Appendix B
The ROW Part of the MCE Model

January 30, 2010

Table B.1
The Countries and Variables in the MCE Model

Quarterly Countries			**Local Currency**	**Trade Share Equations Only**		
1	US	United States	U.S. Dollar (mil.)	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 (bil.)	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 (mil.)	52	AL	Algeria
14	KO	Rep. of Korea	Won (bil.)	53	IA	Indonesia
Annual Countries				54	IN	Iran
15	BE	Belgium	Euro (mil.)	55	IQ	Iraq
16	DE	Denmark	Den. Kroner (bil.)	56	KU	Kuwait
17	NO	Norway	Nor. Kroner (bil.)	57	LI	Libya
18	SW	Sweden	Swe. Kroner (bil.)	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 (bil.)			
25	VE	Venezuela	Bolivares (bil.)			
26	CO	Colombia	Col. Pesos (bil.)			
27	JO	Jordan	Jor. Dinars (mil.)			
28	SY	Syria	Syr. Pound (mil.)			
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 (mil.)			
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 2000 for all countries except US (2005), CA (2002), AU (2005), UK (2005), AS (2007-2008), KO (2005), PH (1985), SA (2005), VE (2005), CO (2005), JO (2005), SY (2005), ID (2005), MA (2005), PA (2005), TH (2005), CH (2005), AR (2005), BR (2005), CE (2005), PE (2005).

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]
A	I-7	Net stock of foreign security and reserve holdings, end of quarter, in lc. [$A_{-1} + S$. Base value of zero used for the quarter prior to the beginning of the data.]
C	2	Personal consumption in constant lc. [OECD data or IFS96F/CPI]
E	9 or I-14	Exchange rate, average for the period, lc per $. [IFSRF]
EE	I-9	Exchange rate, end of period, lc per $. [IFSAE]
EX	I-2	Total exports (NIPA) in constant lc. [OECD data or (IFS90C or IFS90N)/ PX]
$EXDS$	exog	Discrepancy between NIPA export data and other export data in constant lc. [$EX - PX00(E00 \cdot X00\$ + XS)$.]
$E00$	exog	E in 2005, 2005 lc per 2005 $. [IFSRF in 2005]
F	10	Three-month forward exchange rate, lc per $. [IFSB]
G	exog	Government purchases of goods and services in constant lc. [OECD data or (IFS91F or IFS91FF)/PY] (Denoted GZ for countries CO and TH.)
H	9	Exchange rate, average for the period, lc per DM euro. [E/E_{GE}]
I	3	Gross fixed investment in constant lc. [OECD data or IFS93/PY]
IM	I-1	Total imports (NIPA) in constant lc. [OECD data or IFS98C/PM]
$IMDS$	exog	Discrepancy between NIPA import data and other import data in constant lc. [$IM - PM00(M + MS)$]
J	13	Total employment in millions. [OECD data or IFS67 or IFS67E or IFS67EY or IFS67EYC]
$JMIN$	I-13	Minimum amount of employment needed to produce Y in millions. [Y/LAM]
LAM	exog	Computed from peak-to-peak interpolation of $\log(Y/J)$.
$L1$	14	Labor force in millions. [OECD data]
M	1	Total merchandise imports (fob) in 2005 lc. [IFS71V/PM]
MS	exog	Other goods, services, and income (debit) in 2005 lc, BOP data. [((IFS78AED+IFS78AHD)E)/PM]
$M00\$A$	I-8	Merchandise imports (fob) from the trade share matrix in 2005 $. [See below]
$M00\$B$	exog	Difference between total merchandise imports and merchandise imports from the trade share matrix in 2005 $ (i.e., imports from countries other than the 44 in the trade share matrix). [$M/E00 - M00\$A$]
$M1$	6	Money supply in lc. [IFS34 or IFS34A.N+IFS34B.N or IFS35L.B or IFS39MAC or IFS59MA or IFS59MC]
NW	I-15	National Wealth in constant lc. [$NW_{-1} + I + V1 + EX - IM$. Base value of zero used for the quarter prior to the beginning of the data.]
PM	I-13	Import price deflator, 2005 = 1.0. [IFS75/100]
PMP	L-4	Import price index from DOT data, 2005 = 1.0. [See below]
$PM00$	exog	PM in the NIPA base year divided by PM in 2005.
POP	exog	Population in millions. [IFS99Z]
$POP1$	exog	Population of labor-force-age in millions. [OECD data]
$PSI1$	exog	$[(EE + EE_{-1})/2]/E$]
$PSI2$	exog	[PM/PMP]
$PW\$$	L-5	World price index, $/2005$. [See below]
PX	11	Export price index, 2005 = 1.0. [IFS74/100. If no IFS74 data for t, then $PX_t = PX\$_t(E_t/E00_t$, where $PX\$_t$ is defined next.]

Table B.2 (continued)

Variable	Eq. No.	Description
$PX\$$	I-16	Export price index, \$/2005\$, 2005 = 1.0. [$(E00 \cdot PX)/E$. If no IFS74 data at all, then $PX\$_t = PX_{UST}$ for all t. If IFS74 data only from t through $t+h$, then for $i > 0$, $PX\$_{t-i} = PX\$_t(PX_{USTt-i}/PX_{UST}$ and $PX\$_{t+h+i} = PX\$_{t+h}(PX_{UST+k+i}/PX_{UST}$.
$PX00$	exog	PX in the NIPA base year divided by PX in 2005.
PY	5	GDP or GNP deflator, equals 1.0 in the NIPA base year. [OECD data or (IFS99B/IFS99B.P]
RB	8	Long term interest rate, percentage points. [IFS61]
RS	7	Three-month interest rate, percentage points. [IFS60 or IFS60B or IFS60C or IFS60L or IFS60P]
S	I-6	Total net goods, services, and transfers in lc. Current account balance. [See Table B.7] (Denoted SZ for countries CO and TH.)
$STAT$	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.]
TT	exog	Total net transfers in lc. [See Table B.7]
UR	I-10	Unemployment rate. [$(L1 - J)/L1$]
V	I-5	Stock of inventories, end of period, in constant lc. [$V_{-1} + V1$. Base value of zero was used for the period (quarter or year) prior to the beginning of the data.]
$V1$	I-4	Inventory investment in constant lc. [OECD data or IFS93I/PY]
W	not used	Nominal wage rate. [IFS65..C or IFS65A or IFS65EY or IFS65UMC]
X	I-3	Final sales in constant lc. [$Y - V1$] (Denoted XZ for country PE.)
XS	exog	Other goods, services, and income (credit) in 2005 lc. BOP data. [(E(IFS78ADD+IFS78AGD))/PX]
$X00\$$	L-3	Merchandise exports from the trade share matrix in 2005 \$. [See below]
$XX00\$_{ij}$	L-2	Merchandise exports from i to j in 2005\$. [See below]
Y	4	Real GDP or GNP in constant lc. [OECD data or IFS99B.P or IFS99B.R]
YS	exog	Potential value of Y. [From a peak-to-peak interpolation of $\log Y$.]
ZZ	I-12	Demand pressure variable. [$\log Y - \log YS$]

Construction of variables related to the trade share matrix:

The raw data are:

$XX\$_{ij}$	Merchandise exports from i to j in \$, $i, j = 1, ..., 58$ [DOT data. 0 value used if no data]
$X\$_i$	Total merchandise exports (fob) in \$. $i = 1, ..., 39$ [IFS70/E or IFS70D]

The constructed variables are:

$XX\$_{i59} =$	$X\$_i - \sum_{j=1}^{58} XX\$_{ij}, i = 1, ..., 39$
$XX00\$_{ij} =$	$XX\$_{ij}/PX\$_i, i = 1, ..., 39, j = 1, ..., 59$ and $i = 40, ..., 58, j = 1, ..., 58$
$M00\$A_i =$	$\sum_{j=1}^{58} XX00\$_{ji}, i = 1, ..., 58$; $M00\$A_{59} = \sum_{j=1}^{39} XX00\$_{j59}$
$a_{ij} =$	$XX00\$_{ij}/M00\$A_j, i = 1, ..., 39, j = 1, ..., 59$ and $i = 40, ..., 58, j = 1, ..., 58$
$X00\$_i =$	$\sum_{j=1}^{59} XX00\$_{ij}, i = 1, ..., 39$; $X00\$_i = \sum_{j=1}^{58} XX00\$_{ij}, i = 40, ..., 58$
$PMP_i =$	$(E_i/E00_i) \sum_{j=1}^{58} a_{ji} PX\$_j, i = 1, ..., 39$
$PW\$_i =$	$(\sum_{j=1}^{58} PX\$_j X00\$_j)/(\sum_{j=1}^{58} X00\$_j), i = 1, ..., 39$ An element in this summation is skipped if $j = i$. This summation also excludes the oil exporting countries, which are SA, VE, NI, AL, IA, IN, IQ, KU, LI, UA.

- Variables available for trade share only countries are $M00\$A$, $PX\$$, $X00\$$.
- lc = local currency
- IFSxxxxx = variable number xxxxx from the IFS data

Table B.2 (continued)
The EU Variables

Variable	Eq. No.	Description
E	9	Exchange rate, average for the period, euro per \$. [IFSRF]
PY	[ ]	GDP deflator. $[(\sum_{i=1}^{6} PY_i Y_i)/Y_{EU}$, where the summation is for $i =$ GE, AU, FR, IT, NE, FI.]
RB	8	Long term interest rate, percentage points. [IFS61]
RS	7	Three-month interest rate, percentage points. [IFS60]
Y	[ ]	Real GDP in constant euros. $[Y_{GE} + \sum_{i=1}^{5}[Y_i/(E00_i/E00_{GE})]$, where the summation is for $i =$ AU, FR, IT, NE, FI.]
YS	[ ]	Potential value of Y_{EU}. $[YS_{GE} + \sum_{i=1}^{5}[YS_i/(E00_i/E00_{GE})]$, where the summation is for $i =$ AU, FR, IT, NE, FI.]
ZZ	I-18	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	$\log Y$	$\log Y_{-1}$, $\log X$, $\log V_{-1}$ [Real GDP, constant lc]
5	$\log PY$	cnst, $\log PY_{-1}$, $\log PM$, ZZ, T [GDP Price Deflator, base year = 1.0]
6	$\log[M1/(POP \cdot PY)]$	cnst, $\log[M1/(POP \cdot PY)]_{-1}$ or $\log[M1_{-1}/(POP_{-1}PY)]$, RS, $\log(Y/POP)$ [Money Supply, lc]
7	RS	cnst, RS_{-1}, $100[(PY/PY_{-1})^4 - 1]$, ZZ, RS_{GE}, RS_{US} [Three-Month Interest Rate, percentage points]
8	$RB - RS_{-2}$	cnst, $RB_{-1} - RS_{-2}$, $RS - RS_{-2}$, $RS_{-1} - RS_{-2}$ [Long Term Interest Rate, percentage points]
9	$\Delta \log E$	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]
9	$\Delta \log H$	cnst, $\log(PY/PY_{GE} - \log H_{-1}$, $.25\log[(1 + RS/100)/(1 + RS_{GE}/100)]$ [Exchange Rate, lc per DM] [For countries AU, FR, IT, NE, ST, UK, FI, BE, DE, NO, SW, GR, IR, PO, and SP]
10	$\log F$	$\log EE$, $.25\log[(1 + RS/100)/(1 + RS_{US}/100)]$ [Three-Month Forward Rate, lc per \$]
11	$\log PX - \log[PW\$(E/E00)]$	$\log PY - \log[PW\$(E/E00)]$ [Export Price Index, 2005 = 1.0]
13	$\Delta \log J$	cnst, T, $\log(J/JMIN)_{-1}$, $\Delta \log Y$, $\Delta \log Y_{-1}$ [Employment, millions]
14	$\log(L1/POP1)$	cnst, T, $\log(L1/POP1)_{-1}$, UR [Labor Force, millions]

