Forecasts of Asia-Pacific Economic Activity to 1998

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This section of the Journal reports regular forecasts of macroeconomic activity for a selection of Asia-Pacific nations. This issue gives quarterly *ex ante* forecasts for the USA, Japan, Korea, Australia, and New Zealand for the period through to the fourth quarter of 1998 and updates the forecasts for these countries over this horizon that were reported in the previous issue of the Journal.

The forecasts given here are based on time series models that make extensive use of automated model selection procedures.[2] The judgemental elements in making these forecasts are minimal and are confined to the choice of variables, the selection of the model classes to be used and the setting of certain maximal parameters like maximal lag order in an autoregression or vector autoregression. The choice of variables is similar across all the countries considered and includes real gross domestic product, real private consumption expenditure, real fixed investment, real exports, a short run interest rate, the M1 money stock and the unemployment rate. This choice leads to comparable small-scale time series models of the RUMPY variety for each country.

The in-house models used to generate forecasts are all linear (in variables) time series models. The models are either classical or Bayesian versions of vector autoregressions (VAR's and BVAR's), reduced rank regressions (RRR's), error correction models (ECM's) or univariate versions of these models. For the USA we also report forecasts obtained from Ray Fair's (1994) structural econometric model of the US economy. In future issues, coverage of the region will expand and we hope to compare our automated time series forecasts with structural econometric models of other countries in the region.

Data

The final sample observations that were available at the time these forecasts were generated were as follows: USA, 1995:3; Japan, 1995:3; Korea, 1995:1; Australia, 1995:3; New Zealand, 1995:2. The initialisations of the data sets were selected on the basis of the quarterly data that was available for all of the series to ensure a balanced data set for each country. All variables are transformed to natural logarithms except for the interest rate.

USA Variables and Data:

Real gross domestic product (1987$bil., SA)
Real personal consumption expenditure (1987$bil., SA)
Real fixed investment (1987$bil., SA)
Price deflator of GDP
3-month Treasury Bill rate (percentage points)
M1-Money stock, end of quarter ($bil., SA)
Unemployment rate, all workers 16 and over (percentage points, SA)

Sample Period: 1954:1–1995:3
Source: National Income and Product Accounts (chain link data)
Forecast Period: 1995:4–1998:4 (13 quarters)

Japan Variables and Data:

Real gross domestic product (1985Ybil., SA)
Real personal consumption expenditure (1985Ybil., SA)
Real fixed investment (1985Ybil., SA)
Price deflator of GDP
M1-Money stock, end of quarter (Y100mil., SA)
Unemployment rate (percentage points, SA)

Sample Period: 1970:1–1995:3

Source: Nikkei Database

Forecast period: 1995:4–1998:4 (13 quarters)

Korea Variables and Data:

Real gross national product (1990Wbil., SA)

Real personal consumption expenditure (1990Wbil., SA)

Real exports (1990 US$mil., SA)

Consumer price index (1990 = 100)

M1-Money stock, end of quarter (Wbil., SA)

Sample Period: 1971:1–1995:3

Source: Bank of Korea

Forecast period: 1995:4–1998:4 (13 quarters)

Australia Variables and Data:

Real gross domestic product (1989/90$mil., SA)

Real personal consumption exp. (1989/90$mil., SA)

Real fixed investment (1989/90$mil., SA)

Price deflator of GDP

M1-Money stock, end of quarter (currency + demand
   deposits, $mil., SA)

90-day Money market rate (percentage points)

Sample Period: 1975:1–1995:3

Source: Australian Bureau of Statistics

Forecast period: 1995:4–1998:4 (13 quarters)

New Zealand Variables and Data:

Real gross domestic product (production based)
   (1989/90$mil., SA)

Real private consumption exp. (1989/90$mil., SA)

Real fixed investment (1989/90$mil., SA)

Core CPI

M1-Money stock, end of quarter (currency + demand
   deposits, $mil., SA)

90-day RBNZ Bill yield (percentage points)

Sample Period: 1982:1–1995:2

Source: Reserve Bank of New Zealand

Forecast period: 1995:3–1998:4 (14 quarters)

Results

Tables 1–5 give the forecast results for the main variables included in each model. Figures 1–5 graph the forecasts over the forecast horizon together with recent historical data. In these tables and graphs we show growth rates for the main macroeconomic aggregates and level forecasts for interest rates in the case of the USA. The growth rates are computed on an annual basis for Australia and New Zealand.

USA

As with the forecasts that were made from the second quarter of 1995, the ECM and BAR models show a steady pick-up in real GDP growth during 1996 to an annual rate of over 3%. In contrast, the BVAR and RRR models show a slowdown in growth during the fourth quarter of 1995 to around 1.5%, with this rate being sustained over the forecast horizon to 1998:4. The Fair model forecasts are between these two groups of forecasts and predict continuing growth in real GDP at about 2.5%, much the same rate as that of the third quarter of 1995.

There are some differences between the multivariate and univariate model forecasts of inflation and the 90-day T-bill rate. The univariate BAR forecasts predict rising inflation and corresponding rises in interest rates. The other models predict that inflation stays between 2–3.9% for the next three years and that the T-bill rate stays below 6.2%. The Fair model predicts that the T-bill rate stays in the low 5% range and this model has the lowest forecasts for inflation, indicating that the inflation rate stays under 3% through to the end of the forecast horizon in 1998:4.

The models give similar forecasts for growth in real investment. The BVAR, RRR and ECM models all predict a small downturn in investment early in 1996 and the BVAR forecasts indicate that the downturn starts in the fourth quarter of 1995. Thereafter, all the models indicate a slow increase in the growth rate of real investment until the end of 1998.

