

**Appendix B**  
**The ROW Part of the MCJ Model**  
**2018**

**Table B.1**  
**The Countries and Variables in the MCJ Model**

Quarterly Countries			Local Currency	Trade Share Equations Only		
1	US	United States	U.S. Dollar (bil.)	40	TU	Turkey
2	CA	Canada	Can. Dollar (mil.)	41	PD	Poland
3	JA	Japan	Yen (bil.)	42	RU	Russia
4	AU	Austria	Euro (mil.)	43	UE	Ukraine
5	FR	France	Euro (mil.)	44	EG	Egypt
6	GE	Germany	Euro (mil.)	45	IS	Israel
7	IT	Italy	Euro (mil.)	46	KE	Kenya
8	NE	Netherlands	Euro (mil.)	47	BA	Bangladesh
9	ST	Switzerland	Swiss Franc (mil.)	48	HK	Hong Kong
10	UK	United Kingdom	Pound Sterling (mil.)	49	SI	Singapore
11	FI	Finland	Euro (mil.)	50	VI	Vietnam
12	AS	Australia	Aust. Dollar (mil.)	51	NI	Nigeria
13	SO	South Africa	Rand (bil.)	52	AL	Algeria
14	KO	Rep. of Korea	Won (bil.)	53	IA	Indonesia
<b>Annual Countries</b>				54	IN	Iran
15	BE	Belgium	Euro (mil.)	55	IQ	Iraq
16	DE	Denmark	Den. Kroner (mil.)	56	KU	Kuwait
17	NO	Norway	Nor. Kroner (mil.)	57	LI	Libya
18	SW	Sweden	Swe. Kroner (mil.)	58	UA	United Arab Emirates
19	GR	Greece	Euro (mil.)	59	AO	All Other
20	IR	Ireland	Euro (mil.)			
21	PO	Portugal	Euro (mil.)			
22	SP	Spain	Euro (mil.)			
23	NZ	New Zealand	N.Z. Dollar (mil.)			
24	SA	Saudi Arabia	Riyals (mil.)			
25						
26	CO	Colombia	Col. Pesos (bil.)			
27	JO	Jordan	Jor. Dinars (mil.)			
28						
29	ID	India	Ind. Rupee (bil.)			
30	MA	Malaysia	Ringgit (mil.)			
31	PA	Pakistan	Pak. Rupee (bil.)			
32	PH	Philippines	Phil. Peso (bil.)			
33	TH	Thailand	Baht (bil.)			
34	CH	China	Yuan (bil.)			
35	AR	Argentina	Arg. Peso (mil.)			
36	BR	Brazil	Reais (mil.)			
37	CE	Chile	Chi. Peso (bil.)			
38	ME	Mexico	New Peso (bil.)			
39	PE	Peru	Nuevos Soles (mil.)			

• The countries that make up the EMU, denoted EU in the model, are AU, FR, GE, IT, NE, FI, BE, IR, PO, SP, GR. (GR begins in 2001.) (Luxembourg, which is also part of the EMU, is not in the model.)

• Prior to 1999:1 the currency is Schillings for AU, Fr. Francs for FR, DM for GE, Lira for IT, Guilders for NE, Markkaa for FI, Bel. Francs for BE, Irish Pounds for IR, Escudes for PO, Pesetas for SP, and Drachmas for GR (prior to 2001:1). The units are in Euro equivalents. For example, in 1999:1 the Lira was converted to the Euro at 1936.27 Liras per Euro, and 1936.27 was used to convert the Lira to its Euro equivalent for 1998:4 back.

• The NIPA base year is 2010 for all countries except US (2009), BE (2015), NO (2005), IR (2015), PO (2011), NZ (2009).

• Numbers 25 and 28 are blank. They used to be Venezuela and Syria, respectively. Whenever summations are mentioned below, they always exclude 25 and 28.

**Table B.2**  
**The Variables for a Given Country in Alphabetical Order**

Variable	Eq. No.	Description
$a_{ij}$	L-1	Share of $i$ 's merchandise exports to $j$ out of total merchandise imports of $j$ . [See below]
$C$	2	Personal consumption in constant lc. [OECD or IFS data]
$E$	7 or I-4	Exchange rate, average for the period, lc per \$ . [IFS data]
$EX$	I-2	Total exports (NIPA) in constant lc. [OECD or IFS data]
$E10$	exog	$E$ in 2010, 2010 lc per 2010 \$.
$G$	exog	Government purchases of goods and services in constant lc. [OECD or IFS data]
$H$	7 or I-4	Exchange rate, average for the period, lc per euro. [ $E/E_{GE}$ ]
$I$	3	Gross fixed investment in constant lc. [OECD or IFS data]
$IM$	1	Total imports (NIPA) in constant lc. [OECD or IFS data]
$J$	9	Total employment in millions. [OECD data]
$JMIN$	I-7	Minimum amount of employment needed to produce $Y$ in millions. [ $Y/LAM$ ]
$LAM$	exog	Computed from peak-to-peak interpolation of $\log(Y/J)$ .
$L1$	10	Labor force in millions. [OECD data]
$M10\$$	I-1	Total merchandise imports (fob) in 2010 \$ from the DOT data. [See below]
$PM$	I-5	Import price deflator, 2010 = 1.0. [IFS data]
$PMP$	L-4	Import price index from the DOT data, 2010 = 1.0. [See below]
$PM10$	exog	$PM$ in the NIPA base year divided by $PM$ in 2010.
$POP$	exog	Population in millions. [IFS data]
$POP1$	exog	Population of labor force age in millions. [OECD data]
$PSI1$	exog	$[M10\$/((IM/(E10 \cdot PM10)))]$
$PSI2$	exog	$[X10\$/((EX/(E10 \cdot PX10)))]$
$PSI3$	exog	$[PM/PMP]$
$PW\$$	L-5	World price index, \$/2010\$. [See below]
$PX$	8	Export price index, 2010 = 1.0. [IFS data]
$PX\$$	I-6	Export price index, \$/2010\$, 2010 = 1.0. $[(E10 \cdot PX)/E]$ .
$PX10$	exog	$PX$ in the NIPA base year divided by $PX$ in 2010.
$PY$	4	GDP deflator, equals 1.0 in the NIPA base year. [OECD or IFS data]
$RB$	6	Long term interest rate, percentage points. [IFS data]
$RS$	5	Three-month interest rate, percentage points. [IFS data]
$STAT$	exog	Statistical discrepancy in constant lc. [ $Y - C - I - G - EX + IM - V1$ ]
$T$	exog	Time trend. [For quarterly data, 1 in 1952.1, 2 in 1952.2, etc.; for annual data, 1 in 1952, 2 in 1953, etc.]
$UR$	I-9	Unemployment rate. $[(L1 - J)/L1]$
$V1$	exog	Inventory investment in constant lc. [OECD or IFS data]
$X10\$$	L-3	Merchandise exports from the DOT data in 2010 \$. [See below]
$XX10\$_{ij}$	L-2	Merchandise exports from $i$ to $j$ in 2010\$. [See below]
$Y$	I-3	Real GDP in constant lc. [OECD or IFS data]
$YS$	exog	Potential value of $Y$ . [From a peak-to-peak interpolation of $\log Y$ .]
$ZZ$	I-7	Demand pressure variable. [ $\log Y - \log YS$ ]

• lc = local currency

---

**Construction of variables related to the trade share matrix:**

---

**The raw data are:**

$XX\$_{ij}$  Merchandise exports from  $i$  to  $j$  in \$,  $i, j = 1, \dots, 58$  [DOT data.  
0 value used if no data]

$X\$_i$  Total merchandise exports (fob) in \$.  $i = 1, \dots, 39$  [IFS data]

**The constructed variables are:**

$$XX\$_{i59} = X\$_i - \sum_{j=1}^{58} XX\$_{ij}, i = 1, \dots, 39$$

$$XX10\$_{ij} = XX\$_{ij}/PX\$_i, i = 1, \dots, 39, j = 1, \dots, 59 \text{ and } i = 40, \dots, 58, j = 1, \dots, 58$$

$$M10\$_i = \sum_{j=1}^{58} XX10\$_{ij}, i = 1, \dots, 58; M10\$_{59} = \sum_{j=1}^{39} XX10\$_{j59}$$

$$a_{ij} = XX10\$_{ij}/M10\$_j, i = 1, \dots, 39, j = 1, \dots, 59 \text{ and } i = 40, \dots, 58, j = 1, \dots, 58$$

$$X10\$_i = \sum_{j=1}^{59} XX10\$_{ij}, i = 1, \dots, 39; X10\$_i = \sum_{j=1}^{58} XX10\$_{ij}, i = 40, \dots, 58$$

$$PMP_i = (E_i/E10_i) \sum_{j=1}^{58} a_{ji} PX\$_j, i = 1, \dots, 39$$

$$PW\$_i = (\sum_{j=1}^{58} PX\$_j X10\$_j) / (\sum_{j=1}^{58} X10\$_j), i = 1, \dots, 39$$

An element in this summation is skipped if  $j = i$ . This summation also excludes the oil exporting countries, which are SA, NI, AL, IA, IN, IQ, KU, LI, UA.

---

- Variables available for trade share only countries are  $M10\$$ ,  $PX\$$ ,  $X10\$$  (quarterly).
- For AO only variable  $M10\$$  is available (quarterly).