Table B.3 (continued)

IDENTITIES

Eq.	LHS Variable	Explanatory Variables
I-1	$M =$	$(IM - IMDS)/PM00 - MS$ [Merchandise Imports, 2005 lc]
I-2	$EX =$	$PX00(E00 \cdot X00\$ + XS) + EXDS$ [Total Exports (NIPA), constant lc]
I-3	$X =$	$C + I + G + EX - IM + STAT$ [Final Sales, constant lc]
I-4	$V1 =$	$Y - X$ [Inventory Investment, constant lc]
I-5	$V =$	$V_{-1} + V1$ [Inventory Stock, constant lc]
I-6	$S =$	$PX(E00 \cdot X00\$ + XS) - PM(M + MS) + TT$ [Current Account Balance, lc]
I-7	$A =$	$A_{-1} + S$ [Net Stock of Foreign Security and Reserve Holdings, lc]
I-8	$M00\$A =$	$M/E00 - M00\$B$ [Merchandise Imports from the Trade Share Calculations, 2005 $]
I-9	$EE =$	$2PSI1 \cdot E - EE_{-1}$ [Exchange Rate, end of period, lc per $]
I-10	$UR =$	$(L1 - J)/L1$ [Unemployment Rate]
I-11	$JMIN =$	Y/LAM [Minimum Required Employment, millions]
I-12	$ZZ =$	$\log Y - \log YS$ [Demand Pressure Variable]
I-13	$PM =$	$PSI2 \cdot PMP$ [Import Price Deflator, 2005 = 1.0]
I-14	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-15	$NW =$	$NW_{-1} + I + V1 + EX - IM$ [National Wealth, constant lc]
I-16	$PX\$ =$	$(E00/E)PX$ [Export Price Index, $/2005$]

• From 1999:1 on for GE: $E_{GE} = E_{EU}$, $RS_{GE} = RS_{EU}$, and $RB_{GE} = RB_{EU}$. From 1999:1 on for an EU country i (except GE): $H_i = 1.0$, $RS_i = RS_{EU}$, and $RB_i = RB_{EU}$.
• $PX\$$ and $M00\$A$ are exogenous for trade share only countries.

Table B.3 (continued)

Equations that Pertain to the Trade and Price Links Among Countries

L-1	$a_{ij} =$	fraction of country i's exports imported by j. Computed from trade share equations [Trade Share Coefficients]
L-2	$XX00\$_{ij} =$	$a_{ij} M00\$A_j, i = 1, ..., 39, j = 1, ..., 59$ and $i = 40, ..., 58, j = 1, ..., 58$ [Merchandise Exports from i to j, 2005\$]
L-3	$X00\$_i =$	$\sum_{j=1}^{59} XX00\$_{ij}, i = 1, ..., 39$
	$X00\$_i =$	$\sum_{j=1}^{58} XX00\$_{ij}, i = 40, ..., 58$ [Total Merchandise Exports, 2005\$]
L-4	$PMP_i =$	$(E_i/E00_i) \sum_{j=1}^{58} a_{ji} PX\$_j, i = 1, ..., 39$ [Import Price Deflator, 2005 = 1.0]
L-5	$PW\$_i =$	$(\sum_{j=1}^{58} PX\$_j X00\$_j) / \sum_{j=1}^{58} X00\$_j), i = 1, ..., 39$ An element in this summation is skipped if $j = i$. This summation also excludes the oil exporting countries, which are SA, VE, NI, AL, IA, IN, IQ, KU, LI, UA. [World Price Index, \$/2005\$]

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, VE, 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 $PX\$_i$, $M00\$A_i$, 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 $X00\$_i$ 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
Coefficient Estimates and Test Results
for the ROW Equations

See Chapter 1 for discussion of the tests.
See Chapter 2 for discussion of the equations.
* = significant at the 99 percent confidence level.
ρ = first order autoregressive coefficient of the error term.
† = variable is lagged one period.
Dummy variable coefficient estimates are not shown for GE and EU.
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	ρ	SE	DW
Quarterly							
CA	-0.314	0.932	0.100	0.095	0.321	0.0296	1.99
	(-0.91)	(31.26)	(2.32)	(1.54)	(4.05)	1962.1–2009.3	
JA	-0.390	0.928	–	0.104	0.271	0.0321	2.11
	(-1.96)	(37.38)		(2.35)	(3.38)	1966.1–2009.3	
AU	-1.003	0.912	–	0.194	–	0.0287	1.94
	(-2.94)	(36.63)		(3.19)		1970.1–2009.3	
FR	-1.064	0.883	0.073	0.223	–	0.0263	1.72
	(-2.36)	(23.44)	(4.04)	(2.67)		1968.1–2009.1	
GE	-0.325	0.974	0.012	0.062	–	0.0234	1.98
	(-1.42)	(71.25)	(0.82)	(1.69)		1971.1–2009.3	
IT	-0.950	0.883	0.055	0.208	–	0.0348	1.93
	(-2.40)	(27.34)	(3.11)	(2.90)		1971.1–2009.2	
NE	-1.960	0.868	0.021	0.352	–	0.0203	1.65
	(-2.72)	(21.81)	(0.81)	(3.00)		1978.1–2009.3	
ST	-0.211	0.961	–	0.109	–	0.0267	2.10
	(-0.78)	(26.45)		(0.86)		1982.1–2009.3	
UK	-1.913	0.792	0.049	0.402	–	0.0296	1.71
	(-3.08)	(13.67)	(2.25)	(3.32)		1970.1–2009.3	
FI	-0.743	0.937	–	0.142	–	0.0566	2.45
	(-1.46)	(26.51)		(1.62)		1976.2–2009.3	
AS	-1.676	0.869	0.063	0.287	–	0.0387	1.46
	(-3.44)	(22.70)	(2.61)	(3.48)		1968.1–2009.2	
SO	-0.280	0.911	–	0.107	–	0.0718	1.78
	(-0.64)	(26.20)		(1.55)		1961.1–2009.2	
KO	-0.922	0.863	–	0.231	–	0.0566	1.98
	(-3.76)	(26.11)		(4.03)		1974.1–2009.3	
Annual							
BE	-0.948	0.774	0.262	0.315	–	0.0421	1.76
	(-0.69)	(5.92)	(3.47)	(1.20)		1962–2008	
DE	-1.077	0.863	–	0.321	–	0.0537	2.34
	(-1.34)	(9.29)		(1.43)		1962–2008	
NO	-0.117	0.560	0.191	0.387	–	0.0477	1.36
	(-0.31)	(4.61)	(2.93)	(2.66)		1962–2008	
GR	-0.241	0.921	0.139	0.097	–	0.0662	1.98
	(-0.27)	(12.76)	(1.56)	(0.64)		1962–2008	
IR	-1.075	0.864	0.141	0.248	–	0.0719	1.09
	(-0.71)	(7.27)	(1.32)	(0.95)		1968–2007	
PO	-1.312	0.295	0.483	0.765	–	0.0718	1.35
	(-2.20)	(2.37)	(5.50)	(4.86)		1962–2008	
SP	-0.911	0.729	0.313	0.330	–	0.0672	1.21
	(-0.59)	(7.40)	(4.45)	(1.38)		1962–2008	
NZ	-2.849	0.721	0.240	0.531	–	0.0729	1.97
	(-1.38)	(5.52)	(2.43)	(1.72)		1962–2007	
SA	-0.050	0.777	–	0.186	–	0.1516	1.12
	(-0.15)	(6.78)		(1.27)		1970–2008	
CO	-3.932	0.231	0.179	1.072	–	0.0785	1.23
	(-2.68)	(1.55)	(1.52)	(4.82)		1970–2007	
SY	-4.994	0.262	0.104	1.116	–	0.1246	1.25
	(-3.78)	(1.88)	(2.86)	(4.84)		1965–2007	
ID	-0.955	0.868	–	0.382	–	0.1023	1.78
	(-1.81)	(8.98)		(1.90)		1962–2008	
MA	-2.154	0.735	–	0.492	–	0.0923	1.52
	(-2.39)	(8.79)		(2.85)		1972–2008	
PA	-1.004	0.438	–	0.584	–	0.0924	1.34
	(-2.78)	(3.45)		(3.75)		1974–2008	

Table B1: Coefficient Estimates for Equation 1

	a_1	a_2	a_3	a_4	ρ	SE	DW
PH	-1.583	0.727	–	0.799	–	0.1599	2.06
	(-2.12)	(7.54)		(2.28)			1962–2008
TH	-0.785	0.785	–	0.373	–	0.0989	1.47
	(-2.48)	(9.90)		(2.74)			1962–2008
CH	-1.207	0.461	–	0.791	–	0.1013	1.36
	(-3.46)	(3.63)		(3.91)			1984–2008
BR	-6.531	0.861	–	0.812	–	0.0872	1.77
	(-1.73)	(5.87)		(1.79)			1995–2008
CE	-2.017	0.538	–	0.651	–	0.1051	1.06
	(-2.56)	(3.12)		(2.80)			1979–2008
ME	-2.731	0.841	0.279	0.388	–	0.1563	1.35
	(-1.69)	(11.21)	(2.00)	(1.97)			1962–2007
PE	-10.002	0.209	–	1.750	–	0.0612	0.48
	(-4.13)	(0.84)		(3.84)			1992–2008

Table B1: Test Results for Equation 1

	Lags	$\log PY$	RHO	T	Stability			End Test		overid	
	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly											
CA	0.000	0.375	0.000	0.095	20.57	5	5.875	0.752	1998.4		
JA	0.000		0.000	0.119	21.94	4	7.228	0.713	1998.3		
AU	0.451		0.000	0.002	29.12	3	5.510	0.972	1998.3		
FR	0.112	0.331	0.090	0.358	14.22	4	4.466	0.512	1998.3	0.023	5
GE	0.228	0.067	0.098	0.555	10.53	4	5.116	0.217	1998.4		
IT	0.800	0.227	0.191	0.040	15.91	4	5.166	1.000	1998.3	0.000	5
NE	0.205	0.162	0.000	0.003	4.63	4	2.770	0.098	1998.4		
ST	0.497		0.594	0.039	6.72	3	1.748	0.000	1998.3		
UK	0.052	0.288	0.002	0.265	11.98	4	5.510	0.718	1998.3	0.008	5
FI	0.003		0.010	0.009	28.49	3	3.290	1.000	1998.3		
AS	0.000	0.069	0.000	0.001	7.88	4	6.340	1.000	1998.2	0.000	6
SO	0.271		0.000	0.849	3.31	3	9.701	0.533	1998.3		
KO	0.413		0.000	0.006	13.44	3	4.024	0.351	1998.4		
Annual											
BE	0.176	0.890	0.001	0.000	32.86	4	8.626	1.000	1996	0.001	5
DE	0.045		0.113	0.001	29.23	3	8.626	0.731	1998	0.000	6
NO	0.023	0.000	0.000	0.120	39.55	4	8.626	1.000	1998		
GR	0.333	0.005	0.209	0.003	12.53	4	8.626	0.654	1998	0.113	5
IR	0.034	0.355	0.000	0.080	20.59	4	6.181	0.000	1998		
PO	0.028	0.844	0.074	0.626	4.31	4	8.626	0.950	1995		
SP	0.020	0.577	0.000	0.012	16.03	4	8.626	0.923	1998		
NZ	0.607	0.000	0.845	0.000	23.61	4	9.061	1.000	1998	0.000	5
SA	0.018		0.000	0.110	18.40	3	5.127	0.722	1998		
CO	0.251	0.200	0.000	0.037	10.23	4	5.343	1.000	1998		
SY	0.370	0.159	0.000	0.067	9.78	4	7.552	1.000	1998		
ID	0.534		0.392	0.500	4.86	3	8.626				
MA	0.740		0.141	0.139	8.90	3	4.393	0.875	1998		
PA	0.072		0.000	0.000	5.54	3	3.716	0.000	1998		
PH	0.392	0.001	0.528	0.001	19.93	3	8.626	0.929	1999		
TH	0.299		0.000	0.115	3.08	3	8.626	0.231	1998		
CH	0.014		0.078	0.966							
CE	0.295		0.000	0.007	2.08	3	2.270				
ME	0.000	0.000	0.000	0.000	13.56	4	9.061	1.000	1998		