Japan

There is substantial inter-model dispersion of forecasts for real GDP growth, repeating our experience in previous forecasts.[3] The results here indicate that the uncertainty

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[3] Reported in the Vol. 1 No. 1 and No. 2 issues of *APER.*

ranges from a shallow but protracted recession predicted by the BVAR through to growth in the region of 3% predicted by the RRR and 4% predicted by the BAR. The ECM model forecasts real growth rate for GDP in the region of 1.5% throughout the forecast period. The BVAR forecasts of inflation are much higher than those of the other models and are associated with the contraction in real GDP that this model predicts for late 1996. In contrast, the ECM and RRR models give close predictions of inflation in the region of 1–2% over most of the forecast period.

Korea

The RRR, BVAR and BAR models all predict a slow decline in real GNP growth from present levels to around 7–8% by 1998. The ECM model predicts a sharper decline in real GNP growth during the final two quarters of 1995 and the first three quarters of 1996 to about 4% per annum, and indicates that growth at around this rate will be sustained for the remainder of the forecast period. All models predict a decline in the growth of real exports from present levels, but the ECM model forecasts the most sustained reduction in export growth and this is associated with that model's lower forecasts for real GNP growth. There is some divergence in the inflation forecasts across models, but all predict a steady increase in inflation over the next two years.

Australia

Reflecting our experience in earlier forecasts, all models except the RRR give a similar pattern of projection for real GDP growth: the growth rate increases from its present level to around 4% in the first two quarters of 1996 and then declines to around 2.5–3%. The RRR model similarly forecasts a rise in the growth rate early in 1996 but then predicts a slow downturn in growth to around 1.5% during 1997 and 1998. Inflation is predicted to remain below 3%, with the ECM, BVAR and BAR models showing decreases in inflation, and the RRR model showing a small increase in the inflation rate over the forecast period to 1998.

New Zealand

There are some important disparities across models in these forecasts. The BVAR, BAR and RRR models all predict that real GDP growth will continue at rates well above 3% throughout the period to 1998:4. These models also all forecast an upturn in the rate of growth during the first half of 1996 and a steady rate of investment growth around present levels. In contrast, the ECM model predicts a decline in real investment growth and a steady decline in real GDP growth from its present level of about 4% to around 1% during 1996 with a mild recession starting in the fourth quarter of 1997. The RRR, BVAR, and BAR models forecast that inflation will remain below the 2% upper limit of the Reserve Bank of New Zealand's policy band of 0–2% inflation rates. Again in contrast, the ECM model forecasts that inflation will rise steadily and break the 2% level during 1996, rising to 2.9% by 1998.

Forecasting Record

Table 6 reports the forecasting record of our in-house models and the Fair structural econometric model of the US economy over the period 1995:1–1995:3. The table shows predicted and actual values of real GDP growth and inflation. For GDP growth, the Fair model has lower root mean squared error (RMSE) of forecast than the automated time series models, whereas for inflation the BVAR and ECM models both have lower RMSE of forecast than the Fair model. The ECM model produced the best forecast of real GDP growth three quarters ahead, and came closest to capturing the 2.8% growth rate in real GDP during the third quarter of 1995.

Table 7 gives the forecasting record of the time series models for real GDP growth in Australia. The univariate BAR model produced the best 3-period ahead forecast of real GDP growth in the third quarter of 1995, and this model also gave the lowest RMSE of forecast overall. The ECM model produced the best 1-period and 2-period ahead forecasts of real GDP growth.

Table 1: USA Forecasts

(a) Real GDP: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR	Fair Model
1995:4	2.66	1.51	1.60	3.27	2.42
1996:1	3.16	1.23	1.46	3.60	2.45
1996:2	3.28	1.64	1.31	3.64	2.52
1996:3	3.27	1.66	1.30	3.65	2.28
1996:4	3.34	1.70	1.44	3.62	2.22
1997:1	3.32	1.67	1.47	3.60	2.21
1997:2	3.25	1.64	1.51	3.57	2.19
1997:3	3.20	1.59	1.52	3.55	2.23
1997:4	3.15	1.55	1.52	3.53	2.32
1998:1	3.09	1.51	1.49	3.51	2.39
1998:2	3.04	1.48	1.46	3.49	2.44
1998:3	3.00	1.46	1.42	3.47	2.53
1998:4	2.97	1.44	1.39	3.45	2.67

(c) Inflation — GDP deflator (% annual rate)

	ECM	RRR	BVAR	BAR	Fair Model
1995:4	2.60	2.89	2.73	2.89	2.46
1996:1	2.68	3.30	2.85	3.12	2.34
1996:2	2.74	3.60	2.94	3.33	2.41
1996:3	2.86	3.77	3.09	3.63	2.47
1996:4	2.96	3.86	3.18	3.86	2.51
1997:1	3.05	3.89	3.25	4.06	2.54
1997:2	3.13	3.89	3.30	4.26	2.58
1997:3	3.21	3.88	3.34	4.44	2.61
1997:4	3.28	3.86	3.37	4.60	2.64
1998:1	3.35	3.83	3.39	4.74	2.67
1998:2	3.41	3.80	3.40	4.87	2.71
1998:3	3.47	3.77	3.40	4.99	2.75
1998:4	3.52	3.74	3.40	5.09	2.80

