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Three Essays on Problems of Market Economies

by

Colin Simkin

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Foreword

I am unhappily aware that the world has deteriorated since I retired from the University of Sydney sixteen years ago, but do not postulate a causal relation. My retirement has been clouded by doubts about the efficacy of financial markets, by worry about Australia's poor record in regard to saving and investment and, worst of all, by disappointment at the collapse of earlier hopes that unemployment could be reduced to tolerable proportions.[1]

So, aided by research material and other assistance generously supplied by Warren Hogan and Jack Towe, I have tried to explore the nature and magnitude of these important problems, and to search some of the economic literature for explanations. I have been struck by the paucity of *realistic* explanations as well as by the seriousness of the problems themselves. The bright dawn of the Keynesian Revolution for theory and policy has faded and we are groping, if not in the dark, in a decidedly misty atmosphere.

In spite of these explorations, I would not like it to be thought that I doubt the superiority of a market economy over any practical rival. But it has defects which we should properly recognize and try to reduce, if elimination is impossible. The economics profession should, of course, play a key role in this task, and I very much hope that younger economists will have much more success in that regard than their predecessors have had. They, after all, have access to much more data and to much better econometric tools. Perhaps, too, they have been better trained, at least in a technical sense, and are certainly members of a vastly larger profession with attendant benefits in the way of critical discussion and collaboration.

Colin Simkin.
Sydney, Januuary 1996

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[1] Another serious problem which bothers me is the recent growth of large fortunes and executive remunerations which seem to lack rational justification and contrast obscenely with the lowest ranges of incomes. But I have yet to make a good beginning on a study of this phenomenon.

I. AN EXPLORATION OF INTERNATIONAL INTEREST RATES

1. International Differences in Government Interest Rates

And, sure, the reverent eye must see
A Purpose in Liquidity.

Rupert Brooke

Competitive markets are supposed, in the absence of uncertainty, to lead, sooner or later, to uniform prices for homogeneous commodities. Government bonds are certainly homogeneous within national markets and, if they were also homogeneous between highly competitive international financial markets, one would expect their average yields over a number of years to be much the same and their movements to be highly correlated. This expectation is underlined by the widely accepted theory of efficient markets which takes it that all opportunities for arbitrage will be exploited.

The following tables, all derived from OECD sources, throw light upon on this matter. They relate to the five major international capital markets in the United States, the United Kingdom, Germany, Switzerland and Japan, plus Australia for local interest, and to data for 97 quarters, from 1979Q3 to 1994 Q4, a period long enough to smooth out purely random fluctuations and one in which nearly all official impediments to international capital transactions between these markets had been removed. The data relate to short term securities of 90 days and to long term securities of 10 years, both issued by governments that posed hardly any risk of default on payments of interest or principal.

Table 1 International Rates of Interest on Government Securities
Sample period 1969Q3 to 1993Q3

	US	UK	GERMANY	SWITZ	JAPAN	AUSTRALIA
Short Rates						
Maximum	17.5200	17.6800	13.1600	10.0700	12.5910	19.4300
Minimum	3.1300	5.1700	3.2400	1.5700	2.1670	4.8200
Mean	8.4206	11.2750	7.3305	5.5865	59952	5.9952
Std Devn	3.6243	3.1234	2.3476	2.1014	2.1425	4.4691
Coef of Varn	0.4304	0.2770	0.3251	0.3774	0.37575	0.3285
Long Rates						
Maximum	13.6000	15.6800	10.6000	6.8100	9.2860	16.3800
Minimum	6.1400	6.8700	5.800	3.500	3.3000	6.6700
Mean	9.4606	10.6100	7.6823	4.9921	6.3072	12.2307
Std Devn	1.9548	2.0264	1.1606	0.8734	1.7095	2.2931
Coef of Varn	0.2066	0.1910	0.1511	0.1775	0.2710	0.1879
Yield Gap						
Maximum	3.9500	3.0800	2.8800	2.0600	2.3400	4.0200
Minimum	-4.1200	-5.1600	-2.8600	-4.4200	-3.6700	-4.9400
Mean	1.0400	-0.6640	0.4618	-0.6465	-0.3148	-0.1822
Std Devn	2.1670	2.0201	1.5242	1.3800	1.1111	2.2890
Coef of Varn	2.0836	3.0422	3.3007	2.1348	3.5297	12.4926
Real Long Rate						
Maximum	10.7925	11.5245	8.0326	4.0072	9.0134	10.7527
Minimum	-4.7113	-13.7193	0.0470	-2.0156	-3.9936	0.0072
Mean	4.7050	4.2179	4.7274	1.2142	4.0625	5.3717
Std Devn	3.2397	4.8550	1.8395	1.4075	2.7148	2.3324
Coef of Varn	0.6886	1.1510	0.3891	1.1592	0.6749	0.4342
Inflation Rate	4.9577	6.6388	3.0375	3.5663	2.4426	7.1512

Table 1 shows that there are large differences between these rates, both short and long; in other words, international capital mobility has been imperfect.

The means for short rates in Switzerland or Japan were about half those for the United Kingdom or Australia, and the those for the United States or Germany were significantly higher than the Swiss average short rate. There were, too, wide ranges of variation between these short rates as shown by the gaps between maxima and minima, and considerable variability as shown by the coefficients of variation.[1]

In the case of each country the averages for long rates were surprisingly close to those for short rates, so that there were much the same differences between their long rates as between their short rates. The variability of long rates within these countries, however, was about half that for their short rates.

Yield gap here means the long rate less the short rate and it appears from the table that, on average, this was positive in the United States, Germany and Japan, and negative in the United Kingdom, Switzerland and Australia. The negative gaps for the United Kingdom and Australia were connected with their high rates of inflation (as measured by changes in retail price indexes); but the United States also had a fairly high rate of inflation and the greatest gap. Nor does inflation look to be a plausible explanation of the negative Swiss gap. The gaps, however, exceeded 0.7% in absolute value only in the case of the United States where it was 1.04%.

The table also shows average real long term rates that ranged from 5.37% for Australia to 1.21% for Switzerland. They were decidedly more variable than either the nominal long rates or the short rates. Surprisingly

[1] Jeffrey A. Frankel , in *Measuring International Capital Mobility*, AEA Papers and Proceedings, May 1992, claims that " a worldwide trend of integration of financial markets in the 1980s had all but eliminated short-term interest differentials for the major industrialized countries." p 201. Yet during 1994Q4 short-term rates averaged 5.8633 in the US, 6.1133 in the UK, 5.2767 in Germany, 3.9967 in Switzerland, and 2.3400 in Japan. They averaged 7.3333 in Australia.

for two such closely knit economies, the average real long rate in Germany was nearly four times the level of the corresponding Swiss rate. The UK rate and the Japanese rate were both a shade below the US rate. None of these results is explicable in terms of differences in national growth rates of real national income, as some economic theories suggest. For the simple correlation coefficients for real long rates and real growth of GDPs were 0.2163 for the US, 0.1108 for the UK, 0.2769 for Germany, 0.3245 for Switzerland, 0.0158 for Japan and 0.2956 for Australia.

The next table shows simple correlation coefficients for national short and long rates.

Table 2 Estimated Correlation Matrices

	US	UK	GERMANY	SWITZ	JAPAN	AUSTRALIA
Short Rates						
US	1.0000					
UK	0.6420	1.0000				
GERMANY	0.4243	0.4538	1.0000			
SWITZ	0.1199	0.4081	0.7633	1.0000		
JAPAN	0.6120	0.7521	0.4967	0.2828	1.0000	
AUSTRALIA	0.4736	0.4982	-0.1573	0/0081	0.2393	1.0000
Long Rates						
US	1.0000					
UK	0.6420	1.0000				
GERMANY	0.4243	0.4538	1.0000			
SWITZ	-0.1199	0.4081	0.7633	1.0000		
JAPAN	0.6120	0.7521	0.4967	0.2828	1.0000	
AUSTRALIA	0.4736	0.4982	-0.1575	0.0081	0.2393	1.0000

The strongest connection was between long rates in the US and Australia, although there was a much weaker one between their short rates. Fairly strong connections are indicated between both short and long rates of the UK and Japan, and also for Germany and Switzerland. The UK and Japanese short rates were moderately correlated with the US short rate, but

there were much weaker correlations between their long rates and the US long rate. Other correlations were not impressive.

2. The Influence of Exchange Rates

The usual explanation of international differences in interest rates is the influence of expectations about two kinds of risk - risk of default, and risk of movements in rates of exchange between currencies associated with differential rates of inflation, etc. Risk of default by governments on their bond payments can surely be ruled out in the case of all the above countries, at least within the sample period, so that exchange risk remains to be considered. Such risk was considerable after the Bretton Woods arrangements ended as Table 3 shows.

Table 3a Rates of Exchange of National Currencies on the US Dollar
Sample period 1979Q3 to 1994Q4

Variables	UK	GERMANY	SWITZ	JAPAN	AUSTRALIA
Maximum	0.8975	4.0140	4.3730	362.8033	1.6117
Minimum	0.3567	1.4645	1.2722	105.5800	0.6701
Mean	0.5095	2.6941	2.7319	254.9884	1.0263
Std Devn	0.1224	0.8731	1.1730	6.1428	0.2416
Coef of Varn	0.2403	0.3241	0.4294	0.3378	0.2354

Table 3b Estimated Correlation Matrix

	UK	GERMANY	SWITZ	JAPAN	AUSTRALIA
UK	1.0000				
GERMANY	-0.5731	1.0000			
SWITZ	-0.6936	0.9732	1.0000		
JAPAN	0.6818	0.9246	0.9385	1.0000	
AUSTRALIA	0.7418	-0.4934	-0.5770	-0.7376	1.0000

All these exchange rates had a considerable degree of variability in respect to the US dollar, but rates between the German mark, the Swiss franc and the Japanese yen were fairly stable as these three currencies

appreciated against the US dollar about equally. To a lesser degree the rate between sterling and the Australian dollar had a marked positive correlation and so that between the yen and the Australian dollar a marked negative correlation.