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	ρ	SE	DW
Quarterly								
CA	0.025	0.883	–	-0.0009@	0.109	–	0.0076	1.99
	(1.32)	(37.14)		(-4.28)	(4.77)		1962.1–2009.3	
JA	0.093	0.849	–	-0.0014	0.126	-0.204	0.0089	2.03
	(4.20)	(23.91)		(-4.01)	(3.65)	(-2.68)	1966.1–2009.3	
AU	0.105	0.927	-0.0004	–	0.057	–	0.0138	2.54
	(2.04)	(23.63)	(-0.69)		(1.45)		1970.1–2009.3	
FR	0.049	0.865	-0.0004	–	0.121	–	0.0064	1.97
	(1.76)	(29.11)	(-2.79)		(4.06)		1968.1–2009.3	
GE	-0.008	0.872	–	-0.0015	0.122	–	0.0102	2.15
	(-0.11)	(32.01)		(-2.17)	(4.08)		1971.1–2009.3	
IT	-0.002	0.914	-0.0001	–	0.081	–	0.0072	1.52
	(-0.03)	(23.69)	(-0.86)		(1.90)		1971.1–2009.2	
NE	0.251	0.923	–	-0.0016	0.043	–	0.0086	2.13
	(2.92)	(32.63)		(-2.13)	(1.92)		1978.1–2009.3	
ST	0.038	0.859	–	-0.0019	0.103	–	0.0036	1.65
	(2.53)	(23.37)		(-4.78)	(3.44)		1982.1–2009.3	
UK	-0.048	0.888	–	-0.0018	0.114	–	0.0098	2.04
	(-0.43)	(20.63)		(-3.87)	(2.16)		1970.1–2009.3	
FI	0.060	0.869	-0.0003	–	0.115	–	0.0079	1.22
	(1.34)	(25.48)	(-1.34)		(3.40)		1976.2–2009.3	
AS	-0.033	0.905	–	-0.0002	0.093	–	0.0071	1.99
	(-1.07)	(37.08)		(-0.76)	(3.77)		1968.1–2009.3	
SO	0.081	0.947	-0.0005@	–	0.041	–	0.0198	2.20
	(0.58)	(32.64)	(-1.54)		(1.50)		1961.1–2009.2	
KO	0.173	0.828	–	-0.0009	0.141	–	0.0183	1.75
	(3.23)	(13.40)		(-1.51)	(2.47)		1974.1–2009.3	
Annual								
BE	0.140	0.738	–	–	0.233	–	0.0124	1.73
	(1.95)	(9.28)			(2.94)		1962–2008	
DE	0.243	0.578	–	–	0.325	–	0.0216	1.68
	(3.44)	(5.02)			(3.46)		1962–2008	
NO	0.050	0.910	–	–	0.072	–	0.0217	1.57
	(1.10)	(11.34)			(1.09)		1962–2008	
SW	0.352	0.570	–	–	0.313	–	0.0151	1.17
	(4.29)	(6.65)			(4.88)		1965–2008	
GR	0.055	0.898	-0.0016	–	0.097	–	0.0197	1.42
	(0.45)	(22.85)	(-2.84)		(2.01)		1962–2008	
IR	0.920	0.766	–	-0.0062	0.133	–	0.0241	1.34
	(3.14)	(6.09)		(-3.47)	(1.45)		1968–2007	
PO	0.181	0.625	–	-0.0020	0.341	–	0.0348	1.53
	(1.65)	(7.89)		(-2.11)	(4.37)		1962–2008	
SP	0.222	0.599	-0.0014	–	0.359	–	0.0124	1.48
	(2.72)	(6.48)	(-2.19)		(3.83)		1962–2008	

Table B2: Coefficient Estimates for Equation 2

	a_1	a_2	a_3	a_4	a_5	ρ	SE	DW
NZ	-0.127	0.641	–	-0.0029	0.357	–	0.0184	1.43
	(-0.70)	(5.41)		(-3.18)	(3.19)		1962–2007	
SA	-0.768	0.920	–	–	0.252	–	0.1482	2.12
	(-1.28)	(11.35)			(2.08)		1970–2008	
VE	-0.552	0.718	–	–	0.444	–	0.0753	1.81
	(-1.96)	(9.51)			(3.72)		1962–2008	
CO	0.798	0.446	–	–	0.439	–	0.0218	1.48
	(3.45)	(4.34)			(5.26)		1970–2007	
SY	1.330	–	–	–	0.844	–	0.0638	1.21
	(3.38)				(23.52)		1965–2007	
ID	0.197	0.259	-0.0011	–	0.575	–	0.0272	1.82
	(3.95)	(2.36)	(-0.80)		(7.03)		1962–2008	
MA	0.703	0.327	–	–	0.548	–	0.0409	1.21
	(3.37)	(2.35)			(4.81)		1972–2008	
PA	0.057	0.640	–	–	0.319	–	0.0346	1.28
	(0.62)	(4.55)			(2.56)		1974–2008	
PH	0.002	0.834	-0.0018	–	0.156	–	0.0198	1.68
	(0.04)	(13.06)	(-2.78)		(2.86)		1962–2008	
TH	0.077	0.448	–	–	0.466	–	0.0248	1.65
	(3.48)	(5.97)			(7.26)		1962–2008	
CH	-0.143	0.562	-0.0023	–	0.359	–	0.0263	1.27
	(-2.28)	(5.48)	(-0.70)		(4.19)		1984–2008	
BR	1.068	0.379	–	–	0.476	–	0.0180	0.76
	(1.15)	(2.49)			(4.45)		1995–2008	
CE	0.351	0.493	–	–	0.435	–	0.0402	1.45
	(1.70)	(5.49)			(5.88)		1979–2008	
ME	0.445	0.409	–	–	0.529	–	0.0282	0.61
	(2.22)	(3.65)			(5.06)		1962–2007	
PE	1.893	0.321	–	–	0.444	–	0.0208	1.30
	(2.21)	(1.80)			(4.97)		1992–2008	

Table B2: Test Results for Equation 2

	Lags	RHO	T	Leads	Stability			End Test		overid	
	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly											
CA	0.381	0.000	0.003	0.015	9.75	4	5.875	1.000	1998.4		
JA	0.212	0.191	0.595	0.002	4.93	5	7.228	1.000	1998.3	0.000	4
AU	0.000	0.000	0.625	0.556	43.93	4	5.510	1.000	1998.3	0.003	4
FR	0.412	0.000	0.984	0.054	9.98	4	4.423	1.000	1998.3		
GE	0.026	0.081	0.040	0.137	16.12	4	5.116	1.000	1998.4		
IT	0.002	0.000	0.000	0.000	26.90	4	5.166	1.000	1998.3	0.000	4
NE	0.435	0.316	0.000	0.035	5.02	4	2.770	1.000	1998.4	0.000	3
ST	0.061	0.118	0.010	0.011	7.40	4	1.748	1.000	1998.3	0.052	4
UK	0.600	0.392	0.356	0.016	9.16	4	5.510	1.000	1998.3	0.001	3
FI	0.000	0.000	0.000	0.000	42.49	4	3.290	1.000	1998.3	0.000	3
AS	0.838	0.775	0.271	0.709	3.22	4	6.340	1.000	1998.2	0.073	3
SO	0.089	0.170	0.000	0.005	9.83	4	9.701	1.000	1998.3	0.000	4
KO	0.134	0.000	0.004	0.007	9.10	4	4.024	0.298	1998.4	0.000	3
Annual											
BE	0.412	0.406	0.007	0.636	6.92	3	8.626	0.864	1996	0.416	4
DE	0.351	0.006	0.485	0.468	2.82	3	8.626	0.462	1998	0.108	5
NO	0.120	0.080	0.149	0.100	17.65	3	8.626	1.000	1998	0.024	4
SW	0.001	0.001	0.001	0.290	4.87	3	7.208	1.000	1998	0.004	4
GR	0.222	0.021	0.000	0.100	11.25	4	8.626	1.000	1998		
IR	0.006	0.028	0.952	0.743	15.32	4	6.181	0.810	1998	0.097	3
PO	0.070	0.042	0.000	0.142	15.68	4	8.626	0.950	1995	0.006	3
SP	0.074	0.068	0.002	0.810	24.31	4	8.626	1.000	1998	0.153	3
NZ	0.064	0.030	0.599	0.172	13.28	4	9.061	0.963	1998	0.119	3
SA	0.912	0.533	0.718	0.000	1.25	3	5.127	1.000	1998		
VE	0.968	0.438	0.929	0.349	3.02	3	8.626	0.923	1998		
CO	0.470	0.002	0.794	0.680	2.78	3	1.137	0.053	1998		
SY	0.837	0.008	0.932	0.240	2.96	2	7.552	0.542	1998		
ID	0.253	0.002	0.066	0.493	11.08	4	8.626				
MA	0.000	0.004	0.868	0.560	2.58	3	4.393	0.000	1998		
PA	0.171	0.003	0.376	0.851	24.86	3	3.716	0.000	1998		
PH	0.403	0.292	0.014	0.110	9.24	4	8.626	1.000	1999		
TH	0.632	0.001	0.021	0.930	5.39	3	8.626	0.000	1998		
CH	0.068	0.030	0.034	0.005							
CE	0.348	0.005	0.000	0.011	1.12	3	2.270				
ME	0.000	0.000	0.584	0.314	32.92	3	9.061	0.074	1998		

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	-0.188	0.914	0.092	–	-0.0022@	0.0211	1.39
	(-2.04)	(37.43)	(3.28)		(-3.81)	1962.1–2009.3	
AU	0.452	0.906	0.043	–	-0.0054	0.0282	2.34
	(2.68)	(23.40)	(1.10)		(-2.64)	1970.1–2009.3	
FR	0.322	0.946	0.023	–	-0.0027@	0.0149	1.80
	(4.85)	(52.30)	(1.56)		(-5.37)	1968.1–2009.3	
GE	0.173	0.874	0.098	–	-0.0017	0.0261	2.24
	(1.05)	(23.81)	(2.76)		(-0.92)	1971.1–2009.3	
IT	0.357	0.884	0.074	–	-0.0016@	0.0180	1.41
	(3.29)	(30.47)	(3.43)		(-3.42)	1971.1–2009.2	
NE	-0.359	0.600	0.381	–	-0.0093@	0.0441	2.45
	(-0.87)	(8.54)	(4.69)		(-2.49)	1978.1–2009.3	
UK	-0.177	0.847	0.147	–	-0.0042@	0.0258	1.83
	(-0.85)	(24.09)	(3.60)		(-3.43)	1970.1–2009.3	
FI	0.009	0.930	0.059	–	–	0.0377	1.77
	(0.07)	(34.09)	(2.43)			1976.2–2009.3	
AS	-0.286	0.947	0.072	–	-0.0012	0.0270	1.73
	(-1.78)	(34.25)	(1.97)		(-1.73)	1968.1–2009.3	
SO	-0.163	0.967	0.047	–	-0.0044@	0.0375	2.28
	(-1.60)	(70.72)	(3.27)		(-5.23)	1961.1–2009.2	
KO	0.026	0.954	0.040	–	–	0.0533	2.14
	(0.21)	(34.33)	(1.17)			1974.1–2009.3	
Annual							
BE	0.212	0.641	0.306	–	-0.0179	0.0466	1.89
	(0.83)	(6.88)	(3.46)		(-5.07)	1962–2008	
DE	-0.909	0.603	0.444	–	-0.0100	0.0570	1.74
	(-2.62)	(6.56)	(3.88)		(-3.73)	1962–2008	
SW	-0.046	0.790	0.177	-0.0067	–	0.0537	1.11
	(-0.19)	(7.87)	(2.02)	(-2.50)		1965–2008	
GR	0.270	0.540	0.388	-0.0131	–	0.0809	1.81
	(0.79)	(5.09)	(3.72)	(-4.51)		1962–2008	
IR	0.363	0.826	0.127	–	-0.0076	0.0779	1.54
	(0.83)	(7.70)	(1.12)		(-1.44)	1968–2007	
PO	-0.338	0.566	0.415	–	-0.0070	0.0620	1.11
	(-1.18)	(4.99)	(3.50)		(-3.18)	1962–2008	
SP	-0.021	0.772	0.213	-0.0092	–	0.0497	1.17
	(-0.05)	(9.61)	(2.21)	(-4.67)		1962–2008	

