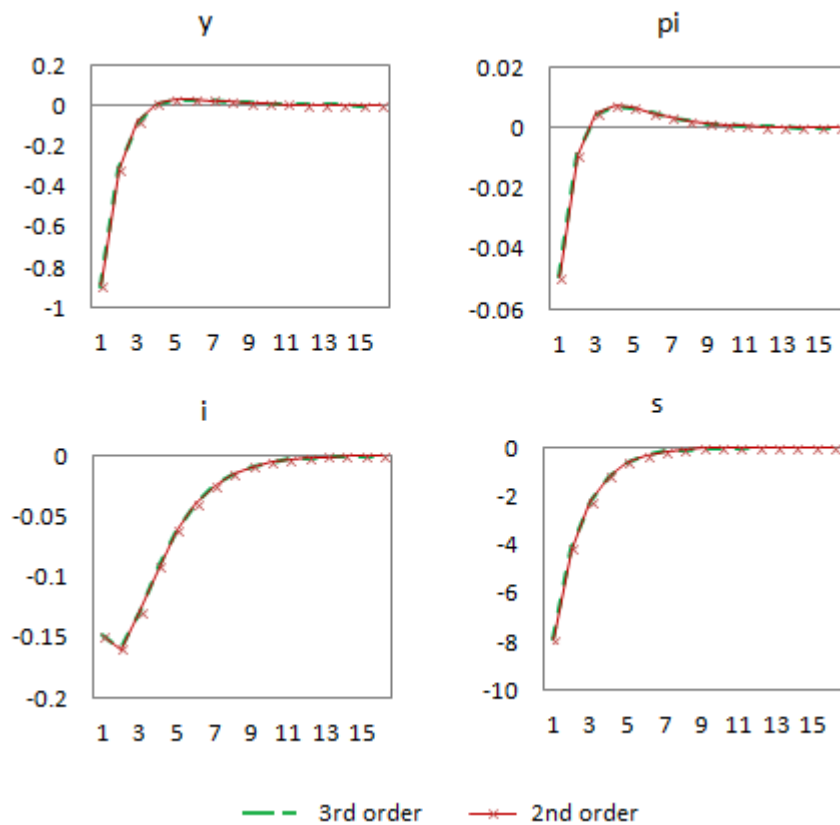
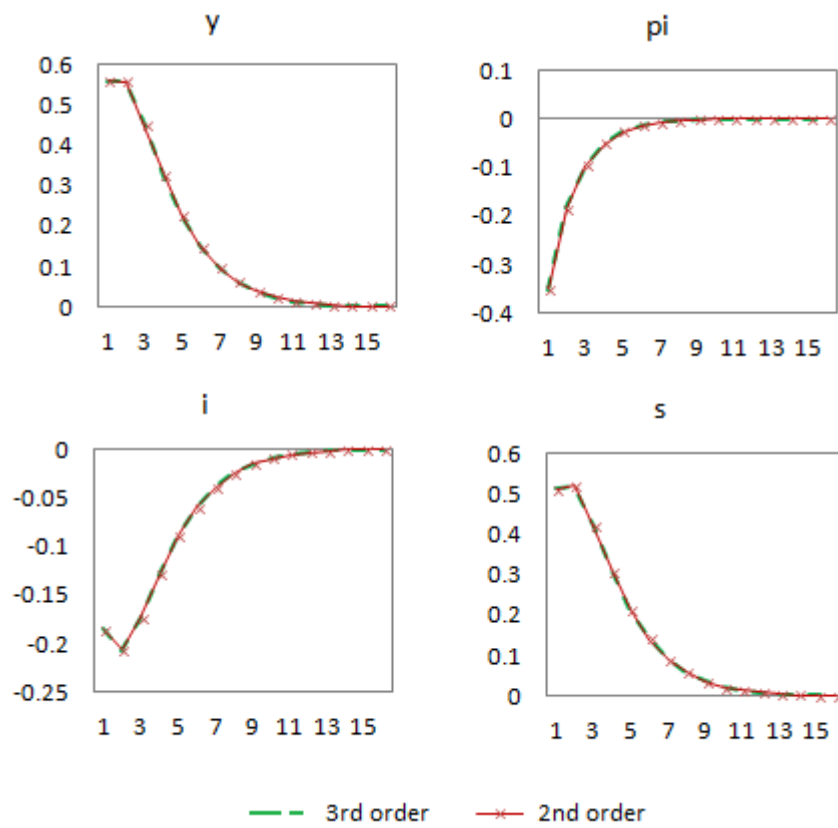
$$\beta = \tilde{\beta}(1 + \varphi)$$