Keynes had two suggestions about the connection between differences in short rates and movements in exchange rates. In *A Tract on Monetary Reform*[2] he explained post-World War I forward exchange rates as being at a premium or discount on spot exchange rates in strict accordance with the difference between short term interest rates in the relevant two countries because of arbitrage between spot and forward transactions. Later in *A Treatise on Money*[3] he explained the long rate as being determined by the short rate through arbitrage operations between shorts and longs and through portfolio adjustments by financial institutions and others. Yet he stressed that even the best informed traders were so ignorant of the future that they "are the prey of hopes and fears easily aroused by transient events and as easily dispelled". Such hopes and fears about future events prevent exact correspondence between movements in shorts and longs, and also, of course influence expectations about future movements in exchange rates.

Hawtrey, in *A Century of Bank Rate*, challenged Keynes's finding that movements in the long rate followed those in the short rate. He held that this relation prevailed only in the 1920s and then mainly between 1919 and 1924. His much longer data showed little or no trace of such a connection, and he explained movements in the yield on Consols by changes in business activity; during booms demands for capital raise interest rates and during booms the opposite happens.

[2] Ch III, s 4
[3] Vol II, p 352 ff

In his article reviewing *A Century of Bank Rate*[4], Hicks gave a graph showing that the yield on Consols had been "extraordinarily insensitive to the Cycle" because movements in Bank Rate were expected to be transient. He suggested that the important influences would have been changing expectations about the future price of Consols or changing degrees of certainty with which people held these expectations. He offered what he thought was a better statistical analysis (from 1750 to 1968) in *Critical Essays in Monetary Theory*[5] to buttress this explanation; supply and demand have determined the price of Consols and particularly " the willingness to hold Stock depends on the running yield and on the expectation (with due allowance for risk) of the future price of the security". On the supply side, he points to the expansion of credit which led to a slow fall in the long rate during the latter part of the nineteenth century, and also to the expansion of international credit which became less dependable after 1914 with the collapse of the gold standard and consequent uncertainties about exchange rates. Thereafter long term rates were higher.

Table 4 Regressions of Long Rates on Short Rates

Country	Period	Constant	Short Rate	u(-1)	$\bar{R}^2$	DW
US	63Q1-93Q4	6.3163	0.2194	0.9737	0.9749	1.7589
		(4.0975)	(7.2251)	(54.4369)		
UK	63Q1-93Q3	7.0977	0.2694	0.9690	0.9549	1.7949
		(5.0355)	(6.1131)	(45.4949)		
GERMANY	63Q1-93Q4	5.8481	0.2399	0.9252	0.9241	1.4378
		(14.2441)	(8.0770)	(27.1413)		
SWITZERLAND	74Q1-93Q4	3.9414	0.1991	0.9252	0.9427	1.5936
		(98342)	(7.3840)	(23.1181)		
JAPAN	79Q3-93Q4	4.6079	0.2966	0.9315	0.9031	2.1139
		(4.7514)	(3.2361)	(19.5008)		
AUSTRALIA	69Q3-93Q3	7.1560	0.1694	0.9789	0.9651	1.8720
		(8.8287)	(5.3209)	(47.2122)		

[4] Manchester School, April 1939. Reprinted in *Money, Interest and Wages* (1982).
[5] Ch 5.

Within our sample period the evidence favours Keynes's view as the above table shows. The regression used was the maximum likelihood method related to first-order autoregression of residuals, denoted by the u(-1) terms. The statistics in brackets are t-values.

These results are satisfactory. Multiple correlation coefficients are high, all regression coefficients are highly significant, and little or no autocorrelation is indicated for the residuals. If these national financial markets are less than efficient in substituting government securities between international capital markets, they seem to have been efficient in recent times in substituting such securities within national capital markets, although there was not much difference between the average yields of long and short term government securities within any of these countries. But autoregression may point to the net influence of omitted variables which are themselves autocorrelated; economic variables, because of general interdependence, do tend to move roughly in phase with general trends and business cycles. This might suggest a closer look at Hawtrey's explanation of movements in the price, and so the yield, of Consols or similar long term bonds, in spite of poor correlations, noted above, between real long rates and growth rates of real GDP.

Although the above multiple correlation coefficients in Table 5are high the coefficients for growth of nominal GDP are very small and lack statistical significance so that, in this recent period, Hawtrey's contention is not supported.

Table 5 - Regressions of Long Rates on Growth Rates of Nominal GDP.
Sample period 1979Q3 to 1994Q4

Country	Constant	Coefficient	u(-1)	$\bar{R}^2$	DW
US	8.7860	0.0342	0.9426	0.9023	1.3541
	(7.9753)	(1.8473)	(22.2243)		
UK	10.4333	0.0143	0.9445	0.8947	1.4514
	(8.4449)	(0.6646)	(22.4590)		
SWITZERLAND	4.6964	0.0138	0.9240	0.8395	1.1386
	(8.9393)	(0.5107)	(19.0046)		
JAPAN	6.3743	0.0115	0.9518	0.8960	1.9646
	(5.5723)	(0.6932)	(24.2335)		
AUSTRALIA	11.2772	0.0102	0.9457	0.8931	1.6821
	(7.9240)	(0.6892)	(22.7174)		

Note. Germany is omitted because of data imperfections through re-unification.

Returning then to Keynes's thesis that short rates have a strong influence on long rates of interest, we go on to consider the influence of forward exchange rates. The basic arbitrage equation is

$$F^{ab} - S^{ab} = R^a - R^b$$

where F denotes the three months forward rate of exchange between two currencies, a and b, S the spot rate and R the three months interest rate on government securities. If this can be used to explain differences in national short rates we would have, in view of the above results, a considerable part of the explanation of differences in national long rates.

The theory of rational expectations would suggest that forward rates accurately predict future spot rates, and Bennett T. McCallum has found nearly perfect correlations between spot rates and preceding forward rates using data for the deutschmark, the pound and the yen in relation to the US dollar over the period 1978.01 to 1990.07[6]. I have confirmed this by the following OLS regression results for spot rates on lagged forward rates for

[6] *Journal of Monetary Economics* 33 (1994), page 113.

the US dollar in the UK, Germany and Switzerland, on a monthly basis over our sample period 1979Q3 to 1994Q4.

	UK	GERMANY	SWITZERLAND
Constant	0.0303	0.0247	0.0407
Coefficient	0.9840	0.9545	1.0823
Std Error of Estimate	0.0616	0.0189	0.0292
Rbarsq	0.9514	0.9645	0.9329

Accepting these findings about forward rates, we have

$$F^{ab} - S^{ab} = D\,S^{ab} = R^a - R^b$$

D being the time difference operator. Transactions costs, including taxes, may be neglected because of their relative insignificance.

The US dollar was the dominant currency within our sample period so that the data relating to it are used to test the last equation.

Table 6 OLS Regressions of Changes in National Spot Rates for the US Dollar on Differences between National Short Rates and US Short Rates.
Sample period 1979Q1 to 1994Q4

Country	Constant	Coefficient	$\bar{R}^2$	DW	Mean
UK	2.9779	-26.9317	0.1164	2.7021	2.8970
	(0.91254)	(-2.9840)			
GERMANY	-1.2274	-3.6121	-0.00367	3.2633	-1.2113
	(-2.8792)	(-0.9850)			
SWITZERLAND	-2.9147	-8.1372	0.0367	3.8794	-2.8962
	(-5.9706)	(-1.8131)			
JAPAN	-2.6347	-0.1138	0.1534	2.7377	-2.4108
	(-8.0083)	(-3.4458)			
AUSTRALIA	4.0224	-2.2483	0.0157	3.6611	4.0063
	(8.4490)	(-0.02732)			

These are miserable results. The conclusion is inevitable that forward discounts and premiums on spot rates depend on much more than differences

in national short rates. The fault lies with the arbitrage equation; for the simple correlation coefficient for the difference between forward and spot rates on the US dollar and the difference between a national short rate and the US short rate are only -0.4253 in the UK, 0.4765 in Germany and 0.4490 in Switzerland (quarterly data). There is accordingly plenty of scope, perhaps more than in the period he studied, for Keynes's "hopes and fears easily aroused by transient events", not to mention official interventions in both short term money markets and foreign exchange markets, even without involving the non-linearity of chaos theory.

Turning attention next to differences in long rates, I apply the adaptive expectations hypothesis, with speed of response 0.6, to dollar exchange rates in the hope that this reflects longer term expectations about future exchange rates. The results are given in Table 7.