(b) Real Investment: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR	Fair Model
1995:4	0.59	0.37	-2.13	3.83	1.80
1996:1	-1.87	-0.13	-3.26	4.37	0.58
1996:2	0.19	0.13	-2.43	4.81	1.08
1996:3	0.22	0.88	-2.31	4.98	1.96
1996:4	0.54	1.26	-1.70	5.04	1.45
1997:1	1.35	1.49	-0.97	5.04	1.18
1997:2	1.74	1.56	-0.28	5.01	1.05
1997:3	2.08	1.54	0.35	4.96	0.91
1997:4	2.43	1.49	0.82	4.90	0.97
1998:1	2.66	1.42	1.15	4.84	1.10
1998:2	2.83	1.37	1.34	4.79	1.26
1998:3	2.98	1.32	1.42	4.73	1.48
1998:4	3.09	1.29	1.44	4.68	1.80

(d) 3-Month Treasury Bill Rate

	ECM	RRR	BVAR	BAR	Fair Model
1995:4	5.54	4.85	5.31	5.57	5.28
1996:1	5.66	4.63	5.28	5.78	5.40
1996:2	5.61	4.49	5.22	5.87	5.49
1996:3	5.63	4.40	5.14	5.99	5.49
1996:4	5.71	4.34	5.09	6.15	5.47
1997:1	5.76	4.30	5.04	6.28	5.48
1997:2	5.80	4.27	5.01	6.39	5.48
1997:3	5.86	4.24	4.98	6.51	5.48
1997:4	5.93	4.21	4.96	6.62	5.47
1998:1	5.98	4.18	4.95	6.72	5.47
1998:2	6.04	4.14	4.94	6.82	5.47
1998:3	6.10	4.11	4.94	6.91	5.48
1998:4	6.16	4.07	4.93	6.99	5.49

Table 2: Japan Forecasts

(a) Real GDP: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	1.32	2.28	0.69	3.51
1996:1	1.85	2.87	0.54	3.96
1996:2	1.75	3.11	0.20	4.01
1996:3	1.59	3.12	0.65	4.52
1996:4	1.82	3.11	-0.15	4.60
1997:1	1.86	3.11	-0.06	4.60
1997:2	1.75	3.12	-0.31	4.63
1997:3	1.78	3.13	-0.50	4.57
1997:4	1.74	3.13	-0.48	4.50
1998:1	1.69	3.14	-0.45	4.42
1998:2	1.67	3.14	-0.42	4.33
1998:3	1.64	3.15	-0.27	4.24
1998:4	1.61	3.15	-0.13	4.16

(c) Inflation — GDP deflator (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	1.35	1.88	2.66	0.80
1996:1	2.57	2.04	4.67	1.42
1996:2	2.01	2.07	4.26	1.04
1996:3	2.23	1.98	5.55	1.09
1996:4	1.99	1.92	5.82	0.98
1997:1	2.05	1.85	6.05	0.96
1997:2	1.94	1.79	5.91	0.91
1997:3	1.93	1.73	5.74	0.89
1997:4	1.87	1.68	5.35	0.86
1998:1	1.83	1.64	4.92	0.84
1998:2	1.78	1.60	4.45	0.83
1998:3	1.74	1.57	3.96	0.81
1998:4	1.70	1.54	3.50	0.80

Table 2 cont: Japan Forecasts

(b) Real Investment: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	2.02	1.27	2.74	3.59
1996:1	0.77	2.91	1.75	3.72
1996:2	1.85	3.08	0.33	3.99
1996:3	1.19	3.23	0.99	4.46
1996:4	1.39	3.21	−0.67	4.51
1997:1	1.72	3.24	−0.97	4.56
1997:2	1.53	3.27	−1.49	4.55
1997:3	1.58	3.30	−1.98	4.51
1997:4	1.61	3.33	−2.21	4.45
1998:1	1.56	3.36	−2.23	4.38
1998:2	1.56	3.38	−2.23	4.31
1998:3	1.55	3.40	−2.05	4.23
1998:4	1.53	3.41	−1.80	4.17

(d) M1 growth (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	4.60	9.08	7.14	4.25
1996:1	3.84	6.91	5.53	4.21
1996:2	2.96	6.05	5.20	4.26
1996:3	4.02	5.83	4.68	4.34
1996:4	4.01	5.71	4.25	4.40
1997:1	4.03	5.68	3.58	4.46
1997:2	3.77	5.67	3.06	4.51
1997:3	3.72	5.66	2.59	4.56
1997:4	3.59	5.65	2.14	4.61
1998:1	3.51	5.64	1.73	4.65
1998:2	3.43	5.63	1.43	4.69
1998:3	3.34	5.62	1.16	4.72
1998:4	3.26	5.61	0.95	4.75

Table 3: Korea Forecasts

(a) Real GDP: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	7.51	8.48	8.90	8.44
1996:1	6.29	8.04	8.66	7.91
1996:2	5.67	8.13	8.99	8.04
1996:3	4.53	7.78	8.78	7.81
1996:4	4.60	7.58	8.28	7.82
1997:1	4.39	7.30	7.92	7.82
1997:2	4.20	7.13	7.64	7.83
1997:3	4.17	7.03	7.54	7.84
1997:4	4.09	6.98	7.54	7.84
1998:1	4.02	6.93	7.58	7.85
1998:2	3.96	6.90	7.65	7.85
1998:3	3.90	6.86	7.74	7.86
1998:4	3.84	6.83	7.83	7.86

