rates. This infusion of liquidity was quickly appreciated by the markets: it was reported that probably the most important factor moving stock prices higher in Wall Street on the Tuesday(20th October), was the Federal Reserve's efforts to help the market rally with big cuts in interest rates(Ref FT 19).

Governments and finance ministers were called on by the financial press to heed the 'market's message'. Nigel Lawson's attempt to dismiss the crash as 'an absurd over-reaction' was given short shrift. He was addressed by the Financial times in its editorial article of October 24th, titled, 'Deciphering the message', and told in the opening paragraph, 'It is governments that are the root of the problem, while markets have merely been carrying the message'. The Economist in its leader article titled 'The show can't go on', viciously attacked and ridiculed the inadequacy of past international economic policy and concluded, 'Let the market talk to government, not the other way round'(Ref EC 10). The full policy response advocated in the financial writing was almost unanimous(Refs FT 25, EC 7, for example) :

(i) The appropriate post-crash medicine should now be applied; that is, finance ministers and central bankers must provide liquidity.
(ii) To restore confidence both to the U.S. and the world economies, the fundamental weaknesses of the world economy must be urgently remedied. Encouraging the world's richest nation to consume beyond its means could not be viewed as a satisfactory long-term basis for economic growth. This of itself had led to the situation where currency stability was now dependent on international support of the dollar by official intervention. Another consequence of America's desire for funds was higher interest rates. These were particular burdensome on the debt repayments of developing countries. And investment opportunities were being directed away from them to America(Ref E5). Finance ministers and central bankers must therefore convince the market that the composition of world demand - as opposed to its level - will change. In short, fiscal restraint was required in America along with monetary relaxation in the other industrialised countries.
(iii) Some sort of stability must be achieved for the dollar. In other words, it must approach a value that was consistent with desired trade flows.
(iv) All wrong policies must be avoided. In particular, America's

Congress must abandon the protectionist trade bill it was presently pondering.

These, of course, were essentially the policies that the Group of Seven industrialised nations had been publicly advocating since their meeting in New York's Plaza hotel in September 1985. What the financial community now wanted was that the October crash would have the effect of galvanising them into pursuing their own avowed policies with some greater urgency. If they didn't, the consequence must be either (i) ever increasing interest rates as America, against the background of a threatened dollar, strove to finance its budget deficit. Such climbing interest rates would be crushing for the growth of debt repaying third-world countries, and would eventually tip America and then the world economy into recession; or (ii) the dollar would collapse, leading to inflation and economic dis-array in America and the loss of America's thrust to other countries' exports. Again, a world depression would be the inevitable consequence. That was the well-understood theory(Ref EC 7, for example). Now was the time for persistent action in accordance with the theory:

In the immediate aftermath of the crash, the G7 nations had, as we have seen, put on a show of their unanimity. And the reaffirmation of their Louvre currency accord had gone some way to reassuring the markets that their policies might once again be complementary rather than confrontational. But the financial press remained cynical as to their long-term commitment, and considered as apt enough description, one European finance ministry official's comment, 'All I have seen so far is what might be described as fire-fighting'(Refs FT 22 and FT 28). On Thursday October 22nd, President Reagan did appear to shift his ground on tackling the U.S. budget deficit. He said that he was ready to meet with congressional leaders as soon as possible to arrange talks aimed at reducing the federal budget and hinted that he would consider tax increases(Ref FT 21). But the financial press was not altogether convinced(Ref FT 26). Essentially, the financial press feared that, despite the crash and the greater urgency it brought, the finance ministers and central bankers would continue to dither : West Germany's because of exaggerated fears of inflation(Ref FT 25); and America's both because of the deadlock of authority between the Administration and Congress and because its Administration wished to approach the

general election at the end of 1988 with its economy still appearing healthy(Ref FT 29, for example).

A month later, the financial writing re-assessed the character of the G7 nation's commitment. At this time, the American budget negotiators were hammering out a compromise of tax increases and cuts in public spending that would reduce the budget deficit for 1988. If the White House and Congress failed to come up with their own package, legislation already in place - the Gramme-Rudman law - would dictate automatic across-the-board spending cuts of 23 million dollars. The financial community was looking for some initiative over and above this figure and remained unimpressed when a package of $25 million was duely revealed ('America's budget mouse'(Ref EC 11)). The reaction of the Financial Times was to begin its editorial article on November 21st, 'If the world economy succeeds in escaping a serious recession before the end of the decade, it will probably owe more to luck than to judicious economic management in the United States or worthwhile co-operative effort on the part of the leading developed countries'.

It was becoming increasingly clear that, for the foreseeable future, efforts in the U.S, would, at best, be aimed at merely consolidating the reduction in the deficit achieved in the fiscal year ending September 1987(Ref FT 33). There would, in other words, be a policy of containment rather than a vigorous programme of correction. It was clear that America, especially in an election year, would rather have its trade deficits than the policies required to correct them(Ref FT 29, FT 33). Market prices did not, in fact, respond significantly to the news of America's budget-cut proposals in November(Ref EC 12). So although America's twin deficits did not go away, they were allowed to go out of focus. Signals at this time from Japan and West Germany were : Japan had loosened its monetary policy and was back on an upward tack, with the OECD (in mid-November) projecting 3.5 percent growth for it in 1987 and 1988(Ref EC 16, FT 31). West Germany, however, was content with low growth, since it remained a wealthy economy with low unemployment by European standards. It was becoming increasingly clear that West Germany was averse to risk-taking and consequently would have little appetite for co-operation with America(Ref FT 31). But West Germany did loosen its monetary policy : on December 3rd , it announced a cut in the discount rate from 3 percent to 2.5 percent(Ref FT 33).