Table 7 Maximum Likelihood First Order Autoregressions on Differences between National Long Rates and US Long Rates on Expected Exchange Rates on the US dollar.
Sample period 1979Q3 to 1994Q4

	Constant	Coefficient	u(-1)	$\bar{R}^2$	DW	Mean
UK	1.9725	-1.0127	0.8943	0.7820	1.7915	1.1507
	(1.0955)	(-0.3553)	(15.7376			
GERMANY	0.3846	-0.9680	0.9020	0.8850	1.9004	-1,7788
	(0.2656)	(-1.4389)	(16.4476)			
SWITZERLAND	-5.4568	0.7670	0.9663	0.9352	1.6520	-4.5387
	(-2.5688)	(0.8472)	(29.5445)			
JAPAN	-4.4872	0.0098	0.9132	0.7460	1.9001	-3.1533
	(-2.5179)	(1.0835)	(17.6479)			
AUSTRALIA	0.8789	1.4282	0.8700	0.7992	1.7992	2.7433
	(0.3693)	(0.7507)	(13.8970)			

These are better results in that the corrected coefficients of multiple correlation are fairly high and the DW statistics are satisfactory. But the

coefficient values do not agree in sign and their values are well below what is required for statistical significance at the 5% level. Autoregression coefficients again point to an influence from omitted variables, and account for most of the regression. The conclusion is that long-term expectations about future exchange rates, governed by past experience as indicated by the adaptive expectations hypothesis, do not seem to have had an appreciable influence on differences in national long term rates of interest. This would have surprised Hicks although he could well have queried whether the adaptive expectations formula is a satisfactory reflection of acual expectations.

3. The Influence of US Rates

The United States has been the most important centre for international financial dealings, even if its dominance has weakened. It is, therefore, appropriate to consider what influences movements in its short and long rates have had upon those of the other financial markets in our sample. The next table throws light upon this matter.

Table 8 Maximum Likelihood First Order Auto-Correlation Regressions of Interest Rates on US Rates.
Sample period 1979Q1 to 1994Q4

	Constant	Coefficient	u(-1)	$\bar{R}^2$	DW	Mean
Short Rates						
UK	9.4483	0.1790	0.9921	0.8651	1.5745	11.2750
	(5.1726)	(1.6261)	(8.6530)			
GERMANY	5.3814	0.1828	0.9358	0.9090	1.3989	7.2205
	(4.1773)	(2.6888)	(20.8936)			
SWITZERLAND	3.5438	0.1587	0.9108	0.7962	1.3421	5.5685
	(2.5337)	(1.7471)	(17.3723)			
JAPAN	5,6785	-0.0346	0.9492	0.8795	1.0207	5.9925
	(3.5766)	0.4845)	(23.7625)			
AUSTRALIA	9.5359	0.2119	0.9246	0.8756	1,5206	12.3869
	(4.0549)	(1.5383)	(19.1139)			
Long Rates						
UK	5.1385	0.5956	0.9276	0.9292	1.7257	10.6110
	(3.9867)	(5.3503)	(19.5474)			
GERMANY	4.0014	0.4008	0.9110	0.9060	1.8494	7.6823
	(4.9934)	(5.4849)	(17.3904)			
SWITZERLAND	2.5183	0.2449	0.9535	0.8703	1.3207	4.9221
	(2.8384)	(3.7562)	(24.9074)			
JAPAN	3.3722	0.3347	0.9388	0.9113	2.0722	6.3072
	(2.6192)	(3.1767)	(21.4508)			
AUSTRALIA	6.5440	0.5621	0.9146	0.9151	1.7826	12.2037
	(4.3021)	(4.0923)	(17.8059)			

Its correlation coefficients are all highly significant, allowing for the influence of the lagged residuals and, except for Japan, the regression coefficients are also statistically significant. Nor do the Durbin-Watson statistics indicate further autocorrelation. Although then neither short nor long term rates approached equalization, movements of both were closely associated with movements in the US rates. To that extent, financial markets could be regarded as efficient.

4. The Combination of Influences on National Long Rates of the US Long Rate and Expected Dollar Exchange Rates.

In view of the previous finding that expected exchange rates, as determined by the adaptive expectations hypothesis, influence *differences* between national long rates and US long rates it seems appropriate to

consider whether such expectations can add anything to the above explanation of national long rates in terms of the US long rate.

Table 9 Maximum Likelihood First Order Auto-Correlation Regressions of National Long Rates on Us Long Rates and Expected Dollar Exchange Rates.
Sample period 1979Q1 to 1994Q4

	Constant	US Long Rate	Expected Exchange Rate	u(-1)	$\bar{R}^2$	DW
UK	5.6647	0.5974	-0.9461	0.9178	0.9279	1.7081
	(2.7579	(5.3208)	(-0.3547)	(18.2076)		
GERMANY	4.2543	0.4069	-0.1632	0.9061	0.9076	1.6084
	(3.8862)	(5.4018)	(-0.3356)	(16.8621)		
SWITZERLAND	1.3722	0.2473	0.6813	0.9646	0.8723	1.3333
	(1.0614)	(3.8246)	(1.3625)	(28.7931)		
JAPAN	0.7665	0.3226	0.0150	0.8973	0.9154	2.1874
	((0.5209)	(3.1476)	(2.2841)	(15.6853)		
AUSTRALIA	8.5594	0.5249	-1.4216	0.9219	0.9144	1.7503
	(2.5269)	(3.5623)	(-0.6691)	(10.7328)		

The rather surprising result emerges that the expected exchange rate adds little to the previous explanation in terms of the US long rate. The multiple correlation coefficients are only slightly higher in Table 9 than in Table 8 and the values of the coefficients for the US long rate are hardly different; moreover those for the expected exchange rate (on the adaptive expectations hypothesis) lack statistical significance. Nor was these much change in the coefficients for the lagged residual, although coefficients for the constant term were markedly lower for Switzerland and Japan. Values of the Durbin-Watson statistic were also little different in the two tables and satisfactory.

5. German and Swiss Long Rates.

Perhaps the purest case of a yield difference is given by German and Swiss long rates as not only was default risk minimal but exchange rate risk

was also low. Differences in their dollar exchange rates, X, however, have to be considered together with differences between their short rates, S, differences between their rates of inflation, F, and differences in their growth rates, G, as possible determinants of the differences in their long rates.

Table 10 Maximum Likelihood First Order Auto-Correlation Regression of L on S, X, Z and G.
Sample period 1979Q1 to 1994Q4

Regressor	Coefficient	t-Ratio
Constant	1.9020	0.8331
S	0.1437	2.4826
X	0.5853	0.3080
F	-0.0015	-0.0799
G	0.0403	1.3080
u(-1)	0.9395	20.5170
Rbarsq	0.9060	
DW	1.9148	

In view of this regression, F and G may be neglected as explanatory variables of L so that S and the lagged residual, u(-1) seem to be the only significant explanatory variables. Somewhat better regression results are obtained if only they are used as then Rbarsq rises to 0.9383 although the coefficient for S drops slightly to 0.1434 and the D-W to 1.7256. Yet this simpler regression passes the usual tests of statistical significance.

The small difference, however, between the coefficient for the constant term and the mean of the difference in the two long rates (2.7760) together with the very significant autoregressive term shows that the difference between German and Swiss short rates had only a partial influence upon the difference between the corresponding long rates. Again there seems to be ample scope for Keynes's hopes and fears. Within the sample period their influence would seem to have been strongest in the economic turmoil of the

earlier half of the 1980s; for then the gap between the two long rates was much bigger than afterwards.

Yet the minimum difference between German and Swiss long rates was 1.2867% and it is difficult to see such psychological influences making for persistent differences indicated by the average difference of 2.77598%.

6. Interpretation

What is to be made of all these results? The firmest conclusions are that short rates have a strong influence on long rates, that the US rates have a strong influence on other national rates, and that 90 days future rates of exchange predict the corresponding spot rates very well. Long term expectations about exchange rates (as indicated by the adaptive expectations hypothesis) do not appear to have had a clear or marked influence on differences in national long rates. But these objective influences were incomplete explanations of differences in yields that went far seem to go well beyond what could be ascribed here to information costs, transactions costs, discriminatory tax laws or risks of future capital controls.[7]

The subjective influences stressed by Keynes are, no doubt, important as bond traders still lack reliable econometric or other guidance about future events. Such influences are immeasurable but it is hard to believe that they have been *regular* enough to account for the persistent differences in national long rates.

[7] Frankel lumps such factors together as "country risk" (op.cit p 199). They could hardly have been important in the case of Germany and Switzerland.

Something is missing. Where to find what else besides uncertain exchange rates prevents arbitrage operations from equalizing national interest rates between strong and stable economies, even adjacent ones? *The Economist*[8] denies that the world now has a 'single capital market' and holds that the best evidence for this denial is strong correlations between domestic investment and domestic saving. It also points out that only 10% of the assets of the 500 largest of the world's portfolios is invested in foreign securities. But the only explanation suggested is that portfolio managers may be 'concerned about low-probability events such as repayment default or currency non-convertibility and fiduciary committes may also see their task as acting "prudently" rather than maximizing a risk-adjusted return'. In the light of the above evidence such explanation seems unconvincing. It may hold for foreign investment in Mexican bonds, which the *Economist'* article began by considering, but is it all plausible in regard to German and Swiss bonds?

[8] June 24th 1995, pp 26-27.

II. Investment and Saving in Australia

Because of our inadequate savings Australia does have to import capital to fund our investment

Ralph Willis

1. Investment

Between 1960 and 1993 gross investment in Australia averaged 25% of GDP and consumption of fixed capital 14%, so that net investment averaged only 11% of GDP. This net investment percentage had fallen from 17% in 1965 to only 11% in 1992 because of a marked growth of depreciation provisions.

In 1993, however, this lower ratio of Australian gross investment to GDP compared well enough with the corresponding ratios in Western Europe and the United States although badly with those in leading Asian countries, as the following table shows.