(c) Inflation — GDP deflator (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	4.03	4.26	4.51	4.09
1996:1	4.46	5.05	5.74	4.43
1996:2	4.74	5.68	6.83	4.55
1996:3	5.24	6.48	8.13	4.86
1996:4	5.72	6.92	8.89	5.05
1997:1	6.01	6.97	9.08	5.17
1997:2	6.24	6.87	9.09	5.25
1997:3	6.43	6.72	8.96	5.31
1997:4	6.56	6.57	8.72	5.35
1998:1	6.66	6.43	8.41	5.37
1998:2	6.71	6.31	8.07	5.38
1998:3	6.75	6.21	7.72	5.39
1998:4	6.75	6.11	7.39	5.38

(b) Real Exports: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	21.55	20.41	23.02	23.30
1996:1	14.75	13.51	17.51	18.00
1996:2	7.71	7.55	12.13	13.36
1996:3	2.89	4.18	9.17	10.97
1996:4	2.19	6.29	9.03	11.05
1997:1	1.10	7.10	8.80	11.13
1997:2	0.83	7.62	9.13	11.23
1997:3	0.58	7.86	9.39	11.31
1997:4	0.47	8.02	9.69	11.39
1998:1	0.37	8.12	9.99	11.47
1998:2	0.30	8.18	10.30	11.53
1998:3	0.24	8.21	10.59	11.60
1998:4	0.19	8.22	10.88	11.66

(d) M1 growth (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	9.48	11.48	11.07	10.87
1996:1	9.43	13.09	12.23	11.64
1996:2	8.07	13.28	11.81	11.46
1996:3	9.41	15.80	14.11	13.99
1996:4	9.78	15.03	13.74	14.03
1997:1	9.49	13.87	13.16	14.03
1997:2	9.54	13.15	13.26	14.04
1997:3	9.61	12.76	13.40	14.05
1997:4	9.54	12.53	13.56	14.05
1998:1	9.47	12.38	13.75	14.06
1998:2	9.42	12.27	13.95	14.07
1998:3	9.34	12.17	14.13	14.07
1998:4	9.24	12.08	14.29	14.07

Table 4: Australia Forecasts

(a) Real GDP: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	3.38	3.02	3.35	3.40
1996:1	4.06	3.39	3.99	4.00
1996:2	3.90	2.87	3.80	3.69
1996:3	3.07	1.75	2.97	2.74
1996:4	3.03	1.78	3.03	2.56
1997:1	2.98	1.74	3.11	2.50
1997:2	2.86	1.68	3.13	2.45
1997:3	2.83	1.61	3.23	2.50
1997:4	2.81	1.55	3.31	2.57
1998:1	2.79	1.49	3.38	2.64
1998:2	2.77	1.44	3.45	2.72
1998:3	2.76	1.39	3.50	2.79
1998:4	2.75	1.35	3.55	2.84

(c) Inflation — GDP deflator (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	2.96	2.99	2.75	2.58
1996:1	2.89	2.97	2.52	2.15
1996:2	2.68	2.87	2.10	1.49
1996:3	2.55	2.89	1.75	0.84
1996:4	2.41	2.92	1.60	0.54
1997:1	2.27	2.96	1.41	0.18
1997:2	2.15	3.00	1.28	−0.09
1997:3	2.03	3.03	1.15	−0.36
1997:4	1.92	3.05	1.03	−0.61
1998:1	1.82	3.06	0.93	−0.85
1998:2	1.72	3.06	0.83	−1.09
1998:3	1.62	3.06	0.74	−1.33
1998:4	1.53	3.05	0.65	−1.57

(b) Real Investment: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	−5.65	−3.71	−3.84	−5.86
1996:1	−2.62	0.34	−1.13	−3.23
1996:2	−0.84	2.79	0.56	−1.80
1996:3	0.69	4.63	1.74	−0.56
1996:4	2.50	4.37	0.94	1.15
1997:1	3.40	4.01	1.47	2.29
1997:2	4.08	3.64	1.50	3.24
1997:3	4.52	3.30	1.58	3.89
1997:4	4.51	2.99	1.82	4.22
1998:1	4.39	2.73	1.96	4.33
1998:2	4.13	2.51	2.15	4.25
1998:3	3.76	2.32	2.33	4.03
1998:4	3.41	2.16	2.47	3.74

(d) M1 growth (% annual rate)

	ECM	RRR	BVAR	BAR
1995:4	1.66	3.00	2.77	3.68
1996:1	3.06	5.67	5.27	6.97
1996:2	3.60	7.32	6.53	9.35
1996:3	1.87	6.95	5.91	9.77
1996:4	2.53	7.35	6.40	10.43
1997:1	2.78	7.25	6.41	10.76
1997:2	2.79	6.95	6.57	10.91
1997:3	3.13	6.60	6.62	11.01
1997:4	3.34	6.25	6.62	11.05
1998:1	3.50	5.93	6.65	11.07
1998:2	3.67	5.65	6.64	11.07
1998:3	3.79	5.41	6.62	11.06
1998:4	3.87	5.19	6.59	11.05

Table 5: New Zealand Forecasts

(a) Real GDP: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:3	2.77	4.46	3.42	3.41
1995:4	1.94	4.44	3.30	3.52
1996:1	1.43	5.14	3.41	3.91
1996:2	1.15	6.01	4.05	4.88
1996:3	0.77	4.86	3.81	5.03
1996:4	0.52	4.79	3.76	5.18
1997:1	0.16	4.27	3.72	5.33
1997:2	0.09	4.11	3.68	5.48
1997:3	−0.08	4.10	3.66	5.63
1997:4	−0.15	4.13	3.63	5.78
1998:1	−0.17	4.07	3.61	5.93
1998:2	−0.16	3.99	3.59	6.08
1998:3	−0.14	3.84	3.57	6.23
1998:4	−0.09	3.71	3.55	6.38