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
NZ	-2.212	0.616	0.530	–	-0.0080	0.0702	1.19
	(-2.76)	(4.86)	(3.06)		(-2.48)		1962–2007
ID	-1.688	0.685	0.446	–	–	0.0486	1.41
	(-3.57)	(6.77)	(3.36)				1962–2008
PA	-0.492	0.673	0.321	–	–	0.0733	1.19
	(-1.48)	(6.27)	(2.72)				1974–2008
CH	-1.214	0.473	0.612	-0.0100	–	0.0723	0.88
	(-1.67)	(2.19)	(2.34)	(-1.17)			1984–2008

Table B3: Test Results for Equation 3

	Lags	RHO	T	Leads	Stability			End Test		overid	
	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly											
CA	0.000	0.000	0.001	0.141	9.47	4	5.940	1.000	1998.4	0.002	4
AU	0.005	0.005	0.375	0.107	13.43	4	5.510	1.000	1998.3	0.143	4
FR	0.229	0.012	0.723	0.388	8.32	4	4.423	0.873	1998.3	0.353	4
GE	0.056	0.172	0.000	0.601	4.83	4	5.116	1.000	1998.4		
IT	0.001	0.002	0.002	0.130	12.29	4	5.166	0.176	1998.3	0.000	4
NE	0.000	0.000	0.000	0.446	8.81	4	2.770	1.000	1998.4	0.000	4
UK	0.428	0.398	0.000	0.897	3.48	4	5.510	0.915	1998.3	0.002	4
FI	0.907	0.000	0.000	0.000	29.27	3	3.290	1.000	1998.3	0.000	5
AS	0.007	0.010	0.240	0.043	4.77	4	6.340	0.481	1998.2	0.227	4
SO	0.063	0.054	0.000	0.389	8.25	4	9.701	1.000	1998.3	0.004	4
KO	0.427	0.044	0.000	0.030	8.09	3	4.024	1.000	1998.4	0.071	5
Annual											
BE	0.602	0.655	0.060	0.447	6.71	4	8.626	0.864	1996	0.838	4
DE	0.229	0.132	0.000	0.133	14.81	4	8.626	1.000	1998	0.025	4
SW	0.000	0.001	0.288	0.366	10.02	4	7.208	0.783	1998	0.034	4
GR	0.377	0.466	0.041	0.268	20.00	4	8.626	1.000	1998	0.081	4
IR	0.048	0.002	0.000	0.105	8.61	4	6.181	1.000	1998		
PO	0.000	0.001	0.068	0.274	4.02	4	8.626	1.000	1995	0.673	4
SP	0.000	0.002	0.652	0.037	5.55	4	8.626	1.000	1998	0.065	4
NZ	0.000	0.001	0.667	0.249	13.08	4	9.061	1.000	1998	0.501	4
ID	0.052	0.001	0.503	0.599	2.84	3	8.626				
PA	0.000	0.003	0.855	0.974	4.72	3	3.716	0.000	1998		
CH	0.000	0.002	0.185	0.000							

Table B4: Coefficient Estimates for Equation 4

$$\log Y = a_1 + a_2 \log Y_{-1} + a_3 \log X + a_4 \log V_{-1}$$

	a_1	a_2	a_3	a_4	ρ	Implied Values See eq. 2.10 λ	α	β	SE	DW
Quarterly										
JA	0.191	0.200	0.835	-0.0532	0.426	0.800	0.067	0.667	0.0035	2.07
	(10.86)	(7.81)	(33.13)	(-5.04)	(5.90)				1966.1–2009.3	
IT	2.367	0.352	0.700	-0.2455	0.960	0.648	0.379	0.213	0.0044	1.71
	(2.83)	(7.88)	(14.38)	(-4.93)	(43.54)				1971.1–2009.2	
NE	0.349	0.365	0.641	-0.0364	–	0.635	0.057	0.159	0.0063	1.49
	(3.28)	(9.51)	(16.45)	(-2.51)					1978.1–2009.3	
UK	0.338	0.152	0.867	-0.0483	0.608	0.848	0.057	0.404	0.0052	2.07
	(2.16)	(3.90)	(21.90)	(-2.30)	(7.72)				1970.1–2009.3	
AS	0.155	0.142	0.908	-0.0670	0.403	0.858	0.078	0.754	0.0053	1.92
	(2.73)	(4.01)	(23.79)	(-2.95)	(4.66)				1968.1–2009.3	
Annual										
PA	-0.172	0.113	0.935	-0.0302	–	0.887	0.034	1.588	0.0041	1.42
	(-2.72)	(2.60)	(24.46)	(-2.65)					1974–2008	

Table B4: Test Results for Equation 4

	Lags	RHO	T	Leads	Stability			End Test	
	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End
Quarterly									
JA	0.064	0.343	0.132	0.181	8.71	5	7.228	0.540	1998.3
IT	0.002	0.036	0.068	0.003	58.19	5	5.166	1.000	1998.3
NE	0.013	0.000	0.008	0.427	9.18	4	2.770	1.000	1998.4
UK	0.608	0.352	0.001	0.000	20.92	5	5.510	1.000	1998.3
AS	0.116	0.907	0.449	0.001	13.06	5	3.368	1.000	1998.2
Annual									
PA	0.040	0.113	0.539	0.154	6.34	4	3.716	0.643	1998

Table B5: Coefficient Estimates for Equation 5

$$\log PY = a_1 + a_2 \log PY_{-1} + a_3 \log PM + a_4 ZZ + a_5 T$$

	a_1	a_2	a_3	a_4	a_5	ρ	SE	DW
Quarterly								
CA	0.024	0.992	0.012	0.09469@	-0.00008	0.593@	0.0070	2.11
	(1.13)	(47.83)	(0.72)	(1.94)	(-0.73)	(9.59)	1962.1–2009.3	
JA	0.018	0.988	0.006	–	-0.00010	0.305@	0.0089	2.04
	(2.71)	(166.75)	(1.55)		(-2.75)	(4.31)	1966.1–2009.3	
AU	-0.002	0.976	0.015	0.07637@	0.00003	-0.315@	0.0082	1.97
	(-0.18)	(113.04)	(1.84)	(2.16)	(0.61)	(-4.12)	1970.1–2009.2	
FR	-0.121	0.877	0.073	–	0.00063	0.225@	0.0058	1.88
	(-6.36)	(60.07)	(8.45)		(6.54)	(2.50)	1968.1–2009.1	
GE	-0.007	0.976	0.003	0.07438@	0.00006	–	0.0053	1.65
	(-0.91)	(136.50)	(0.69)	(2.54)	(1.58)		1971.1–2009.3	
IT	0.020	0.960	0.033	0.17732@	-0.00003	–	0.0083	1.72
	(2.23)	(220.08)	(8.25)	(4.15)	(-0.67)		1971.1–2009.2	
NE	-0.052	0.940	0.008	–	0.00029	–	0.0065	1.45
	(-1.85)	(36.09)	(0.97)		(2.03)		1978.1–2009.3	
ST	0.004	0.982	0.014	0.10246@	–	0.197@	0.0040	2.20
	(0.46)	(89.88)	(1.05)	(3.06)	(0.02)	(2.11)	1982.1–2009.3	
UK	-0.113	0.893	0.075	0.08074@	0.00055	0.416@	0.0100	2.17
	(-3.14)	(38.77)	(4.48)	(1.36)	(3.21)	(4.97)	1970.1–2009.3	
FI	0.027	0.985	0.011	0.04864	-0.00010	–	0.0088	2.19
	(2.32)	(139.58)	(1.33)	(2.84)	(-1.74)		1976.2–2009.3	
AS	0.035	0.994	0.005@	0.26821@	-0.00013	0.358@	0.0107	2.04
	(1.04)	(45.83)	(0.40)	(3.96)	(-0.88)	(4.56)	1968.1–2009.3	
SO	-0.051	0.946	0.044	–	0.00035	–	0.0173	1.82
	(-1.31)	(99.36)	(5.11)		(1.86)		1961.1–2008.4	
KO	-0.035	0.968	–	0.05523@	0.00019	0.190@	0.0134	1.95
	(-1.66)	(171.84)		(1.24)	(1.87)	(2.24)	1974.1–2009.3	
Annual								
BE	0.111	0.985	0.049	0.42445@	-0.00194	–	0.0202	0.39
	(2.70)	(26.22)	(1.67)	(2.00)	(-1.89)		1962–2008	
DE	0.068	0.932	0.069	–	-0.00098	–	0.0223	0.31
	(1.55)	(19.83)	(1.76)		(-0.86)		1962–2008	
NO	-0.396	0.700	0.183	0.27771@	0.01010	–	0.0345	1.04
	(-2.09)	(5.85)	(2.43)	(1.06)	(2.32)		1962–2008	
SW	0.237	0.941	0.118	0.41689@	-0.00458	–	0.0174	1.05
	(5.91)	(32.12)	(5.57)	(3.70)	(-4.73)		1965–2008	
IR	-0.200	0.729	0.209	0.21590@	0.00534	–	0.0280	1.53
	(-1.47)	(8.66)	(3.61)	(0.94)	(1.64)		1968–2007	
PO	-0.270	0.730	0.270	0.10628@	0.00765	–	0.0222	1.32
	(-4.91)	(42.25)	(19.04)	(0.91)	(5.87)		1962–2008	
SP	0.112	0.898	0.151	0.49617@	-0.00113	–	0.0318	0.54
	(1.13)	(23.28)	(4.91)	(2.14)	(-0.47)		1962–2008	
NZ	-0.099	0.741	0.240	0.21194@	0.00281	–	0.0332	1.35
	(-1.50)	(18.96)	(8.14)	(1.32)	(1.73)		1962–2007	
CO	0.172	0.750	0.291	0.38858@	-0.00222	–	0.0382	2.45
	(0.65)	(15.19)	(8.46)	(1.58)	(-0.37)		1970–2007	
JO	0.186	0.917	0.122	–	-0.00305	–	0.0336	1.70
	(1.21)	(13.99)	(2.99)		(-0.88)		1978–2007	
SY	-0.157	0.893	0.108	–	0.00487	–	0.0651	1.30
	(-0.69)	(18.47)	(4.05)		(0.94)		1965–2007	

