

COMPARING BEAR MARKETS – 1973 AND 2000

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In nominal terms, the fall in global share prices since 1999/2000 bears a close resemblance to that experienced worldwide in the years following 1972/3. This article seeks to compare the two periods of market weakness in the G-7 countries in terms not only of share prices but also focusing on macroeconomic trends, financial market developments, sectoral patterns of shareholding and potential wider economic consequences of falling share prices. It is shown that the earlier period was much more severe in terms of adverse economic developments, in particular high inflation. But the current situation also presents some risks, in particular a disruptive correction of US sectoral imbalances.

Introduction

A bear market may be defined as a prolonged period of falling equity prices, usually by 20 per cent or more over several years, accompanied by widespread pessimism about future economic prospects. In this context, the widely-analysed 1987 crash does not fit the definition of a bear market, given that the falls were concentrated in a short period, and were rapidly reversed in the context of a long-term uptrend. The period since 1999/2000 corresponds much more closely to the classic definition of a bear market. Indeed, the depth of the recent bear market in equities bears close comparison with the period following 1972/3, when the oil crisis, recession and financial instability combined to create the sharpest fall in global share prices since the Great Depression and World War Two.

In this article, we compare and contrast the two periods in the G-7 countries, in the light of equity valuation theory, with the aim of elucidating the causes, features and consequences of the current situation. We focus in particular on the periods 1972–75 and 1998–2001 which incorporate the peak of share prices and the decline towards a trough, adding data for 2002 where feasible and relevant. First, we show the relative changes in nominal and real share prices before going on to macroeconomic, financial and portfolio aspects of the crises. Before concluding, we also outline recent empirical work on the causal role of equity prices in the economies of the G-7 and show trends in relevant indicators.

Share price changes during the bear periods

The data used for share prices are from MSCI ‘official price indices’. In most of the article, the data exclude dividends, given the main interest is in changes in share prices *per se*. We focus on the G-7 countries’ experience, while noting that the other OECD and emerging market countries have generally experienced similar trends.

Tables 1 and 2 provide basic information on trends in share prices during the two bear periods. Looking first at the mid-1970s period in nominal terms, it can be seen that prices in the UK and Germany peaked first, with France and Italy peaking a year later. The pivotal market, the US, peaked in December 1972, as did the world index, of which the US is the main component. Whereas the peaks were dispersed in time, the troughs were much more closely aligned, between September and December 1974 as the oil crisis and other economic and financial events took their toll. Nominal declines were sizeable in all markets, with the UK experiencing the largest fall of 68.5 per cent (also at the time of the miners’ strike, power cuts and the three-day week). The rest of the G-7 was in the range 33–53 per cent, with the US, France and Italy being relatively harder hit. Recovery of nominal share prices from the 1974 trough was rapid in Germany, where it only took 18 months, and also in the UK. Elsewhere, the recovery of nominal values to their 1972–3 level took 6–7 years to be completed.

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Table 1. Changes in share prices from mid-1970s peak

	UK	US	Germany	Japan	Canada	France	Italy
Peak of share prices	Aug. 1972	Dec. 1972	July 1972	Jan. 1973	Dec. 1972	April 1973	June 1973
Fall to trough in nominal terms (date of trough)	68.5% (Dec. 1974)	48.4% (Sept. 1974)	34.4% (Sept. 1974)	40.2% (Oct. 1974)	35.5% (Sept. 1974)	52.7% (Sept. 1974)	42.9% (Dec. 1974)
Return to original nominal level	Sept. 1977	Nov. 1980	March 1976	Jan. 1979	Jan. 1979	Sept. 1979	Oct. 1980
Fall to trough in real terms (date of trough)	77.2% (Dec. 1974)	56.1% (Sept. 1974)	43.0% (Sept. 1974)	56.2% (Oct. 1974)	46.7% (Dec. 1974)	68.1% (April 1977)	82.4% (Dec. 1977)
Return to original real level	May 1987	August 1993	June 1985	Feb. 1985	Oct. 1996	Aug. 1986	August 1986

Source: MSCI official price indices in local currency, Datastream.

Table 2. Changes in share prices from 1999–2000 peak

	UK	US	Germany	Japan	Canada	France	Italy
Peak of share prices	Dec. 1999	March 1900	Feb. 2000	March 2000	Aug. 2000	Aug. 2000	Oct. 2000
Trough to date	Sept. 2002	Sept. 2002	Sept. 2002	Oct. 2002	Sept. 2002	Sept. 2002	Sept. 2002
Nominal fall to trough	43.5%	47.9%	65.3%	47.8%	48.9%	56.0%	50.1%
Nominal fall to December 2002	40.3%	43.7%	63.7%	48.8%	45.2%	52.5%	45.5%
Real fall to November 2002	40.6%	43.6%	60.2%	44.4%	48.2%	50.5%	45.7%

Source: See table 1.

Of interest as these nominal declines are, they ignore the fact that inflation was high in the 1970s, as shown in table 4 below. Measuring real share prices by the change in the index divided by the national CPI, the falls in many countries were much larger than the nominal declines. In the UK,¹ France and Italy, the troughs of real share prices were around 70–80 per cent below their previous peaks. In the US, Canada, Germany and Japan, the falls were a still-sizeable 40–60 per cent. Shares took an extremely long time to recover their original real value (noting again that we are abstracting from dividends). The earliest to regain their previous levels were Germany and Japan, dynamic economies at the time, where the recovery took eleven years to 1985. Elsewhere, only the UK, Italy (briefly) and France recovered their previous real value in the 1980s. The US market only recovered its end-1972 real value in August 1993, and Canada in October 1996. The severity of the mid-1970s bear market is thus underlined.

The current bear market is still ongoing, so much of the above detail cannot be reproduced for it. Suffice to note that the peaks were somewhat closer together, with the UK being the earliest and Italy last to enter the bear phase. Declines up to September 2002 were comparable to those in the mid-1970s in nominal terms, with the decline being 45–65 per cent. Although there has been some recovery since, its durability remains an open question at the end of 2002, and shares are still far

down from their peaks. There appears to be much closer similarity in terms of the decline experienced, perhaps reflecting closer international integration of equity markets (table 9). Given the low level of inflation, nominal share price falls are comparable to real declines.

