Fear of Floating: Exchange Rate Flexibility Indices

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An exchange rate flexibility index

There is no single all-encompassing indicator that provides an adequate measure of the extent of exchange rate flexibility allowed by the monetary authorities. Yet from the model developed in Section III, we can motivate the construction of a multivariate index that captures different manifestations of the extent of exchange rate variability relative to the variability of the instruments that are at the disposal of the monetary authorities stabilize the exchange rate.

As noted earlier, domestic reserves, *R,* can also be expressed in terms of their asset counterparts, which includes foreign exchange reserves, *F*. As the results of the F-tests attest to, reserve variability is significantly higher for the less committed floaters than for the benchmark countries. Furthermore, it is well known that foreign exchange market intervention is commonplace in many of the cases studied here. For this reason, in the empirical application of the model we focus on a variance ratio that looks at the central bank

$$\lambda = \frac{\sigma_{-}^{2}}{\sigma_{i}^{2} + \sigma_{F}^{2}}$$

balance sheet from the asset side, implying that equation (19) should be modified to,
the values λ can take on range from zero, when there is a peg or a ver high degree of commitment to inflation targeting, to 1 when seignorage has a high weight in the policy maker's objective function. As shown in Table 4, in about 83 percent of the cases the index of exchange rate flexibility is below that of Australia--for Japan and the United States the share of cases below these two benchmarks is 95 and 90, respectively. When we disaggregate the advanced economies from the emerging market countries, no obvious differences emerge on the proportion of cases that lie below and above the three benchmarks. Separating the two groups does shed light on the "causes" behind the high readings. For the advanced economies, there is no obvious link between a high flexibility index reading and high inflation or rising inflation, as is usually the case following a currency crisis. For emerging markets, however, between 66 and 93 percent of the cases (depending on

whether the Australia or Japan benchmark is used) recording a "higher degree of variability" either had inflation rates above 30 percent per annum or the period in question is immediately following a currency crisis. This finding is broadly consistent with the model's predictions that the higher the weight placed on seignorage relative to the inflation target, the more variable the exchange rate relative to the instruments of policy, as the shocks to the risk premia will not be offset to the same degree if the commitment to an inflation target is not binding.

Furthermore, the mode index level for emerging markets is well below the mode for the advanced economies group. This is also in line with the predictions of the model. The variance of nominal interest rates is determined on a one-to-one basis by the variance of risk premia shocks, σ_{ϱ}^2 (equation 14)--as discussed earlier risk premia are far more volatile in emerging markets than in developed economies.

Table 1. AFlexibility Index≅ and its Components [1]

	Average monthly inflation rate	Var(ε) (1)	Var(*i*) (2)	Var(*ΔF/F*) (3)	Index (1)/ [(2)+(3)]
Argentina					
November 1976-June 1985, Managed floating	11.08	271.19	672214.53	326.61	0.00
July 1985- March 1986, Peg	3.12	0.00	1009.07	396.85	0.00
April 1986-May 1989, Managed floating	12.57	4235.37	3980823040000.00	301.57	0.00
June 1989-November 1989, Peg	61.74	4500.00	2990976549136.00	1275.89	0.00
December 1989-December 1990, Floating	28.90	4110.80	5017600000000000.06	409.37	0.00
March 1991-November 1999, Peg-currency board	0.62	0.08	345.14	81.60	0.00
Australia					
January 1970-December 1983, Peg	0.82	7.14	7.65	120.45	0.06
January 1984-November 1999, Float	0.49	9.61	17.73	42.18	0.16
Bolivia					
January 1980-August 1985, Peg	18.83	6546.24	1647.68	495.60	3.05
September 1985-December 1997, Float	1.75	9.09	257.64	473.78	0.01
January 1998-November 1999, Managed floating	0.29	0.02	0.84	25.25	0.00
Brazil					
January 1970-December 1979, Peg	NA	1.46	24.64	34.40	0.02
January 1979-December 1988, Managed floating	9.78	56.48	159972.08	75.46	0.00
January 1989-June 1989, Peg	19.33	179.94	297913.80	116.35	0.00
July 1989-March 1990, Managed floating	47.67	227.52	1950307858.40	45.34	0.00
March 1990-June 1994, Floating	25.14	123.89	8934485.66	98.47	0.00
July 1994-December 1998, Managed floating	1.02	1.73	354.48	65.15	0.00
January 1999-November 1999 , Floating	0.86	1258.12	25.63	164.21	6.63
Canada					
June 1970-April 1999, Float	0.44	1.60	13.70	160.52	0.01
Chile					