**The EU Variables**

<b>Variable</b>	<b>Eq. No.</b>	<b>Description</b>
<i>E</i>	7	Exchange rate, average for the period, euro per \$ . [IFS data]
<i>PY</i>		GDP deflator. $[(\sum_{i=1}^6 PY_i Y_i)/Y_{EU}]$ , where the summation is for $i = GE, AU, FR, IT, NE, FI.$
<i>RB</i>	6	Long term interest rate, percentage points. [IFS data]
<i>RS</i>	5	Three-month interest rate, percentage points. [IFS data]
<i>Y</i>		Real GDP in constant euros. $[Y_{GE} + \sum_{i=1}^5 [Y_i/(E10_i/E10_{GE})]]$ , where the summation is for $i = AU, FR, IT, NE, FI.$
<i>YS</i>		Potential value of $Y_{EU}$ . $[YS_{GE} + \sum_{i=1}^5 [YS_i/(E10_i/E10_{GE})]]$ , where the summation is for $i = AU, FR, IT, NE, FI.$
<i>ZZ</i>		Demand pressure variable. $[\log Y_{EU} - \log YS_{EU}]$

**Table B.3**  
**The Equations for a Given Country**

STOCHASTIC EQUATIONS		
Eq.	LHS Variable	Explanatory Variables
1	$\log(IM/POP)$	cnst, $\log(IM/POP)_{-1}$ , $\log(PY/PM)$ , $\log[(C + I + G)/POP]$ [Total Imports (NIPA), constant lc]
2	$\log(C/POP)$	cnst, $\log(C/POP)_{-1}$ , $RS$ or $RB$ , $\log(Y/POP)$ [Consumption, constant lc]
3	$\log I$	cnst, $\log I_{-1}$ , $\log Y$ , $RS$ or $RB$ [Fixed Investment, constant lc]
4	$\log PY$	cnst, $\log PY_{-1}$ , $\log PM$ , $ZZ$ , $T$ [GDP Price Deflator, base year = 1.0]
5	$RS$	cnst, $RS_{-1}$ , $100[(PY/PY_{-1})^4 - 1]$ , $ZZ$ , $RS_{GE}$ , $RS_{US}$ [Three-Month Interest Rate, percentage points]
6	$RB - RS_{-2}$	cnst, $RB_{-1} - RS_{-2}$ , $RS - RS_{-2}$ , $RS_{-1} - RS_{-2}$ [Long Term Interest Rate, percentage points]
7	$\Delta \log E$	cnst, $\log(PY/PY_{US} - \log E_{-1})$ , $.25 \log[(1 + RS/100)/(1 + RS_{US}/100)]$ [Exchange Rate, lc per \$] [For all countries but AU, FR, IT, NE, ST, UK, FI, BE, DE, NO, SW, GR, IR, PO, and SP]
7	$\Delta \log H$	cnst, $\log(PY/PY_{GE} - \log H_{-1})$ , $.25 \log[(1 + RS/100)/(1 + RS_{GE}/100)]$ [Exchange Rate, lc per DM or euro] [For countries AU, FR, IT, NE, ST, UK, FI, BE, DE, NO, SW, GR, IR, PO, and SP]
8	$\log PX - \log[PW\$(E/E10)]$	$\log PY - \log[PW\$(E/E10)]$ [Export Price Index, 2010 = 1.0]
9	$\Delta \log J$	cnst, $T$ , $\log(J/JMIN)_{-1}$ , $\Delta \log Y$ , $\Delta \log Y_{-1}$ [Employment, millions]
10	$\log(L1/POP1)$	cnst, $T$ , $\log(L1/POP1)_{-1}$ , $UR$ [Labor Force, millions]

Table B.3 (continued)

<b>IDENTITIES</b>		
<b>Eq.</b>	<b>LHS Variable</b>	<b>Explanatory Variables</b>
I-1	$M10\$ =$	$PSI1 \cdot IM / (E10 \cdot PM10)$ [Merchandise Imports, 2010 \$]
I-2	$EX =$	$(X10\$ \cdot E10 \cdot PX10) / PSI2$ [Total Exports (NIPA), constant lc]
I-3	$Y =$	$C + I + G + V1 + EX - IM + STAT$ [GDP, constant lc]
I-4	$E$	$E = H \cdot E_{GE}$ [Exchange Rate: lc per \$] [Equation relevant for countries AU, FR, IT, NE, ST, UK, FI, BE, DE, NO, SW, GR, IR, PO, and SP only]
I-4	$H$	$H = E / E_{GE}$ [Exchange Rate: lc per euro] [Equation relevant for all countries except those listed above]
I-5	$PM =$	$PSI2 \cdot PMP$ [Import Price Deflator, 2010 = 1.0]
I-6	$PX\$ =$	$(E10/E)PX$ [Export Price Index, \$/2010\$]
I-7	$JMIN =$	$Y / LAM$ [Minimum Required Employment, millions]
I-8	$ZZ =$	$\log Y - \log YS$ [Demand Pressure Variable]
I-9	$UR =$	$(L1 - J) / L1$ [Unemployment Rate]

- $PX\$$  and  $M10\$$  are exogenous for trade-share-only countries.

**Table B.3 (continued)****Equations that Pertain to the Trade and Price Links Among Countries**

L-1	$a_{ij} =$	Share of $i$ 's merchandise exports to $j$ out of total merchandise imports of $j$ . Computed from trade share equations. [Trade Share Coefficients]
L-2	$XX10\$_{ij} = a_{ij}M10\$_j, i = 1, \dots, 39, j = 1, \dots, 59$ and $i = 40, \dots, 58, j = 1, \dots, 58$	[Merchandise Exports from $i$ to $j$ , 2010\$]
L-3	$X10\$_i = \sum_{j=1}^{59} XX10\$_{ij}, i = 1, \dots, 39$ $X10\$_i = \sum_{j=1}^{58} XX10\$_{ij}, i = 40, \dots, 58$	[Total Merchandise Exports, 2010\$]
L-4	$PMP_i = (E_i/E10_i) \sum_{j=1}^{58} a_{ji}PX\$_j, i = 1, \dots, 39$	[Import Price Deflator, 2010 = 1.0]
L-5	$PW\$_i = (\sum_{j=1}^{58} PX\$_j X10\$_j) / \sum_{j=1}^{58} X10\$_j, i = 1, \dots, 39$	An element in this summation is skipped if $j = i$ . This summation also excludes the oil exporting countries, which are SA, NI, AL, IA, IN, IQ, KU, LI, UA. [World Price Index, \$/2010\$]

**Trade Share Equations**

- For each  $i, j$  equation, the left hand side variable is  $\log(a_{ijt} + .00001)$ . The three right hand side variables are the constant,  $\log(a_{ijt-1} + .00001)$ , and  $PX\$_{it} / (\sum_{k=1}^{58} a_{kjt-1} PX\$_{kt})$ , where the summation excludes the oil exporting countries, which are SA, NI, AL, IA, IN, IQ, KU, LI, UA. Also, an element in the summation is skipped if  $k = j$ .

**Linking of the Annual and Quarterly Data**

- Quarterly data exist for all the trade share calculations, and all these calculations are quarterly. Feeding into these calculations from the annual models are predicted annual values of  $PX\$_i$ ,  $M10\$_i$ , and  $E_i$ . For each of these three variables the predicted value for a given quarter was taken to be the predicted annual value multiplied by the ratio of the actual quarterly value to the actual annual value. This means in effect that the distribution of an annual value into its quarterly values is taken to be exogenous.
- Once the quarterly values have been computed from the trade share calculations, the annual values of  $X10\$_i$  that are needed for the annual models are taken to be the sums of the quarterly values. Similarly, the annual values of  $PMP_i$  and  $PW\$_i$  are taken to be the averages of the quarterly values.



**Table B.4**  
**Links Between the US and ROW Models**

In the US model by itself, exports,  $EX$ , and the price of imports,  $PIM$ , are exogenous. The price of exports,  $PEX$ , is determined as  $PSI1 \cdot PX$ , which is equation 32 in Table A.2. When the US model is added to the ROW model, the  $PEX$  equation is dropped and replaced by

$$PEX = DELT \cdot PX\$_{US}$$

where  $PX\$_{US}$  is the price of US goods exports and  $DELT$  is by construction  $PEX/PX\$_{US}$ .  $EX$  and  $PIM$  are now endogenous, and the linking equations are

$$EX = (X10\$_{US}/1000)/PSI2_{US}$$

where  $PSI2_{US}$  is by construction  $(X10\$_{US}/1000)/EX$ , and

$$PIM = PSI3_{US} \cdot PMP_{US}$$

where  $PSI3_{US}$  is by construction  $PIM/PMP_{US}$ . The variables  $X10\$_{US}$  and  $PMP_{US}$  are from the trade share calculations and are thus endogenous.

The variable  $PX\$_{US}$  is determined by an equation like 8 for the ROW countries. The estimates are in Table B8 below. The variable  $M10\$_{US}$  is needed for the trade share calculations, and the equation for it is

$$M10\$_{US} = 1000 \cdot PSI1_{US} \cdot IM$$

where  $PSI1_{US}$  is by construction  $(M10\$_{US}/1000)/IM$ . ( $EX$  and  $IM$  are in billions of dollars and  $X10\$_{US}$  and  $M10\$_{US}$  are in millions of dollars; hence the use of 1000 above.) Variable  $PW\$_{US}$  is needed in the equation determining  $PX\$_{US}$ , and it is determined from the trade share calculations.

To summarize, feeding into the US model from the trade share calculations are  $X10\$_{US}$ ,  $PMP_{US}$ , and  $PW\$_{US}$ . Feeding out to the trade share calculations are  $M10\$_{US}$  and  $PX\$_{US}$ . In addition,  $RS_{US}$  and  $PY_{US}$  are used as explanatory variables in some of the ROW equations.

**Table B.5**  
**Coefficient Estimates and Test Results**  
**for the ROW Equations**

---

$\rho$  = first order autoregressive coefficient of the error term.

@ = variable is lagged one period.

t-statistics are in parentheses.