Macroeconomic background

A helpful way of considering equity price determination is in terms of the Gordon's (1962) growth model. This highlights expected dividend growth (g), as well as real long-term interest rates (rr) and share price volatility as a proxy for the risk premium (pr), as key determinants of share valuations (V). Equation (1) shows that the value of a share (or a market index) depends on the dividend and the future price. The latter, as shown in equation (2), depends on future dividends suitably discounted. As shown in equation (3), if dividend growth, the long rate and the risk premium are expected to be constant, a series of discounted dividends can be simplified to an expression in dividend growth, the real long rate, the risk premium and the level of dividends:

$$V_o = (D_0(1+g) + P_{t+1}) / (1 + (rr_{t+1} + pr_{t+1})) \quad (1)$$

$$V_o = D_{t+1} / (1 + (rr_{t+1} + pr_{t+1})) \\ + D_{t+2} / (1 + (rr_{t+2} + pr_{t+2}))^2 \\ + D_{t+3} / (1 + (rr_{t+3} + pr_{t+3}))^3 \dots \quad (2)$$

$$V_o = D_{t+1} / ((rr + pr) - g) \quad (3)$$

Applying this theory at a macro level, since capital's share of GDP is bounded, GDP growth itself gives a helpful proxy for dividend growth. The most relevant variable is trend growth,² although cyclical factors are also likely to influence prices. In table 3 we highlight developments in economic growth during the recent period and in the mid-1970s, as well as showing a proxy for trend growth based on a Hodrick-Prescott filter on quarterly GDP with a smoothing factor of 1600.³

The early 1970s were seen as a period of extremely rapid growth in output, with all of the G-7 except Italy growing at over 4 per cent in 1972Q4, the US by 7.2 per cent and Japan by 10.2 per cent. If such growth rates, well in excess of likely productive potential, were seen as sustainable, then a high value of shares prior to the bear market might have been seen as justifiable. Very rapid growth continued in most countries for much of 1973. In 1974, by contrast, after oil prices increased, a sharp recession hit all of the G-7 other than Canada (owing to natural resources in that country). It is apparent that the peak of share prices took place well before the recession itself, showing the forward-looking element in share price determination. In contrast, the trough of the recession (1974Q4 or 1975Q1) is close to the trough of share prices. Except in Japan, growth in 1975 remained anaemic, justifying a slow recovery in share prices, even in nominal terms. Another key factor was the growing realisation that the capital stock had to be written down, since much of it had been installed on the unjustified assumption that oil prices would remain at their pre-1973 level. Note that other aspects underlying weak growth were industrial unrest and exchange rate volatility after the breakdown of Bretton Woods.⁴ Accordingly, as shown in the lower half of table 3, the estimate of trend growth fell in all countries except the US.

The period since 1998 was less extreme in most countries, with growth close to its trend rate. The main exception, and the driver of world markets in recent years, was the US, where growth in 1998–9 was well over 4 per cent, far above trend. Canada, France and the UK also retained a fairly strong growth rate, while growth in Germany, Italy and Japan was at times below estimates of trend. It is only in 2001 that growth slowed sharply across the whole of the G-7, and even then growth has not been negative except in Japan, while in 2002 growth generally recovered. The apparent reversal in growth prospects is accordingly much less dramatic in 1998–2001 and hence the justification for a bear market on that basis alone is less strong. Neither have

we seen a sharp writedown of the entire capital stock comparable to that after the oil price shock. The main exception may be the US, where potential growth rates were considered to have increased sharply in the late 1990s, in line with trends in measured labour productivity, and this was held to justify high share prices. It can be seen in the lower half of the table that trend growth in the US fell most sharply (although the UK, Canada and Japan also saw a slowdown on this measure) and the large volume of IT investment in the US and in telecoms generally proved in retrospect to be excessive, implying some writedown of capital.

In theory, share prices should be determined in real terms and not affected by inflation. If real interest rates fall in inflationary periods, share prices could even be boosted. On the other hand, some theorists (Modigliani and Cohn, 1989) have suggested that inflation could interact with taxation systems to reduce corporate profitability. This would be particularly the case when there is fiscal drag, with lack of appropriate indexation of tax bands. Lack of indexed allowances for stock relief was a particular problem in countries such as the UK in the 1970s, with firms being held to profit from the rise in value of their inventories, although the impact on profits was wholly offset by rising costs. Equally, inflation might be expected to increase uncertainty and hence the risk premium required for holding equities. Certainly the data in table 4 confirm that inflation was extremely high and volatile in 1972–5, as countries absorbed the oil price shock. Germany, where the Bundesbank had considerable competence and credibility in counterinflationary monetary policies, was the main exception. Even Japan saw inflation rise to 21 per cent in 1974. By comparison, as noted, there was very little inflation in 1998–2001, and only a mild pick-up in some countries in 2002. Indeed, concerns have focused to some extent on the possibility of deflation, which have been realised for Japan. Deflation may be more adverse than inflation for share valuations owing, *inter alia*, to the rise in the real value of corporate and household debt, consequent default risk and downward pressure on aggregate demand.

A further macroeconomic aspect worthy of consideration is the state of the sectoral financial balances. These summarise the extent to which the government, private or external sectors provide or require financial flows from each other. Obviously, current account imbalances may at times be of concern to equity markets if they necessitate a tightening of monetary and fiscal policy, reducing growth and hence

Table 3. Real GDP growth (actual and trend)

Fourth quarter	UK	US	Germany	Japan	Canada	France	Italy
<i>Actual growth</i>							
1972	5.1	7.2	5.5	10.2	5.0	4.4	2.9
1973	3.9	4.0	2.8	5.9	6.3	5.3	9.9
1974	-1.1	-2.1	-1.5	-2.0	2.2	0.9	-0.2
1975	0.2	2.6	1.6	4.6	2.9	1.5	0.7
1998	2.6	4.8	0.7	-1.2	4.4	3.0	0.6
1999	3.2	4.3	3.3	0.4	5.7	4.1	2.9
2000	2.2	2.3	1.9	4.0	3.5	3.8	2.6
2001	1.6	0.1	0.1	-2.7	0.8	0.3	0.6
2002Q3	2.1	3.3	0.4	1.3	4.0	0.8	0.5
<i>Trend growth (estimate based on Hodrick-Prescott filter)</i>							
1972	2.8	3.1	3.3	5.7	5.1	4.6	3.9
1973	2.4	2.9	2.7	4.6	4.9	3.9	3.7
1974	1.9	2.8	2.3	3.8	4.6	3.3	3.5
1975	1.7	3.1	2.3	3.7	4.3	3.0	3.4
1998	2.8	3.8	1.6	0.9	3.9	2.7	1.9
1999	2.7	3.5	1.7	0.7	3.8	2.8	2.0
2000	2.5	3.0	1.6	0.5	3.5	2.7	1.9
2001	2.3	2.6	1.5	0.4	3.3	2.5	1.8

Source: Datastream.