October 1973-June 1979, Managed floating	9.02	335.32	719.14	4226.79	0.07
July 1979-July 1982, Peg	1.57	10.16	59.78	22.24	0.12
October 1982-November 1999, Managed floating	1.22	26.21	171.96	31.88	0.13

Table 1. AFlexibility Indices≅ and its Components (continued) [1]

	Average monthly inflation rate	Var(ε) (1)	Var(*i*) (2)	Var(Δ*F*/*F*) (3)	Index (1)/ [(2)+(3)]
Colombia					
January 1970-December 1978, Peg	1.50	0.23	6.45	55.24	0.00
January 1979-November 1999, Managed floating	1.80	2.75	30.79	43.51	0.04
Egypt					
January 1970-January 1991, Peg	1.03	56.67	13.24	832.16	0.06
February 1991-December 1998, Managed floating	0.81	28.26	9.26	16.19	1.11
France					
January 1970-February 1973, Peg	0.45	1.73	3.16	134.54	0.01
March 1973-December 1973, Limited flexibility	0.79	4.27	2.76	102.41	0.04
January 1974-June 1975, Managed floating	1.07	8.56	4.74	14.78	0.44
July 1975-March 1976, Limited flexibility	0.75	0.59	0.12	72.28	0.01
April 1976-February 1979, Managed floating	0.76	3.78	1.45	26.73	0.13
March 1979-November 1999, Limited flexibility	0.39	0.92	12.58	39.65	0.02
Germany					
January 1970-April 1971, Peg	0.39	0.10	1.74	64.38	0.00
May 1971-January 1972, Float	0.39	0.77	2.02	46.47	0.02
February 1972-February 1973. Peg	0.52	0.36	1.77	97.03	0.00
March 1973-November 1999, Limited flexibility	0.26	11.27	6.82	42.37	0.23
Greece					
January 1977-December 1997, Managed floating	1.25	5.14	8.03	136.61	0.04
January 1998-November 1999, Limited flexibility	0.82	8.43	2.33	143.52	0.06
India					
February 1979-February 1993, Managed floating	0.76	4.81	20.71	134.04	0.03

March 1993-November 1999, Floating	0.76	2.11	37.90	27.15	0.03
Indonesia					
November 1978-July 1997, Managed floating	0.76	15.02	9.59	49.80	0.25
August 1997-November 1999, Floating	3.89	998.60	260.75	38.77	3.33

Table 1. AFlexibility Indices≅ and its Components (continued) [1]

	Average monthly inflation rate	Var(ε) (1)	Var(*i*) (2)	Var(Δ*F*/*F*) (3)	Index (1)/ [(2)+(3)]
Indonesia (cont.)					
July 1985-February 1990, Peg	1.96	5.04	2267.64	78.76	0.00
March 1990-November 1991, Limited flexibility	1.48	8.53	4.87	51.78	0.15
December 1991-November 1999, Managed floating	0.74	3.59	5.01	55.67	0.06
Japan					
January 1970-January 1973, Peg	0.46	1.31	2.36	107.06	0.01
February 1973-November 1999, Floating	0.32	11.68	10.42	16.15	0.44
Kenya					
January 1970-September 1993, Peg	1.08	10.16	94.55	628.54	0.01
October 1993-December 1997, Floating	0.69	26.04	63.64	335.29	0.07
January 1998-November 1999, Managed floating	0.67	6.62	45.86	71.08	0.06
Lithuania					
April 1994-November 1999		0.00	NA	68.94	0.00
Malaysia					
January 1986-February 1990, Limited flexibility	0.16	1.17	7.95	25.08	0.04
March 1990-November 1992, Peg	0.34	1.06	0.67	32.81	0.03
December 1992-August 1998, Managed floating	0.32	19.68	2.67	48.24	0.39
September 1998-November 1999, Peg	0.44	0.00	0.21	25.96	0.00
Mexico					
September 1976-October 1986, Managed floating	3.74	111.37	427.47	509.38	0.12
November 1987-February 1988, Floating	11.63	188.72	663.00	7.42	0.28
March 1988-December 1988,	1.95	0.00	205.16	120.63	0.00