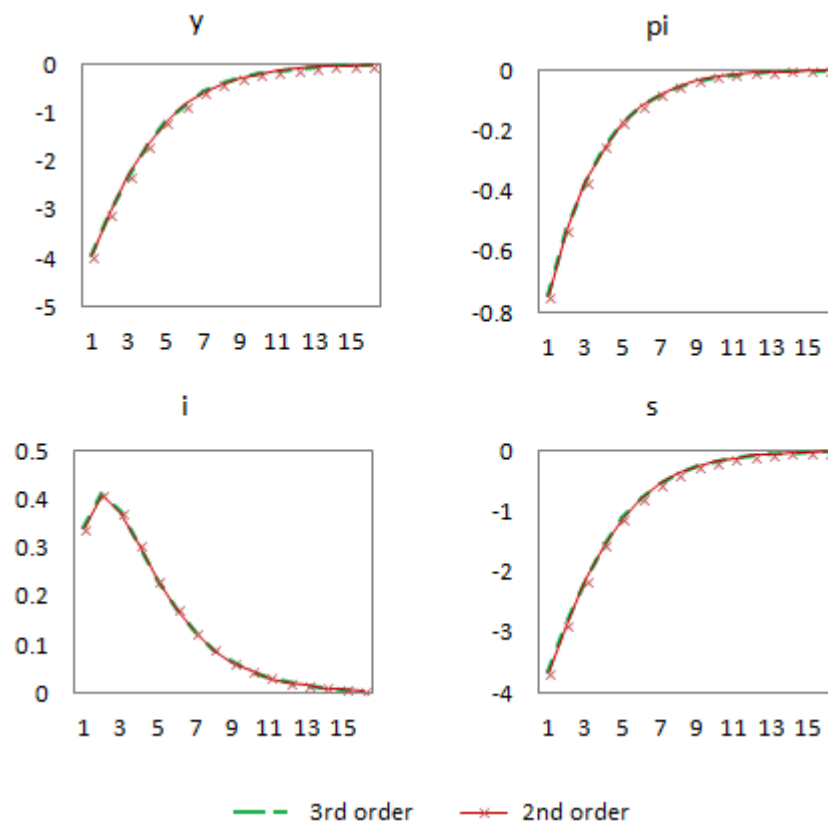
$$\tilde{\Lambda} = \frac{\bar{MC}}{1 - \theta\beta}$$

$$\tilde{\Xi} = \frac{1}{1 - \theta\beta}$$

I Aproximação de Segunda Ordem versus Terceira Ordem

– Resultados IRF





J Teste de Linearidade

O teste de linearidade foi feito a partir de estimações por mínimos quadrados ordinários do modelo de limiar para cada possível valor de limiar, dada uma variável predeterminada para representar a variável de limiar.

Para cada possível valor de limiar, foi calculada a estatística de Wald, que testa se existe diferença entre os coeficientes estimados de cada regime. O *sup* da estatística Wald de todos os possíveis valores de limiar é então considerado:

$$W_n = \sup_{\gamma \in \Gamma} W_n(\gamma),$$

onde $\Gamma = [\underline{\gamma}, \bar{\gamma}]$. Neste trabalho, como estamos lidando com um modelo VAR, o teste é modificado de forma a capturar o *sup* do determinante do *log* de $W_n(\gamma)$.

Devido à presença de heterocedasticidade, o teste de Wald foi calculado usando desvios padrão com correção de White¹.