---

**Table B1: Coefficient Estimates for Equation 1**  
 $\log(IM/POP) = a_1 + a_2 \log(IM/POP)_{-1} + a_3 \log(PY/PM)$   
 $+ a_4 \log[(C + I + G)/POP]$

	$a_1$	$a_2$	$a_3$	$a_4$	$\rho$	SE	DW
Quarterly							
CA	-0.224 (-0.74)	0.946 (40.15)	0.078 (2.39)	0.073 (1.44)	0.308 (4.43)	0.0272	2.06 1961.1–2017.4
JA	-0.061 (-0.38)	0.961 (47.90)	0.022 (1.80)	0.037 (0.99)	0.213 (3.07)	0.0322	2.03 1961.1–2017.4
AU	-0.682 (-2.35)	0.912 (44.01)	0.044 (1.49)	0.157 (3.29)	!	0.0283	2.08 1961.1–2017.4
FR	-0.421 (-1.50)	0.927 (45.62)	0.079 (4.44)	0.110 (2.32)	!	0.0251	1.85 1965.1–2016.4
GE	-0.008 (-0.05)	0.980 (85.89)	0.040 (2.52)	0.020 (0.73)	!	0.0254	2.08 1961.1–2017.4
IT	-0.510 (-1.68)	0.949 (50.69)	0.028 (1.78)	0.101 (2.06)	!	0.0337	1.90 1971.2–2017.2
NE	-0.343 (-1.22)	0.964 (60.68)	0.025 (1.34)	0.073 (1.70)	!	0.0199	1.77 1971.1–2017.4
ST	-1.955 (-2.62)	0.844 (22.19)	0.057 (1.60)	0.347 (3.31)	!	0.0413	2.20 1963.1–2017.4
UK	-1.006 (-2.75)	0.886 (27.53)	0.030 (1.47)	0.213 (3.12)	!	0.0294	2.02 1963.2–2017.4
FI	-0.342 (-1.25)	0.931 (33.28)	0.051 (1.45)	0.099 (1.90)	!	0.0629	2.71 1961.1–2017.4
AS	-2.376 (-4.72)	0.813 (20.88)	0.066 (3.30)	0.404 (4.79)	!	0.0353	1.41 1969.4–2017.4
SO	-0.314 (-1.81)	0.902 (27.64)	!	0.147 (2.34)	!	0.0679	1.79 1961.1–2016.4
KO	-0.772 (-3.51)	0.889 (31.95)	!	0.191 (3.79)	!	0.0792	2.09 1961.1–2017.2
Annual							
BE	-1.671 (-1.06)	0.772 (8.10)	0.297 (3.34)	0.384 (1.61)	!	0.0470	2.01 1972–2017
DE	-4.359 (-2.50)	0.774 (10.69)	0.089 (0.74)	0.560 (2.85)	!	0.0462	1.98 1973–2017
NO	2.231 (1.46)	0.664 (4.82)	0.255 (2.45)	0.133 (0.75)	!	0.0527	1.57 1972–2016
SW	-2.381 (-0.98)	0.892 (8.48)	!	0.289 (1.01)	!	0.0557	1.93 1972–2017
GR	-0.940 (-0.79)	0.824 (16.05)	0.370 (2.57)	0.250 (1.63)	!	0.0775	1.64 1972–2017
IR	-1.651 (-1.22)	0.860 (9.22)	0.104 (0.77)	0.305 (1.47)	!	0.0780	0.99 1972–2016
PO	-1.754 (-1.22)	0.662 (5.29)	0.306 (2.59)	0.487 (2.02)	!	0.0748	1.22 1972–2017
SP	-4.874 (-2.18)	0.573 (5.69)	0.254 (3.54)	0.862 (2.84)	!	0.0629	0.95 1972–2017
NZ	-0.490 (-0.25)	0.611 (4.37)	0.348 (3.32)	0.392 (1.42)	!	0.0625	1.29 1975–2016
SA	0.690 (0.42)	0.736 (7.10)	!	0.176 (0.96)	!	0.1188	1.72 1982–2016
CO	-1.859 (-2.59)	0.706 (6.57)	!	0.442 (2.78)	!	0.0718	1.39 1972–2016

**Table B1: Coefficient Estimates for Equation 1**

	$a_1$	$a_2$	$a_3$	$a_4$	$\rho$	SE	DW
JO	-0.190 (-0.29)	0.438 (3.49)	!	0.549 (3.98)	!	0.0998	1.03 1972–2016
ID	0.031 (0.05)	0.999 (9.74)	!	0.011 (0.05)	!	0.0917	1.30 1978–2016
MA	-0.119 (-0.31)	0.921 (20.14)	!	0.092 (1.20)	!	0.0751	1.44 1972–2016
PA	-1.023 (-3.48)	0.458 (3.81)	!	0.565 (4.23)	!	0.0842	1.60 1972–2016
PH	-0.304 (-0.88)	0.906 (19.00)	!	0.145 (1.36)	!	0.1011	1.66 1962–2016
TH	-1.080 (-3.21)	0.685 (8.12)	!	0.508 (3.60)	!	0.0989	1.47 1972–2016
CH	-0.407 (-1.10)	0.797 (6.33)	!	0.258 (1.43)	!	0.1569	1.29 1982–2016
AR	0.442 (0.19)	0.740 (7.03)	!	0.171 (0.63)	!	0.1524	1.77 1992–2016
BR	-1.681 (-0.89)	0.547 (3.75)	!	0.529 (2.00)	!	0.0925	1.96 1997–2016
CE	-1.235 (-2.06)	0.508 (3.50)	!	0.571 (3.04)	!	0.0889	1.67 1983–2016
ME	-2.609 (-1.61)	0.754 (9.21)	0.369 (2.57)	0.735 (1.92)	!	0.1409	0.95 1972–2016
PE	-1.766 (-4.11)	0.447 (3.33)	!	0.924 (4.20)	!	0.1115	1.52 1981–2016

Table B1: Test Results for Equation 1

	Lags <i>p</i> -val	log <i>PY</i> <i>p</i> -val	RHO <i>p</i> -val	T <i>p</i> -val	Stability			End Test <i>p</i> -val	overid <i>p</i> -val df
					AP	df	$\lambda$		
Quarterly									
CA	0.000	0.102	0.000	0.128	32.16	5.	2.053	0.859	
JA	0.028	0.000	0.048	0.002	29.34	5.	2.053	0.040	
AU	0.022	0.033	0.430	0.000	33.40	4.	2.053	0.638	
FR	0.022	0.000	0.262	0.304	13.04	4.	2.178	0.489	
GE	0.030	0.449	0.442	0.014	10.40	4.	2.053	0.624	
IT	0.191	0.494	0.626	0.000	23.01	4.	2.356	0.800	
NE	0.062	0.437	0.101	0.003	7.27	4.	2.322	0.174	
ST	0.027	0.721	0.048	0.000	7.80	4.	2.091	0.028	
UK	0.426	0.245	0.803	0.006	22.07	4.	2.096	0.793	0.000 5
FI	0.000	0.438	0.000	0.000	45.49	4.	2.053	0.946	0.000 4
AS	0.000	0.236	0.000	0.221	15.97	4.	2.274	0.561	0.000 6
SO	0.211	0.823	0.053	0.823	2.85	3.	2.095	0.850	
KO	0.282	0.670	0.437	0.670	5.48	3.	2.073	0.921	
Annual									
BE	0.643	0.433	0.936	0.000	12.28	4.	2.210	0.148	0.009 5
DE	0.099	0.134	0.536	0.131	14.27	4.	2.251	0.231	0.002 5
NO	0.173	0.609	0.090	0.254	9.52	4.	1.878	0.857	0.054 5
SW	0.856	0.048	0.000	0.036	31.35	3.	2.210	0.444	0.000 6
GR	0.779	0.017	0.216	0.000	6.43	4.	2.251	0.038	
IR	0.006	0.236	0.000	0.003	11.07	4.	2.251	0.393	
PO	0.057	0.000	0.000	0.000	5.84	4.	2.210	0.185	0.000 4
SP	0.097	0.405	0.000	0.273	8.77	4.	2.210	0.000	
NZ	0.023	0.000	0.000	0.000	15.15	4.	2.394	0.680	0.000 5
SA	0.395	0.172	0.001	0.172	3.20	3.	3.118	1.000	
CO	0.255	0.525	0.000	0.525	17.83	3.	2.251	0.679	
JO	0.003	0.151	0.000	0.151	1.96	3.	2.251	0.321	
ID	0.016	0.022	0.014	0.022	5.06	3.	2.605	0.000	
MA	0.111	0.251	0.045	0.251	7.32	3.	2.251	0.643	
PA	0.409	0.001	0.001	0.001	2.21	3.	2.251	0.536	
PH	0.299	0.148	0.203	0.148	3.99	3.	1.992	0.658	
TH	0.431	0.934	0.000	0.934	6.36	3.	2.251	0.607	
CH	0.214	0.589	0.016	0.589	14.02	3.	3.118	0.500	
AR	0.878	0.352	0.000	0.352	0.00	0.	0.000	0.000	
BR	0.764	0.736	0.104	0.736	0.00	0.	0.000	0.000	
CE	0.462	0.474	0.000	0.474	1.37	3.	3.331	0.000	
ME	0.000	0.000	0.000	0.000	12.63	4.	2.251	0.964	
PE	0.523	0.572	0.012	0.572	1.22	3.	2.949	0.368	