Peg					
January 1989-December 1994, Managed floating	1.23	0.90	162.79	159.37	0.00
January 1995-November 1999, Floating	2.00	20.86	220.14	359.41	0.04
New Zealand					
January 1970-February 1985, Peg	0.95	10.43	24.50	376.95	0.03
March 1995-November 1999	0.44	10.17	36.16	97.38	0.08
Nigeria					
April 1974-September 1986, Managed floating	2.34	7.30	5.85	196.51	0.04

Table 1. AFlexibility Indices≅ and its Components (continued) [1]

	Average monthly inflation rate	Var(ε) (1)	Var(*i*) (2)	Var(Δ*F*/*F*) (3)	Index (1)/ [(2)+(3)]
Nigeria (cont.)					
October 1986-March 1993, Floating	0.63	110.82	9.73	393.47	0.27
April 1993-December 1997, Peg		0.01	20.18	1635.50	0.00
Norway					
January 1970-February 1973, Peg	0.56	0.61	2.10	28.80	0.02
March 1973-November 1978, Limited flexibility	0.74	2.84	5.93	47.61	0.05
December 1978-November 1992, Peg	0.55	2.44	5.20	37.36	0.06
December 1992-December 1994, Floating	0.15	1.79	13.07	41.06	0.03
January 1995-November 1999, Managed floating	0.19	2.30	1.50	44.07	0.05
Pakistan					
January 1970-December 1981, Peg	0.95	119.42	4.26	780.12	0.15
January 1982-November 1999, Managed floating	0.66	2.43	9.16	666.02	0.00
Peru					
September 1976-August 1985, Managed floating	5.14	18.94	322.57	173.48	0.04
September 1985-May 1989, Peg	15.68	9974.97	119304.48	88.51	0.08
June 1989-July 1990, Managed floating	32.24	270.58	4018469.27	103.97	0.00
August 1990-November 1999, Floating	6.75	20.52	17926.08	49.82	0.00
Philippines					

February 1974-September 1984, Managed floating	1.29	13.08	18.74	204.66	0.06
October 1984-March 1986, Floating	0.78	19.84	86.15	1881.30	0.01
April 1986-December 1987, Peg	0.25	0.14	6.42	227.45	0.00
January 1988-November 1999, Floating	0.78	9.53	19.40	265.43	0.03
Singapore					
June 1973-December 1975, Managed floating	0.91	2.85	4.81	4.59	0.30
January 1976-December 1979, Peg	0.31	1.86	2.69	2.41	0.36
January 1980-December 1982, Managed floating	0.46	2.88	2.51	4.41	0.42

Table 1. AFlexibility Indices≅ and its Components (continued) [1]

	Average monthly inflation rate	Var(ε) (1)	Var(*i*) (2)	Var(Δ*F*/*F*) (3)	Index (1)/ [(2)+(3)]
Singapore(cont.)					
January 1988-November 1999, Managed floating	0.17	3.84	0.80	150.99	0.03
South Africa					
February 1979-December 1988, Managed floating	1.13	5.81	27.38	2703.65	0.00
January 1989-November 1999, Floating	0.96	18.88	13.94	736.45	0.03
South Korea					
December 1997-November 1999, Floating	0.44	176.62	48.33	57.48	1.67
Spain					
January 1974-January 1976, Floating	1.29	6.12	9.96	7.63	0.35
February 1976-June 1977, Peg	1.83	0.18	14.47	20.93	0.01
July 1977-December 1983, Managed floating	1.17	13.43	47.46	30.27	0.17
January 1984-May 1989, Floating	0.57	1.93	5.55	22.50	0.07
June 1989-November 1999, Limited flexibility	0.36	3.27	15.17	23.30	0.09
Sweden					
January 1970-July 1971, Peg	0.55	0.05	3.40	52.51	0.00
August 1971-December 1971,Managed floating	0.67	0.84	0.39	26.31	0.03
January 1972-February 1973, Peg	0.52	2.10	0.31	31.08	0.07
March 1973-July 1977,	0.82	2.09	6.91	54.14	0.03

