TABLE 1

Properties of exchange rates and consumer price indices

Statistic	Country Relative to U.S.											Europe Relative to U.S.
	Austria	Denmark	Finland	France	Germany	Italy	Netherlands	Norway	Spain	Switzerland	UK	
Standard Deviations												
Price ratio	1.59	1.23	1.80	1.17	1.42	1.67	1.62	1.80	2.29	1.49	1.74	1.18
Exchange rate												
Nominal	8.19	8.08	8.28	8.52	8.37	8.51	8.30	6.23	8.88	9.08	8.20	7.95
Real	7.93	8.00	7.71	7.95	8.06	7.80	7.99	6.08	8.42	8.83	7.89	7.52
Autocorrelations												
Price ratio	0.89	0.74	0.92	0.92	0.90	0.87	0.93	0.90	0.90	0.90	0.79	0.90
Exchange rate												
Nominal	0.83	0.84	0.85	0.86	0.83	0.85	0.84	0.78	0.87	0.82	0.84	0.85
Real	0.82	0.83	0.83	0.84	0.82	0.83	0.82	0.77	0.86	0.82	0.81	0.83
Cross-Correlations												
Real and nominal exchange rates	0.98	0.99	0.98	0.99	0.99	0.98	0.98	0.96	0.97	0.99	0.98	0.99

See notes at the end of the Tables.

TABLE 2

Properties of exchange rates and disaggregated consumer price indices

Statistic	Country Relative to U.S.				Europe Relative to U.S.
	France	Italy	Netherlands	Norway	
Standard Deviations					
Price ratio					
All goods	1.01	1.57	1.44	1.82	1.24
Traded goods	1.42	2.00	1.97	2.13	1.65
Exchange rate					
Nominal	8.72	8.68	8.50	6.39	8.25
All goods real	8.25	8.10	8.24	6.14	7.78
Traded goods real	8.05	8.12	8.05	6.34	7.76
Autocorrelations					
Price ratio					
All goods	0.90	0.83	0.88	0.91	0.91
Traded goods	0.90	0.85	0.84	0.90	0.89
Exchange rate					
Nominal	0.86	0.86	0.84	0.79	0.85
All goods real	0.84	0.83	0.83	0.76	0.83
Traded goods real	0.84	0.83	0.82	0.79	0.83
Cross-Correlations of Exchange Rates					
Real and nominal					
All goods	0.99	0.98	0.99	0.96	0.99
Traded goods	0.99	0.97	0.97	0.94	0.94
All and traded goods real	1.00	0.99	0.99	0.99	1.00

See notes at the end of the Tables.

TABLE 3

Properties of exchange rates and wholesale price indices

Statistics	Country Relative to U.S.									Europe Relative to U.S.
	Austria	Denmark	Finland	Germany	Italy	Netherlands	Spain	Switzerland	UK	
Standard Deviations										
Price ratio	2.19	2.25	1.92	2.04	2.86	2.59	2.85	1.99	2.52	2.08
Exchange rate										
Nominal	8.19	8.08	8.28	8.37	8.51	8.30	8.88	9.08	8.20	7.98
Real	7.45	6.52	7.29	7.74	7.35	7.59	7.79	8.71	7.25	7.30
Autocorrelations										
Price ratio	0.76	0.86	0.83	0.88	0.83	0.90	0.87	0.85	0.85	0.87
Exchange rate										
Nominal	0.83	0.84	0.85	0.83	0.85	0.84	0.87	0.82	0.84	0.85
Real	0.79	0.80	0.82	0.81	0.82	0.82	0.84	0.80	0.79	0.82
Cross-Correlations										
Real and nominal exchange rates	0.97	0.97	0.98	0.97	0.95	0.95	0.95	0.98	0.95	0.97

See notes at the end of the Tables.