**Table B2: Coefficient Estimates for Equation 2**

$$\log(C/POP) = a_1 + a_2 \log(C/POP)_{-1} + a_3 RS + a_4 RB + a_5 \log(Y/POP)$$

	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$\rho$	SE	DW
Quarterly								
CA	-0.051 (-2.27)	0.899 (55.82)	!	-0.0012@ (-5.89)	0.101 (6.01)	!	0.0075 1961.1–2017.2	1.98
JA	0.124 (5.94)	0.891 (28.47)	!	-0.0012 (-3.22)	0.083 (2.82)	-0.231 (-3.32)	0.0098 1966.1–2016.3	2.05
AU	0.126 (2.74)	0.919 (22.00)	-0.0001 (-0.17)	!	0.061 (1.54)	!	0.0121 1971.3–2017.1	2.70
FR	-0.052 (-1.79)	0.804 (27.69)	-0.0003 (-2.40)	!	0.189 (6.38)	!	0.0069 1965.1–2017.1	1.95
GE	0.028 (1.35)	0.940 (53.48)	!	!	0.053 (2.94)	!	0.0090 1961.1–2017.1	2.34
IT	-0.091 (-2.69)	0.844 (34.21)	!	!	0.157 (5.86)	!	0.0065 1961.1–2017.4	1.26
NE	0.225 (3.28)	0.953 (43.51)	!	-0.0011 (-1.72)	0.019 (1.02)	!	0.0091 1974.1–2017.1	1.92
ST	0.110 (3.88)	0.949 (58.15)	!	-0.0004@ (-1.29)	0.037 (2.19)	!	0.0067 1961.1–2017.2	2.03
UK	-0.384 (-6.35)	0.818 (33.19)	!	-0.0011 (-4.49)	0.217 (7.23)	!	0.0097 1961.1–2017.4	1.76
FI	0.155 (2.65)	0.918 (47.12)	-0.0010 (-3.45)	!	0.059 (2.87)	!	0.0093 1978.2–2017.1	2.05
AS	-0.093 (-3.23)	0.919 (52.09)	!	!	0.086 (4.57)	!	0.0069 1969.4–2017.4	1.89
SO	0.005 (0.12)	0.935 (37.50)	-0.0005@ (-1.68)	!	0.056 (2.18)	!	0.0188 1961.1–2016.4	2.15
KO	0.193 (4.13)	0.893 (23.15)	!	-0.0007@ (-1.48)	0.077 (2.33)	!	0.0173 1973.4–2017.2	1.83
Annual								
BE	0.555 (6.48)	0.746 (10.08)	!	!	0.186 (2.77)	!	0.0121 1972–2017	1.74
DE	1.603 (3.48)	0.658 (6.21)	-0.0027 (-1.71)	!	0.196 (1.96)	!	0.0183 1973–2017	1.54
NO	0.429 (2.49)	0.878 (22.75)	-0.0032 (-3.07)	!	0.084 (2.33)	!	0.0193 1972–2017	1.47
SW	0.946 (4.32)	0.720 (10.78)	-0.0023 (-3.08)	!	0.190 (3.51)	!	0.0138 1972–2016	1.38
GR	-0.979 (-2.98)	0.729 (16.24)	!	!	0.360 (5.10)	!	0.0264 1972–2017	0.68
IR	0.996 (3.24)	0.700 (10.72)	-0.0042 (-1.54)	!	0.184 (3.08)	!	0.0274 1974–2016	1.00
PO	0.909 (6.44)	0.485 (8.66)	!	-0.0043 (-5.88)	0.401 (8.47)	!	0.0167 1972–2016	1.30
SP	0.500 (4.23)	0.646 (6.26)	!	!	0.285 (3.09)	!	0.0181 1972–2017	0.69
NZ	-0.865 (-4.28)	0.663 (11.10)	-0.0007 (-0.93)	!	0.402 (6.77)	!	0.0134 1975–2016	1.38
SA	-0.102 (-0.04)	0.886 (9.57)	!	!	0.114 (0.65)	!	0.0994 1982–2016	1.99
CO	1.020 (5.38)	0.487 (6.27)	!	!	0.381 (6.59)	!	0.0183 1972–2016	1.59

**Table B2: Coefficient Estimates for Equation 2**

	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$\rho$	SE	DW
JO	-0.756 (-1.54)	0.598 (6.11)	!	!	0.490 (3.92)	!	0.0661	1.13 1972–2016
ID	-0.013 (-0.34)	0.788 (11.54)	!	!	0.198 (3.90)	!	0.0194	2.15 1978–2016
MA	0.035 (0.24)	0.731 (6.94)	!	!	0.249 (2.52)	!	0.0461	1.26 1972–2016
PA	-0.286 (-4.06)	0.371 (3.72)	!	!	0.662 (6.27)	!	0.0242	1.82 1972–2016
PH	-0.023 (-0.18)	0.816 (17.30)	-0.0035 (-3.57)	!	0.187 (3.80)	!	0.0187	1.86 1979–2016
TH	-0.025 (-0.74)	0.523 (7.24)	!	!	0.424 (6.40)	!	0.0252	1.28 1972–2016
CH	-0.085 (-2.10)	0.734 (10.86)	!	!	0.232 (3.98)	!	0.0213	1.03 1982–2016
AR	0.836 (1.07)	0.197 (1.82)	!	!	0.692 (7.03)	!	0.0463	1.06 1992–2016
BR	-0.071 (-0.30)	0.545 (8.59)	!	!	0.441 (7.53)	!	0.0125	1.34 1997–2016
CE	-0.106 (-0.85)	0.566 (7.32)	!	!	0.424 (5.81)	!	0.0327	1.72 1983–2016
ME	-0.047 (-0.30)	0.491 (5.12)	!	!	0.477 (4.98)	!	0.0297	0.97 1972–2016
PE	-0.026 (-0.30)	0.590 (5.77)	!	!	0.358 (4.67)	!	0.0484	1.34 1981–2016

Table B2: Test Results for Equation 2

	Lags <i>p</i> -val	RHO <i>p</i> -val	T <i>p</i> -val	Leads <i>p</i> -val	Stability AP df $\lambda$			End Test <i>p</i> -val	overid <i>p</i> -val	df
Quarterly										
CA	0.088	0.402	0.192	0.005	9.96	4.	2.073	1.000		
JA	0.258	0.098	0.511	0.003	4.14	5.	2.215	0.246	0.006	4
AU	0.000	0.000	0.517	0.147	33.78	4.	2.378	0.700	0.055	4
FR	0.084	0.694	0.416	0.284	11.46	4.	2.167	0.941		
GE	0.002	0.005	0.000	0.734	15.47	3.	2.084	1.000		
IT	0.000	0.000	0.220	0.000	4.54	3.	2.053	0.839		
NE	0.674	0.742	0.000	0.041	11.10	4.	2.505	0.960		
ST	0.099	0.149	0.006	0.058	17.46	4.	2.073	0.695		
UK	0.962	0.033	0.000	0.045	25.80	4.	2.053	0.503		
FI	0.621	0.542	0.030	0.259	14.97	4.	2.843	0.108	0.004	3
AS	0.441	0.429	0.149	0.865	1.87	3.	2.274	0.904	0.245	4
SO	0.131	0.154	0.000	0.886	10.77	4.	2.095	1.000		
KO	0.305	0.297	0.001	0.049	17.74	4.	2.478	0.810	0.002	3
Annual										
BE	0.662	0.294	0.180	0.009	16.33	3.	2.210	1.000	0.002	4
DE	0.203	0.119	0.504	0.282	4.00	4.	2.251	1.000	0.304	3
NO	0.075	0.088	0.485	0.625	12.16	4.	2.210	1.000	0.182	4
SW	0.012	0.027	0.005	0.031	9.98	4.	7.957	1.000	0.034	3
GR	0.001	0.000	0.309	0.000	26.03	3.	2.210	0.000		
IR	0.000	0.004	0.002	0.164	8.95	4.	2.340	0.346	0.009	3
PO	0.073	0.089	0.062	0.542	8.29	4.	2.251	0.107	0.533	3
SP	0.000	0.000	0.000	0.265	1.20	3.	2.210	0.000	0.103	3
NZ	0.122	0.029	0.361	0.825	2.46	4.	2.394	0.880	0.543	4
SA	0.911	0.912	0.422	0.633	3.34	3.	3.118	0.056		
CO	0.459	0.002	0.052	0.237	2.34	3.	2.251	1.000		
JO	0.036	0.000	0.449	0.038	2.49	3.	2.251	0.714		
ID	0.508	0.842	0.000	0.001	12.33	3.	2.605	1.000		
MA	0.040	0.000	0.245	0.542	33.89	3.	2.251	0.643		
PA	0.781	0.311	0.322	0.113	3.10	3.	2.251	0.857		
PH	0.490	0.440	0.000	0.335	5.22	4.	2.699	0.524		
TH	0.395	0.000	0.183	0.804	6.43	3.	2.251	0.929		
CH	0.002	0.001	0.071	0.072	6.54	3.	3.118	1.000		
AR	0.611	0.000	0.000	0.021	0.00	0.	0.000	0.000		
BR	0.046	0.024	0.002	0.912	0.00	0.	0.000	0.000		
CE	0.739	0.026	0.162	0.009	1.59	3.	3.331	0.882		
ME	0.041	0.000	0.574	0.527	20.98	3.	2.251	1.000		
PE	0.534	0.000	0.013	0.076	10.84	3.	2.949	1.000		