Table B5: Coefficient Estimates for Equation 5

	a_1	a_2	a_3	a_4	a_5	ρ	SE	DW
MA	-0.794	0.410	0.248	0.19386	0.01620	–	0.0328	1.87
	(-4.48)	(3.42)	(4.21)	(1.97)	(4.69)		1972–2008	
PA	0.275	0.748	0.265	–	-0.00462	–	0.0332	1.57
	(0.59)	(9.49)	(4.09)		(-0.46)		1974–2008	
PH	0.367	0.676	0.273	0.34583@	0.00448	–	0.0457	1.32
	(2.59)	(10.21)	(7.03)	(1.67)	(0.97)		1962–2008	
TH	-0.096	0.666	0.186	0.47267@	0.00380	–	0.0335	1.09
	(-1.02)	(8.73)	(4.32)	(4.14)	(1.73)		1962–2008	
CH	-0.673	0.453	0.281	0.68353	0.01590	–	0.0276	1.65
	(-4.64)	(5.82)	(7.30)	(4.05)	(4.87)		1984–2008	
CE	-0.244	0.594	0.363	0.71105@	0.00536	–	0.0470	1.47
	(-1.44)	(7.25)	(4.58)	(2.69)	(1.42)		1979–2008	

Table B5: Test Results for Equation 5

	Lags-1	Lags-2	RHO	Stability			End Test		overid	
	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly										
CA	0.215	0.002	0.111	25.39	6	5.875	0.000	1998.4		
JA	0.006	0.000	0.001	53.81	5	7.228	1.000	1998.3		
AU	0.055	0.010	0.010	5.87	6	5.565	1.000	1998.3	0.035	6
FR	0.044	0.003	0.179	10.89	5	4.466	0.912	1998.3	0.009	6
GE	0.677	0.034	0.004	30.50	6	5.116	1.000	1998.4	0.000	6
IT	0.006	0.088	0.293	11.82	5	5.166	1.000	1998.3	0.016	6
NE	0.001	0.008	0.000	23.18	4	2.788	1.000	1998.4	0.000	5
ST	0.000	0.000	0.000	7.95	6	1.748	1.000	1998.3	0.005	6
UK	0.010	0.001	0.006	10.52	6	5.510	1.000	1998.3	0.001	6
FI	0.416	0.413	0.388	10.68	5	3.290	1.000	1998.3	0.761	4
AS	0.043	9.900	0.004	15.48	6	6.340	0.935	1998.2		
SO	0.021	0.033	0.004	23.68	4	9.940	0.578	1998.3	0.000	5
KO	0.792	0.655	0.516	6.99	5	4.058	0.828	1998.4	0.001	7
Annual										
BE	0.000	0.000	0.000	97.69	5	8.626	1.000	1996		
DE	0.000	0.000	0.000	98.78	4	8.626	1.000	1998		
NO	0.000	0.000	0.000	11.21	5	8.626	0.115	1998		
SW	0.004	0.000	0.000	26.62	5	7.552	1.000	1998		
IR	0.030	0.038	0.248	11.95	5	6.181	1.000	1998		
PO	0.087	0.014	0.031	26.20	5	8.626	1.000	1995		
SP	0.000	0.000	0.000	98.21	5	8.626	1.000	1998		
NZ	0.000	0.004	0.030	7.50	5	9.061	0.963	1998		
CO	0.031	0.069	0.176	4.41	5	5.343	0.421	1998		
JO	0.912	0.673	0.440							
SY	0.008	0.024	0.004	20.48	4	7.552	1.000	1998		
MA	0.001	0.000	0.746	13.37	5	4.393	0.938	1998		
PA	0.370	0.291	0.295	6.16	4	3.716	0.071	1998		
PH	0.120	0.024	0.001	18.91	5	8.626	0.929	1999		
TH	0.000	0.008	0.000	80.81	5	8.626	0.731	1998		
CH	0.359	0.000	0.817							
CE	0.218	0.252	0.385	17.80	5	2.270				

Table B6: Coefficient Estimates for Equation 6

$$\log[M1/(POP \cdot PY)] = a_1 + a_2 \log[M1/(POP \cdot PY)]_{-1} + a_3 \log[M1_{-1}/(POP_{-1} \cdot PY)] + a_4 RS + a_5 \log(Y/POP)$$

	a_1	a_2	a_3	a_4	a_5	SE	DW
Quarterly							
CA	-0.274	–	0.930	-0.0030	0.102	0.0272	2.29
	(-2.58)		(53.72)	(-2.65)	(4.11)	1968.1–2008.4	
GE	-0.224	0.985	–	-0.0027	0.044	0.0197	2.17
	(-1.44)	(99.52)		(-3.15)	(1.66)	1971.1–2009.3	
NE	-0.524	–	0.881	-0.0043	0.186	0.0202	2.14
	(-1.74)		(20.17)	(-3.87)	(2.38)	1978.1–2009.3	
ST	-0.135	0.939	–	-0.0092	0.134	0.0344	1.51
	(-1.06)	(34.78)		(-3.78)	(1.99)	1982.1–2009.3	
UK	0.163	0.975	–	-0.0030	0.002	0.0146	2.19
	(1.65)	(114.16)		(-5.85)	(0.33)	1970.1–2006.1	
FI	-0.192	–	0.892	-0.0031	0.144	0.0353	2.21
	(-0.88)		(27.67)	(-2.31)	(2.70)	1976.2–2009.3	
AS	-0.606	–	0.944	-0.0034	0.124	0.0247	2.05
	(-3.28)		(58.35)	(-3.10)	(3.52)	1968.1–2009.3	
KO	0.110	–	0.907	–	0.068	0.0624	2.42
	(1.40)		(19.38)		(1.51)	1974.1–2009.2	
Annual							
BE	0.300	0.958	–	-0.0094	0.014	0.0325	1.81
	(1.05)	(18.92)		(-5.34)	(0.54)	1962–2008	
DE	-0.560	–	0.780	-0.0078	0.295	0.0498	1.96
	(-1.96)		(12.82)	(-2.78)	(3.00)	1962–2008	
SW	0.014	0.970	–	-0.0071	0.037	0.0406	1.87
	(0.08)	(13.77)		(-3.93)	(0.66)	1965–2008	
IR	-0.761	–	0.771	-0.0147	0.293	0.1765	2.18
	(-0.26)		(5.11)	(-0.58)	(0.81)	1983–2007	
PO	-0.744	0.844	–	-0.0016	0.226	0.1299	1.50
	(-1.09)	(10.32)		(-0.54)	(1.62)	1962–2008	
SP	0.914	–	0.800	-0.0011	0.099	0.0461	1.40
	(4.83)		(7.58)	(-0.48)	(0.97)	1962–2008	
NZ	2.251	–	0.752	-0.0040	0.001	0.0689	1.36
	(2.54)		(11.12)	(-1.06)	(0.01)	1962–2007	
VE	-2.408	0.624	–	-0.0048	1.105	0.1756	1.59
	(-2.81)	(6.14)		(-2.88)	(3.01)	1962–2008	
ID	-0.613	–	0.723	–	0.345	0.0466	1.92
	(-3.16)		(8.47)		(3.60)	1962–2008	
PA	-0.161	–	0.846	-0.0096	0.196	0.0684	1.68
	(-0.50)		(6.95)	(-1.75)	(1.27)	1974–2007	
PH	-0.452	–	0.738	-0.0091	0.280	0.0769	2.19
	(-2.07)		(9.31)	(-2.49)	(2.94)	1962–2007	

Table B6: Test Results for Equation 6

	[a]N vs R	Lags	RHO	T	Stability			End Test		overid	
	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly											
CA	0.046	0.352	0.009	0.581	14.95	4	6.476	1.000	1998.4	0.150	5
GE	0.023	0.179	0.354	0.168	7.45	4	5.116	0.971	1998.4	0.901	4
NE	0.444	0.388	0.470	0.009	4.22	4	2.770	0.000	1998.4		
ST	0.964	0.050	0.388	0.154	6.65	4	1.000	0.115	1998.3	0.188	5
UK	0.000	0.065	0.088	0.023	4.05	4	6.435	0.298	1998.3	0.197	4
FI	0.261	0.475	0.000	0.000	18.96	4	3.290	1.000	1998.3	0.012	4
AS	0.692	0.504	0.195	0.631	3.49	4	6.340	0.494	1998.2	0.050	4
KO	0.599	0.009	0.006	0.246	2.62	3	4.058	0.897	1998.4	0.042	5
Annual											
BE	0.906	0.871	0.496	0.703	4.26	4	8.626	0.364	1996		
DE	0.936	0.412	0.869	0.020	2.41	4	4.902	0.577	1998		
SW	0.143	0.940	0.666	0.760	3.01	4	7.208	0.000	1998		
IR	0.656	0.544	0.604	0.495	1.24	4	1.000	0.000	1998		
PO	0.003	0.036	0.068	0.129	37.69	4	8.626	1.000	1995		
SP	0.386	0.016	0.035	0.002	10.52	4	8.626	0.462	1998		
NZ	0.545	0.215	0.001	0.034	5.17	4	6.452	0.963	1998		
VE	0.713	0.379	0.000	0.000	12.06	4	8.626	0.077	1998		
ID	0.849	0.813	0.747	0.348	9.18	3	8.626				
PA	0.514	0.089	0.622	0.758	5.45	4	3.850	0.000	1998		
PH	0.407	0.148	0.448	0.224	3.43	4	9.061	0.345	1999		