TABLE 4
Parameter values

Benchmark Model	
Preferences	$\beta = .99$, $\psi = 10$, $\gamma = 5$, $\sigma = 5$, $\eta = .39$, $\omega = .94$
Final good technology	$\rho = 1/3$, $a_1 = .9397$, $a_2 = .0603$
Intermediate good technology	$\alpha = 1/3$, $\delta = .021$, $\theta = .9$, $N = 4$
Money growth process	$\rho_\mu = .683$, $\text{corr}(\varepsilon_\mu, \varepsilon_\mu^*) = .5$
Variations[a]	
High exports	$a_1 = .7607$, $a_2 = .2393$
Real shocks	
Technology	$\rho_A = .95$, $\text{var}(\varepsilon_A) = \text{var}(\varepsilon_A^*) = (.007)^2$, $\text{corr}(\varepsilon_A, \varepsilon_A^*) = .25$
Government consumption	$\mu_g = .13$, $\rho_g = .97$, $\text{var}(\varepsilon_g) = \text{var}(\varepsilon_g^*) = (.01)^2$
Taylor rule	$\rho_r = .79$, $\alpha_\pi = 2.15$, $\alpha_y = .93/4$, $\text{corr}(\varepsilon_r, \varepsilon_r^*) = .5$
Incomplete markets	No changes
Sticky wages	$\vartheta = .87$, $M = 4$
Nonseparable preferences	$\xi = 2.25$

See notes at the end of the Tables.

TABLE 5

Exchange rates and prices for the models

Statistic	Data[b]	Benchmark Economy	Variations on the Benchmark Economy[a]					
			High Exports	Nonseparable Preferences	Real Shocks	Taylor Rule	Sticky Wages	Incomplete Markets
Standard Deviations Relative to GDP[c]								
Price ratio	.71	3.00 (.75)	3.26 (.77)	.02 (.00)	2.98 (.74)	1.35 (.33)	2.11 (.59)	2.98 (.75)
Exchange rate								
Nominal	4.67	4.32 (.80)	4.27 (.79)	.07 (.01)	4.27 (.80)	4.66 (.66)	4.14 (.80)	4.22 (.78)
Real	4.36	4.27 (.72)	4.09 (.67)	.05 (.01)	4.26 (.71)	4.98 (.72)	4.35 (.83)	4.19 (.71)
Autocorrelations								
Price ratio	.87	.93 (.02)	.92 (.02)	.81 (.06)	.93 (.02)	.92 (.02)	.95 (.02)	.93 (.02)
Exchange rate								
Nominal	.86	.69 (.08)	.69 (.08)	.83 (.05)	.69 (.08)	.46 (.10)	.69 (.08)	.69 (.08)
Real	.83	.62 (.08)	.58 (.08)	.77 (.06)	.62 (.08)	.48 (.09)	.69 (.08)	.62 (.08)
Cross-Correlations								
Real and nominal exchange rates	.99	.76 (.06)	.70 (.07)	.98 (.00)	.76 (.06)	.96 (.01)	.88 (.04)	.75 (.06)

See notes at the end of the Tables.