(c) Inflation — Core CPI (% annual rate)

	ECM	RRR	BVAR	BAR
1995:3	1.21	1.19	1.22	0.98
1995:4	1.22	1.16	1.23	0.69
1996:1	1.80	1.74	1.71	0.91
1996:2	1.91	1.73	1.64	0.55
1996:3	2.06	1.78	1.63	0.48
1996:4	2.20	1.79	1.58	0.42
1997:1	2.29	1.70	1.57	0.35
1997:2	2.33	1.68	1.57	0.29
1997:3	2.43	1.71	1.55	0.23
1997:4	2.52	1.77	1.55	0.18
1998:1	2.61	1.82	1.54	0.13
1998:2	2.72	1.84	1.53	0.08
1998:3	2.82	1.83	1.52	0.03
1998:4	2.92	1.81	1.51	−0.02

Table 5 cont: New Zealand Forecasts

(b) Real Investment: growth rate (% annual rate)

	ECM	RRR	BVAR	BAR
1995:3	10.75	17.39	16.81	17.41
1995:4	13.31	22.95	20.51	22.05
1996:1	6.81	21.10	16.17	18.51
1996:2	1.50	20.99	15.33	18.76
1996:3	4.32	21.47	15.39	19.41
1996:4	1.80	19.88	15.57	20.06
1997:1	−0.47	17.54	15.38	20.71
1997:2	0.02	17.24	15.32	21.36
1997:3	−0.81	16.52	15.13	22.01
1997:4	−1.18	16.69	14.99	22.65
1998:1	−0.85	16.50	14.88	23.30
1998:2	−0.81	15.97	14.77	23.95
1998:3	−0.68	15.41	14.68	24.60
1998:4	−0.29	14.84	14.60	25.25

(d) M1 growth (% annual rate)

	ECM	RRR	BVAR	BAR
1995:3	1.39	5.48	3.18	1.62
1995:4	2.95	9.91	5.10	1.82
1996:1	6.28	15.74	9.74	5.20
1996:2	3.34	14.72	8.14	2.65
1996:3	3.85	12.26	7.76	2.92
1996:4	2.68	9.18	7.11	3.16
1997:1	2.71	8.20	6.78	3.32
1997:2	3.31	8.44	6.72	3.47
1997:3	3.66	9.11	6.61	3.59
1997:4	4.17	9.94	6.52	3.68
1998:1	5.00	10.10	6.46	3.75
1998:2	5.76	9.77	6.40	3.81
1998:3	6.41	9.25	6.35	3.86
1998:4	7.06	8.72	6.31	3.90

Table 6: Forecast Record: USA

Predicted & Actual Values of Real GDP Growth

Date:	94:4	95:1	95:2	95:3	Model	RMSE
Actual Value:	4.5	1.4	0.5	2.8		
Forecast from:						
94:4		2.6	0.6*	0.7	BVAR	1.40
		3.7	2.5	2.7*	ECM	1.76
		3.2	1.4	1.4	RRR	1.42
		1.2 *	1.5	2.3	Fair	0.66

* Closest forecast to actual value.

Predicted & Actual Values of Inflation

Date:	94:4	95:1	95:2	95:3	Model	RMSE
Actual Value:	1.4	3.2	2.6	2.0		
Forecast from:						
94:4		2.5*	2.6*	2.7	BVAR	0.57
		2.4	2.4	2.4	ECM	0.53
		2.5*	2.6*	2.7	RRR	1.10
		2.1	1.9	1.9*	Fair	0.75

* Closest forecast to actual value.

Table 7: Forecast Record: Australia

Predicted & Actual Values of Real GDP Growth

| Date:	94:4	95:1	95:2	95:3	Model	RMSE
Actual Value:	5.7	3.6	3.7	3.3		
Forecast from:						
94:4		0.7	0.2	−0.6	BVAR	3.43
		3.9*	3.2*	1.4	ECM	1.14
		1.0	1.0	0.4	RRR	2.71
		2.4	3.1	2.7*	BAR	0.80

* Closest forecast to actual value.

References

Fair, Ray C. (1994), "*Testing Macroeconometric Models*", Cambridge: Harvard University Press.

Phillips Peter C. B. (1995), "Automated forecasts of Asia-Pacific Economic Activity", *Asia Pacific Economic Review*, 1, pp. 92–102.

Phillips Peter C. B. (1996), "Econometric Model Determination", *Econometrica* (forthcoming).

Figures 1[a]-[d]: USA Forecasts

[a]: Real GDP growth rate [%]

[b]: Real Investment growth rate [%]

[c]: Inflation: GDP deflator [%]