Table B7: Coefficient Estimates for Equation 7

$RS = a_1 + a_2 RS_{-1} + a_3 PCPY + a_4 ZZ + a_5 RS_{GE} + a_6 RS_{US}$

	a_1	a_2	a_3	a_4	a_5	a_6	ρ	SE	DW
Quarterly									
EU	0.53	0.876	0.053@	23.5	–	0.06	–	0.682	1.67
	(2.98)	(28.87)	(2.17)	(4.78)		(2.44)		1972.2–2009.2	
CA	0.09	0.833	0.014	8.4	–	0.20	–	0.819	1.69
	(0.54)	(20.75)	(0.54)	(2.50)		(3.60)		1972.2–2009.3	
JA	-0.21	0.826	0.087	1.9	–	0.12	0.302	0.610	2.03
	(-0.74)	(22.46)	(3.95)	(0.42)		(2.64)	(3.00)	1972.2–2009.3	
AU	0.92	0.840	–	31.6	–	0.11	–	0.702	2.02
	(3.45)	(22.62)		(6.08)		(3.45)		1972.2–1998.4	
FR	0.03	0.748	0.038	10.6	0.20	0.13	–	0.866	1.65
	(0.07)	(17.77)	(1.29)	(1.20)	(4.15)	(2.32)		1972.2–1998.4	
GE	0.66	0.890	0.043@	34.1	–	0.06	–	0.770	1.78
	(2.35)	(24.48)	(1.44)	(4.79)		(1.85)		1972.2–1998.4	
IT	1.28	0.819	0.121	22.0	–	–	0.337	1.034	1.91
	(2.34)	(17.54)	(4.33)	(2.61)			(3.19)	1972.2–1998.4	
NE	0.04	0.652	–	23.7	0.24	0.17	–	0.910	1.88
	(0.13)	(6.75)		(3.46)	(2.44)	(3.72)		1978.1–1998.4	
ST	0.24	0.877	0.036	–	–	–	0.461	0.555	1.89
	(1.30)	(14.57)	(0.64)				(4.09)	1982.1–2009.3	
UK	0.37	0.817	0.036	11.7	–	0.19	–	0.905	1.57
	(1.88)	(21.16)	(2.06)	(3.22)		(4.52)		1972.2–2009.3	
FI	0.78	0.951	–	7.1	–	–	–	1.008	1.79
	(2.15)	(32.19)		(3.26)				1976.2–1998.4	
AS	0.10	0.907	0.018	9.9	–	0.12	–	0.958	1.70
	(0.46)	(34.99)	(0.72)	(1.86)		(3.03)		1972.2–2009.3	
SO	0.30	0.902	–	–	–	0.13	0.484	1.021	2.00
	(0.50)	(19.49)				(2.31)	(4.99)	1972.2–2009.2	
Annual									
BE	0.69	0.596	0.039	35.8	0.41	–	–	1.488	2.30
	(0.64)	(3.63)	(0.39)	(1.31)	(2.13)			1972–1998	
DE	-0.50	0.623	0.240	19.7	0.50	–	–	2.098	2.34
	(-0.56)	(6.01)	(2.09)	(1.02)	(2.83)			1972–2008	
NO	-0.39	0.807	–	41.5	0.44	–	–	1.424	2.20
	(-0.56)	(11.21)		(3.38)	(3.87)			1972–2008	
SW	-0.37	0.763	0.057	7.8	–	0.33	–	1.681	2.55
	(-0.52)	(7.01)	(0.50)	(0.60)		(2.54)		1972–2008	
IR	2.63	–	0.154	–	0.26	0.74	–	2.065	1.83
	(2.06)		(2.16)		(1.35)	(3.87)		1972–1998	
PO	-0.34	0.805	0.294	32.0	–	–	–	2.730	1.82
	(-0.25)	(7.81)	(3.59)	(2.16)				1972–1998	
SP	1.83	0.556	0.195	–	–	0.21	–	3.009	2.40
	(0.88)	(3.07)	(1.72)			(0.72)		1972–1998	
NZ	1.67	0.723	0.221	19.6	–	–	–	2.441	1.99
	(1.68)	(7.44)	(3.03)	(1.51)				1972–2007	
ID	4.03	0.597	0.144	19.7	–	–	–	2.445	1.72
	(1.79)	(4.02)	(1.38)	(1.46)				1972–2008	
PA	1.31	0.740	0.138	26.2	–	–	–	1.492	2.21
	(1.23)	(5.84)	(2.75)	(1.67)				1974–2008	
PH	1.04	0.751	0.167	12.0	–	0.20	–	2.540	1.62
	(0.69)	(6.12)	(3.18)	(0.85)		(1.05)		1972–2008	

Table B7: Test Results for Equation 7

	Lags	RHO	T	Stability			End Test		overid	
	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly										
CA	0.145	0.031	0.113	19.85	5	4.645	1.000	1998.4	0.000	5
JA	0.083	0.389	0.365	8.86	6	4.645	1.000	1998.3	0.010	6
AU	0.054	0.355	0.294	2.69	4	2.696			0.114	6
FR	0.874	0.404	0.042	4.80	6	2.696			0.016	4
GE	0.729	0.226	0.151	6.42	5	2.696			0.002	5
IT	0.412	0.308	0.444	1.44	5	2.696	0.240	1998.3	0.028	7
NE	0.643	0.274	0.000	13.48	5	1.154			0.002	5
ST	0.016	0.687	0.092	3.24	4	1.538	1.000	1998.3	0.000	7
UK	0.183	0.018	0.038	6.87	5	4.645	1.000	1998.3	0.007	5
FI	0.519	0.352	0.604	0.96	3	1.555			0.208	4
AS	0.151	0.036	0.425	5.46	5	4.645	1.000	1998.2	0.001	5
SO	0.558	0.877	0.021	8.33	4	4.645	0.081	1998.3	0.008	6
Annual										
BE	0.022	0.228	0.822	6.84	5	2.469				
DE	0.053	0.181	0.445	6.07	5	4.393	1.000	1998		
NO	0.231	0.432	0.909	8.85	4	4.393	0.875	1998		
SW	0.031	0.037	0.149	5.92	5	4.393	1.000	1998		
IR	0.982	0.997	0.081	4.94	4	2.469				
PO	0.868	0.636	0.031	4.83	4	2.469				
SP	0.575	0.123	0.449	1.98	4	2.469				
NZ	0.796	0.990	0.220	4.58	4	3.133	1.000	1998		
ID	0.290	0.308	0.119	4.90	4	4.393				
PA	0.115	0.299	0.851	6.87	4	3.716	0.214	1998		
PH	0.372	0.244	0.168	12.76	5	4.393	1.000	1999		

Table B8: Coefficient Estimates for Equation 8

$$RB - RS_{-2} = a_1 + a_2(RB_{-1} - RS_{-2}) + a_3(RS - RS_{-2}) + a_4(RS_{-1} - RS_{-2})$$

	a_1	a_2	a_3	a_4	ρ	SE	DW
Quarterly							
EU	0.077	0.934	0.349	-0.335	–	0.3741	1.74
	(1.64)	(36.78)	(3.94)	(-3.08)		1970.3–2009.2	
CA	0.103	0.918	0.372	-0.335	–	0.3891	1.99
	(2.32)	(34.78)	(2.69)	(-2.01)		1962.1–2009.3	
JA	0.010	0.947	0.271	-0.244	–	0.3506	1.99
	(0.29)	(27.76)	(1.74)	(-1.08)		1966.1–2009.3	
AU	0.064	0.948	0.171	-0.070	0.392	0.2638	1.92
	(1.00)	(31.42)	(1.85)	(-0.98)	(4.18)	1970.1–1998.4	
FR	0.069	0.863	0.441	-0.292	0.269	0.4555	2.01
	(0.98)	(14.76)	(2.88)	(-1.84)	(2.11)	1968.1–1998.4	
GE	0.124	0.904	0.559	-0.579	–	0.4495	2.03
	(2.13)	(28.77)	(4.68)	(-3.99)		1971.1–2009.3	
IT	-0.059	0.784	0.331	-0.192	0.540	0.4493	1.94
	(-0.63)	(12.01)	(3.30)	(-2.31)	(5.50)	1971.1–1998.4	
NE	0.091	0.891	0.358	-0.224	–	0.4601	1.92
	(1.24)	(20.59)	(3.16)	(-2.12)		1978.1–1998.4	
ST	0.027	0.960	0.312	-0.274	–	0.2700	1.84
	(0.78)	(41.09)	(3.27)	(-2.09)		1982.1–2009.3	
UK	0.017	0.966	0.414	-0.453	–	0.4789	1.61
	(0.33)	(33.74)	(2.05)	(-1.86)		1970.1–2009.3	
AS	0.086	0.913	0.579	-0.637	–	0.5747	1.98
	(1.33)	(18.50)	(2.88)	(-2.88)		1968.1–2009.3	
SO	0.135	0.929	0.752	-1.035	–	0.6194	1.91
	(1.86)	(27.36)	(2.87)	(-2.85)		1961.1–2009.2	
KO	0.145	0.909	0.398	-0.169	–	1.0416	2.05
	(1.12)	(20.63)	(2.55)	(-0.92)		1974.1–2009.3	
Annual							
BE	0.509	0.753	0.378	–	–	0.6957	1.43
	(2.05)	(7.89)	(5.64)			1962–1998	
DE	0.357	0.732	0.416	–	–	1.1352	1.72
	(1.60)	(7.07)	(5.09)			1962–2008	
NO	-0.023	0.853	0.441	–	–	0.6590	1.77
	(-0.24)	(8.93)	(6.38)			1962–2008	
IR	0.466	0.540	0.479	–	–	1.2546	1.46
	(1.72)	(4.04)	(5.71)			1968–1998	
PO	0.064	0.785	0.385	–	–	1.2897	1.69
	(0.30)	(8.99)	(5.16)			1962–1998	
NZ	-0.177	0.774	0.370	–	–	0.9321	2.42
	(-1.09)	(8.20)	(5.70)			1962–2007	
TH	0.005	0.828	0.341	–	–	1.0655	2.23
	(0.02)	(10.40)	(5.23)			1978–2008	

Table B8: Test Results for Equation 8

	[a]Restr.	Lags	RHO	T	Leads	Stability			End Test		overid	
	p-val	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly												
CA	0.036	0.086	0.798	0.468	0.053	3.97	4	5.875	0.943	1998.4	0.037	5
JA	0.046	0.150	0.512	0.660	0.060	3.81	4	7.228	0.908	1998.3	0.185	5
AU	0.412	0.079	0.823	0.035	0.248	2.16	5	3.475			0.020	6
FR	0.598	0.783	0.704	0.605	0.442	3.16	5	3.117			0.846	6
GE	0.355	0.006	0.042	0.589	0.408	3.46	4	5.116	1.000	1998.4	0.090	5
IT	0.744	0.924	0.610	0.561	0.742	7.93	5	3.117			0.981	6
NE	0.493	0.366	0.139	0.773	0.463	2.76	4	1.154			0.381	5
ST	0.002	0.002	0.170	0.856	0.007	4.76	4	1.762	0.160	1998.3	0.000	5
UK	0.976	0.360	0.034	0.050	1.000	5.23	4	5.510	1.000	1998.3	0.001	5
AS	0.361	0.259	0.767	0.105	0.455	7.25	4	6.340	1.000	1998.2	0.118	5
SO	0.263	0.011	0.037	0.024	0.235	4.91	4	9.701	0.439	1998.3	0.062	5
KO	0.632	0.706	0.529	0.079	9.900	4.08	4	4.024	1.000	1998.4	0.018	5
Annual												
BE	0.372	0.158	0.030	0.002	0.499	12.00	3	24.156				
DE	0.923	0.808	0.271	0.029	0.598	7.98	3	8.626	1.000	1998		
NO	0.157	0.205	0.480	0.051	0.845	5.15	3	8.626	0.808	1998		
IR	0.570	0.561	0.019	0.000	0.689	10.11	3	3.812				
PO	0.002	0.002	0.156	0.004	0.117	7.87	3	6.370				
NZ	0.125	0.000	0.003	0.718	0.432	1.95	3	3.531	0.815	1998		
TH	0.065	0.358	0.493	0.705	0.711	5.41	3	2.531	1.000	1998		

Table B9: Coefficient Estimates for Equation 9

$$\Delta \log E = a_1 + \lambda[\log(PY/PY_{US}) - \log E_{-1}] + .25\lambda\beta \log[(1 + RS/100)/(1 + RS_{US}/100)]$$

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	λ	$\lambda\beta$	ρ	SE	DW
Quarterly						
EU	-0.027	0.085	-1.855	0.300	0.0469	1.97
	(-2.58)	(2.28)	(-1.65)	(3.27)	1972.2–2009.2	
CA	0.014	0.075	-1.128	0.390	0.0247	1.87
	(1.85)	(2.09)	(-1.08)	(4.15)	1972.2–2009.3	
JA	-0.120	0.050	-1.426	0.278	0.0483	1.93
	(-17.64)		(-1.53)	(3.43)	1972.2–2009.3	
AU	0.007	0.050	–	0.504	0.0045	2.14
	(7.54)			(6.12)	1972.2–1998.4	
FR	0.003	0.189	–	0.226	0.0198	2.04
	(1.22)	(3.41)		(1.99)	1972.2–1998.4	
GE	-0.029	0.088	-1.743	0.302	0.0489	1.98
	(-2.26)	(1.99)	(-1.37)	(2.77)	1972.2–1998.4	
IT	0.021	0.050	–	0.338	0.0333	1.95
	(4.23)			(3.68)	1972.2–1998.4	
NE	0.002	0.050	-0.698	–	0.0049	1.36
	(3.71)		(-3.12)		1978.1–1998.4	
ST	-0.640	0.099	–	–	0.0169	1.73
	(-2.31)	(2.31)			1982.1–2009.3	
UK	0.005	0.050	-0.531	–	0.0413	1.39
	(0.97)		(-0.86)		1972.2–2009.3	
FI	0.010	0.083	-0.445	0.415	0.0290	2.02
	(0.92)	(1.28)	(-0.41)	(3.20)	1976.2–1998.4	
AS	0.047	0.098	–	0.323	0.0457	1.92
	(2.33)	(2.30)		(3.38)	1972.2–2009.3	
KO	0.019	0.073	–	0.345	0.0491	1.91
	(2.21)	(1.88)		(3.74)	1974.1–2009.3	
Annual						
BE	0.012	0.175	–	–	0.0288	1.38
	(2.09)	(2.07)			1972–1998	
DE	-0.399	0.085	–	–	0.0262	0.92
	(-1.02)	(1.06)			1972–2008	
NO	-0.251	0.057	–	–	0.0490	1.57
	(-0.91)	(0.98)			1972–2008	
SW	-1.505	0.319	–	–	0.0580	1.93
	(-3.47)	(3.55)			1972–2008	
GR	0.118	0.266	–	–	0.0675	0.97
	(7.68)	(1.63)			1972–2000	
IR	0.061	0.120	–	–	0.0623	0.98
	(2.97)	(0.94)			1972–1998	