A segunda etapa foi calcular a distribuição de W_n . Para esse fim, utilizou-se a teoria de distribuição descrita por Hansen (1996, 1997), que propõe um método de simulação que permite obter os valores críticos da estatística. Além disso, mostra que procedimentos de *bootstrap* permitem replicar a distribuição assintótica do modelo. Portanto, um teste de Wald não padrão, com distribuição por *bootstrap*, foi implementado para estudar a possível existência de não linearidade no modelo.

Aplicado o teste, se a linearidade do modelo é rejeitada, há motivos para se estimar o VAR de limiar, sendo que, para essa etapa, é necessário conhecer a variável de limiar c_{t-d} , escolhida previamente para implementar o teste de linearidade, bem como seu valor de limiar γ , este sendo o valor que minimiza o determinante do *log* da matriz de variância-covariância dos resíduos do VAR de limiar: $\log|\sum_{t=1}^n u_t u_t'|$.

Para evitar problemas de *overfitting*, foi imposta a restrição aos possíveis valores de limiar de forma a garantir que nenhum dos regimes fosse estimado com menos do que 15% do total de observações disponíveis no modelo.

Após conhecer o valor de γ , as observações podem ser separadas de acordo com seu valor de c_{t-d} : abaixo do valor de limiar, compõem o regime 1; acima do

¹ Para mais detalhes sobre a construção do teste de linearidade, ver Hansen (1996, 1997).

valor de limiar, farão parte da regressão estimada para encontrar os coeficientes associados ao regime 2.

K Respostas a Impulsos – TVAR de uma Defasagem

Como pode ser evidenciado nas figuras abaixo, de fato os resultados das funções de resposta aos impulsos demonstram a existência de comportamentos assimétricos das variáveis em decorrência dos choques exógenos. Essa assimetria, mais visível nas trajetórias das variáveis que foram atingidas por choques exógenos no momento em que havia instabilidade no mercado financeiro, decorre do fato de que a variável endógena de interesse tem capacidade de alterar a sua dinâmica de reação ao choque a cada período, condicional à variável de limiar ter ultrapassado ou não o valor que determina se a economia se mantém no mesmo regime ou se alterna sua dinâmica para o outro regime que representa a economia.

Figura K.1: Choques nos Preços Reais das Ações

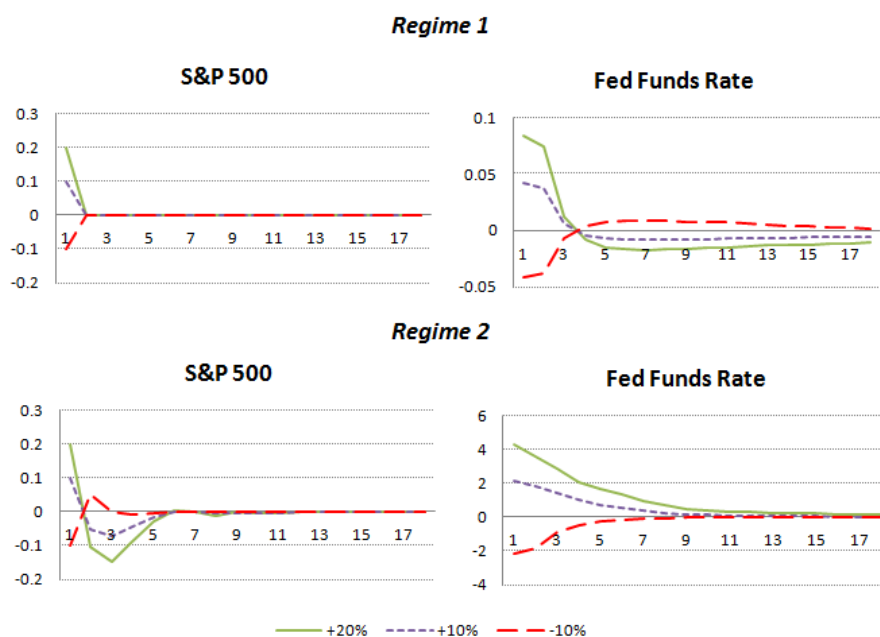
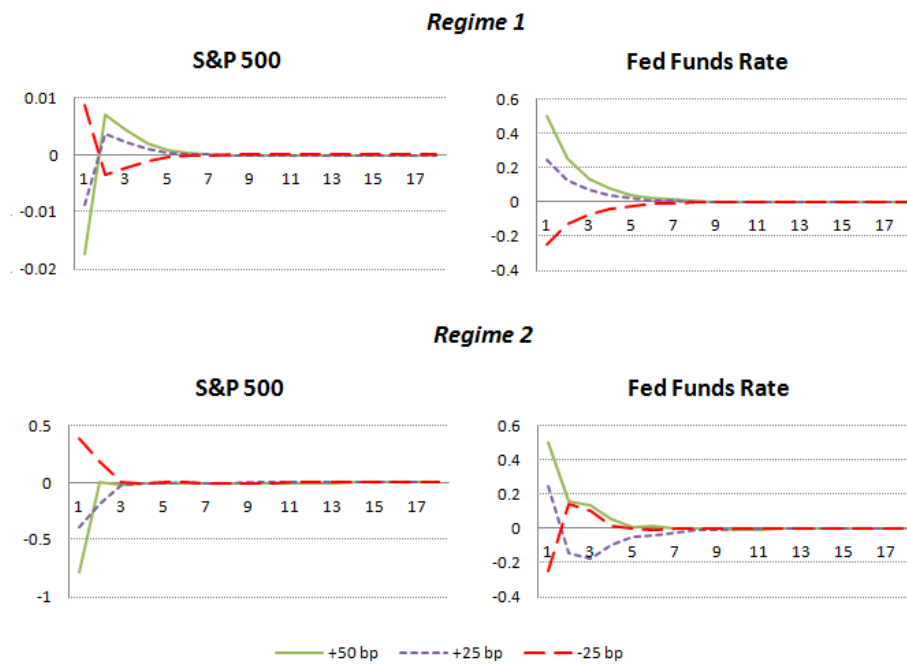