[d]: 3-Month Treasury Bill rate

———	ECM Forecasts
·—·—·	RRR Forecasts
············	BVAR[opt] Forecasts
········	BAR[opt] Forecasts
— — —	Fair Model Forecasts
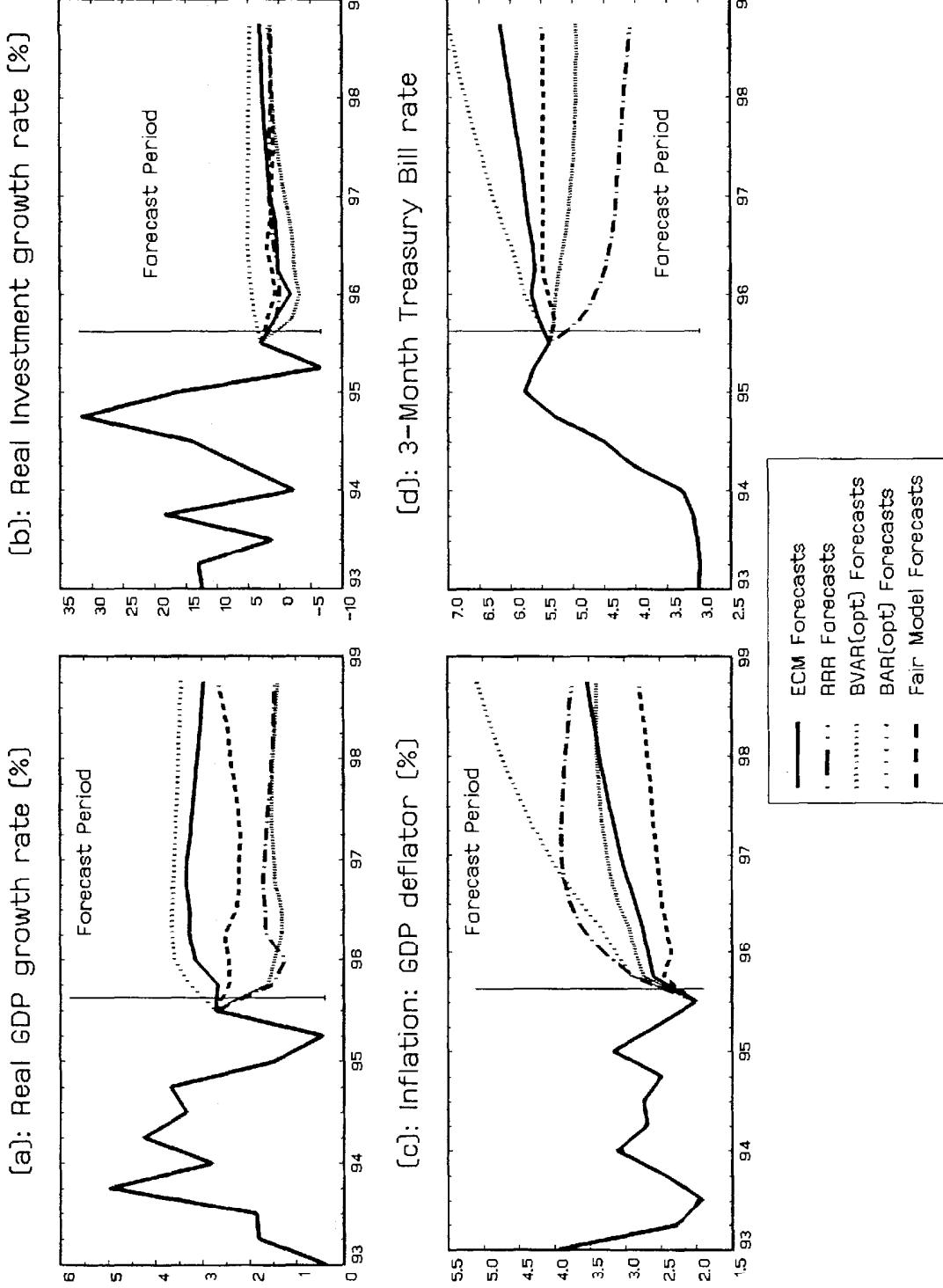
Figures 2(a)-(d): JAPAN Forecasts