Table 4. Inflation (CPI), per cent

End year	UK	US	Germany	Japan	Canada	France	Italy
1972	7.7	3.4	6.4	7.1	5.1	6.9	7.4
1973	10.6	8.7	7.8	16.0	9.4	8.3	12.4
1974	19.1	12.3	5.8	20.9	12.3	15.0	25.2
1975	24.9	6.9	5.5	8.4	9.5	9.7	11.1
1998	2.8	1.6	0.4	0.8	1.0	0.2	1.5
1999	1.8	2.7	1.2	-1.4	2.6	1.3	2.1
2000	2.9	3.4	2.2	-0.8	3.2	1.6	2.7
2001	0.7	1.6	1.7	-1.5	0.7	1.4	2.4
11/2002	2.6	2.2	1.1	-0.4	4.3	2.2	2.8

Source: Datastream.

dividends. Equally, although initial effects of fiscal expansion may be positive, public sector deficits may have adverse consequences if public debt is high and crowds out equity investment via higher real interest rates. Finally, private sector deficits are typical of investment booms, which as discussed below may accompany rising share prices. But they also imply rising debt in the corporate sector or (since financial liberalisation) in the household sector. Experience suggests that private sector imbalances can reverse themselves very quickly and thereby endanger economic growth, impacting on share prices, especially when property prices fall (Davis, 1995a).

Table 5. Sector financial balances/GDP, per cent

Annual averages	UK	US	Germany	Japan	Canada	France	Italy
<i>Current account</i>							
1972	0.2	-0.5	0.4	2.1	-2.2	0.1	1.4
1973	-1.5	0.5	1.6	0.0	-1.6	0.6	-1.7
1974	-4.0	0.1	2.8	-1.1	-2.9	-1.4	-4.5
1975	-1.7	1.1	1.1	-0.1	-4.8	0.8	-0.3
<i>Government balance</i>							
1972	-1.6	-1.2	-0.5	-0.1	-1.0	1.4	-8.2
1973	-3.2	-0.3	1.2	0.4	0.6	1.4	-7.7
1974	-3.5	-1.2	-1.3	0.3	1.1	1.0	-7.5
1975	-4.4	-5.1	-5.6	-2.0	-3.5	-1.6	-12.3
<i>Private sector balance</i>							
1972	1.9	0.8	1.0	2.2	-1.2	-1.2	9.7
1973	1.7	0.9	0.4	-0.4	-2.2	-0.9	5.9
1974	-0.5	1.3	4.0	-1.4	-4.0	-2.4	3.0
1975	2.8	6.2	6.7	1.9	-1.3	2.4	12.0
<i>Current account</i>							
1998	-0.6	-2.3	-0.3	3.0	-1.2	2.6	1.7
1999	-2.2	-3.2	-0.9	2.6	0.2	2.4	0.7
2000	-2.0	-4.2	-1.2	2.5	2.6	1.5	-0.5
2001	-1.6	-3.9	0.3	2.1	2.7	1.6	0.0
<i>Government balance</i>							
1998	0.2	0.3	-2.2	-5.5	0.1	-2.7	-3.1
1999	1.1	0.8	-1.6	-7.1	1.7	-1.6	-1.8
2000	1.6	1.5	1.2	-7.4	3.1	-1.3	-0.6
2001	0.9	-0.4	-2.7	-7.1	1.8	-1.4	-2.2
<i>Private sector balance</i>							
1998	-0.8	-2.6	1.9	8.5	-1.3	5.3	4.8
1999	-3.3	-4.1	0.6	9.7	-1.5	4.0	2.5
2000	-3.7	-5.7	-2.4	9.9	-0.5	2.9	0.0
2001	-2.5	-3.5	3.0	9.3	1.0	3.0	2.2

Source: Datastream.

The data suggest that current account imbalances were small in 1972–3, and even in 1974 only the UK and Italy saw deficits of 4 per cent of GDP or more. Germany retained a surplus throughout. In most countries, a similar comment can be made about the government position. Italy, on the other hand, was already running immense deficits of 8 per cent of GDP in 1972, which grew during the period shown. By 1975, all of the G-7 other than France and Japan had fiscal deficits well in excess of 3 per cent of GDP. The recovery in share prices suggests that the market took a Keynesian view of the deficits at the time (i.e. they focused on the effect in stimulating demand rather than the effect on real interest rates or future taxation).

Looking at the private sector position (estimated by residual from the other two),⁵ there was marked volatility in a number of countries in the 1970s, with a

shift equivalent to 5 per cent of GDP in 1974–5 in the US and France, and 9 per cent of GDP in Italy. Other countries saw smaller shifts in the same direction, as private expenditure contracted. As regards the later period, the US is the most interesting case. It features the well-known twin deficits in the current account and private sector, which entailed foreigners purchasing US securities to finance private sector spending, while the government was in mild surplus. Counterparts include current account surpluses in France, Japan and Canada. There has been a collapse in investment in the US since 2000, but consumption remains strong, and is hence driving continuing private sector borrowing, notably via mortgage refinancing (Deep and Domanski, 2002). The UK shows some echo of this pattern. In both countries, house prices are rising, as discussed below, and in the US the government was also in deficit from 2001.⁶ The other outlier is Japan, where the fiscal deficit is comparable to that of Italy in the mid-1970s, in an attempt to drive an economic recovery after the prolonged stagnation seen over the 1990s.

Financial aspects of the bear markets

As noted, risk and the real long rate are two factors which help to determine the equilibrium return on equity. Dividend yields may also be relevant valuation indicators. Furthermore, changing correlations with the world index are an important effect of a bear market. We examine these in turn before commenting on behaviour of another key asset class, namely residential property.

As regards risk, one may distinguish unconditional volatility (total volatility, as measured by the variance or standard deviation of changes in prices) and conditional or expected volatility (that is, the level of volatility which may be predicted given background features such as volatilities' own past history). An analysis of patterns of the latter is required to determine whether market responses to shocks, as opposed to the changing distribution of random and unanticipated shocks themselves, are responsible for rises in volatility.