Limited flexibility					
August 1977-May 1985, Peg	0.77	6.56	7.74	71.01	0.08
June 1985-October 1992, Limited flexibility	0.48	1.74	61.62	109.45	0.01
November 1992-November 1999, Floating	0.12	6.90	5.26	67.53	0.09
Thailand					
January 1970-June 1997, Peg	0.52	1.47	12.57	27.38	0.04
Ex November 1984 devaluation		0.52	12.57	27.38	0.01
July 1997-November 1999, Floating	0.46	72.28	59.76	49.81	0.66
Turkey					
January 1980-November 1999, Managed floating	4.16	19.50	1431.12	127.22	0.01
Uganda					
January 1992-November 1999, Managed floating	0.85	8.54	117.04	173.11	0.03

Table 1. AFlexibility Indices≅ and its Components (continued) [1]

	Average monthly inflation rate	Var(ε) (1)	Var(*i*) (2)	Var(Δ*F*/*F*) (3)	Index (1)/ [(2)+(3)]
United States					
January 1970-January 1973, Peg--$/–	0.33	1.43	2.33	93.15	0.02
January 1970-January 1973, Peg--$/DM	0.33	0.65	2.33	93.15	0.01
February 1973-November 1999, Float--$/–	0.43	11.68	11.08	23.46	0.34
February 1973-November 1999, Float--$/DM	0.43	11.27	11.08	23.46	0.33
Uruguay					
April 1972-October 1982, Managed floating	3.93	6.06	21.51	1182.40	0.01
November 1982-December 1992, Floating	4.76	60.95	2658.16	619.42	0.02
January 1993-November 1999, Managed floating	2.09	1.12	1865.59	54.68	0.00
Venezuela					
March 1989-June 1994, Floating	3.28	36.76	141.49	65.25	0.15
July 1994-March 1996, Peg	4.78	249.04	6.70	43.67	4.94
Ex December 1995 devaluation		0.00	6.70	43.67	0.00

Sources: International Monetary Fund, *International Financial Statistics* and *Exchange Arrangements and Exchange Restrictions,* various issues.

Footnotes

[1] The pertinent footnotes appear at the end of this document.
[2] During this period there was a transition from pegging to the British pound to pegging to the US dollar to a peg to a basket of currencies.
[3] See Footnote 1.
[4] From March 8, 1975 the peg to the US dollar was suspended in favor of pegging to a basket of currencies.
[5] The rupee was initially pegged to the British pound, the peg was switched to the US dollar in 1971 and back to the British pound in 1973; in 1988 the peg was switched to a basket of currencies.
[6] On July 8, 1976 the US dollar peg was replaced by a peg to a basket of five currencies.
[7] See Footnote 1.
[8] Peg was to a basket of currencies.
[9] The oeg was switched from the British pound in 1971 to the US dollar; on October 27, 1975 a the SDR replaced the US dollar as the anchor currency.
[10] Peg to the British pound was replaced by a peg to gold (within a narrow band). On September 1975, the ringgit is pegged to a basket of currencies.
[11] The peg is to a basket of currencies.
[12] The New Zealand dollar is bound to the British pound; in late 1971 gold replaces the pound and in 1973 it pegs to a basket of currencies.
[13] One revaluation occurs in November 1971 as the US dollar replaces the British pound as the anchor currency.
[14] Following the devaluation of the US dollar in February 1973, the Krone is pegged to the SDR.
[15] Krone is pegged to a basket of twelve currencies.
[16] The equality of the two indices owes to the fact that Var (ε)/Var (i)=0.
[17] The Singapore dollar is pegged to a basket of currencies.
[18] The Swedish Krona is pegged to a basket of 15 currencies.
[19] The peg to the US dollar lasts until December 1978, at which time the baht is pegged against a basket of currencies.From August 1981to October 1984 the baht is de facto pegged to the US dollar; in the remainder of the period it is pegged to a basket of currencies.
[20] The Uganda shilling=s peg to the US dollar is abandoned in favor of a peg to the SDR.

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