[a]: Real GDP growth rate

[b]: Real Investment growth rate

[c]: Inflation: GDP deflator

[d]: M1-Money Stock growth

Legend:
- ECM Forecasts
- RRR Forecasts
- BVAR(opt) Forecasts
- BAR(opt) Forecasts
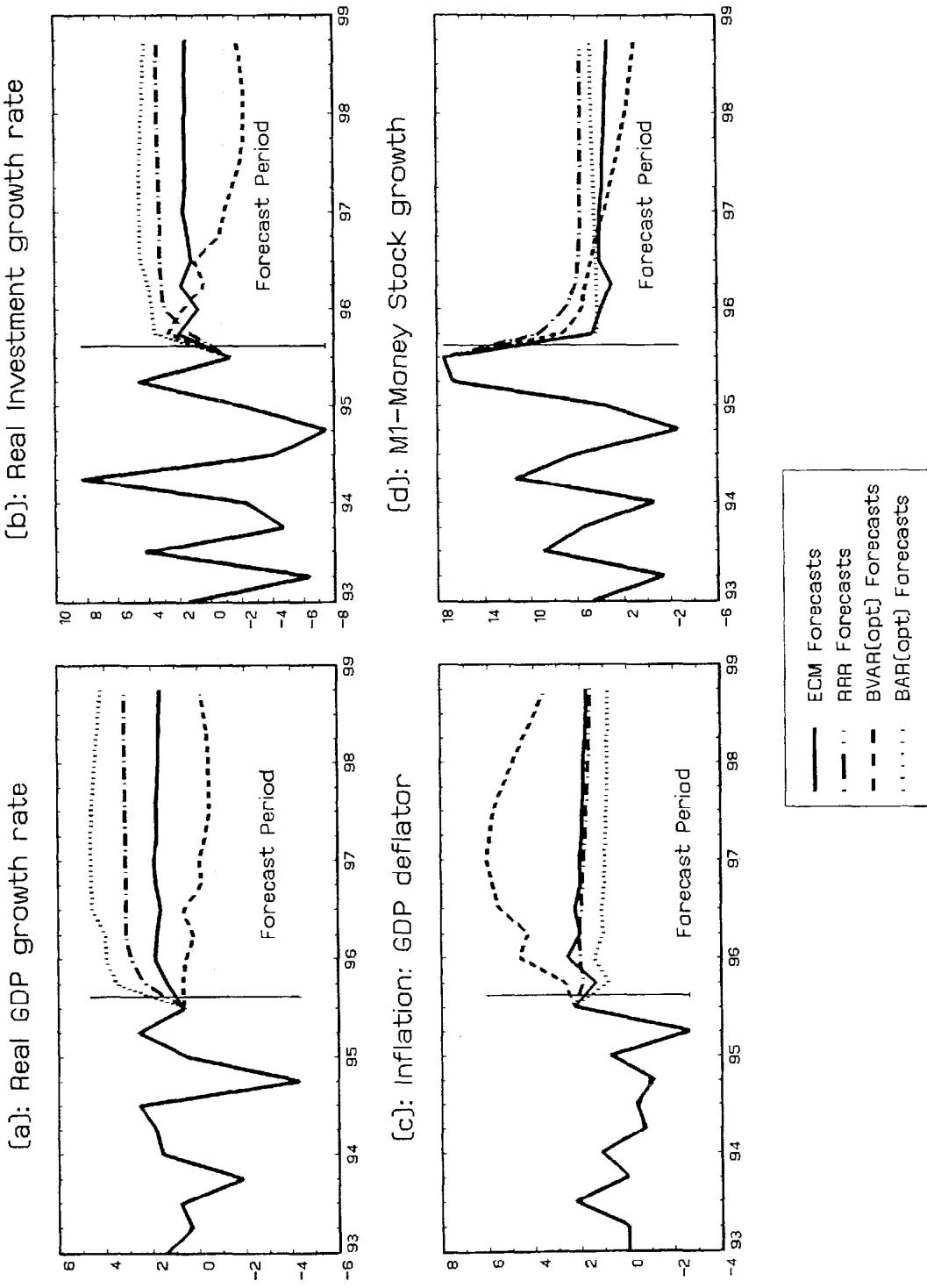
Figures 3(a)-(d): Korea Forecasts

[a]: Real GNP growth rate

[b]: Real Export growth rate

[c]: Inflation: CPI

[d]: M1-Money Stock growth

Legend:
- ECM Forecasts
- RRR Forecasts
- BVAR(opt) Forecasts
- BAR(opt) Forecasts
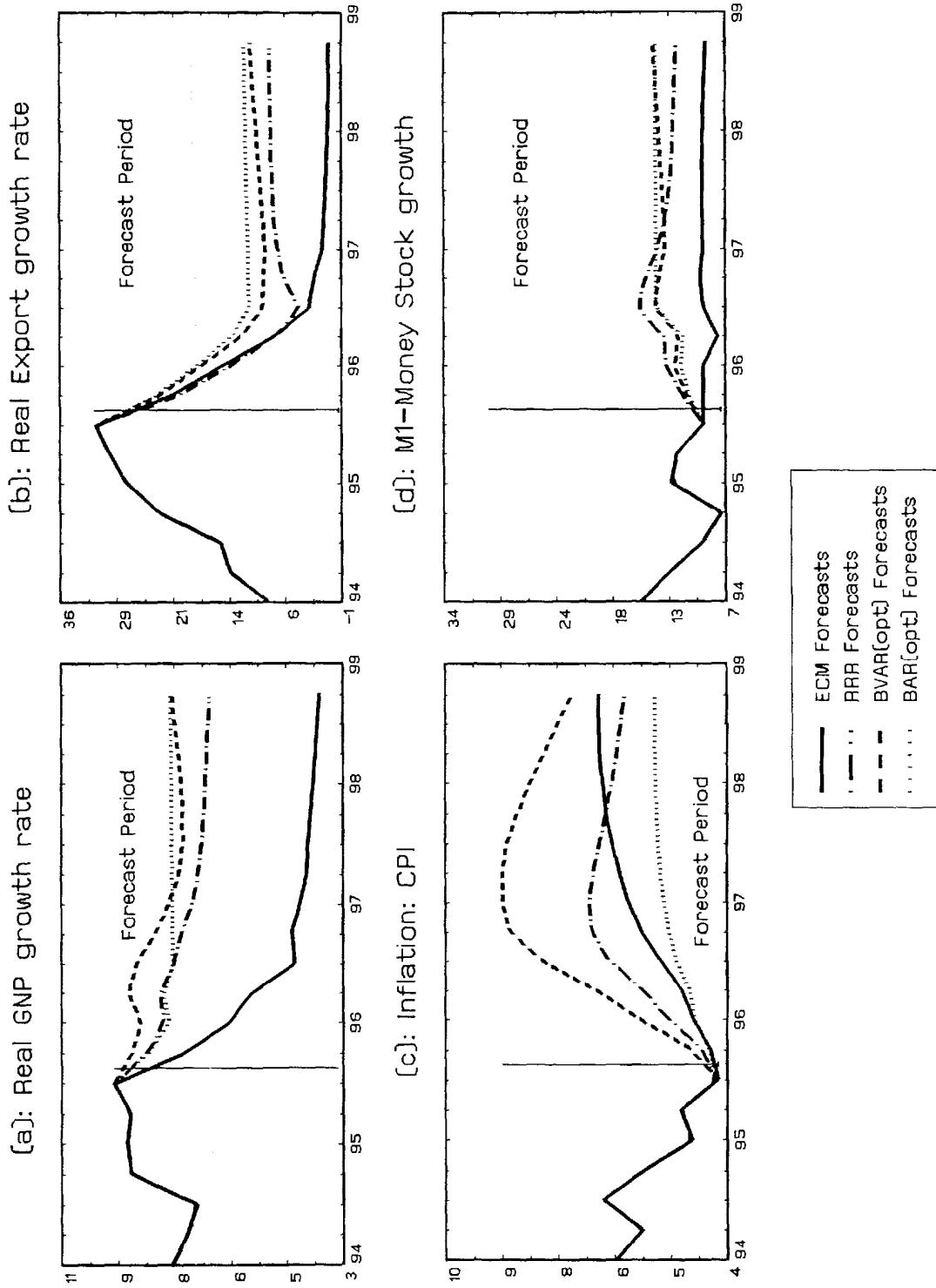
Figures 4(a)-(d): AUSTRALIA Forecasts