Figura K.2: Choques de Política Monetária



L Respostas a Impulsos – TVAR de duas Defasagens

Figura L.1: Choques nos Preços Reais das Ações

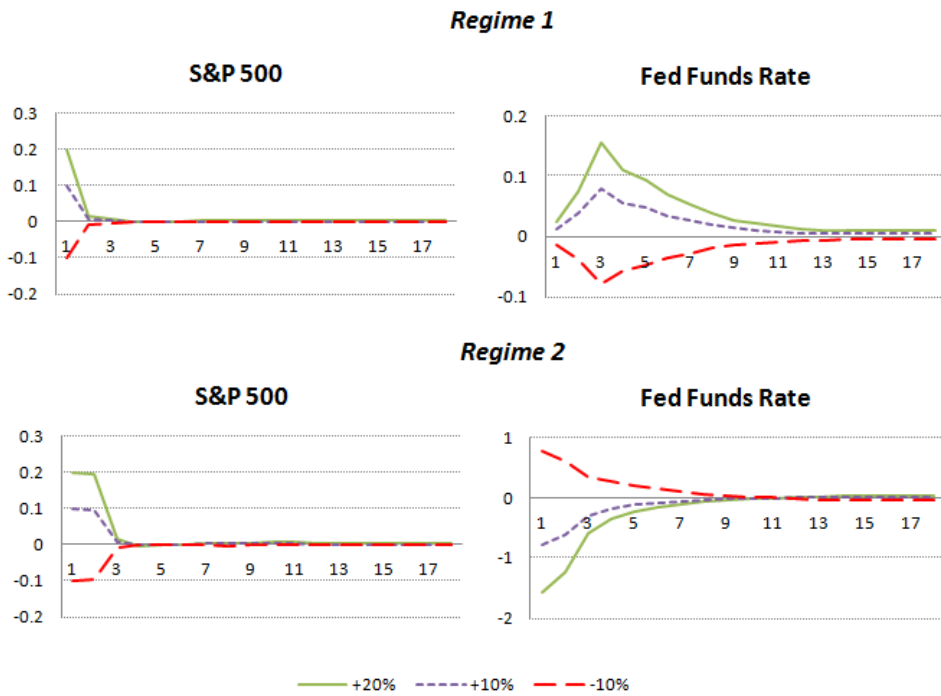


Figura L.2: Choques de Política Monetária