The distinction between unconditional and conditional volatility is a potentially important one, since heightened unconditional volatility alone may merely reflect a greater incidence of random and independent shocks to the market, i.e. greater *risk*, without a change in underlying perceptions as to the market itself on the part of market participants. On the other hand, heightened conditional volatility may indicate greater

Table 6. Volatility of share prices (per cent)

	UK	US	Germ- any	Japan	Can- da	France	Italy	World	Coun- try ave.
<i>Standard deviations of monthly per cent changes</i>									
1972	4.80	1.70	3.84	3.75	2.89	4.72	4.08	1.96	3.68
1973	4.55	4.11	5.85	5.21	4.54	5.31	9.38	4.08	5.57
1974	9.09	7.04	4.19	5.87	6.54	7.49	7.70	5.13	6.85
1975	14.80	5.19	5.66	5.04	5.71	7.71	5.82	4.78	7.13
1998	4.89	6.29	7.59	6.11	7.88	7.83	10.04	5.87	7.23
1999	3.34	3.87	6.69	4.93	4.76	4.48	5.58	3.57	4.81
2000	4.32	4.90	5.57	3.91	6.76	4.54	5.57	3.71	5.08
2001	4.02	5.73	8.05	4.79	6.72	6.52	5.97	5.30	5.97
2002	5.92	6.18	11.32	5.04	4.05	8.11	7.34	5.89	6.85

Source: MSCI.

Table 7. Conditional volatility (standard deviation derived from GARCH estimation)

	UK	US	Germ- any	Japan	Can- da	France	Italy	World	Coun- try ave.
1972	4.94	3.89	5.11	6.01	4.72	5.74	6.24	3.88	5.23
1973	5.16	4.00	5.06	6.19	4.70	5.62	7.57	3.96	5.47
1974	9.15	5.22	5.68	5.76	5.84	6.69	7.19	4.33	6.50
1975	12.52	5.83	5.63	5.74	5.30	6.79	7.02	4.24	6.98
1998	5.27	4.83	7.42	5.17	5.80	6.58	8.02	4.22	6.16
1999	4.78	4.82	6.90	5.85	4.87	5.74	6.61	4.01	5.65
2000	4.97	4.70	7.14	5.14	5.80	5.89	6.91	4.05	5.79
2001	4.96	5.07	6.91	5.00	5.84	6.19	6.77	4.22	5.82
2002	5.72	5.12	8.94	5.13	4.90	6.75	6.95	4.33	6.22
<i>Difference between unconditional and conditional volatility</i>									
1972	-0.14	-2.19	-1.27	-2.25	-1.83	-1.02	-2.15	-1.92	-1.55
1973	-0.60	0.12	0.79	-0.98	-0.16	-0.30	1.81	0.13	0.10
1974	-0.06	1.82	-1.48	0.11	0.70	0.79	0.51	0.80	0.34
1975	2.28	-0.64	0.03	-0.70	0.41	0.92	-1.20	0.54	0.16
1998	-0.38	1.46	0.17	0.94	2.08	1.25	2.02	1.65	1.08
1999	-1.44	-0.95	-0.21	-0.93	-0.11	-1.27	-1.03	-0.44	-0.85
2000	-0.65	0.20	-1.57	-1.23	0.96	-1.35	-1.34	-0.34	-0.71
2001	-0.94	0.66	1.14	-0.21	0.87	0.33	-0.81	1.09	0.15
2002	0.20	1.05	2.38	-0.10	-0.85	1.36	0.39	1.55	0.63

Source: MSCI.

uncertainty on the part of the market regarding the direction of the market. Expected volatility is also of relevance as a key component of the risk premium required by investors to hold shares and of the appropriate pricing of options. Recent advances in econometric modelling of financial data (using the generalised autoregressive conditional heteroskedastic (GARCH) framework, introduced by Bollerslev, 1986)

allow one to estimate the nature of the process generating conditional volatility as well as the level of conditional volatility itself. This we use in the current paper. (Another recent use of conditional volatility is in NIESR work on uncertainty and fixed investment, see Byrne and Davis, 2002.)

As shown in table 6, the unconditional volatility of nominal share prices in the 1972–75 period steadily increased, with most countries as well as the world index seeing a peak in volatility in 1974–5. High inflation probably added to volatility at the time. Note the extreme volatility of the UK market in 1975 and Italy in 1973. Volatility in 1998–2001 was less dramatic, with average volatility showing an initial peak followed by a rise over 1999–2001 (1998 was a volatile year owing to the Russia/LTCM crisis). However, the year 2002 was exceptional for some countries, notably Germany, which saw volatility comparable to the UK in 1975.

Conditional volatility (table 7) follows a broadly similar pattern, with a steady rise over 1972–5 and a peak in 1998 followed, unlike unconditional volatility, by relatively flat volatility in 1999–2001. The differences between the two are potentially instructive. In 1972, unconditional volatility was below conditional, suggesting uncertainty in markets at the sustainability of the bull market. Thereafter conditional volatility fell somewhat short of unconditional, especially for the US in 1974 and the UK in 1975, when markets were hit by unpredictable and uncorrelated shocks such as the oil shock, as well as expected volatility. Similarly, in 1998 the markets may not have anticipated the level of volatility seen in the Russia/LTCM crisis and hence unconditional was highest, but thereafter as the bear market took hold it was conditional volatility that tended to be higher till 2002 when unconditional was again higher. It is clear from the conditional volatility measures that the UK and US experienced lower levels than the other markets, which may reflect thinness, low liquidity and the greater relative influence of foreign investors in the latter. The same argument applies to the US in 1972–4 where volatility was lower than in other markets.

Of course, financial uncertainty can be a result of diverse shocks, one of which is financial instability *per se*, where the 1972–5 period saw the failure of major international banks such as Franklin National in the US and Herstatt in Germany, as well as the secondary banking crisis in the UK (Davis, 1995b). Political

uncertainty, such as the fall of Nixon, also played a role in the earlier period. To date, financial and political instability has been much less severe since the late 1990s, although the Enron and WorldCom scandals in the US have helped to increase mistrust in share valuations and may consequently have contributed to falls in share prices.

Table 8 supplements these equity-price based measures with the dividend yield, indicating the current income return on equity purchase. These are derived from the difference between the return on the MSCI gross index and the price index. The main interest is in the yield at the peak of the previous bull market, which when compared with its long run average gives an indication of the degree of overvaluation of shares. Usually in the succeeding bear market this ratio increases (dividends are stickier than prices). Table 8 shows that yields were close to or above long-term averages in 1972, but declined quite sharply from 1972 to 1973 after share prices peaked, except in Italy.