**Table B3: Coefficient Estimates for Equation 3**  
 $\log I = a_1 + a_2 \log I_{-1} + a_3 \log Y + a_4 RS + a_5 RB$

	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	SE	DW
Quarterly							
CA	-0.214 (-2.08)	0.907 (37.37)	0.100 (3.43)	!	-0.0019@ (-3.71)	0.0209 1961.1–2017.2	1.33
AU	0.349 (2.13)	0.912 (25.33)	0.047 (1.34)	!	-0.0034 (-1.92)	0.0258 1971.3–2017.1	2.46
FR	0.329 (4.99)	0.935 (54.24)	0.033 (2.29)	!	-0.0023@ (-5.42)	0.0122 1970.1–2017.1	1.24
GE	0.536 (4.52)	0.784 (20.24)	0.151 (5.04)	!	-0.0028@ (-2.17)	0.0320 1961.1–2017.1	2.20
IT	0.212 (3.69)	0.955 (55.91)	0.022 (1.81)	!	!	0.0199 1961.1–2017.4	1.38
NE	0.174 (0.53)	0.751 (14.27)	0.204 (3.48)	!	-0.0058@ (-1.92)	0.0434 1974.1–2017.1	2.56
ST	0.092 (1.10)	0.937 (40.87)	0.049 (1.92)	!	-0.0045@ (-4.78)	0.0196 1961.1–2017.2	1.56
UK	0.119 (1.44)	0.908 (31.37)	0.071 (2.63)	!	-0.0004@ (-0.49)	0.0300 1961.1–2017.4	2.08
AS	-0.367 (-1.98)	0.929 (32.93)	0.093 (2.40)	!	-0.0005@ (-0.70)	0.0280 1969.4–2017.4	1.84
SO	0.024 (0.56)	0.958 (70.96)	0.035 (2.62)	!	-0.0031@ (-4.30)	0.0373 1961.1–2016.4	2.08
KO	0.306 (1.43)	0.964 (34.20)	0.010 (0.26)	!	-0.0023@ (-1.42)	0.0503 1973.4–2017.2	2.29
Annual							
BE	1.652 (2.52)	0.619 (6.30)	0.215 (2.05)	!	-0.0204 (-4.46)	0.0472 1972–2016	1.82
DE	2.007 (1.13)	0.548 (5.09)	0.265 (1.72)	-0.0190 (-2.83)	!	0.0670 1973–2017	1.62
NO	1.209 (2.35)	0.868 (14.00)	0.038 (0.71)	-0.0084 (-2.76)	!	0.0585 1972–2017	1.30
SW	0.079 (0.12)	0.686 (6.88)	0.280 (2.66)	-0.0057 (-1.89)	!	0.0545 1972–2016	1.27
GR	0.490 (0.51)	0.871 (10.07)	0.070 (0.67)	!	!	0.1267 1972–2017	1.32
IR	-0.565 (-1.78)	0.724 (6.56)	0.292 (2.85)	!	!	0.1124 1973–2016	0.84
PO	0.386 (0.66)	0.849 (9.60)	0.100 (1.05)	!	-0.0010 (-0.36)	0.0802 1972–2016	0.81
SP	-0.228 (-0.41)	0.856 (9.56)	0.146 (1.31)	!	!	0.0667 1972–2017	0.58
NZ	-3.365 (-3.12)	0.646 (5.48)	0.590 (3.13)	!	!	0.0663 1975–2016	1.29
ID	-1.490 (-2.15)	0.663 (4.49)	0.438 (2.29)	!	!	0.0704 1978–2016	1.69
PA	-0.131 (-0.55)	0.783 (8.25)	0.191 (2.02)	!	!	0.0831 1972–2016	1.32
CH	-1.290 (-2.74)	0.471 (2.89)	0.612 (3.19)	!	!	0.0729 1982–2016	0.97

Table B3: Test Results for Equation 3

	Lags <i>p</i> -val	RHO <i>p</i> -val	T <i>p</i> -val	Leads <i>p</i> -val	Stability AP df $\lambda$			End Test <i>p</i> -val	overid <i>p</i> -val	df
Quarterly										
CA	0.000	0.000	0.165	0.121	3.55	4.	2.073	0.000	0.016	4
AU	0.000	0.000	0.228	0.292	8.96	4.	2.378	0.909	0.519	4
FR	0.000	0.000	0.023	0.048	6.29	4.	2.317	0.552	0.009	4
GE	0.011	0.027	0.003	0.418	2.69	4.	2.084	0.888		
IT	0.000	0.000	0.185	0.004	2.84	3.	2.053	0.262		
NE	0.000	0.000	0.000	0.410	13.98	4.	2.505	0.540	0.001	4
ST	0.001	0.000	0.083	0.189	10.73	4.	2.073	0.748		
UK	0.413	0.501	0.010	0.128	12.37	4.	2.053	0.664		
AS	0.252	0.235	0.591	0.053	3.00	4.	2.274	0.965	0.021	4
SO	0.605	0.609	0.000	0.284	10.76	4.	2.095	0.667	0.000	4
KO	0.018	0.003	0.001	0.079	13.82	4.	2.478	1.000		
Annual										
BE	0.242	0.305	0.134	0.228	5.34	4.	2.297	0.793	0.335	4
DE	0.003	0.209	0.005	0.647	4.98	4.	2.251	0.500	0.063	4
NO	0.030	0.054	0.315	0.288	6.29	4.	2.210	1.000	0.141	5
SW	0.000	0.000	0.024	0.104	23.71	4.	2.251	0.500	0.154	4
GR	0.008	0.000	0.000	0.003	2.36	3.	2.210	0.111		
IR	0.000	0.000	0.000	0.031	2.28	3.	2.293	0.000		
PO	0.000	0.000	0.000	0.002	11.11	4.	2.251	0.107		
SP	0.000	0.000	0.000	0.000	1.77	3.	2.210	0.037		
NZ	0.004	0.001	0.087	0.009	8.37	3.	2.394	0.600	0.018	6
ID	0.673	0.004	0.146	0.486	4.33	3.	2.605	0.409		
PA	0.002	0.001	0.110	0.157	1.58	3.	2.251	0.321		
CH	0.000	0.000	0.161	0.001	3.22	3.	3.118	0.833		

**Table B4: Coefficient Estimates for Equation 4**  
 $\log PY = a_1 + a_2 \log PY_{-1} + a_3 \log PM + a_4 ZZ + a_5 T$

	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$\rho$	SE	DW
Quarterly								
CA	0.007 (0.41)	0.982 (64.21)	0.012 (1.09)	0.063@ (1.89)	-0.00001 (-0.17)	0.466 (7.00)	0.0067	1.96 1970.1–2017.4
JA	0.011 (2.79)	0.972 (150.94)	0.008 (1.96)	0.058@ (1.80)	-0.00005 (-2.06)	0.615 (10.25)	0.0059	2.29 1970.1–2017.4
AU	-0.017 (-3.56)	0.964 (175.13)	0.016 (2.68)	0.034@ (1.68)	0.00011 (4.28)	-0.171 (-2.53)	0.0054	1.89 1971.3–2017.2
FR	-0.005 (-0.82)	0.955 (162.16)	0.045 (8.90)	0.132@ (4.32)	0.00005 (1.75)	!	0.0067	1.14 1965.3–2016.4
GE	0.011 (2.04)	0.995 (170.53)	0.008 (1.73)	0.070@ (3.48)	-0.00003 (-1.14)	!	0.0066	2.11 1961.1–2017.2
IT	0.021 (3.22)	0.961 (236.30)	0.034 (8.27)	0.101@ (3.45)	-0.00006 (-1.58)	!	0.0089	2.03 1972.2–2017.2
NE	-0.023 (-2.48)	0.964 (110.97)	0.006 (1.14)	0.073@ (3.23)	0.00014 (2.92)	!	0.0064	1.77 1971.1–2017.4
ST	0.010 (1.31)	0.980 (122.21)	0.053 (5.57)	0.101@ (6.90)	-0.00003 (-0.72)	!	0.0068	1.75 1963.2–2017.3
UK	0.005 (0.42)	0.929 (85.78)	0.076@ (7.19)	0.142@ (3.34)	0.00003 (0.56)	0.395 (6.09)	0.0094	2.18 1963.4–2017.4
FI	0.012 (1.20)	0.977 (164.05)	0.014 (1.69)	0.041 (3.06)	-0.00004 (-0.76)	!	0.0077	2.39 1978.2–2017.2
AS	0.030 (1.98)	0.998 (172.50)	!	0.142@ (2.35)	-0.00012 (-1.58)	0.305 (4.37)	0.0101	2.13 1970.1–2017.4
KO	-0.015 (-1.23)	0.971 (228.46)	!	0.107@ (3.59)	0.00009 (1.39)	!	0.0152	2.08 1973.4–2017.2
Annual								
BE	-0.066 (-2.48)	0.850 (35.46)	0.074 (4.23)	0.234@ (2.07)	0.00139 (2.75)	!	0.0111	1.00 1972–2017
DE	-0.104 (-5.36)	0.796 (38.19)	0.117 (6.27)	!	0.00220 (5.67)	!	0.0098	1.54 1973–2017
NO	-0.096 (-0.51)	0.892 (8.05)	0.054 (0.76)	0.300@ (1.25)	0.00278 (0.69)	!	0.0375	1.65 1972–2016
SW	0.116 (4.67)	0.929 (37.72)	0.071 (3.15)	0.317@ (4.12)	-0.00163 (-3.37)	!	0.0143	1.28 1972–2017
IR	-0.230 (-3.43)	0.683 (12.87)	0.263@ (5.19)	0.173@ (3.89)	0.00479 (3.69)	!	0.0253	1.45 1974–2017
PO	-0.098 (-2.23)	0.778 (33.36)	0.206 (9.93)	0.063@ (0.80)	0.00213 (2.38)	!	0.0211	1.31 1972–2017
SP	0.070 (1.78)	0.916 (42.68)	0.082@ (3.49)	0.323@ (2.78)	-0.00096 (-1.22)	!	0.0215	0.61 1972–2017
NZ	0.063 (0.81)	0.905 (18.73)	0.073 (1.53)	0.445@ (3.89)	-0.00058 (-0.38)	!	0.0238	1.30 1975–2016
JO	0.127 (1.05)	0.868 (25.93)	0.127 (3.92)	!	-0.00159 (-0.68)	!	0.0356	2.09 1972–2016
MA	-0.368 (-2.63)	0.758 (10.18)	!	0.335 (3.21)	0.00748 (2.76)	!	0.0336	2.06 1972–2016
PA	0.024 (0.10)	0.697 (12.87)	0.222 (5.83)	0.112 (0.93)	0.00093 (0.19)	!	0.0343	2.00 1972–2016
TH	-0.068 (-1.06)	0.698 (13.80)	0.172 (5.40)	0.286@ (4.14)	0.00164 (1.29)	!	0.0227	1.39 1972–2016
CH	0.075 (0.50)	0.942 (17.50)	!	0.566 (3.57)	-0.00127 (-0.43)	!	0.0377	0.71 1982–2016