Table B9: Coefficient Estimates for Equation 9

	a_1	λ	$\lambda\beta$	ρ	SE	DW
PO	0.142	0.313	–	–	0.0959	0.57
	(3.57)	(1.36)				1972–1998
SP	0.064	0.163	–	–	0.0723	1.27
	(3.87)	(1.13)				1972–1998
NZ	0.088	0.103	-2.982	–	0.1077	1.03
	(1.37)	(0.79)	(-1.43)			1972–2007
PH	-1.491	0.336	–	–	0.0953	1.06
	(-2.74)	(2.84)				1972–2008

Table B9: Test Results for Equation 9

	[a]Restr.	Lags	RHO	T	Stability			End Test		overid	
	p-val	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly											
CA	0.679	0.210	0.071	0.459	0.58	3	4.645	0.000	1998.4	0.135	6
JA	0.157	0.772	0.209	0.122	4.30	3	4.645	0.935	1998.3	0.047	7
AU	0.004	0.023	0.127	0.000	4.88	2	2.696			0.002	7
FR	0.358	0.502	0.463	0.758	1.45	3	2.696			0.687	6
GE	0.980	0.650	0.944	0.893	4.23	4	2.696			0.258	6
IT	0.001	0.940	0.532	0.003	4.50	2	2.696			0.098	7
NE	0.140	0.256	0.001	0.000	9.83	2	1.154			0.005	7
ST	0.442	0.077	0.062	0.040	3.75	2	1.748	1.000	1998.3	0.124	6
UK	0.000	0.001	0.001	0.000	8.11	2	4.645	1.000	1998.3	0.000	7
FI	0.147	0.743	0.623	0.272	0.37	4	1.555			0.019	6
AS	0.503	0.446	0.183	0.940	0.64	3	4.645	0.000	1998.2	0.278	6
KO	0.021	0.354	0.100	0.067	11.51	3	4.024	0.053	1998.4	0.428	6
Annual											
BE	0.990	0.124	0.118	0.876	25.85	2	2.469				
DE	0.000	0.000	0.000	0.000	23.37	2	4.393	0.938	1998		
NO	0.104	0.138	0.197	0.095	1.82	2	4.393	0.938	1998		
SW	0.349	0.564	0.832	0.226	3.88	2	4.393	1.000	1998		
GR	0.002	0.003	0.000	0.000	11.45	2	7.528	0.125	1998		
IR	0.000	0.001	0.000	0.000	5.75	2	2.469				
PO	0.023	0.000	0.000	0.004	9.11	2	2.469				
SP	0.002	0.052	0.002	0.006	4.46	2	2.469	0.500	1998		
NZ	0.355	0.000	0.001	0.098	7.04	3	4.566	0.118	1998		
PH	0.676	0.002	0.000	0.872	2.16	2	4.393	0.778	1999		

Table B10: Coefficient Estimates for Equation 10

$\log F = a_1 \log EE + a_2(.25)\log[(1 + RS/100)/(1 + RS_{US}/100)]$

	a_1	a_2	ρ	SE	DW
Quarterly					
CA	0.9824	1.761	0.793	0.0096	2.28
	(49.23)	(3.68)	(11.64)		1972.2–1997.3
JA	1.0010	1.182	0.359	0.0087	1.84
	(1301.92)	(6.85)	(4.47)		1972.2–2006.3
AU	0.9930	1.049	0.250	0.0058	2.10
	(299.71)	(8.25)	(2.60)		1972.2–1998.4
FR	1.0076	0.644	–	0.0071	1.54
	(333.90)	(4.78)			1972.2–1989.3
GE	0.9960	1.198	0.720	0.0032	2.21
	(250.42)	(10.89)	(10.67)		1972.2–1998.4
IT	0.9967	1.057	–	0.0105	1.74
	(257.91)	(8.62)			1976.3–1998.4
NE	0.9955	1.472	–	0.0097	2.03
	(123.29)	(4.84)			1978.1–1990.4
ST	1.0001	1.124	–	0.0031	1.87
	(17913.52)	(23.20)			1982.1–2009.3
UK	1.0028	1.246	0.199	0.0049	2.01
	(743.06)	(12.21)	(2.32)		1972.2–2006.3
FI	0.9942	1.211	0.676	0.0071	2.63
	(103.38)	(4.80)	(6.79)		1976.2–1989.3
AS	1.0027	1.249	–	0.0066	2.01
	(441.27)	(15.57)			1976.1–2006.4

Table B11: Coefficient Estimates for Equation 11

$\log PX - \log[PW\$(E/E00)] = \lambda[\log PY - \log[PW\$(E/E00)]$

	λ	ρ_1	ρ_2	SE	DW
Quarterly					
CA	0.669	1.230	-0.251	0.0158	1.99
	(15.50)	(17.00)	(-3.49)		1962.1–2008.4
JA	0.393	1.276	-0.284	0.0139	1.94
	(15.77)	(17.30)	(-3.90)		1966.1–2008.4
AU	0.834	0.714	0.267	0.0106	2.04
	(30.48)	(9.13)	(3.46)		1970.1–2008.4
FR	0.770	1.133	-0.144	0.0096	2.01
	(29.47)	(13.90)	(-1.79)		1968.1–2008.4
GE	0.826	1.168	-0.179	0.0076	1.77
	(40.90)	(13.73)	(-2.11)		1971.1–2008.4
IT	0.613	0.825	0.166	0.0165	1.88
	(15.62)	(10.06)	(2.03)		1971.1–2008.4
NE	0.640	1.224	-0.234	0.0172	1.96
	(11.55)	(13.09)	(-2.52)		1978.1–2008.4
ST	0.840	0.720	0.240	0.0113	2.07
	(25.86)	(7.43)	(2.51)		1982.1–2008.4
UK	0.719	1.051	-0.058	0.0205	1.93
	(15.38)	(12.68)	(-0.70)		1970.1–2008.4
FI	0.656	1.031	-0.022	0.0182	1.96
	(13.00)	(11.53)	(-0.24)		1976.2–2008.4
AS	0.547	1.347	-0.358	0.0284	1.98
	(9.64)	(17.98)	(-4.76)		1968.1–2008.4
SO	0.584	0.875	0.099	0.0406	2.01
	(9.89)	(12.02)	(1.36)		1961.1–2008.4
KO	0.936	1.155	-0.169	0.0377	1.94
	(12.86)	(12.90)	(-1.92)		1974.1–2008.4
Annual					
BE	0.533	0.894	-0.075	0.0200	1.93
	(12.10)	(5.75)	(-0.51)		1962–2008
DE	0.611	1.143	-0.201	0.0179	1.96
	(12.99)	(7.77)	(-1.47)		1962–2008
SW	0.492	1.148	-0.287	0.0316	1.77
	(6.15)	(7.57)	(-1.98)		1965–2008
IR	0.432	0.977	–	0.0308	1.57
	(5.82)	(44.65)			1968–2007
SP	0.540	1.117	-0.154	0.0355	1.69
	(6.81)	(7.54)	(-1.08)		1962–2008

Table B11: Coefficient Estimates for Equation 11

	λ	ρ_1	ρ_2	SE	DW
NZ	0.442	1.037	-0.164	0.0675	1.82
	(3.03)	(6.86)	(-1.13)		1962–2007
CO	0.842	1.056	-0.093	0.1225	1.98
	(3.37)	(6.04)	(-0.55)		1970–2007
ID	0.510	0.689	-0.168	0.0523	1.92
	(11.27)	(4.59)	(-1.14)		1962–2008
MA	0.913	0.831	-0.035	0.1195	1.85
	(3.11)	(4.67)	(-0.19)		1972–2008
PA	0.113	0.904	0.022	0.0682	2.21
	(0.63)	(5.93)	(0.15)		1974–2008
TH	0.528	0.935	-0.405	0.0618	1.83
	(5.94)	(6.78)	(-2.99)		1962–2008
CH	0.500	1.064	-0.252	0.0442	1.86
		(4.98)	(-1.24)		1984–2008
ME	0.500	1.186	-0.282	0.0558	1.92
		(8.20)	(-1.96)		1962–2007

Table B11: Test Results for Equation 11

	[a] Restr.	Stability			End Test	
	p-val	AP	df	λ	p-val	End
Quarterly						
CA	0.016	0.69	3	3.392	0.159	1998.4
JA	0.000	2.49	3	7.391	1.000	1998.3
AU	0.000	6.29	3	5.622	1.000	1998.3
FR	0.008	7.52	3	4.511	0.778	1998.3
GE	0.000	1.86	3	5.218	0.718	1998.4
IT	0.097	6.50	3	5.218	1.000	1998.3
NE	0.000	11.29	3	2.808	0.884	1998.4
ST	0.281	1.46	3	1.762	0.000	1998.3
UK	0.023	3.20	3	5.622	0.877	1998.3
FI	0.000	8.98	3	3.341	0.000	1998.3
AS	0.017	3.58	3	6.476	0.278	1998.2
SO	0.018	2.02	3	9.940	1.000	1998.3
KO	0.001	15.03	3	4.095	0.051	1998.4
Annual						
BE	0.008	3.98	3	8.626	0.409	1996
DE	0.266	0.62	3	8.626	0.885	1998
SW	0.001	16.45	3	7.208	0.870	1998
IR	0.004	4.49	3	6.491	0.591	1998
SP	0.012	3.10	3	8.626	1.000	1998
NZ	0.000	9.26	3	9.061	0.926	1998
CO	0.083	0.60	3	5.343	1.000	1998
ID	0.817	0.97	3	8.626		
MA	0.690	3.51	3	4.393	1.000	1998
PA	0.103	1.33	3	3.716	1.000	1998
TH	0.156	3.89	3	8.626	1.000	1998