Yields recovered markedly as share prices fell in succeeding years, notably in the UK, to well above their long-run averages; Italy again was the exception. In the 1998–2001 period, dividend yields were in all cases far lower than their long-run averages and actually fell as the bear market worsened, suggesting sizeable dividend cuts, with some recovery in yields in 2002 only. This partly reflects the willingness of firms to distribute profits via share buybacks rather than dividends in the later period. The differing behaviour made it harder to assess relative overvaluation in the two periods. Nevertheless, low dividend yields in the recent period have been viewed as a warning of possible

Table 8. Dividend yields, per cent

	UK	US	Germ- any	Japan	Canada	France	Italy
1972	4.2	3.3	4.3	5.4	3.9	4.9	2.9
1973	3.1	2.7	3.1	2.9	3.3	4.2	3.2
1974	3.2	2.8	3.8	2.0	3.1	3.4	1.9
1975	11.0	4.9	5.6	2.8	4.8	7.2	2.3
1998	3.3	2.0	1.8	0.8	2.0	2.0	2.7
1999	2.8	1.7	1.6	1.0	2.1	1.7	1.7
2000	2.4	1.3	1.9	0.7	2.1	1.6	2.2
2001	2.2	1.0	1.6	0.7	1.1	1.1	2.1
2002	2.3	1.2	1.3	0.8	1.6	1.3	2.5
1970–2002 average	4.8	3.9	2.9	1.7	3.6	3.9	2.9

Source: Derived from MSCI.

Table 9. Correlation of share prices with world indices

	UK	US	Germ- any	Japan	Canada	France	Italy	Country ave.
1972	0.74	0.83	0.47	0.63	0.66	0.17	0.22	0.53
1973	0.64	0.96	0.51	0.65	0.88	0.45	0.03	0.59
1974	0.59	0.95	0.39	0.09	0.78	0.80	0.50	0.59
1975	0.72	0.96	0.51	0.72	0.72	0.50	0.69	0.69
1998	0.92	0.94	0.87	0.75	0.93	0.81	0.72	0.85
1999	0.71	0.97	0.88	0.61	0.85	0.86	0.54	0.77
2000	0.78	0.96	0.44	0.54	0.81	0.66	0.22	0.63
2001	0.96	0.98	0.95	0.72	0.89	0.95	0.90	0.91
2002	0.98	0.99	0.95	0.40	0.88	0.97	0.95	0.88

Source: MSCI.

Table 10. Real bond yields, per cent

Annual ave.	UK	US	Germ- any	Japan	Canada	France	Italy	Average ave.
1972	0.7	2.8	1.5	-0.4	0.8	0.4	-0.8	0.7
1973	0.0	-1.9	1.5	-8.7	-3.1	0.0	-4.2	-2.3
1974	-4.9	-4.8	4.7	-11.6	-4.7	-4.6	-15.1	-5.9
1975	-11.7	1.1	3.2	0.8	-1.7	0.0	-0.2	-1.2
1998	2.8	3.7	4.2	0.6	4.1	4.4	3.4	3.3
1999	3.3	3.0	3.3	3.1	3.0	3.3	2.6	3.1
2000	2.4	2.6	3.1	2.6	2.5	3.8	2.9	2.8
2001	4.2	3.5	3.1	2.8	4.8	3.6	2.8	3.5
2002Q3	3.3	3.3	3.9	2.1	3.1	3.2	2.6	3.1

Source: Datastream.

overvaluation by some economists (such as Campbell and Shiller, 2001).

The correlation of domestic share prices with world indices tends to increase in bear markets, reducing the seeming diversification benefits of international investment. This pattern reflects common behaviour of institutional investors (often repatriating their holdings) as well as common fundamentals across the world. For example, in 1972 the average correlation of monthly share price changes with those in the world market was 0.53 while in 1975 it was 0.69. This is not precisely mirrored in the country data but a general tendency is apparent (the US correlation is high because it represents a large share of the world market). Meanwhile in the recent period, when global financial integration had in any case ensured a much higher level of correlations, the highest correlation is again apparent late in the bear market in 2001 and 2002, with all countries

Table 11. Annual house price increases, per cent

	UK	US	Germ- any	Japan	Canada	France	Italy	Country ave.
1972	34.4	7.2	32.0	15.3	8.2	12.6	4.9	16.4
1973	37.1	11.9	20.9	33.6	21.1	11.2	9.6	20.7
1974	8.0	9.1	0.0	17.5	27.5	18.1	70.0	21.5
1975	6.0	6.3	-7.4	-4.5	11.6	10.6	14.6	5.3
1998	11.5	5.2	-5.1	-1.4	-1.3	3.5	1.6	2.0
1999	10.9	5.5	-2.6	-2.7	3.7	8.0	5.3	4.0
2000	14.9	7.8	-2.4	-4.1	3.8	10.3	7.9	5.5
2001	8.1	8.6	-1.2	-4.1	4.7	6.9	8.4	4.5
2002 Q2	13.7	6.5		-4.4	9.9			
1972	26.3	3.6	25.0	8.9	3.3	5.9	-1.1	10.3
1973	26.4	6.1	13.5	20.4	12.9	3.5	-4.3	11.2
1974	-7.8	-1.0	-6.7	-2.9	14.7	2.8	39.6	5.5
1975	-14.1	-1.7	-12.6	-14.4	0.3	-1.0	-1.1	-6.4
1998	8.4	4.1	-6.1	-1.2	-2.5	2.9	-0.5	0.7
1999	9.2	3.8	-3.0	-2.2	2.0	7.8	3.1	3.0
2000	14.0	5.1	-3.9	-3.1	1.7	9.0	4.9	4.0
2001	7.7	6.5	-3.1	-2.1	2.7	5.4	5.3	3.2
2002 Q2	13.1	5.3		-2.9	8.5			

Source: Bank for International Settlements (using national data).

except Japan having correlations of 0.88 or more.

As noted, the real bond yield is another key determinant of share prices. Conventionally, a rise in the real bond yield is expected to put downward pressure on share prices as it discounts future cash flows more heavily. Also, bonds become a more attractive investment from a portfolio point of view for investors. On the other hand, in the early 1970s, a period of rapid inflation led to negative real bond yields at the same time as equity prices collapsed. Table 10 shows estimates based on a crude deduction of current inflation from the nominal yield to maturity. We prefer this method to use of smoothing or forecasts as it was clear, for example, that investors in 1972–3 did not anticipate the level of inflation in 1974–5, and hence smoothing would underestimate real bond yields in 1972–3. Another alternative would be use of yields on price-index linked bonds. But these were not available in the 1970s and the yield in the UK at present is distorted by ‘preferred habitat’ demand of long-term UK institutional investors.