Table B4: Test Results for Equation 4

	Lags <i>p</i> -val	RHO <i>p</i> -val	Stability			End Test <i>p</i> -val	overid	
			AP	df	$\lambda$		<i>p</i> -val	df
Quarterly								
CA	0.778	0.588	21.62	6.	2.283	0.000		
JA	0.000	0.000	11.89	6.	2.283	0.186		
AU	0.273	0.471	9.14	6.	2.378	0.855	0.000	6
FR	0.000	0.000	23.55	5.	2.191	0.748	0.000	5
GE	0.646	0.621	14.01	5.	2.332	0.981	0.000	6
IT	0.211	0.742	11.36	5.	2.400	0.991	0.509	6
NE	0.136	0.030	14.33	5.	2.322	0.780		
ST	0.015	0.271	9.50	5.	2.106	0.624	0.001	3
UK	0.006	0.001	15.49	6.	2.106	0.993	0.000	7
FI	0.114	0.013	11.02	5.	2.828	0.878	0.334	4
AS	0.079	0.024	3.99	5.	2.283	0.478		
KO	0.558	0.628	2.00	4.	2.478	1.000	0.001	7
Annual								
BE	0.000	0.000	3.29	5.	2.210	0.852		
DE	0.106	0.059	1.45	4.	2.251	0.462		
NO	0.010	0.006	12.74	5.	2.251	0.214		
SW	0.065	0.010	13.41	5.	2.210	0.889	0.014	4
IR	0.787	0.291	1.91	5.	2.297	0.040		
PO	0.157	0.011	14.39	5.	2.210	0.778	0.091	4
SP	0.000	0.000	7.43	5.	2.210	0.741		
NZ	0.009	0.001	3.85	5.	2.394	0.560	0.002	5
JO	0.731	0.951	4.85	4.	2.251	0.464		
MA	0.903	0.860	3.79	4.	2.251	0.500		
PA	0.081	0.444	7.74	5.	2.251	0.036		
TH	0.000	0.000	31.82	5.	2.251	0.964		
CH	0.000	0.000	25.55	4.	3.118	1.000		

**Table B5: Coefficient Estimates for Equation 5**

$$RS = a_1 + a_2RS_{-1} + a_3PCPY + a_4ZZ + a_5RS_{GE} + a_6RS_{US}$$

	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$a_6$	$\rho$	SE	DW
Quarterly									
EU	0.26 (2.44)	0.856 (33.72)	0.035@ (2.04)	9.68 (4.62)	!	0.115 (5.40)	!	0.630 1972.2–2017.4	1.55
CA	0.10 (0.95)	0.832 (23.04)	!	3.88 (2.50)	!	0.201 (4.48)	!	0.763 1972.2–2017.1	1.62
JA	-0.08 (-1.72)	0.879 (37.13)	0.043 (4.44)	!	!	0.056 (4.19)	0.301 (3.93)	0.257 1972.2–2016.4	2.06
AU	0.53 (2.04)	0.861 (22.73)	!	20.19 (4.29)	!	0.118 (3.59)	!	0.726 1972.2–1998.4	1.69
FR	-0.06 (-0.14)	0.749 (17.19)	0.018 (0.53)	6.30 (0.92)	0.189 (3.58)	0.166 (3.50)	!	0.874 1972.2–1998.4	1.64
GE	0.41 (1.50)	0.841 (21.73)	0.042@ (1.20)	12.63 (3.92)	!	0.119 (3.52)	!	0.798 1972.2–1998.4	1.53
IT	1.16 (2.17)	0.884 (20.62)	0.066 (2.35)	24.70 (2.65)	!	!	0.252 (2.32)	1.143 1972.2–1998.4	1.91
NE	0.25 (0.56)	0.437 (6.08)	!	16.24 (2.22)	0.385 (4.49)	0.197 (2.83)	!	1.353 1973.2–1998.4	1.68
ST	0.10 (1.27)	0.890 (24.67)	0.081 (2.73)	!	!	!	0.289 (3.58)	0.422 1972.2–2017.2	2.06
UK	0.34 (2.57)	0.818 (25.25)	0.023 (1.45)	8.28 (3.89)	!	0.231 (5.99)	!	0.827 1972.2–2016.3	1.55
FI	1.32 (2.75)	0.920 (26.57)	!	8.04 (3.38)	!	!	!	1.067 1979.1–1998.4	1.75
AS	0.13 (0.85)	0.886 (34.03)	0.050 (1.28)	10.44 (2.37)	!	0.148 (3.77)	!	0.937 1976.4–2017.4	1.76
SO	0.54 (1.31)	0.892 (21.73)	!	!	!	0.115 (2.58)	0.494 (5.59)	0.936 1972.2–2016.4	2.01
Annual									
BE	0.17 (0.26)	0.945 (9.93)	0.082 (1.33)	42.91 (3.12)	!	!	!	0.867 1972–1998	1.88
DE	-0.18 (-0.33)	0.617 (6.72)	0.246 (2.41)	13.96 (1.07)	!	!	!	1.879 1973–2017	2.36
NO	-0.10 (-0.27)	0.869 (14.01)	!	18.74 (2.85)	!	!	!	1.277 1972–2017	1.96
SW	-0.12 (-0.19)	0.739 (8.39)	0.058 (0.51)	5.85 (0.61)	!	0.330 (3.00)	!	1.564 1972–2016	2.47
IR	0.24 (0.16)	0.422 (2.63)	0.066 (0.82)	!	!	0.371 (1.81)	!	2.003 1974–1998	1.83
PO	-0.57 (-0.22)	0.791 (2.90)	0.369 (2.44)	33.44 (1.59)	!	!	!	2.053 1984–1998	2.13
SP	-0.97 (-0.60)	0.284 (1.46)	1.450 (4.35)	!	!	0.101 (0.43)	!	0.851 1989–1998	1.72
NZ	0.97 (1.23)	0.612 (6.16)	0.167 (2.01)	4.29 (0.47)	!	0.368 (2.34)	!	2.183 1975–2016	2.23
PH	1.73 (2.47)	0.453 (5.80)	0.293 (6.73)	!	!	0.339 (2.91)	!	1.890 1979–2016	1.56

Table B5: Test Results for Equation 5

	Lags <i>p</i> -val	RHO <i>p</i> -val	T <i>p</i> -val	Stability			End Test <i>p</i> -val	overid	
				AP	df	$\lambda$		<i>p</i> -val	df
Quarterly									
CA	0.002	0.004	0.734	5.66	4.	2.413	1.000	0.000	6
JA	0.152	0.033	0.253	6.84	5.	2.425	1.000	0.000	7
AU	0.110	0.109	0.084	0.00	0.	0.000	0.000	0.000	6
FR	0.053	0.201	0.031	0.00	0.	0.000	0.000	0.014	3
GE	0.029	0.003	0.114	0.00	0.	0.000	0.000	0.000	5
IT	0.705	0.090	0.531	0.00	0.	0.000	0.000	0.088	6
NE	0.003	0.010	0.379	0.00	0.	0.000	0.000	0.152	5
ST	0.157	0.068	0.799	4.64	4.	2.400	0.821	0.106	7
UK	0.005	0.000	0.010	7.26	5.	2.438	0.963	0.007	5
FI	0.507	0.343	0.451	0.00	0.	0.000	0.000	0.655	4
AS	0.225	0.105	0.820	5.60	5.	2.659	1.000	0.001	5
SO	0.930	0.836	0.010	6.79	4.	2.425	1.000	0.005	6
Annual									
BE	0.704	0.641	0.863	0.00	0.	0.000	0.000		
DE	0.033	0.019	0.125	4.31	5.	2.251	1.000		
NO	0.346	0.838	0.685	11.50	4.	2.210	0.926		
SW	0.487	0.129	0.163	1.38	5.	2.251	0.893		
IR	0.514	0.613	0.077	0.00	0.	0.000	0.000		
PO	0.132	0.067	0.245	0.00	0.	0.000	0.000		
SP	0.702	0.331	0.167	0.00	0.	0.000	0.000		
NZ	0.047	0.020	0.473	0.47	5.	2.394	0.840		
PH	0.000	0.001	0.052	23.38	4.	2.699	1.000		
EU	0.009	0.001	0.914	5.50	5.	2.377	0.990	0.293	3

**Table B6: Coefficient Estimates for Equation 6**  
 $RB - RS_{-2} = a_1 + a_2(RB_{-1} - RS_{-2}) + a_3(RS - RS_{-2})$   
 $+ a_4(RS_{-1} - RS_{-2})$   
For annual,  $RS_{-1}$  replaces  $RS_{-2}$

	$a_1$	$a_2$	$a_3$	$a_4$	$\rho$	SE	DW
Quarterly							
EU	0.069 (1.51)	0.968 (71.24)	0.284 (3.93)	-0.229 (-2.37)	!	0.366 1961.1–2017.4	1.38
CA	0.103 (2.38)	0.919 (36.69)	0.362 (2.42)	-0.322 (-1.79)	!	0.368 1961.1–2017.1	1.96
JA	0.141 (1.99)	0.898 (24.57)	0.265 (1.05)	0.101 (0.28)	!	0.401 1966.1–2016.3	1.97
AU	0.062 (0.95)	0.942 (30.46)	0.191 (1.94)	-0.080 (-1.06)	0.395 (4.07)	0.261 1971.3–1998.4	1.97
FR	0.074 (1.04)	0.875 (14.98)	0.381 (2.59)	-0.215 (-1.44)	0.270 (2.09)	0.438 1970.1–1998.4	2.00
GE	0.094 (1.77)	0.941 (39.89)	0.421 (4.90)	-0.408 (-3.73)	!	0.398 1961.1–1998.4	1.84
NE	0.221 (1.93)	0.819 (11.80)	0.407 (2.91)	-0.317 (-2.62)	!	0.602 1973.3–1998.4	1.93
ST	0.084 (1.85)	0.909 (26.75)	0.900 (4.50)	-0.949 (-3.78)	!	0.364 1972.2–2017.2	2.01
UK	0.043 (0.88)	0.937 (35.93)	0.671 (4.43)	-0.756 (-4.09)	!	0.504 1972.2–2016.3	1.67
AS	-0.012 (-0.28)	0.944 (23.94)	0.323 (2.07)	-0.360 (-2.08)	!	0.484 1977.1–2017.4	1.68
SO	0.180 (2.00)	0.904 (20.49)	0.980 (2.69)	-1.348 (-2.69)	!	0.703 1961.1–2016.4	2.05
KO	0.132 (1.26)	0.883 (21.36)	0.462 (3.58)	-0.234 (-1.50)	!	0.962 1977.2–2017.2	2.08
Annual							
BE	0.220 (1.43)	0.639 (5.05)	0.608 (5.84)	!	!	0.665 1972–1998	1.73
DE	-0.085 (-0.47)	0.761 (7.36)	0.296 (2.77)	!	!	0.780 1985–2017	1.90
NO	-0.103 (-1.16)	0.729 (9.93)	0.397 (6.41)	!	!	0.600 1972–2017	2.06
PO	-0.256 (-0.65)	0.787 (3.64)	0.628 (3.98)	!	!	1.248 1984–1998	1.58
SP	0.138 (0.40)	0.608 (2.06)	0.811 (5.71)	!	!	0.778 1989–1998	1.58
NZ	-0.154 (-1.18)	0.810 (12.65)	0.402 (7.92)	!	!	0.788 1975–2017	2.01