Table 1 Income per head and Structure of Demand (as % of GDP), 1993.

	US$ per head	Exports	Investment	Government
United States	24,740	10	16	17
Germany	23,560	22	22	20
France	22,490	23	18	19
Netherlands	20,950	43	20	22
Italy	19,840	23	17	18
United Kingdom	18,960	25	15	22
Australia	17,500	19	20	18
Japan	31,490	9	30	10
Singapore	19,850	169	44	9
New Zealand	12,600	31	21	15
South Korea	7,660	29	34	11
Malaysia	3,140	80	33	13
Thailand	2,110	37	40	10
Indonesia	740	28	28	10

Source *Barclays Economic Review*, Third Quarter 1995.

There was, as would be expected, a strong connection between net investment, NI, and national income, Y, as the following equation shows.

$$Y = 71880 + 2.5014\ NI + 0.9935u(-1)$$
$$(1.0038)\ (7.4204) \quad (50.7084)$$
$$\text{R-bar-Squared} = 0.9941 \quad DW = 0.718.$$

Here the sample period is 1960-93 and the regression method was maximum likelihood with an autocorrelated residual.

There was, surprisingly, a doubtful connection between NI and RET, the return on all forms of capital stock.

$$NI = 26725 + 806.8RET + 0.9918u(-1)$$
$$(0.7269)\ (1.4217) \quad (40.2256)$$
$$\text{R-bar-Squared} = 0.9680 \quad DW = 0.7544$$

The correlation coefficient is high but the t-ratio for RET and the DW statistic are not significant. On an OLS regression we get startlingly worse results.

$$NI = 88585 - 0.3118R$$
$$(2.7267) \quad (-1.6011)$$
$$\text{R-bar-Squared} = 0.0567 \quad DW = 0.0976.$$

Table 2 shows the structure of gross investment.

Table 2. Australian Gross Investment.
Sample period 1973 to 1993

	Max	Min	Mean	Std Devn	Coef of Variation	ETGR
Private Fixed						
Dwellings	20,382	2,860	10,152	5,606	0.5522	9.65
Other Construction	16,345	1,488	6,959	4,780	0.6870	12.08
Equipment	29,019	3,458	15,379	8,565	0.5569	10.63
Government Fixed						
Enterprises	13,092	1,687	7,470	3,670	0.4912	9.34
General	9,033	1,709	5,542	2,449	0.4419	7.64
Real Estate Transfers	6,297	591	2,737	2,002	0.7313	
Inventories	5,264	-2,558	687	1,737	2.5270	
TOTAL	95,563	12,243	48,927	26,566	0.5430	
DISCREPANCY	4,126	-2,614	-172	1,864	10.8177	
NET INVESTMENT	45,505	6,428	16,661	10,146	0.6090	10.73
NET RETURN %	22.1	11.9	16.5	2.6	0.1584	-0.89

Note: ETGR means exponential trend growth rate. It cannot be computed for a series which contains some negative values.

Over this period private investment in equipment accounted for 31% of gross investment, private investment in dwellings for 21% and private investment in other construction for 14%. Expenditures by government and government enterprises on fixed capital formation were 27% and most of these expenditures were by government enterprises. Private investment was more variable than government investment and especially private other construction which was the most rapidly growing type of investment.

Net investment came to only 34% of gross investment because of large expenditures on depreciation or consumption of fixed capital. The return on net investment averaged 16.7% and it grew more slowly than gross investment at 10.7 per cent a year.

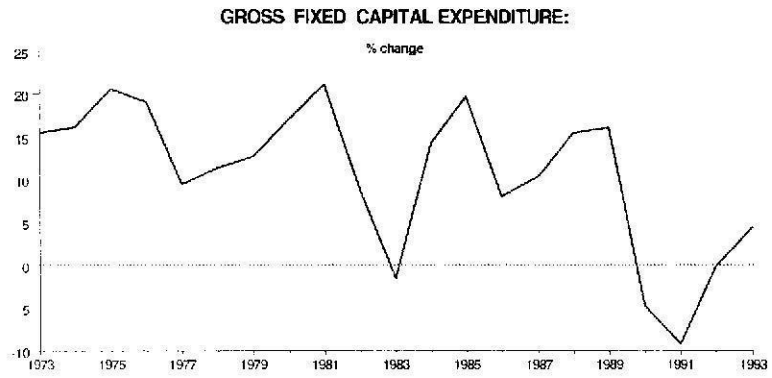
A strong connection, of course, exists between I, real GDP per capita, and E, real private expenditures on equipment, as shown by the following regression for 1984Q3 to 1994Q4.

$$I = 4977.8 + 0.0459E + 0.9943u(-1)$$
$$(12.0456)\ (2.6328)\ (59.9373)$$

R-bar-Squared = 0.9630 DW = 1.3144 Mean = 5258.0

Investment in equipment clearly contributed to gains in labour productivity.

There was considerable volatility in the annual growth of investment as the following graph for gross fixed capital formation clearly shows. This series had peaks in 1975, 1981, 1985 and 1989, after then declining to a negative trough in 1991 and regaining a positive value in 1993. Its mean value was 10.64% and its coefficient of variation was 0.81. The maximum value of 20.98% was reached in 1981 and the minimum value of -9.37% in 1991.



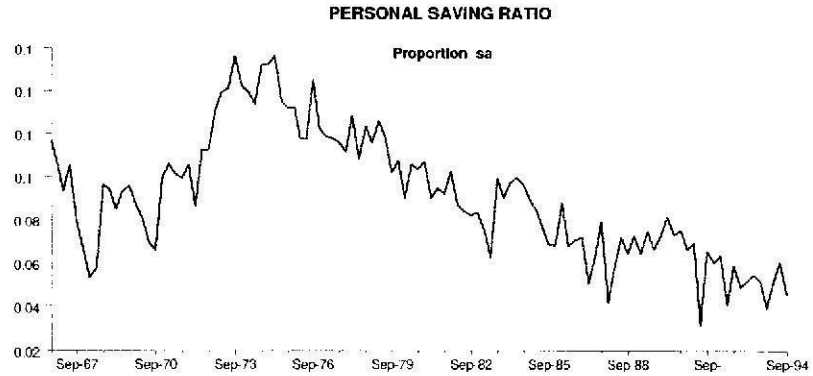
2. Saving

Table 3 shows that depreciation accounted for almost two-thirds of gross saving over the sample period. Other business saving made a negative contribution of 1.6.%; government saving was also slightly negative and markedly volatile. Household saving contributed 22% and was almost equal to private investment in housing. Foreign saving, or net foreign borrowing, had thus to finance most of net investment, and has been the most rapidly growing component of gross saving.

Table 3 Australian Gross Saving.
Sample period 1973 to 1993

	Max	Min	Mean	Std Devn	Coef of Variation	ETGR
Depreciation	63,662	6,291	32,094	19,342	0.6027	11.42
Other Business	2,592	-9,6664	-776	3,123	4.0263	
Household	17,345	4,712	10,647	3,442	0.3233	5.25
Government	7,026	-12,450	-1,530	4,992	3.2620	
Foreign	22,096	-601	8,319	6,491	0.7802	16.52
TOTAL	99,201	12,719	48,754	27,210	0.5581	9.85

There has been a striking decline after 1973 in the percentage of household saving to disposable income. This is reflected in the following graph for the personal saving ratio.



Among the main causes of the relative decline of household saving from 12% of national income to 4% may be put the rise in direct taxes from 13.9% of national income in 1972 to 22.4% in 1990, which reduced the ability of households to save, together with a rise in cash benefit payments from 6.6% of national income in 1970 to 14.1% in 1993, which reduced their need or willingness to save. That much is indicated by the OLS regression equation for the period 1974-93.

HSR = 0.3161 - 0.9353CBR - 0.7164 DTR
(11.7161) (-6.1913) (-4.6494)
R-bar-Squared = 0.8499 DW = 2.0027

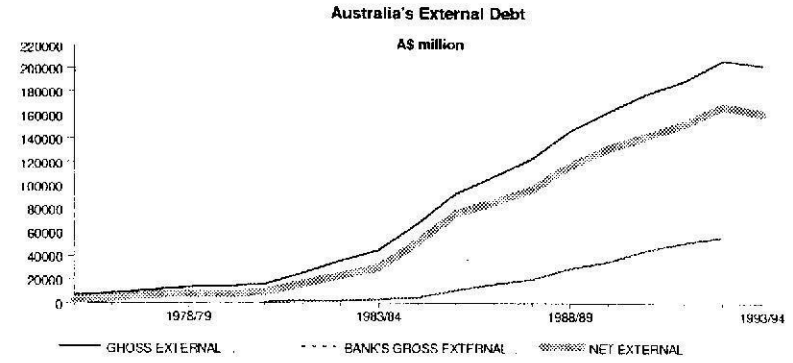
in which HSR is the ratio of household saving to national income and CBR and DTR the corresponding rates for cash benefits and direct taxes.