Heightened macroeconomic and financial uncertainty as well as the above-mentioned fiscal drag effects may help to explain the pattern of negative real yields. Note

that in Germany, where inflation was lower, real bond yields were always positive over this period. In contrast, the 1998–2001 period did experience high real bond yields, although they tended not to increase until 2001, when the bear market was well underway, and fell back in 2002. Hence it is not clear that trends in real bond yields were a strong causal factor in lower share prices.

Long-term bonds are usually seen as the closest substitute for equities, and hence the most relevant yield to compare them with, as well as being the discount factor for future earnings. However, in the recent bear phase there has been a remarkable buoyancy of house prices. They may to some extent have been seen as an ‘alternative asset’ to shares for households. Even abstracting from trends in personal income and interest rates, such behaviour would have been less likely in the 1970s, owing to the lesser liquidity of housing markets and lesser availability of mortgage finance prior to

financial liberalisation in most countries. Certainly, the data suggest that nominal house prices were affected similarly to shares in 1974–5, although falls were less extreme with nominal rises continuing except in Germany and Japan, while real prices fell sharply in the prevailing inflation. Real declines were especially marked in the UK, Germany and Japan. In contrast, house prices showed marked resilience in 1998–2001 except in Germany and Japan, while 2002 showed even more marked increases in the UK and Canada.

Portfolio holdings during bear markets

We turn now to assessing which sectors of the economy bought or sold shares during the bear markets. *A priori*, we would expect more risk-averse sectors such as households to decumulate, as well as the rest of the world sector, where foreign investors may seek to repatriate assets to markets they know better and whose

Table 12A. Sectoral holdings of equities (end-year, percent of total)

	1972	1973	1974	1975	1998	1999	2000	2001
<i>UK</i>								
Households	54.5	47.8	43.4	45.9	19.8	20.9	18.9	15.3
Companies	11.9	12.8	12.7	12.3	10.6	12.7	16.6	19.0
Government	na	na	na	na	0.1	0.1	0.1	0.1
Banks	na	na	na	na	2.3	2.0	2.5	2.7
Life/pension	19.4	26.2	31.4	28.0	35.1	32.9	28.5	27.5
Mutual funds	14.2	13.3	12.5	13.8	11.0	11.3	11.1	12.2
Rest of world	na	na	na	na	21.0	20.1	22.3	23.2
<i>US</i>								
Households	66.7	63.0	58.6	59.0	45.6	46.6	42.5	40.0
Companies	na	na	na	na	na	na	na	na
Government	0.0	0.0	0.0	0.0	0.7	0.6	0.7	0.8
Banks	10.7	12.0	12.9	11.8	2.6	2.2	2.2	2.3
Life/pension	14.6	16.7	19.7	20.6	26.7	24.7	26.5	27.5
Mutual funds	4.7	4.7	5.1	4.7	16.5	17.6	18.9	19.4
Rest of world	3.2	3.5	3.8	3.9	8.0	8.2	9.2	10.1
<i>Germany</i>								
Households	23.3	23.6	22.7	22.1	18.8	18.0	17.3	15.2
Companies	35.8	36.0	36.8	37.6	34.1	30.7	31.9	32.5
Government	11.7	11.2	10.9	10.9	1.4	0.8	0.7	0.7
Banks	7.9	7.8	7.9	7.8	12.1	13.3	13.1	13.0
Life/pension	4.6	4.3	4.3	4.3	8.3	8.7	9.0	9.7
Mutual funds	na	na	na	na	13.6	15.0	13.1	14.9
Rest of world	16.8	17.1	17.3	17.3	11.6	13.6	15.0	14.0
<i>Japan</i>								
Households	42.6	36.4	38.4	39.2	22.4	23.1	23.8	23.3
Companies	38.4	41.4	38.1	39.3	25.3	28.4	24.6	23.0
Government	0.4	0.6	0.7	0.6	14.7	9.9	12.6	15.8
Banks	6.8	9.0	10.2	8.5	13.0	10.9	10.7	11.1
Insurance	5.9	7.7	8.9	7.6	14.4	11.4	13.1	12.1
Mutual funds	1.5	1.7	1.9	2.0	1.0	1.5	2.1	2.5
Rest of world	4.3	3.2	1.9	2.8	9.2	14.8	13.1	12.1

Source: National flow-of-funds balance sheet data. Note that UK data for 1972–5 are incomplete and not comparable with 1998–2001.

Table 12B. Sectoral holdings of equities (end-year, percent of total)

	1972	1973	1974	1975	1998	1999	2000	2001
<i>Canada</i>								
Households	53.9	55.1	58.7	60.2	41.6	40.9	39.7	41.4
Companies	23.9	22.7	20.7	19.6	26.5	26.6	26.6	25.5
Government	0.6	0.6	0.8	0.8	2.8	3.3	3.6	4.1
Banks	0.4	0.4	0.5	0.5	2.9	3.7	3.8	4.0
Life/pension	9.2	9.5	8.7	8.6	13.8	12.8	13.4	12.9
Mutual funds	2.1	2.0	1.8	1.5	7.4	7.7	7.3	6.6
Rest of the world	9.9	9.8	8.9	8.8	5.0	5.0	5.6	5.5
<i>France</i>								
Households	29.6	28.6	25.6	24.7	23.5	23.2	22.0	21.7
Companies	42.1	41.2	37.0	35.6	34.6	34.7	35.7	36.0
Government	11.5	10.9	15.5	17.5	4.4	4.1	3.9	3.8
Banks	3.5	4.0	5.2	4.4	10.8	8.5	8.9	9.1
Life/pension	2.6	3.1	3.9	4.0	4.3	4.1	4.4	4.5
Mutual funds	1.4	1.4	1.3	1.5	4.1	4.7	5.3	5.6
Rest of World	9.1	10.7	11.1	12.2	18.3	20.5	19.8	19.4
<i>Italy</i>								
Households	21.9	22.7	15.5	10.0	31.4	33.9	32.5	24.1
Companies	36.5	38.2	36.2	35.1	20.8	24.8	28.6	39.7
Government	16.5	15.9	19.3	21.2	9.5	5.2	4.8	4.6
Banks	5.3	5.4	7.2	10.1	6.0	6.1	6.1	5.4
Life/pension	1.4	1.3	1.6	2.0	4.0	4.4	4.0	3.5
Mutual funds	na	na	na	na	15.7	15.0	15.2	13.9
Rest of world	18.5	16.5	20.2	21.6	12.6	10.6	8.9	8.7

Source: National flow-of-funds balance sheet data.

denomination matches their liabilities. We sought to assess this by observing patterns of portfolio holdings during the bear periods, using end-year data on sectoral holdings as a proportion of total equity drawn from the national flow-of-funds balance sheet data (for an extended analysis of these data up to 2000 see Byrne and Davis, 2003). This measure is not strongly affected by share price falls *per se* (except to the extent that sectors hold undiversified portfolios) while it is also not affected by the book value methods used by a number of countries in their flow of funds data over 1972–5. Although new issues may boost the overall stock of equity (implying that the shares of equity do not give a perfect picture of accumulation), they were not sizeable in the bear periods studied.