Table B6: Test Results for Equation 6

	<sup>a</sup> Restr. <i>p</i> -val	Lags <i>p</i> -val	RHO <i>p</i> -val	T <i>p</i> -val	Leads <i>p</i> -val	Stability AP df $\lambda$			End Test <i>p</i> -val	overid <i>p</i> -val df
Quarterly										
CA	0.058	0.132	0.690	0.612	0.074	4.67	4.	2.084	0.941	0.029 5
JA	0.122	0.122	0.869	0.014	0.105	6.71	4.	2.215	1.000	0.003 5
AU	0.550	0.089	0.937	0.094	0.476	0.00	0.	0.000	0.000	0.043 6
FR	0.455	0.583	0.934	0.262	0.416	0.00	0.	0.000	0.000	0.681 6
GE	0.172	0.003	0.007	0.014	0.124	0.00	0.	0.000	0.000	0.003 5
NE	0.789	0.525	0.400	0.282	0.741	0.00	0.	0.000	0.000	0.652 5
ST	0.534	0.042	0.106	0.118	0.480	5.76	4.	2.400	0.575	0.048 5
UK	0.608	0.320	0.013	0.248	0.732	1.53	4.	2.438	0.817	0.000 5
AS	0.268	0.393	0.018	0.784	0.301	5.77	4.	2.680	0.835	0.001 5
SO	0.348	0.011	0.038	0.078	0.337	4.76	4.	2.095	0.693	0.183 5
KO	0.482	0.475	0.580	0.150	0.511	4.73	4.	2.729	1.000	0.027 5
Annual										
BE	0.341	0.215	0.444	0.737	0.622	0.00	0.	0.000	0.000	
DE	0.015	0.007	0.010	0.112	0.083	12.68	3.	3.919	1.000	
NO	0.056	0.153	0.805	0.758	0.820	3.57	3.	2.210	0.852	
PO	0.847	0.107	0.341	0.599	0.990	0.00	0.	0.000	0.000	
SP	0.375	0.092	0.584	0.492	0.767	0.00	0.	0.000	0.000	
NZ	0.000	0.003	0.552	0.780	0.664	2.56	3.	2.350	0.708	
EU	0.014	0.002	0.000	0.002	0.015	7.86	4.	2.053	0.792	0.000 6



**Table B7: Coefficient Estimates for Equation 7**

$$\Delta \log E = a_1 + \lambda[\log(PY/PY_{US}) - \log E_{-1}]$$

$$+ .25\lambda\beta \log[(1 + RS/100)/(1 + RS_{US}/100)]$$

or

$$\Delta \log H = a_1 + \lambda[\log(PY/PY_{GE}) - \log H_{-1}]$$

$$+ .25\lambda\beta \log[(1 + RS/100)/(1 + RS_{GE}/100)]$$

	$a_1$	$\lambda$	$\lambda\beta$	$\rho$	SE	DW
Quarterly						
EU	-0.023 (-2.66)	0.100 (2.69)	-1.935 (-1.65)	0.334 (3.97)	0.0449	1.96 1972.2–2017.4
CA	0.015 (2.02)	0.050 (2.00)	-0.558 (-0.63)	0.319 (3.99)	0.0258	1.97 1972.2–2017.1
JA	-0.129 (-16.31)	0.050	-1.218 (-1.20)	0.307 (4.21)	0.0474	1.90 1972.2–2016.4
AU	0.006 (7.31)	0.050	!	0.446 (5.78)	0.0044	2.04 1972.2–1998.4
FR	0.013 (4.32)	0.168 (3.38)	!	0.214 (1.93)	0.0199	2.04 1972.2–1998.4
GE	-0.026 (-2.29)	0.089 (2.04)	-1.975 (-1.56)	0.303 (2.78)	0.0490	1.98 1972.2–1998.4
IT	0.026 (5.35)	0.050	!	0.336 (3.65)	0.0333	1.95 1972.2–1998.4
NE	0.008 (8.47)	0.050	-1.730 (-5.37)	!	0.0093	2.03 1973.2–1998.4
ST	0.019 (10.77)	0.050	!	!	0.0244	1.48 1972.2–2017.3
UK	-0.001 (-0.12)	0.050	-0.210 (-0.39)	!	0.0398	1.36 1972.2–2016.3
FI	0.011 (1.03)	0.098 (1.49)	-0.924 (-0.81)	0.399 (2.91)	0.0286	1.96 1978.3–1998.4
AS	0.024 (2.05)	0.053 (2.01)	!	0.294 (3.72)	0.0454	1.96 1972.2–2017.4
KO	0.022 (2.71)	0.113 (2.61)	!	0.349 (3.93)	0.0459	1.94 1974.1–2017.2
Annual						
BE	0.035 (3.09)	0.172 (2.09)	!	!	0.0288	1.39 1972–1998
DE	0.118 (32.01)	0.050	!	!	0.0248	0.85 1973–2017
NO	0.125 (16.98)	0.050	!	!	0.0498	1.49 1972–2017
SW	0.690 (4.13)	0.305 (3.98)	!	!	0.0574	1.86 1972–2017
GR	0.169 (4.38)	0.294 (1.79)	!	!	0.0669	0.97 1972–2000
IR	0.076 (2.26)	0.123 (0.98)	!	!	0.0622	0.98 1972–1998
PO	0.197 (2.72)	0.341 (1.47)	!	!	0.0953	0.56 1972–1998
SP	0.094 (2.50)	0.165 (1.14)	!	!	0.0723	1.27 1972–1998
NZ	0.059 (2.10)	0.050	-1.692 (-0.75)	!	0.1062	1.22 1974–2016
PH	-0.695 (-2.30)	0.246 (2.45)	!	!	0.0923	1.08 1972–2016

Table B7: Test Results for Equation 7

	<sup>a</sup> Restr. <i>p</i> -val	RHO <i>p</i> -val	T <i>p</i> -val	Stability <i>p</i> -val			End Test AP df $\lambda$	overid <i>p</i> -val
Quarterly								
CA	0.809	0.547	0.288	1.15	4.	2.413	0.000	0.373 6
JA	0.654	0.134	0.486	1.50	3.	2.425	0.870	0.020 7
AU	0.004	0.286	0.002	0.00	0.	0.000	0.000	0.007 7
FR	0.201	0.475	0.577	0.00	0.	0.000	0.000	0.356 6
GE	0.893	0.967	0.845	0.00	0.	0.000	0.000	0.334 6
IT	0.001	0.506	0.004	0.00	0.	0.000	0.000	0.132 7
NE	0.462	0.909	0.889	0.00	0.	0.000	0.000	0.071 7
ST	0.006	0.000	0.001	3.63	1.	2.388	0.000	0.001 7
UK	0.000	0.000	0.000	9.36	2.	2.438	0.872	0.000 7
FI	0.894	0.721	0.999	0.00	0.	0.000	0.000	0.301 6
AS	0.545	0.367	0.225	1.77	3.	2.377	0.029	0.099 6
KO	0.037	0.204	0.108	19.16	3.	2.492	0.394	0.586 6
Annual								
BE	0.955	0.144	0.942	0.00	0.	0.000	0.000	
DE	0.000	0.000	0.000	20.16	1.	2.251	0.808	
NO	0.049	0.081	0.056	2.82	1.	2.210	0.481	
SW	0.387	0.593	0.504	2.30	2.	2.210	0.815	
GR	0.002	0.001	0.000	0.00	0.	0.000	0.000	
IR	0.000	0.000	0.000	0.00	0.	0.000	0.000	
PO	0.025	0.000	0.004	0.00	0.	0.000	0.000	
SP	0.002	0.002	0.007	0.00	0.	0.000	0.000	
NZ	0.027	0.008	0.013	4.27	2.	2.340	0.769	
PH	0.433	0.000	0.187	1.57	2.	2.251	0.893	
EU	0.367	0.460	0.502	0.94	4.	2.377	0.558	0.536 4

**Table B8: Coefficient Estimates for Equation 8**  
 $\log PX - \log[PW\$(E/E00)] = \lambda[\log PY - \log[PW\$(E/E00)]$