Table B13: Coefficient Estimates for Equation 13

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

	a_1	a_2	a_3	a_4	a_5	ρ	SE	DW
Quarterly								
CA	0.003	–	-0.135	0.430	0.163	–	0.0043	1.72
	(1.66)	(-0.12)	(-4.17)	(4.40)	(2.98)		1962.1–2009.3	
JA	0.005	-0.00001	-0.078	0.091	–	–	0.0033	2.22
	(2.56)	(-1.38)	(-5.17)	(1.47)			1966.1–2009.3	
FR	0.004	–	-0.227	0.135	–	-0.365	0.0110	1.88
	(1.42)	(-0.22)	(-4.52)	(1.47)		(-4.56)	1968.2–2009.3	
GE	-0.007	0.00004	-0.166	0.431	–	–	0.0048	1.72
	(-3.44)	(3.91)	(-4.99)	(3.16)			1971.1–2009.3	
IT	0.002	0.00001	-0.123	0.088	–	–	0.0050	2.01
	(0.86)	(0.58)	(-4.70)	(1.08)			1971.1–2009.2	
ST	0.003	-0.00001	-0.085	0.388	–	–	0.0038	1.50
	(1.23)	(-0.53)	(-2.74)	(4.16)			1982.1–2009.3	
UK	0.004	-0.00001	-0.125	0.112	–	0.440	0.0028	2.20
	(2.39)	(-0.84)	(-6.78)	(5.08)		(5.94)	1970.1–2009.3	
FI	0.026	-0.00012	-0.405	0.588	–	–	0.0214	1.91
	(2.44)	(-2.23)	(-6.00)	(1.97)			1976.2–2009.3	
AS	0.010	-0.00002	-0.234	0.109	–	0.322	0.0048	2.14
	(4.78)	(-1.42)	(-5.93)	(3.05)		(3.87)	1968.1–2009.3	
Annual								
BE	-0.024	0.00061	-0.180	0.424	–	–	0.0103	1.64
	(-4.09)	(4.44)	(-1.53)	(4.51)			1962–2008	
DE	0.008	-0.00028	-0.302	0.379	–	–	0.0134	1.48
	(1.15)	(-1.47)	(-2.64)	(3.71)			1962–2008	
NO	-0.013	0.00035	-0.221	0.482	–	–	0.0128	0.82
	(-1.81)	(2.25)	(-2.13)	(3.53)			1962–2008	
SW	-0.007	0.00012	-0.125	0.477	–	–	0.0144	0.89
	(-1.03)	(0.67)	(-1.19)	(3.59)			1965–2008	
IR	-0.038	0.00114	-0.390	0.534	–	–	0.0136	1.92
	(-5.92)	(5.57)	(-3.31)	(5.99)			1968–2007	

Table B13: Test Results for Equation 13

	Lags	RHO	Leads	Stability			End Test		overid	
	p-val	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly										
CA	0.002	0.014	0.271	11.51	5	5.875	0.876	1998.4	0.008	5
JA	0.192	0.210	0.291	7.08	4	7.228	0.759	1998.3	0.002	6
FR	0.001	0.006	0.195	2.64	5	1.979	1.000	1998.3		
GE	0.036	0.072	0.263	11.42	4	5.116	0.000	1998.4	0.009	6
IT	0.001	0.285	0.169	5.66	4	5.166	0.941	1998.3	0.507	6
ST	0.020	0.000	0.191	20.48	4	1.748	1.000	1998.3	0.000	6
UK	0.001	0.000	0.008	32.57	5	5.510	1.000	1998.3		
FI	0.047	0.000	0.317	4.28	4	3.290	1.000	1998.3	0.035	7
AS	0.009	0.001	0.003	6.14	5	6.340	1.000	1998.2		
Annual										
BE	0.111	0.045	0.148	7.57	4	9.061	0.130	1996		
DE	0.011	0.016	0.852	9.70	4	9.061	1.000	1998		
NO	0.000	0.000	0.882	5.02	4	9.061	0.333	1998		
SW	0.000	0.000	0.090	20.40	4	7.552	0.375	1998		
IR	0.931	0.888	0.012	6.22	4	6.181	0.048	1998		

Table B14: Coefficient Estimates for Equation 14

$\log(L1/POP1) = a_1 + a_2 T + a_3 \log(L1/POP1)_{-1} + a_4 UR$

	a_1	a_2	a_3	a_4	SE	DW
Quarterly						
JA	-0.015	0.00001	0.965	-0.115	0.0032	2.14
	(-1.94)	(0.77)	(51.12)	(-2.47)		1966.1–2009.3
IT	-0.173	0.00009	0.779	-0.087	0.0051	1.94
	(-4.26)	(3.77)	(14.94)	(-2.54)		1971.1–2009.2
ST	-0.008	0.00007	0.994	-0.210	0.0035	1.89
	(-1.09)	(3.43)	(66.23)	(-4.92)		1982.1–2009.3
FI	-0.199	-0.00016	0.485	-0.252	0.0198	1.88
	(-6.63)	(-3.03)	(6.47)	(-4.08)		1976.2–2009.3
AS	-0.068	0.00007	0.872	-0.041	0.0043	1.93
	(-3.52)	(3.48)	(24.06)	(-2.30)		1968.1–2009.3
Annual						
BE	-0.081	0.00024	0.880	-0.044	0.0069	2.13
	(-1.45)	(2.19)	(10.36)	(-1.15)		1962–2008
NO	-0.049	0.00077	0.913	-0.371	0.0118	1.04
	(-1.28)	(2.20)	(15.21)	(-2.20)		1962–2008
SW	-0.074	0.00045	0.839	-0.294	0.0076	1.55
	(-3.05)	(3.11)	(16.10)	(-4.14)		1965–2008
IR	-0.104	0.00096	0.841	-0.168	0.0122	2.63
	(-2.17)	(4.00)	(10.44)	(-2.20)		1968–2007

Table B14: Test Results for Equation 14

	Lags	RHO	Stability			End Test		overid	
	p-val	p-val	AP	df	λ	p-val	End	p-val	df
Quarterly									
JA	0.269	0.363	10.22	4	7.228	0.966	1998.3	0.050	5
IT	0.228	0.752	3.86	4	5.166	1.000	1998.3	0.017	5
ST	0.120	0.293	14.80	4	1.748	1.000	1998.3	0.000	5
FI	0.354	0.000	8.57	4	3.290	1.000	1998.3	0.004	5
AS	0.619	0.524	6.00	4	6.340	1.000	1998.2	0.036	5
Annual									
BE	0.513	0.697	4.80	4	4.947	0.000	1996		
NO	0.000	0.000	25.51	4	9.061	0.630	1998		
SW	0.008	0.107	4.94	4	7.552	0.167	1998		
IR	0.029	0.029	9.08	4	6.181	0.429	1998		

Table B.5
Links Between the US and ROW Models

The data on the variables for the United States that are needed when the US model is imbedded in the MCE model were collected as described in Table B.2. These variables are (with the US subscript dropped): $EXDS$, $IMDS$, M, MS, $M00\$A$, $M00\$B$, PM, PMP, $PSI2$, $PW\$$, PX (= $PX\$$), S, TT, XS, and $X00\$$. The PX_{US} variable here is not the same as the PX variable for the United States in Appendix A. The variable here is denoted $USPX$ in the MCE model. The PX variable for the United States is the price deflator of total sales of the firm sector.

Variable	**Determination**
$X00\$_{US}$	Determined in Table B.3
PMP_{US}	Determined in Table B.3
$PW\$_{US}$	Determined in Table B.3
PX_{US}	Determined by an equation that is equivalent to equation 11 for the other countries. See the discussion in Section B.6.
$PEX =$	$DEL3 \cdot PX_{US}$. In the US model by itself, PEX is determined as $PSI1 \cdot PX$, which is equation 32 in Table A.2. This equation is dropped when the US model is linked to the ROW model. $DEL3$ is constructed from the data as PEX/PX_{US} and is taken to be exogenous.
$PM_{US} =$	$PSI2_{US}PMP_{US}$. This is the same as equation I-19 for the other countries.
$PIM =$	$DEL4 \cdot PM_{US}$. PIM is an exogenous variable in the US model by itself. $DEL4$ is constructed from the data as PIM/PM_{US} and is taken to be exogenous.
$EX =$	$(X00\$_{US} + XS_{US} + EXDS_{US})/1000$. This is the same as equation I-2 for the other countries. EX is an exogenous variable in the US model by itself. $EXDS_{US}$ is constructed from the data as $1000EX - X00\$_{US} - XS_{US}$ and is taken to be exogenous.
$M_{US} =$	$1000IM - MS_{US} - IMDS_{US}$. This is the same as equation I-1 for the other countries. $IMDS_{US}$ is constructed from the data as $1000IM - M_{US} - MS_{US}$ and is taken to be exogenous.
$M00\$A_{US} =$	$M_{US} - M00\$B_{US}$. This is the same as equation I-8 for the other countries.
$S_{US} =$	$PX_{US}(X00\$_{US} + XS_{US}) - PM_{US}(M_{US} + MS_{US}) + TT_{US}$. This is the same as equation I-6 for the other countries.

• The new exogenous variables for the US model when it is linked to the ROW model are $DEL3$, $DEL4$, $EXDS_{US}$, $IMDS_{US}$, $M00\$B_{US}$, MS_{US}, $PSI2_{US}$, TT_{US}, and XS_{US}. EX and PIM are exogenous in the US model by itself, but endogenous when the US model is linked to the ROW model.

Table B.6
Construction of the Balance of Payments Data: Data for S and TT

The relevant raw data variables are:

$M\$'$	Goods imports (fob) in \$, BOP data. [IFS78ABD]
$M\$$	Goods imports (fob) in \$. [IFS71V/E]
$X\$'$	Goods exports (fob) in \$, BOP data. [IFS78AAD]
$X\$$	Goods exports (fob) in \$. [IFS70/E]
$MS\$$	Services and income (debit) in \$, BOP data. [IFS78AED + IFS78AHD]
$XS\$$	Services and income (credit) in \$, BOP data. [IFS78ADD + IFS78AGD]
$XT\$$	Current transfers, n.i.e., (credit) in \$, BOP data. [IFS78AJD]
$MT\$$	Current transfers, n.i.e., (debit) in \$, BOP data. [IFS78AKD]

When quarterly data on all the above variables were available, then $S\$$ and $TT\$$ were constructed as:

$$S\$ = \quad X\$' + XS\$ - M\$' - MS\$ + XT\$ - MT\$$$

$$TT\$ = \quad S\$ - X\$ - XS\$ + M\$ + MS\$$$

where $S\$$ is total net goods, services, and transfers in \$ (balance of payments on current account) and $TT\$$ is total net transfers in \$.

When only annual data on $M\$'$ were available and quarterly data were needed, interpolated quarterly data were constructed using $M\$$. Similarly for $MS\$$.

When only annual data on $X\$'$ were available and quarterly data were needed, interpolated quarterly data were constructed using $X\$$. Similarly for $XS\$$, $XT\$$, and $MT\$$.

When no data on $M\$'$ were available, then $M\$'$ was taken to be $\lambda M\$$, where λ is the last observed value of $M\$'/M\$$. Similarly for $MS\$$ (where λ is the last observed annual value of $MS\$/M\$$.)

When no data on $X\$'$ were available, then $X\$'$ was taken to be $\lambda X\$$, where λ is the last observed value of $X\$'/X\$$. Similarly for $XS\$$ (where λ is the last observed annual value of $XS\$/X\$$), for $XT\$$ (where λ is the last observed annual value of $XT\$/X\$$), and for $MT\$$ (where λ is the last observed annual value of $MT\$/X\$$).

The above equations for $S\$$ and $TT\$$ were then used to construct quarterly data for $S\$$ and $TT\$$.

After data on $S\$$ and $TT\$$ were constructed, data on S and TT were constructed as:

$$S = \quad E \cdot S\$$$

$$TT = \quad E \cdot TT\$$$

Note from MS and XS in Table B.2 and from $MS\$$ and $XS\$$ above that

$$MS\$ = \quad (PM \cdot MS)/E$$

$$XS\$ = \quad (PX \cdot XS)/E$$

Note also from Table B.2 that

$$M\$ = \quad (PM \cdot M)/E$$

$$X\$ = \quad (E00 \cdot PX \cdot X00\$)/E$$

Therefore, from the above equations, the equation for S can be written

$$S = \quad PX(E00 \cdot X00\$ + XS) - PM(M + MS) + TT$$

which is equation I-6 in Table B.3.