Looking first at 1972–5, it is apparent that there was considerable decumulation by households, with their share in the UK⁷ falling from 55 per cent to 46 per cent, in the US from 67 per cent to 59 per cent and in Italy from 22 per cent to 10 per cent. Only in Canada was there an increase in personal sector equity holdings over the bear period. In the UK, the slack seems to have been taken up by long-term institutional investors – life insurance and pension funds – whose shares of equities rose from 19 per cent to 28 per cent. A similar pattern

was observable in the US. In both these countries, shares of mutual funds in total equity were flat or declining, as households disinvested from equity funds. Meanwhile, in Italy, the government, banks and rest of the world sector bought shares sold by households.

Elsewhere, in Germany asset shares were remarkably stable, albeit with some small rise in intercorporate holdings. In Japan, a small fall in household equity holdings was offset by banks and insurance companies. In Canada, most sectors' holdings other than households' declined, while in France a fall in both household and corporate holdings was taken up by the government, life insurance and pension funds, and the rest of the world. Concerning foreign holdings, it is notable that for most countries, holdings rose over the bear market of the 1970s, suggesting a longer-term view than the reasoning based on time-varying home asset preference suggested above.

Looking at 1998–2001, again households seem to have decumulated equities in the UK, US, Italy and Germany. In the UK, long-term institutional investors were no longer prepared to act as contrarian investors, and sharply reduced their holdings (this may link to minimum funding regulations for pension funds and

reduced solvency margins for life insurers). It was companies building up cross holdings that were the main offset to declines in holdings by the household sector. In the US, mutual funds and the foreign sector built up their holdings, with households apparently willing still to hold equities indirectly via mutual funds up to end 2001, while foreigners bought US securities as a counterpart to the external deficit. A similar pattern was apparent in Germany. In Italy, a large rise in holdings by companies was more than sufficient to account for the decline in household holdings, with the other sectors and especially the rest of the world also showing a fall in their share of total equities. In Germany, the rest of the world and the insurance sector raised their proportion of equities in the total.

Of the countries where households did not decumulate, in Japan, few portfolio shifts were apparent, perhaps because this bear market was only the latest of a series stretching back to 1990. In Canada and France, sectoral holdings of equities were rather stable over the bear market.

Impact of share prices on the wider economy

Besides assessing the contrasting features of bear markets, it is relevant to consider their potential macroeconomic consequences. Two areas of particular interest are the effects on consumption and investment. Rather than providing a comprehensive literature survey, we briefly summarise two recent NIESR research papers that touch on the issue of the impact of bear markets, and cast light on whether it differs as a consequence of financial structure across the G-7. The references in the papers give access to further analytical material. We also note the results of a relevant NiGEM simulation.

Byrne and Davis (2002) analysed the impact of disaggregated wealth on consumption for G-7 countries. They found that, contrary to earlier empirical work, illiquid financial wealth (securities, pensions and mortgage debt), as a proportion of personal disposable income (PDI), tends to be a more significant long-run determinant of consumption than liquid financial wealth (deposits and money market instruments less other debt) as a proportion of PDI across the G-7. They suggested that this pattern reflects a shift from liquidity constrained to life-cycle behaviour following financial liberalisation. It may also reflect a more disaggregated pattern of wealth holding relative to the 1970s (i.e. with wealth less concentrated among few individuals).

Results were robust in SURE analysis, tested in a nested manner, using varying definition of liquid assets and using non-property income instead of personal disposable income. Wald tests indicated similar long-run behaviour for all EU countries including the UK, despite the differences in financial structure.

Table 13 below first shows the patterns of end-year household net wealth–PDI ratios during the periods of falling share prices. This is an aggregate of liquid and illiquid wealth and is used in many extant consumption functions. Notable features are the volatility of these ratios in the Anglo Saxon countries, where the exposure of households to equities is much greater than elsewhere. In 1972–4 the UK ratio almost halved, for example, and the US and UK ratios fell by a quarter in the recent downturn. Disaggregated data for illiquid assets/PDI in line with the Byrne/Davis work shows larger proportionate falls in a number of countries, also with higher ratios in recent years and marked cross country differences in levels. In the context of these higher ratios of illiquid wealth to PDI, the Byrne/Davis results imply that the impact of the current bear market on consumption may be expected to be at least comparable to that in 1973, abstracting from other determining factors.

Ashworth and Davis (2001) noted that standard theories of investment behaviour have concentrated on

Table 13. Household wealth–income ratios

	UK	US	Germ- any	Japan	Canada	France	Italy
<i>Net financial wealth/personal disposable income</i>							
1972	2.43	3.20	0.62	1.24	1.47	1.00	1.05
1973	1.88	2.78	0.59	1.08	1.47	0.94	1.03
1974	1.34	2.45	0.66	1.01	1.45	0.80	0.93
1975	1.50	2.57	0.71	1.04	1.37	0.85	0.94
1998	3.87	3.96	1.54	2.96	2.45	2.45	2.83
1999	3.34	4.42	1.65	3.27	2.46	2.92	3.03
2000	3.35	4.09	1.62	3.30	2.43	2.83	2.98
2001	2.82	3.41	1.59	3.32	2.36	2.56	2.63
<i>Net illiquid financial wealth/personal disposable income</i>							
1972	1.46	1.44	0.06	0.27	1.01	0.28	0.31
1973	0.94	1.03	0.04	0.13	0.92	0.21	0.28
1974	0.45	0.74	0.05	0.10	0.89	0.08	0.18
1975	0.68	0.86	0.08	0.14	0.86	0.13	0.15
1998	2.95	2.75	0.46	1.22	1.81	1.59	2.12
1999	2.60	3.22	0.58	1.42	1.85	2.02	2.39
2000	2.56	2.70	0.60	1.38	1.88	2.00	2.27
2001	2.02	2.19	0.57	1.31	1.86	1.74	1.91

Sources: National flow-of-funds balance sheet data, Datastream.

the neoclassical and Tobin's Q approaches, with most empirical work on aggregate data focusing on the former. In contrast, a separate literature on monetary transmission, centred on the credit channel and financial accelerator effects, has highlighted the potential impact of credit market imperfections in constraining the investment behaviour of firms. In their paper they presented evidence at a macro level for the G-7 countries that a broad range of financial variables, consistent with the valuation ratio, financial accelerator and credit channel approaches, are relevant determinants of business fixed investment over and above those variables normally included in traditional macro-economic investment functions. The results indicated a wider incidence of these financial effects on investment than the existing literature, focused as it is on the US, would otherwise indicate. There were similar coefficients for the debt–equity ratio in the UK, Germany and France, consistent with a similar transmission process in respect of the financial accelerator despite differences in financial structure. A given shift in the debt–equity ratio has a similar impact on investment, in other words. Again, a widespread impact on investment of a given fall in share prices is indicated.