[a]: Real GDP growth rate

[b]: Real Investment growth rate

[c]: Inflation: GDP deflator

[d]: M1-Money Stock growth

Forecast Period

ECM Forecasts
RRR Forecasts
BVAR(opt) Forecasts
BAR(opt) Forecasts
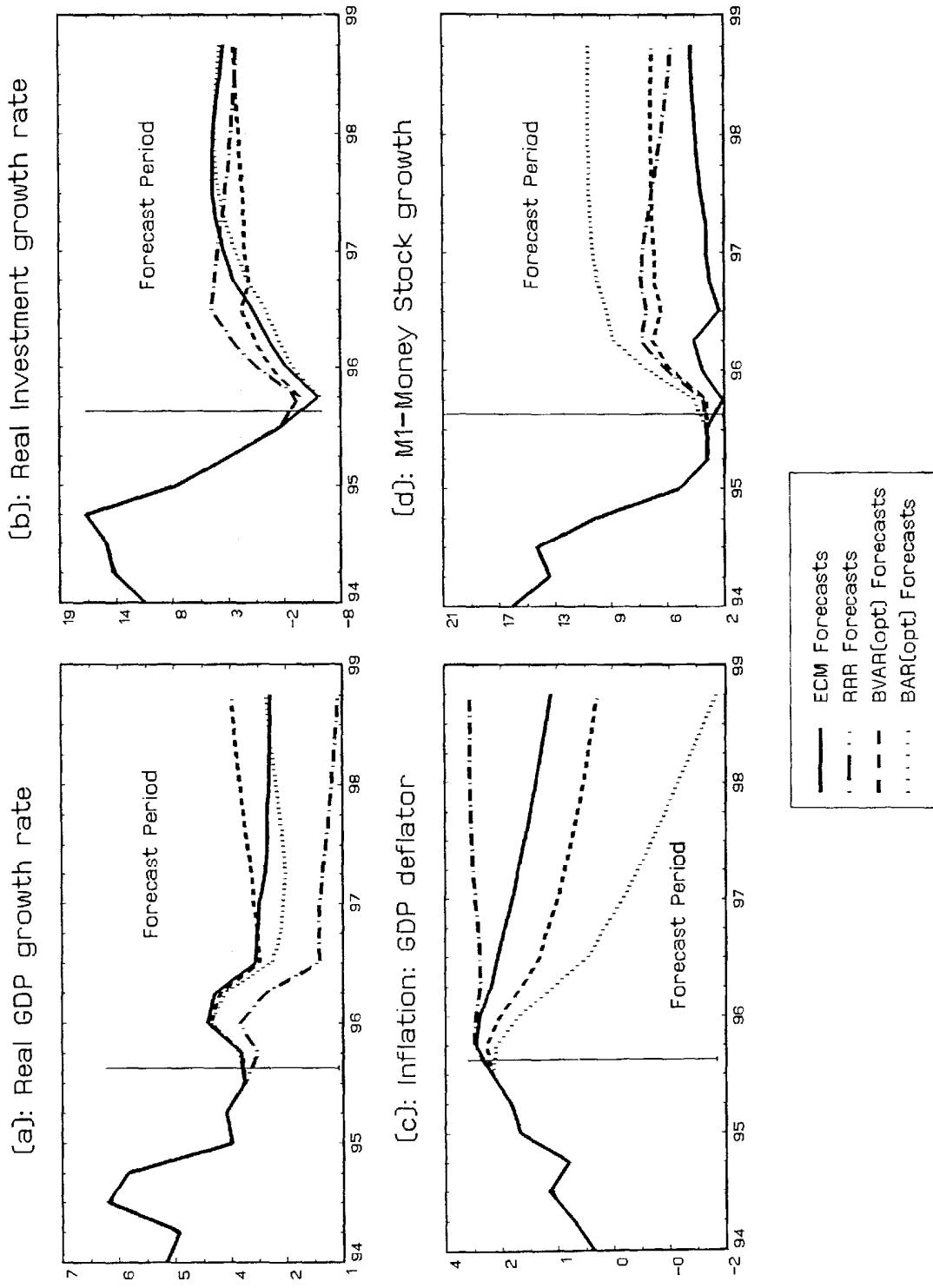
Figures 5[a]-[d]: New Zealand Forecasts

[a]: Real GDP growth rate

[b]: Real Investment growth rate

[c]: Inflation: GDP deflator

[d]: M1-Money Stock growth

ECM Forecasts

RRR Forecasts

BVAR[opt] Forecasts

BAR[opt] Forecasts