It may be noted that the ratio of domestic saving to GDP in 1993 was only 20.0% in Australia, comparing unfavourably with 47.9% in Singapore, 40.0% in China, 35.1% in South Korea, 34.5% in Hong Kong, 37.2% for Thailand and 27.0% in Taiwan. Nor does Australia shine in recent OECD forecasts of ratios household savings to household disposable income for its member countries in 1995. These included 22% for Belgium, 16.2% for Denmark, 15.7% for Japan and 7.5% for Sweden whereas the Australian forecast was about 5%.[1]

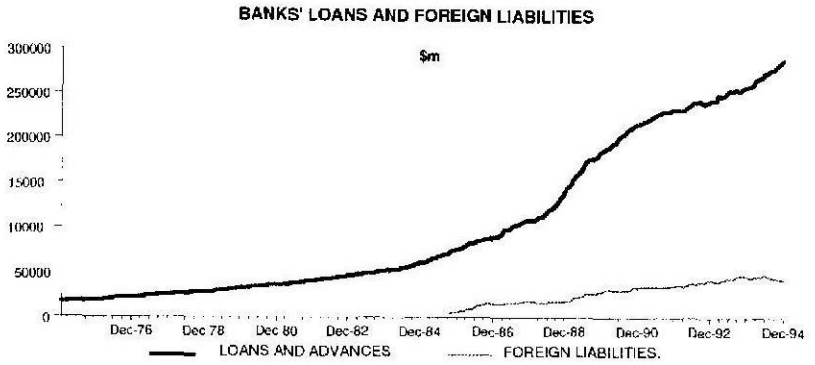
[1] *The Economist*, August 26th 1995, p 993.

3. External Debt

Foreign saving (net external borrowing) consequently rose from 1.4% of national income in 1973 to 7.7% in 1993. This, of course, led to rapid increases in Australia's external debt as the following graph shows.



The gross external debt more than trebled, rising from $5,970 million to $204,073 million between 1973/4 and 1993/4 while the net external debt rose much more rapidly from $2,939 million to $162,727 million. A striking feature of these large increases was the increasing participation of the banking system in external borrowing. Before 1991 such participation was negligible, but from that year to 1993 the bank's participation rose from a mere $771 million to $55,368 million, or from 3.1% of gross external debt to 26.7%.



In 1985 the annual rate of increase in bank loans and advances jumped from 14.1% to 22.0%, then dropped to 19.4% in 1988 before leaping to 39.7% in 1989. It then dropped to 20.7% in 1990, to 12.1% in 1991 and to 5.5% in 1992 then recovered to 8,6% in 1994. The large expansion of bank lending between 1984 and 1990 was made possible by bank borrowing abroad.

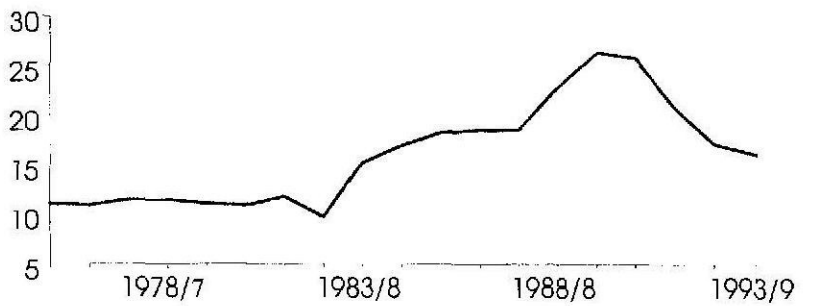
In 1986 the ratio of foreign liabilities to loans and advances had jumped to 12.7% and thereafter never fell below the 1988 level of 13.7%, reaching a maximum of 17.26% in 1993. In 1994 it fell slightly to 16.4%.

Table 4 and the accompanying graph show the substantial burden of external debt service after 1976.

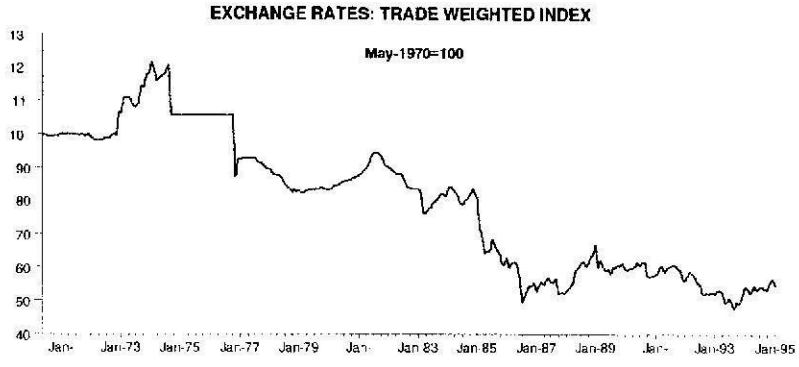
Table 4 - External Debt Service Ratios 1976-1993

	% to Exports	% to National Income
Maximum	26.40	4.50
Minimum	9.70	1.40
Mean	16.05	2.47
Standard Deviation	5.24	0.98
Coef of Variation	0.33	0.37

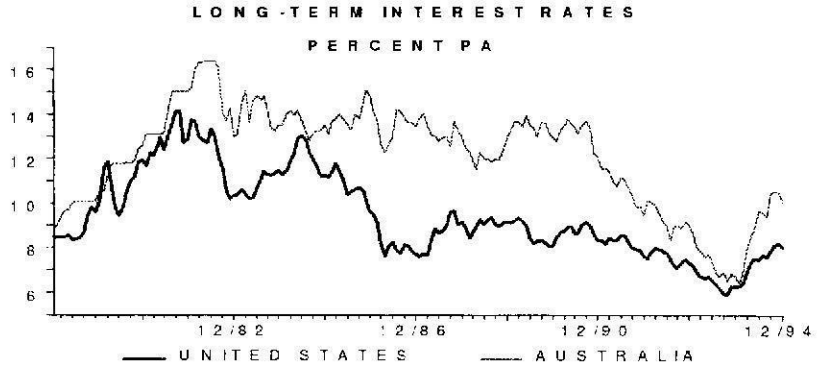
Foreign Debt Service: Percentage of National Income



Notwithstanding the large increase of external borrowing Australia's trade weighted index of foreign exchange rates fell sharply from 92.2 in December 1976 to 54.5 in December 1994. The decline was arrested after 1986 but there was little recovery.



After 1981 the Australian long-term interest rate (on government bonds) declined along with the corresponding US rate, but until 1991 was well above the US rate, reflecting Australia's need for foreign saving and the deterioration of its exchange rates. In spite of the rise in external debt the fall in interest rates reduced the burden of servicing this debt.



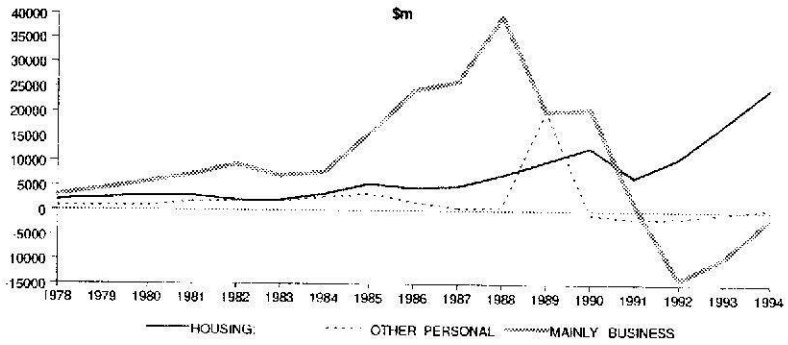
4. Some Conclusions

It has been shown above that the relative level of gross investment spending is about the same as that in many advanced countries, if well below that which prevails in the newly industrialising countries of East and South-east Asia. But there has been a recent disproportionate emphasis on housing to the detriment of investment in equipment and other construction. In 1993, moreover, the percentage of GDP derived from manufacturing was 29% in Australia[2] , lower than that in most Asian or Western European countries, and the percentage from services was 67%, higher than that in any Asian country except Hong Kong, and among Western European countries exceeded only in Belgium, Luxemburg, Denmark and France. It may be noted that among our services is the growing provision for organized gambling, which is detrimental to private saving.

The following graph shows that financial institutions made large annual increases of credit to the business sector up to 1998 but these increases then declined and became negative between 1992 and 1994. Annual increases in credit for housing, after a check in 1991, then rose markedly.

[2] This comparative figure comes from *Barclays Economic Review*, Third Quarter 1995. According to figures derived from the Australian Bureau of Statistics the contribution of manufacturing to real GDP fell from 21.8% in 1974Q3 to 15.0% in 1992Q2 and was 16.2% in 1994Q2. Nevertheless seasonally adjusted exports of manufactures rose, as a percentage of total exports of goods and services, from 10 .0 to 18.2 between 1980Q4 and 1984Q3.

ANNUAL CHANGE IN CREDIT TO PRIVATE SECTOR



The most disturbing feature since 1973 has been a drastic fall of private saving, coupled with negative government saving, and the associated rise in foreign borrowing to finance Australian domestic investment. This has led to a marked decline in the external value of the Australian dollar and consequent increases in the burden of servicing the net external debt which, by September 1994, had reached 1.78 times national income.

Most of this debt is denominated in Australian or US dollars so that, in view of the close relation between the Australian and US interest rates, our current balance of payments is affected by changes in US interest rates.[3] In 1993 interest service on the net external debt was 61% of the current external deficit or 3% of GDP at factor cost.

The average annual growth rate of real GDP, from 1979Q3 to 1993Q1, was 2.79% in Australia, slightly better than the corresponding rate

[3] For the period 1979Q3-1994Q4 maximum likelihood regressions for Australian short rates, SOZ, on US short rates, SUS, and Australian long rates, LOZ, on US long rates, LUS, were:

SOZ = 9.5308 + 0.2126SUS + 0.9245u(-1)
(4.0543) (1.5425) (19.0905) Rbarsq = 0.8755 DW = 1.5217

LOZ = 6.6344 + 0.5632LUS + 0.9145u(-1)
(4.2939) (4.0987) (17.7932) Rbarsq = 0.9151 DW = 1.7817

of 2.42% for all OECD countries. It compares less well with rates in Asian countries as the next table shows.