Table 14 shows the debt–equity ratio during the two reference periods. Note that there are structural differences in such ratios that link to features of the financial system such as relationship banking (Byrne and Davis 2003). The main interest is therefore in the changes in such ratios. Overall, leverage was higher in the earlier than the later period, except in Canada where the data are comparable. Also the rise in the debt–equity ratio was much greater in the 1970s, indicating a major risk of external financing constraints on investment as share prices fell. In the later period, rises in the ratio

Table 14. Corporate debt–equity ratio, per cent

	UK	US	Germ- any	Japan	Canada	France	Italy
1972	86	62	181	341	84	148	256
1973	146	93	305	528	91	156	223
1974	323	136	333	599	97	250	320
1975	171	143	294	486	96	206	359
1998	43	64	100	286	90	55	87
1999	48	55	83	166	89	42	69
2000	50	72	104	210	85	43	84
2001	66	89	118	234	85	56	93

Source: National flow-of-funds balance sheet data.

Table 15. Output and price effects of 5 per cent US profit re-evaluation (per cent difference from base)

Year	US con- sumption	US GDP	US price level	Euro Area GDP	UK GDP
1	-3.0	-1.4	-0.3	-0.5	-0.8
2	-4.7	-1.4	-1.0	-0.1	-0.7
5	-4.5	-0.4	-2.7	0.6	-0.1

Source: NIESR (2003), NiGEM simulation.

have been relatively moderate despite the amplitude of the equity price falls, perhaps partly reflecting scope to reduce borrowing in a less adverse overall macro-economic situation. This might lead one to expect a lesser decline in investment arising from credit constraints. On the other hand, the burden of a given volume of debt is likely to be greater owing to positive real interest rates (see table 10). Also the profitability of future investment, as indicated by the ratio of share prices to the replacement cost of the capital stock (Tobin's q) has fallen markedly in 2000–2002.

We have undertaken a simulation using the NiGEM model of a concerted re-evaluation of future profits in all equity markets, engineering a fall of 34 per cent immediately in US share prices. Following Barrell (2002) we have a temporary increase in the perceived risk premium, with it slowly declining back to historical levels after fourteen years. Equity price falls are lower in other countries than in the US, reflecting in part the greater impact of equity prices on the US economy and hence greater second round effects on equity prices.⁸

As table 15 shows, the US is noticeably more sensitive to the fall in equity prices than is the UK, and the impact on the Euro Area economies is on average slightly below that in the UK. The major effect in the US comes through consumption because the household sector is more sensitive to share prices than elsewhere, as is suggested by Byrne and Davis (2001). Meanwhile the dollar depreciates and the US authorities cut short rates one point initially and two points after two years, which helps to cushion the recession. The UK and the Euro Area are hit both by effects on consumption and lower US export demand. Besides being of interest in itself, the simulation raises some interesting issues, notably why EU and UK share prices actually fell in line with or in excess of US ones (table 2), although it is clear that a re-evaluation of US profits was the main trigger of the bear market. Global market integration is clearly important (table 9), although the poor performance of the German economy (table 3) is another potentially important aspect.

Conclusions

The evidence presented above suggests that the current bear market does not appear to date to have been as severe as that in the mid-1970s. The macroeconomic background was clearly less severe, with growth broadly maintained and inflation under control. Falls in trend growth are less widespread and smaller. Indeed, it can be argued that the current bear market largely reflects the correction of an overvaluation, while the 1970s period saw a more marked deterioration of the fundamentals. Valuation indicators such as the dividend yield bear out this suggestion. On the other hand, a further leg of share price falls is conceivable, possibly ‘overshooting’ fundamentals, and equally some features of the current bear market may yet lead to economic and financial difficulties. One is the pattern of sectoral imbalances, and in particular the US external and private imbalances, which far exceed those seen in 1972–5, and which could yet unwind rapidly, destabilising the US and the world economies. In this context a further danger point is the buoyancy of house prices, in the context of a liberalised financial system. This is leading to widespread growth of debt, that could yet lead to a much worse economic and financial situation if the housing boom reverses itself sharply with share prices and corporate investment still subdued. Furthermore, we have not yet experienced a severe financial crisis such as a major bank failure in the current bear period. Such an occurrence could again aggravate the situation. Finally, the life insurers and pension funds, whose ‘contrarian purchases’ helped to end the previous bear market, seem unlikely to fulfil this role today. Indeed, in some countries they are selling equities, reflecting interaction of solvency concerns and current regulation.

NOTES

- 1 Unlike the other countries, the nominal peak for the UK differed from the real peak which was in April 1972.
- 2 Use of potential GDP growth as a proxy for dividend growth is suggested *inter alia* in IMF (2000). The assumption is criticised in Davis and Madsen (2001) who argue in favour of growth in capital productivity. In the current exercise we utilise the simpler method for data reasons.
- 3 Note that we included IMF World Economic Outlook forecast data for 2002–3 in the HP filter estimation to avoid the estimate for 2001 being distorted by the ‘end point’ problem.
- 4 Byrne and Davis (2002) highlight the adverse impact of exchange rate volatility on investment in the G-7.

- 5 The domestic balance (government plus private sector) is identical to the foreign balance.
- 6 Estimates based on the first three quarters of 2002 suggest that the US current account deficit was 4.7 per cent of GDP, corresponding to a private sector deficit of 1.6 per cent and a public deficit widening to 3.1 per cent.
- 7 The UK data for 1972–5 are incomplete and reflect the distribution among the household, corporate and institutional-investor sectors only.
- 8 UK equity prices fall by 30 per cent initially in this simulation, whilst those in the Euro Area decline on average by just over 20 per cent.

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