	$\lambda$	$\rho_1$	$\rho_2$	SE	DW
Quarterly					
US	0.840 (27.99)	1.462 (24.40)	-0.465 (-7.79)	0.0114	2.03 1961.1–2016.4
CA	0.796 (23.41)	1.376 (21.85)	-0.384 (-6.12)	0.0135	1.88 1961.1–2016.4
JA	0.492 (15.03)	0.980 (14.46)	-0.007 (-0.10)	0.0208	1.99 1961.1–2016.4
AU	0.836 (34.10)	0.863 (12.97)	0.128 (1.94)	0.0097	1.97 1961.1–2016.4
FR	0.706 (17.62)	0.563 (9.27)	0.428 (7.08)	0.0202	2.10 1961.1–2016.4
GE	0.805 (28.49)	1.031 (15.41)	-0.039 (-0.59)	0.0122	1.98 1961.1–2016.4
IT	0.594 (17.44)	0.841 (12.62)	0.155 (2.33)	0.0154	1.92 1961.1–2016.4
NE	0.604 (13.47)	1.160 (17.50)	-0.169 (-2.58)	0.0169	2.02 1961.1–2016.4
ST	0.684 (19.17)	0.871 (13.01)	0.084 (1.26)	0.0201	1.96 1961.1–2016.4
UK	0.685 (26.78)	1.018 (15.15)	-0.027 (-0.41)	0.0124	2.00 1961.1–2016.4
FI	0.528 (11.00)	0.720 (11.01)	0.272 (4.18)	0.0244	2.02 1961.1–2016.4
AS	0.603 (11.60)	1.211 (18.23)	-0.239 (-3.58)	0.0293	1.90 1961.1–2016.4
KO	0.484 (15.01)	0.768 (11.98)	0.219 (3.45)	0.0322	1.74 1961.1–2016.4
Annual					
BE	0.549 (10.64)	1.036 (6.73)	-0.070 (-0.46)	0.0226	1.97 1972–2016
DE	0.625 (12.59)	1.183 (7.67)	-0.211 (-1.41)	0.0194	1.93 1972–2016
SW	0.598 (10.83)	1.337 (9.00)	-0.358 (-2.45)	0.0244	1.78 1972–2016
IR	0.423 (5.77)	1.127 (7.11)	-0.144 (-0.93)	0.0299	1.93 1972–2016
SP	0.545 (8.56)	1.150 (7.72)	-0.193 (-1.37)	0.0280	1.78 1972–2016
NZ	0.664 (5.59)	0.900 (5.32)	0.020 (0.13)	0.0555	1.92 1972–2016
ID	0.605 (2.49)	0.960 (5.58)	-0.003 (-0.02)	0.0750	1.94 1978–2016
PA	0.945 (9.95)	0.642 (5.77)	-0.415 (-4.31)	0.0757	1.53 1972–2016
TH	0.763 (5.17)	1.081 (7.86)	-0.363 (-2.68)	0.0584	1.71 1972–2016
ME	0.429 (4.67)	1.068 (7.04)	-0.123 (-0.81)	0.0803	2.01 1972–2016

**Table B8: Test Results for Equation 8**

	<sup>a</sup> Restr. <i>p</i> -val	Stability			End Test <i>p</i> -val
		AP	df	$\lambda$	
Quarterly					
CA	0.000	4.60	3.	2.095	0.000
JA	0.000	0.86	3.	2.095	0.850
AU	0.000	6.84	3.	2.095	0.307
FR	0.497	6.69	3.	2.095	0.405
GE	0.000	5.54	3.	2.095	0.059
IT	0.014	5.19	3.	2.095	0.987
NE	0.649	8.50	3.	2.095	0.627
ST	0.001	5.98	3.	2.095	0.510
UK	0.102	3.58	3.	2.095	0.673
FI	0.137	11.94	3.	2.095	0.405
AS	0.117	10.62	3.	2.095	0.033
KO	0.125	26.61	3.	2.095	0.621
Annual					
BE	0.292	4.07	3.	2.251	0.143
DE	0.427	0.55	3.	2.251	0.071
SW	0.867	2.89	3.	2.251	0.643
IR	0.334	2.93	3.	2.251	0.000
SP	0.014	1.60	3.	2.251	0.679
NZ	0.005	6.32	3.	2.251	0.036
ID	0.079	1.21	3.	2.605	0.818
PA	0.000	14.73	3.	2.251	0.321
TH	0.084	7.58	3.	2.251	1.000
ME	0.019	6.43	3.	2.251	1.000

**Table B9: Coefficient Estimates for Equation 9**

$$\Delta \log J = a_1 + a_2 T + a_3 \log(J/JMIN)_{-1} + a_4 \Delta \log Y + a_5 \Delta \log Y_{-1}$$

	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	$\rho$	SE	DW	
Quarterly									
CA	0.003 (2.97)	-0.000008 (-1.62)	-0.073 (-3.91)	0.256 (2.81)	0.209 (4.56)	!	0.0040 1961.1–2016.3	1.60	
JA	0.002 (3.08)	-0.000007 (-1.65)	-0.018 (-1.78)	0.078 (3.63)		!	0.0034 1961.1–2016.3	2.10	
GE	-0.004 (-2.12)	0.000028 (3.05)	-0.036 (-2.00)	0.181 (1.45)		!	0.0061 1963.1–2017.2	1.78	
IT	0.002 (1.57)	0.000007 (1.04)	-0.103 (-6.11)	0.127 (2.83)		!	0.0060 1963.2–2017.4	1.89	
NE	0.024 (5.46)	-0.000091 (-4.35)	-0.227 (-7.33)	0.066 (0.98)		!	0.0039 1998.2–2017.4	1.78	
ST	0.006 (1.68)	-0.000014 (-0.73)	-0.149 (-4.46)	0.039 (0.47)		!	0.0049 1991.2–2017.4	2.45	
UK	-0.001 (-0.90)	0.000022 (2.80)	-0.156 (-7.25)	0.207 (4.35)		!	0.0045 1978.3–2017.4	1.86	
FI	0.015 (4.71)	-0.000052 (-3.46)	-0.215 (-7.92)	0.186 (1.97)		!	0.0070 1978.2–2017.2	1.71	
AS	0.009 (4.87)	-0.000012 (-1.03)	-0.156 (-4.85)	0.065 (2.31)		!	0.560 (8.51)	0.0040 1967.4–2017.4	2.16
Annual									
BE	-0.010 (-1.33)	0.000308 (1.88)	-0.501 (-4.29)	0.429 (4.07)		!	0.0079 1985–2016	1.71	
DE	0.035 (2.51)	-0.000720 (-2.51)	-0.452 (-4.54)	0.414 (3.73)		!	0.0111 1985–2016	1.84	
NO	0.007 (0.69)	0.000004 (0.02)	-0.307 (-3.46)	0.330 (2.53)		!	0.0117 1974–2016	0.80	
SW	!	0.000219 (1.96)	-0.476 (-6.91)	0.347 (5.01)		!	0.0095 1972–2016	0.84	
IR	0.076 (2.08)	-0.001307 (-1.60)	-0.598 (-3.45)	0.332 (2.13)		!	0.0418 1985–2016	1.58	

**Table B9: Test Results for Equation 9**

	Lags $p$ -val	RHO $p$ -val	Leads $p$ -val	Stability AP df $\lambda$			End Test $p$ -val	overid $p$ -val df
Quarterly								
CA	0.000	0.001	0.070	5.54	5.	2.106	0.903	0.000 5
JA	0.332	0.359	0.095	18.50	4.	2.106	0.994	
GE	0.004	0.011	0.048	8.80	4.	2.111	0.322	0.000 6
IT	0.013	0.002	0.188	8.15	4.	2.096	0.900	
NE	0.003	0.279	0.487	0.00	0.	0.000	0.000	
ST	0.015	0.008	0.737	0.00	0.	0.000	0.000	
UK	0.002	0.164	0.388	13.67	4.	2.828	0.987	
FI	0.000	0.026	0.729	23.07	4.	2.745	1.000	0.000 7
AS	0.224	0.049	0.002	4.14	5.	2.208	1.000	
Annual								
BE	0.364	0.408	0.092	9.06	4.	3.992	1.000	
DE	0.803	0.737	0.199	3.10	4.	3.992	0.200	
NO	0.000	0.000	0.013	6.86	4.	2.340	0.077	
SW	0.000	0.000	0.015	14.96	4.	2.251	0.893	
IR	0.009	0.039	0.105	20.34	4.	3.992	0.867	

**Table B10: Coefficient Estimates for Equation 10**  
 $\log(L1/POP1) = a_1 + a_2T + a_3 \log(L1/POP1)_{-1} + a_4UR$

	$a_1$	$a_2$	$a_3$	$a_4$	SE	DW
Quarterly						
JA	-0.010 (-1.63)	0.00001 (0.88)	0.975 (65.01)	-0.105 (-3.36)	0.0028	2.37 1965.4–2016.3
ST	-0.179 (-3.79)	0.00025 (3.04)	0.609 (6.01)	-0.545 (-2.64)	0.0036	2.04 2005.2–2017.3
UK	-0.085 (-2.42)	-0.00006 (-2.39)	0.840 (13.29)	-0.016 (-0.69)	0.0025	1.85 1999.3–2017.3
FI	-0.154 (-4.15)	-0.00043 (-4.26)	0.579 (5.74)	-0.315 (-3.28)	0.0033	1.56 2000.2–2017.2
AS	-0.029 (-2.14)	0.00003 (1.84)	0.940 (36.25)	-0.025 (-1.44)	0.0031	1.62 1978.2–2017.4
Annual						
BE	-0.136 (-1.17)	0.00055 (0.99)	0.810 (6.12)	-0.140@ (-0.96)	0.0089	1.78 1985–2016
NO	-0.006 (-0.20)	-0.00007 (-0.31)	0.943 (17.55)	-0.271 (-1.81)	0.0107	1.41 1974–2016
SW	-0.066 (-3.76)	0.00039 (3.04)	0.801 (16.59)	-0.263 (-4.48)	0.0065	1.35 1972–2016
IR	-0.134 (-2.25)	0.00078 (1.52)	0.758 (9.89)	-0.264 (-4.46)	0.0125	2.24 1985–2016

**Table B10: Test Results for Equation 10**

	Lags $p$ -val	RHO $p$ -val	Stability AP df $\lambda$			End Test $p$ -val	overid $p$ -val df	
Quarterly								
JA	0.013	0.006	2.80	4.	2.209	0.719	0.001	5
ST	0.072	0.624	0.00	0.	0.000	0.000	0.050	5
UK	0.303	0.512	0.00	0.	0.000	0.000		
FI	0.004	0.001	0.00	0.	0.000	0.000	0.001	5
AS	0.012	0.012	15.96	4.	2.801	1.000	0.002	5
Annual								
BE	0.083	0.803	4.22	4.	3.992	0.933		
NO	0.001	0.000	14.50	4.	2.340	0.846		
SW	0.019	0.017	8.05	4.	2.251	0.964		
IR	0.645	0.340	8.99	4.	3.992	1.000		