TABLE 6
Business cycle statistics for the models

Statistics	Data[a]	Benchmark Economy	Variations on the Benchmark Economy: High Exports	Nonseparable Preferences	Real Shocks	Taylor Rule	Sticky Wages	Incomplete Markets
Standard Deviations Relative to GDP								
Consumption	.83	.83	.83	.92	.83	.83	.83	.83
		(.01)	(.04)	(.00)	(.02)	(.01)	(.02)	(.01)
Investment	2.78	1.59	1.70	1.32	2.34	1.62	1.49	1.59
		(.01)	(.08)	(.01)	(.05)	(.01)	(.03)	(.01)
Employment	.67	1.51	1.49	1.51	1.56	1.51	1.50	1.50
		(.01)	(.03)	(.00)	(.09)	(.00)	(.01)	(.01)
Net exports	.11	.09	.69	.04	.11	.09	.19	.09
		(.01)	(.08)	(.00)	(.02)	(.01)	(.03)	(.01)
Autocorrelations								
GDP	.88	.62	.65	.03	.61	.49	.70	.62
		(.08)	(.07)	(.10)	(.08)	(.09)	(.07)	(.08)
Consumption	.89	.61	.60	.03	.61	.48	.67	.61
		(.08)	(.08)	(.10)	(.08)	(.09)	(.07)	(.08)
Investment	.91	.60	.59	.03	.60	.47	.68	.60
		(.08)	(.08)	(.10)	(.08)	(.09)	(.07)	(.08)
Employment	.90	.61	.63	.03	.61	.48	.69	.61
		(.08)	(.07)	(.10)	(.08)	(.09)	(.07)	(.08)
Net exports	.82	.72	.53	.12	.77	.68	.84	.71
		(.05)	(.07)	(.11)	(.05)	(.06)	(.04)	(.05)
Cross-Correlations								
Between foreign and domestic								
GDP	.60	.49	.58	.50	.47	.51	.43	.49
		(.14)	(.14)	(.09)	(.14)	(.12)	(.18)	(.14)
Consumption	.38	.49	.52	.50	.48	.50	.49	.49
		(.14)	(.13)	(.09)	(.14)	(.12)	(.16)	(.14)
Investment	.33	.49	.52	.41	.48	.50	.48	.49
		(.14)	(.13)	(.10)	(.14)	(.12)	(.16)	(.14)
Employment	.39	.49	.60	.50	.48	.51	.44	.49
		(.14)	(.13)	(.09)	(.14)	(.12)	(.18)	(.14)
Between net exports and GDP	−.41	.04	.11	−.50	.05	−.04	.26	.04
		(.16)	(.15)	(.09)	(.17)	(.15)	(.18)	(.16)
Between real exchange rates and								
GDP	.08	.51	.34	.17	.51	.49	.52	.51
		(.13)	(.15)	(.09)	(.13)	(.11)	(.15)	(.13)
Net exports	.14	−.04	−.47	−.26	.03	−.20	.30	−.04
		(.13)	(.09)	(.06)	(.16)	(.13)	(.13)	(.13)
Relative consumptions	−.35	1.00	1.00	.32	1.00	1.00	1.00	1.00
		(.00)	(.00)	(.04)	(.00)	(.00)	(.00)	(.00)

See notes at the end of the Tables.

TABLE 7
The Correlation Between the Real Exchange Rate and Relative Consumptions

	France	Germany	Italy	U.K.
U.S.	−.06	−.15	−.35	−.48
France		.24	−.17	.05
Germany			−.08	.17
Italy				.14

See notes at the end of the Tables.

Footnotes to the Tables

Table 1.

The statistics are based on logged and H-P-filtered quarterly data for the period 1973:1–2000:1. The statistics for Europe are trade-weighted aggregates of countries in the table. (See the text for details on construction of the data for Europe.)

Table 2.

The statistics are based on logged and H-P-filtered quarterly data for the period 1973:1–1998:4. The statistics for Europe are trade-weighted aggregates of countries in the table. (See the text for details.)

Table 3.

The statistics are based on logged and H-P-filtered quarterly data for the period 1973:1–2000:1. The statistics for Europe are trade-weighted aggregates of countries in the table. (See the text for details.)

Table 4.

[a] Other parameters in the variations are the same as in the benchmark model, except for two parameters. The adjustment cost parameter is chosen to keep the relative volatility of consumption and output the same as in the data. The innovations to the monetary policy are chosen to keep the volatility of output the same as in the data.

Table 5.

The statistics are based on logged and H-P filtered data. For each economy the standard deviation of monetary shocks are chosen so that the standard deviation of GDP is the same as it is in the data from 1973:1-1994:4, namely, 1.82 percent. Numbers in parentheses are standard deviations of the statistic across 100 simulations.

[a] See Table 4 for specifications of the variations of the benchmark economy.

[b] The statistics are based on a European aggregate with France, Italy, the U.K., and West Germany over the sample period 1973:1-1994:4.

[c] The standard deviations of the variables are divided by the standard deviation of GDP.

Table 6.

Notes *a* and *c* of Table 5 also apply here. With the exception of net exports, the standard deviation of each variable is divided by the standard deviation of output. Throughout the table we measure net exports as the H-P-filtered ratio of real net exports to real gross domestic product. Thus, the standard deviation of net exports is simply the standard deviation of this ratio.

[a] With the exception of net exports, the standard deviations and autocorrelations in the data column are based on logged and H-P-filtered U.S. quarterly data for the period 1973:1–1994:4. The cross-correlations between domestic and foreign variables are based on the U.S. and a European aggregate of France, Italy, the U.K., and West Germany.

Table 7.

The table reports the correlation between bilateral real exchange rates, $\hat{q}_t$, and relative consumptions, $\hat{c}_t - \hat{c}_t^*$.