Table 5. Selected Economic Indicators in Asian Countries.

Country	Growth of Real GDP Av 1990-94	Inflation Rate Av 1990-94	Ratio of Investment to GDP 1993	Ratio of Current Account Balance to GDP 1993*	GDP per head 1993
Australia	2.2	3.0	20	-4.26	17,500
China	10.1	10.3	41	0.94	460
India	4.0	10.3	24	-2.04	300
Indonesia	6.9	8.5	28	-2.14	740
Malaysia	8.7	3.9	33	-4.38	3,140
Pakistan	4.8	10.5	21	-4.13	430
Philippines	1.8	11.7	24	-4.07	850
South Korea	7.6	7.0	34	-1.21	7,660
Taiwan	6.5	3.8	24	3.90	10,700
Thailand	8.9	4.8	40	-5.84	2,110

* 1990-94 average as percentage of 1993 GDP.

Among the countries listed, Australia had the lowest growth rate except for the Philippines, and it had the lowest ratio of investment to GDP as well as the largest relative current account deficit except for Thailand, reflecting our poor household saving ratio and the burden of foreign debt service, both noted above. The higher growth rates of real GDP for Asian countries, of course, is due to their relatively low starting points reflected in the figures for GDP per head, but it also owes much to their higher levels of saving and investment. Hong Kong and Singapore have been omitted from the table because they are small city states rather than countries, but their average incomes are now well above Australia's and their ratios of investment to GDP are also higher, 7% higher for Hong Kong and 24% higher for Singapore.

If, then, Australia is to have a long-term future of adequate economic growth in the Asia-Pacific area its rate of domestic saving has to be considerably increased to reduce heavy dependence on foreign saving with associated difficulties over the current balance of payments and, at the same time, to permit some expansion of domestic investment. Investment, moreover, could well be re-directed towards manufacturing, whose contribution to GDP fell from 21.3% in 1970 to 15.3% in 1990, at the expense of some overblown service activities. Here I have in mind advertising, finance, law, retailing and some tourist activities which may bring in needed foreign exchange but damage environmental amenities and foster servility rather than creativity.

III. UNEMPLOYMENT IN MARKET ECONOMIES

Digna canis pabulo

1. UNEMPLOYMENT RATES BEFORE 1970

An historical perspective of unemployment rates is given in Table 1. It is an imperfect one because this table can give only rates as measured in the different countries and they have measured it in different ways. In the US and Japan the percentage was calculated by using the civilian labour force as the denominator but in the UK and Germany by using the sum of employed and unemployed as the denominator which would give a somewhat higher rate. The US and Italian data were collected by sample surveys of the labour force, but in the UK and Germany by the numbers registering or claiming unemployment benefits at unemployment offices. There are, accordingly difficulties in making international comparisons. Further difficulties arise from changes made by countries to their coverage and definitions of unemployment over the whole period.

Table 1 National Rates of Unemployment in Leading Market Economies, 1900-1969.

Decade	US	UK	GERMANY	FRANCE	JAPAN	ITALY
1900-09	4.39	4.83	2.64	8.36		
1910-19	5.05	2.27	2.73			
1920-29	4.67	7.67	8.24			
1930-39	18.23	11.12	15.17		4.93[1]	
1940-49	5.17	1.27				
1950-59	4.51	1.70	5.03		1.55	8.40
1960-69	4.98	2.02	1.00	1.49	0.99	4.58

[1] 1930-38

Source Thelma Liesner, *Economic Statistics 1900-1983*, The Economist 1985

Nevertheless the table brings out some important aspects of changes in unemployment over the first seven decades of the twentieth century. Even in the comparatively prosperous opening decade unemployment was rather

high in the US and the UK and much worse in France although low in Germany. During the First World War the rate more than halved in the UK but the US and German rates did not change much.

During the 1920s unemployment rates in both the UK and Germany were much higher than in the 1900s, but not so in the US. All three rates rose to very high levels in the depression years of the 1930s and in the US even higher than in Germany. They fell markedly in both the US and the UK during the Second World War. The best years were in the 1950s and 1960s when rates fell below 5% in the US and Italy, to only 2.2% in the UK, and to less than that in Germany France and Japan. In Australia the rate averaged 1.8% in the 1960s.[1] These two decades were the golden period when the popular hope of full employment was most nearly realized, a hope that wartime sacrifices would lead to a better society in which there would never again be anything like the horrifying mass unemployment of the early 1930s.

2. UNEMPLOYMENT RATES FROM 1964.

There were drastic changes in the world economy after 1973, some of which are shown by Table 2.

[1] Australian rates averaged 4.9% in 1900-24, 8.6% in 1925-44, 2.05 in 1945-73 and 7.5% in 1974-94 according to Goodrich, Harding and Lloyd in *The LongTerm Growth of Unemployment*, Institute of Applied Economic and Social Research Woking Paper, 2/95, University of Melbourne.

Table 2 Annual Growth Rates of Key Variables, 1961-1990

	US	UK	FRANCE	GERMANY	ITALY	JAPAN	AUSTRALIA
US$ Rate							
1961-70		1.58	1.20	-1.34	0.10	-0.05	0.04
1971-80		0.30	-2.69	-6.96	3.12	-4.57	-0.24
1981-90		2.69	2.54	-1.17	3.36	-4.48	3.79
Money-M1							
1961-70	1.12	...[2]		7.18		16.67	3.73
1971-80	6.38		10.72	8.84	17.64	12.81	11.60
1981-90	7.17		7.29	5.98	10.41	5.15	9.69
Prices-CPI							
1961-70	2.71	3.99	3.92	2.67	3.27		2.43
1971-80	7.59	12.82	9.20	4.99	12.92	8.60	9.91
1981-90	4.61	6.35	6.12	2.58	9.26	2.03	7.79
Hourly	Wage	Rates[3]					
1961-70	4.43	7.31	7.93	8.82[4]	8.84		
1971-80	7.77	14.33	13.17	8.64	18.11	12.23	
1981-90	3.97	5.31	7.12	4.32	7.80	3.80	6.98
Real	Exports						
1961-70	6.00	4.98				14.73	7.77
1971-80	6.87	4.39	6.78	5.94	5.41	9.01	4.04
1981-90	4.65	3.39	3.84	5.04	4.63	5.41	5.51
Private	GFCF	(real)					
1961-70	4.05	5.06				15.08	5.09
1971-80	3.52	0.35	2.75	2.47	1.18	2.63	2.75
1981-90	2.07	4.05	2.23	1.56	1.73	6.87	2.72
Real GDP							
1961-70	3.77	2.79	5.44	4.35	5.67	9.68	5.04
1971-80	2.73	1.91	3.25	2.68	3.66	4.43	3.31
1981-90	2.60	2.63	2.33	2.23	2.19	4.11	3.19
Short Rate[5]							
1961-70	5.69			5.01			
1971-80	7.82			6.83			9.22
1981-90	9.40	11.81		6.68		6.14	14.73

[2] There were too many changes in the UK definition of M1 for a growth series to be constructed.
[3] In manufacturing.
[4] 1964-70.
[5] Actual three-months rate.

The Bretton Woods system of relatively fixed exchange rates had broken down and international financial deregulation made great strides. In 1974 there was a great jump in oil prices which adversely affected most industrial countries and another one in 1982; both made further for unstable financial conditions and for high interest rates which discouraged investment. Investment was further discouraged by big rises in wage costs which distorted real rates of remuneration to the detriment of profits, and gave impetus to investments which economized on labour. A further adverse influence on western countries was the rapidly emerging competition of exports from the newly industrializing countries of Asia which also had some effect on Japan.[6] Adaptation to these and concomitant technological changes, especially those connected with the 'information revolution', were obviously imperfect.[7]

Some influence, although an uneven one, on unemployment also came from participation rates in the labour force.[8] In Australia and North America the total participation rate rose from about 66% in 1960 to about 75% in 1991 but the rate for men fell while that for women rose sharply. In the European Community the total participation rate was fairly stable but here, too, the male rate fell while the female rate rose.

[6] On these points see Edmond Malinvaud *Diagnosing Unemployment* CUP 1994, pp 12-17. They are partly illustrated by these changes in mean growth rates of OECD variables.

	1964-73	1974-93
Real GDP	4.66	2.56
Real GDCF	5.70	2.06
Real Exports	8.35	4.87

[7] See OECD *Jobs Study*, 1994.

[8] idem, p16.

The consequences are shown in the following table which contrasts growth rates of real GDP for 1964-73 with those of 1974-93.

Table 3 Growth Rates of Real GDP in Selected Countries.

	Maximum	Minimum	Mean	Standard Deviation	Coefficient of Variation
1964-73					
US	5.68	0.43	3.89	1.8220	0.4680
UK	7.13	1.81	3.27	1.7478	0.5340
Germany	7.20	-0.29	4.33	2.0968	0.4848
France	6.73	4.19	5.15	0.8575	0.1665
Japan	11.44	4,31	5.91	2.4633	0.2765
Australia	6.57	2.04	5.24	1.28	0.2437
OECD	5.94	3.23	4.78	0.9674	0.2022
1974-93					
US	6.00	-2.16	2.26	2.2183	0.9835
UK	4.91	-2.19	1.63	2.3038	1.4176
Germany	5.71	-1.68	2.10	2.1089	1.0045
France	4.39	-0.89	2.13	1.4524	0.6821
Japan	6.14	-0.77	3.55	1.7695	0.4989
Australia	7.25	-1.36	2.78	1.9772	0.7122
OECD	4.56	-0.13	2.43	1.4316	0.5896

Mean growth rates about halved over the two periods and growth rates became much more variable. The result was excess supplies of labour shown in large rises of unemployment rates.

Table 4 Rates of Unemployment after 1963

	Maximum	Minimum	Mean	Standard Deviation	Coefficient of Variation
1964-73					
US	5.9	3.5	4.57	0.8642	0.1891
UK	3.7	1.5	2.53	0.7846	0.3101
Germany	2.1	0.6	1.03	0.4893	0.4555
France	2.7	1.1	2.03	0.5926	0.2919
Japan	1.4	0.8	1.13	0.2214	0.1959
1974-93					
US	9.57	5.2	6.80	1.2551	0.1845
UK	12.4	5.0	9.20	2.2194	0.2413
Germany	8.0	3.1	5.49	1.4835	0.2701
France	12.4	5.2	9.09	2.0235	0.2226
Japan	2.9	2.0	2.41	0.2948	0.1273
Australia	10.8	5.7	7.95	1.7098	0.2150
OECD	8.6	5.1	6.99	1.0480	0.1499

Note Data for the first period are national rates and taken from Thelma Liesner, *Economic Statistics 1900-1983*, The Economist 1985. Data for the second period are standardized rates taken from OECD publications.

It will be seen that over the two periods the mean rate of unemployment appears to have about quadrupled in the UK, Germany, and France although the two sets of data are not strictly comparable. In Japan it doubled but from a very low level, and in the US it rose to about 6.8%, a rather high level. This rise of mean rates was accompanied by somewhat lesser volatility.

3. COMPARISON WITH ASIAN ECONOMIES

Japan, South Korea, Taiwan, Hong Kong and Singapore are all regarded as Asian market economies, at least over the sample period 1983-1993 for which data can be obtained for all their rates of unemployment. This data is summarized in Table 4 which also gives comparable data for

unemployment in the US, the UK, Germany, Australia and the OECD countries as a whole.

Table 5 shows that the Asian countries have had much lower rates of unemployment over the sample period, their mean rates being less than half that for the OECD and, in Japan and Hong Kongo, about a third of the OECD rate. These Asian mean rates, moreover, were more uniform than the other rates shown in Table 2, varying as they did between a narrow range from 2.01% to 3.25%.

Table 5 Comparison With Asian Unemployment Rates 1983-1993

	Japan	S. Korea	Taiwan	Hong Kong	Singapore
Maximum	2.85	4.17	2.91	4.48	6.50
Minimum	2.08	2.38	1.43	1.07	1.70
Mean	2.47	3.09	2.01	2.36	3.25
Std Devn	0.2818	0.7198	0.5584	1.1254	1.4010
Coef Varn	0.1139	0.2326	0.2778	0.4703	0.4317
	US	UK	Germany	Australia	OECD
Maximum	10.27	12.57	8.10	11.07	8.73
Minimum	5.13	6.70	4.20	5.87	5.93
Mean	6.70	9.87	6.02	8.57	7.30
Std Devn	1.1921	1.7779	1.1244	1.5142	0.7689
Coef Varn	0.1780	0.1802	0.1867	0.1798	0.1054

[1] All data are recorded for December months only.
Source Reserve Bank of Australia

Table 6 shows that the lower unemployment rates in these Asian countries had some connection with their higher growth rates of real GDP and the lower variability of their growth rates.

Table 6 Unemployment and Variability of Growth in Real GDPs, 1981-1993

Country	Unemployment Mean Rate	Real GDP Growth Rates	Coefficients of Variation Growth Rates
US	6.9801	2.3612	0.8663
UK	9.9686	1.9923	1.1395
Germany	5.9141	2.077	1.0375
Australia	8.2404	2.7901	0.8341
Japan	2.4436	3.5082	0.4688
South Korea	3.0939	8.3579	0.2849
Taiwan	2.0098	7.3997	0.3339
Hong Kong	2.3530	5.8845	0.5541
Singapore	3.2455	6.9584	0.4877

Source OECD

Here the coefficient of rank correlation between unemployment and growth is -0.7500, and that between unemployment and variability of growth is -0.7667, both of which are significant at the 1% level. The closeness of these values arises from the fact that the rank correlation coefficient between growth and its variability is -0.9500 indicating a close relation between growth and stability. The lower unemployment rates in the Asian countries would seem, therefore, to have been associated with their superior growth rates and associated greater stability of growth.

The OECD *Jobs Study,* 1994 remarks that Japan's 'well-developed internal labour market' helped firms to adjust to structural changes by shifting production to higher value-added products and to upgrade the skills of their employees so as to redeploy them. The same conditions hold for Singapore and the other Asian market economies.[9] But in Europe and Australia 'policies to achieve social objectives were extended, with the unintended side effect of making markets, including importantly labour

[9] op.cit. p 25.

markets more rigid'.[10] Employers were faced with increased labour costs other than wages, and unemployment benefits also rose.

In its 1994 *Economic Outlook* the OECD gave estimates of the non-accelerating wage inflation rate of unemployment[11], which is held to reflect structural conditions in the labour market. For a major European group comprising Germany, France, Italy and the United Kingdom this rate was 4.3% in 1970-79, 8.4% in 1980-89 and 9.0% in 1990-93. But for another group comprising Japan, Australia and New Zealand, the rate was 4.8% in 1979-79, 5.8% in 1980-89 and 5.4% in 1990-93. This indicates that the lower rate of unemployment in Japan was associated with a stably structured labour market, and that the rise of unemployment rates in Europe was associated with a deterioration in the flexibility or efficiency of labour markets there.

4. SUGGESTED EXPLANATIONS

A number of explanations of unemployment have been asserted. The oldest is the "classical" view that unemployment is due to a rate of real wages which is too high to balance demand for labour with its supply so that unemployment can be reduced by cutting real wage rates.

Keynes, however, stressed that wage cuts lead to reductions in demands for goods and services and so to reduced demand for labour itself with doubtful effects on unemployment. It is now recognized that real wage cuts serve to reduce unemployment only if aggregate demand for goods and services can be maintained by offsetting measures (such as increased

[10] idem, p 30.
[11] op.cit. p 22.
The OECD's share of world trade in manufactures declined from 89% in 1975 to 78% in 1993.

government expenditure) or other influences (such as increased exports). Correspondingly, an increase of aggregate demand may have its effect in reducing unemployment partly offset by accompanying rises of real wage rates.[12]

Phillips found a negative connection between the rate of unemployment and the rate of wages which, as wages are a major component of prices, seemed to mean that by increasing inflation we could reduce unemployment. During the 1960s much econometric support was found for this idea but the "Phillips curve" seemed to break down afterwards.[13] Monetarists were naturally repulsed by the idea that inflation could cure unemployment and proposed an "expectations augmented Phillips curve" which emphasized a negative connection between expected real wage rates and unemployment, expected real wage rates being actual money wage rates divided by the rate of price inflation. This led to the concept of a 'natural' or non-accelerating rate of inflation and to a shift of emphasis from explaining unemployment to explaining inflation. Malinvaud observes to this concept is perhaps appropriate for discussions of inflation, but holds that it is inappropriate for explaining unemployment because it neglects both the demand for labour and its supply.[14]

[12] That is perhaps why Keynes took care to express the components of aggregate demand in 'wage units'. See John Hicks, *The Crisis in Keynesian Economics*, 1974; pp 9 and 59-61.

[13] Jeffrey C. Fuhrer in an article, The Phillips Curve is Alive and Well, published in *The New England Economic Review*, March/April 1995, finds that in the US, from 1960 to 1993, current inflation can be explained by previous inflation in each of 12 (monthly?) periods and by two previous unemployment rates. This may be so, but it explains inflation, not unemployment which has, in this model, the role of a determinant of inflation. Its policy prediction depends 'on the assumed path of the unemployment rate'. (p 54)

[14] See Malinvaud, op.cit p 14. He has two objections. 'First, I believe there is much more stability in the laws of the labour supply and of the demand for labour than in the macroeconomic laws describing the process of inflation. Second, studying the labour supply and the demand for labour is a more direct and more transparent approach to the explanation of unemployment than concentrating on the study of inflation; we are too little advanced in our macroeconomic knowledge for neglecting direct explanations and going straight to indirect ones.' Yet, in the United States there has been recent dissatisfaction with this natural there has been dissatisfaction with this natural rate even as an explanation of inflation; see *The Economist*, December 16th, 1995, p 82.

A further contribution came from Okun who was asked, by the US Council of Economic Advisers, to investigate the effect of reducing unemployment on the growth of real GDP. He found that a regression of quarterly data for the United States, 1947Q2 to 1960Q4, gave

$$u = .03 - 0.30y \quad r = 0.79$$

where u denotes the rate of unemployment and y the growth rate of real GNP, a distinctly Keynesian finding. The correlation is not very impressive but was taken to mean that a 1% reduction in unemployment made for a 3% growth of real GNP.[15] This relation received other econometric support and became known as 'Okun's Law' - but it broke down in the late 1970s.[16] I have found, however, that better results are obtained by using as the regressor a weighted geometric average of past growth rates and using the regression method of maximum likelihood with an autoregressive term - i.e. an adaptive expectation of growth rates with time constant 0.6.

[15] Joseph A. Pechman (editor), *Economics for Policy Making. Selected Essays of Arthur M. Okun*, p 148.

[16] Ibid. p ix. My own regression for US annual data, 1970 to 1994, gave the miserable result

$$u = 6.9102 - 0.1279y \quad R^2 = 0.0483 \quad DW = 0.6143$$

where u is the standardized rate of unemployment and y is the growth rate of real GDP.

Table 7 Regressions of Standardized Unemployment Rates on Expected Growth Rates of Real GDP.

Country	Period	Constant	Coefficient	u(-1)	Rbarsq	DW
US	1970-94	8.2395	-0.6814	0.5656	0.6003	2.0026
		(13.7765)	(-3.6436)	(3.4208)		
UK	1971-94	8.6036	-0.8284	0.9413	0.9025	1.4279
		(3.9364)	(-4.2628)	(13.6567)		
France	1978-94	9.4340	-0.3768	0.9714	0.8859	1.2290
		(3.6273)	(-2.6733)	(16.8749)		
Germany	1978-94	5.9597	-0.3850	0.8573	0.8107	1.2223
		(6.9964)	(-4.2275)	(6.8670)		
Italy	1970-93	8.8160	-0.2552	0.9697	0.9427	1.3296
		(5.1797)	(-2.5489)	(19.4463)		
Japan	1970-94	3.6186	-0.1350	0.6742	0.9345	1.4036
		(19.5566)	(-8.8600)	(4.5639)		
Australia	1978-94	10.1652	-0.8060	0.7524	0.6575	1.8723
		(8.1209)	(-2.7499)	(4.7100)		

Here the regression coefficient is correctly signed and statistically significant, at least at the 5% level, for all the countries, and the multiple correlation coefficients are reasonably high.

What if we attempt to follow Malinvaud and Lindberg[17], among others, in analysing unemployment in terms of the demand for labour and its supply? Let N denote the number of people of working age, U the number who are unemployed, L^s the supply of labour and L^d the demand for labour. Then the rate of unemployment, *u*, *is*

$$u = U/N = (L^s - L^d)/N$$

The labour participation rate, r, is L^s/N, so that

$$u = r - L^d/N.$$

[17] See Assar Linbeck, *Unemployment and Macroeconomics*. MIT Press, 1994.

This participation rate would seem to vary directly with the real wage rate, w, and inversely with the rate of unemployment benefit, b., while L^d/N would seem to vary inversely with real unit labour costs, c, which combines the influences of real wage rates and productivity of labour; it would also vary directly with the aggregate demand for goods and services, y . It would then follow that

$$u = f(w,b,p,y) \quad f_w > 0, f_b < 0, f_c > 0, f_y < 0.$$

These ideas are tested in the following table which, unfortunately, neglects b and has to use both real hourly wage rates in manufacturing and real unit labour costs in manufacturing instead of more general measures. To allow for b and other neglected influences the regression method is maximum likelihood with an autocorrelated term.

Table 8 Regressions of Unemployment Rates on Real Wage Rates, Real Unit Labour Costs and Real GDP.

	US	**UK**	**France**	**Germany**	**Italy**	**Japan**
Period	1970-94	1971-93	1978-93	1878-93	1972-93	1970-93
Constant	58.2574	30.5065	10.3944	42.5879	2.4071	-1.0242
	(2.9595)	(2.5952)	(0.6026)	(4.1799)	(0.4218)	(-0.5836)
RW	-0.5352	35.8463	68.9623	15.5762	5.2120)	-0.1610
	(-0.0572)	(4.7595)	(9.3960)	(3.6489)	(0.7389)	(-0.0696)
RULC	-19.5472	-13.7636	-35.3414	-4.7044	-1.5872	1.4906
	(-2.5402)	(-2.1686)	(-3.0219)	(-8.6855)	(-0.3966)	(1.9656)
GDP	-7.9904	-11.5640	-8.6701	-8.6855	0.9681	0.4553
	(-2.6944)	(-4.4891)	(-4.7044)	(-3.8221)	(0.4786)	(1.0405)
u(-1)	-0.6615	0.9323	0.1093	0.6152	0.8131	0.9149
	(4.4162)	(13.3624)	(0.4398)	(3.1216)	(6.5525)	(11.1000)
Rbarsq	0.4980	0.9167	0.9423	0.8126	0.9244	0.8399
DW	1.7074	1.3009	1.5910	1.2256	1.2649	1.1872

Results are unsatisfactory if only because all the coefficients for real unit labour costs are wrongly signed except for Japan. For the United States the correlation is rather low, and the coefficient for the real wage rate is wrongly signed and statistically insignificant. For Italy and Japan the coefficient for the real wage rate is also statistically insignificant. The coefficient for real GDP is also statistically insignificant for Italy and it is wrongly signed for both Italy and Japan.

Furthermore, as the next table shows, growth of real GDP has not, by itself, been a sufficient explanation of growth of the employment rate.

Table 8a OLS Regressions of Growth of Employment Rate on Growth Rate of Real GDP.

Country	Period	Constant	Coefficient	Rbarsq	DW statistic
US	1961-94	0.5506	0.3446	0.1024	1.7237
		(0.9690)	(2.1829)		
UK	1961-93	-0.8494	0.4445	0.3469	1.2412
		(-2.6386)	(4.2421)		
France	1979-93	-0.8250	0.4862	0.7392	1.9150
		(-4.6071)	(6.3781)		
Germany	1982-93	-0.6546	0.5071	0.6926	1.5519
		(-2.1489)	(5.0703)		
Italy	1961-1993	-0.5099	0.1512	0.0504	1.1719
		(-1.2912)	(1,6429)		
Japan	1961-93	0.6256	0.0901	0.1711	1.5354
		(2,9246)	(2.7575)		
Australia	1980-93	-0.2215	0.6725	0.4407	1.4750
		(-0.3147)	(3.3539)		

5. CONCLUSION

It has become obvious that there is no very simple quantitative explanation of unemployment, in terms of classical or Keynesian analysis, or by means of Phillips or Okun 'laws'. I have not considered explanations based on recent market-clearing theories derived from the idea of rational expectations because I agree with Lindbeck that the persistence of

unemployment, recently at high levels, means that 'a market-clearing approach to the labor market cannot possibly be appropriate for macroeconomic analysis'.[18] Nor is explanation in terms of labour demand and supply without difficulties. Although there are plenty of theoretical models about unemployment there is a disappointing lack of robust econometric results - apart perhaps from a lagged version of Okun's empirical finding of a connection between the rate of unemployment and the growth rate of real GDP.[19]

In these circumstances it is hardly surprising that governments have had limited success in dealing with this major defect of market economies. Pressure for such action, moreover, seems to have become rather weak through a combination of habituation to the persistence of unemployment and to benefits which have been high enough to prevent serious unrest on the part of its victims. The growth of two-income households has also made unemployment more bearable.[20]

How low can the rate of unemployment be in market economies? We have seen that, after reconstruction of wartime damage had been completed, the UK had an average rate of 2.2% in the 1969s and that Germany, France and Japan had even lower rates. Between 1979 and 1993 Japan still had a low rate, 2.41%, and from 1983 to 1993 it, together with Hong Kong and Taiwan, had a rate of under 3% while Singapore and South Korea had rates under 4%. Australia, moreover, had an average rate of just 2% between 1945/46 and 1973/74. It would seem, then, that an unemployment rate of

[18] op. cit., p 25.

[19] D.F. Hendry observes that although 'economic analysis has a perceived general success in explaining economic behaviour ... some issues have not yielded, one of the most salient being high levels of unemployment in OECD countries'. *The Economic Journal*, November 1995, p 1624.

[20] I owe this observation to Corden's article, *Macroeconomic Policy: Some International Lessons for Australia*, Economic Analysis and Policy, Journal of The Economic Society of Australia (Queensland), March 1995, p 12.

about 2-4% is quite possible if western countries had similar condition to those obtaining before 1974, or if they had to-day something like the conditions prevailing in the dynamic market economies of Asia.

The OECD study outlines 'main planks of a strategy' for dealing with unemployment.[21] Macroeconomic strategy should encourage growth and 'good structural policies' should make growth sustainable. These latter would include better frameworks for diffusing 'technical know-how', increasing flexibility of working time, fostering an 'entrepreneurial climate', making labour costs more flexible, reforming provisions that inhibit growth of employment in the private sector, strengthening 'active labour market policies', improving labour skills, and reforming unemployment benefit systems so that they 'impinge far less on the efficient functioning of labour markets'.

Cordon expresses the view that unemployment has both a cyclical and a structural element and that 'cyclical variations in unemployment cannot really be avoided'.[22] That, of course, was not the view of the Swedish budgetary reformers of the 1930s nor of the postwar makers of Keynesian policies, but it obtains support from the inadequacies of recent econometric attempts to explain or forecast unemployment. The OECD study, however, says that over the short-term macroeconomic policy should 'limit cyclical fluctuations in output and employment' by fostering 'non-inflationary growth of domestic demand where there is still substantial economic slack, while policies should be adjusted promptly to avoid a rekindling of inflation when recovery is well under way'.[23]

[21] OECD op.cit . pp 43ff.
[22] Corden, op.cit. p 12.
[23] OECD op. cit., p 44.

Such very general guidance is not very helpful, especially when one considers how much economies have become interdependent through 'liberalization' of trade and finance, and so much exposed to outside developments. That interdependence requires, if stability is to be attained, international cooperation to make appropriate changes to monetary, fiscal and trading institutions, and we know how difficult and slow this can be.

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