In reviewing the significance of the U.S. budget deficit, the Financial Times(Ref FT 31) recognised that the adjustment process for reducing the deficit was already well in train at the time of the crash. And the American economy remained relatively strong. Perhaps, after all, the American budget deficit did not merit the obsessive attention that both the markets and the financial community had been devoting to it(Refs FT 30 and FT 31). These articles marked a change of emphasis in the Financial Times. After all, immediately after the crash, the importance of correcting these deficits had been the all-important 'message of the markets'(Ref FT 29). Now, the 'message of the markets' was itself called into question. The Financial Times, on the 26th November, stated, 'Financial markets have still to grasp that the trend of the U.S. budget deficit is smartly downwards'(Ref FT 32). In the same article (titled, 'The mythology of the balance of payments'), it also criticised the market's over simplification of the balance of payments problem. The Financial Times had referred earlier to the monthly trade figures as, 'misleading statistics that throw markets off balance', and had found it 'intolerable that the greatest nation in the world should have its currency at the mercy of monthly trade figures which do not even separate value from volume'(Ref FT 25). In fact, the market's ability to react to economic data, dispassionately and with consistency on the basis of fundamentals - rather than be driven by over-reactions on the basis of crowd psychology - would repeatedly be put in question over the following months:

4. The markets and the economy in the six months following the October crash

The post-crash trend for the world equity markets is shown in Figures 11-12

The world stock markets(Japan apart) continued their decidedly nervous, up-and-down performance up to the end of November. While the Tokyo market recovered more confidently, the rest of the world's markets struggled to consolidate themselves somewhere above their post-crash

lows. Then on November 30th, on ill-defined fears for inflation and the economy, the markets collapsed again. The Dow lost 110 points before ending the day 4 percent and 77 points down at 1834. Tokyo's Nikkei lost 2.5 percent and London's FT-SE 100 lost 4.3 percent(Ref EC 14). Thereafter, the world stock markets rose steadily through December and into early January. In this period, they rose some 16 percent in Wall Street and more than 12 percent in London(Ref FT 35). It was seeming as though the markets had now left their October and November woes behind them. But on Friday 8th January, The Dow dropped 6.8 percent. This was its third worst daily fall. On the same day, Tokyo had its second biggest one-day gain(Ref FT 35). There did not seem to be a convincing reason for the abrupt Wall Street fall. It was blamed on a range of factors from stronger than expected U.S. employment figures to rumours of a huge jump in the U.S. trade and budget deficits. But on inspection, these reasons were not particularly convincing(Ref FT 36). The rally in share prices in late December and the first week of January was now regarded as having been 'too fast and too frothy' (Ref FT 37). The markets were reported to be 'balanced on a knife-edge', anxious to see whether the Friday fall would trigger another global rout on equities : 'For all the logic about the differences between October and January's markets, the great unknown factor is the mood of investors. Deeply nervous and unsettled after events of the last four months, they might be unwilling to hold on to their shares' (Ref FT 34). The Financial Times accused the markets of, 'waiting obsessively for a single set of U.S. trade figures that they know to be generally misleading and statistically faulty' (Ref FT 38).

On Friday January 15th, share prices soared on release of the trade figures - which showed that the U.S. trade deficit had fallen to $13.22 billion in November from October's record level of $17.63 billion. On Wall Street, the Dow jumped more than 50 points in the first hour of trading before stabilising to close below its day's highs at 1956, a rise of 40 points(Ref FT 39). It was reported that 'there were moments of genuine buyers' panic and disgruntled investors reported having difficulty in getting through to dealers as telephone lines jammed' (Ref FT 40). The article titled 'Bulls take command in all three markets' considered that the bearish mood prior to the release of the figures was exemplified by the fact that so many people had persisted in believing that the U.S. trade deficit might even show an increase above

the previous month's clearly aberrant figure of $17.6 billion(Ref FT 40). It now considered that, 'The key psychological question for all the financial markets is whether the bearish sentiment is about to turn by 180 degrees, after the losses the unbelievers have suffered. The early comments on the November trade deficit of "only" $13.2 billion suggest that such a U-turn may well now be in prospect'. The same article recognised that America's trade deficit was still appalling and left a horrendous problem for the U.S. and the world economy as far ahead as the eye could see. The Financial Times leader article commented, 'The market reaction does not, of course, bear much relation to underlying reality'(Ref FT 38).

In February 1988, the Financial Times(Ref FT 41) observed that the World Index for Monday October 19th closed at 118.96, and that on Monday February 25th, it was the same round figure, and some six percent ahead over a full year. By the beginning of March, the Japanese market had surged back to the levels set before the crash(Ref FT 42). At the end of February, the Dow had climbed back again above the 2052 mark which it had previously reached at the close of trading on January 7th, and which had then marked a high mark since the crash(Ref FT 43). Early March saw the Dow at a post crash high. In equity-dealing rooms, it was reported, rumours of takeover bids had banished any uncertainty about the economy(Ref FT 43). At the beginning of March, the FT-SE 100 index broke convincingly through the 1800 mark for the first time since October 22nd. This burst of optimism was attributed, in part, to London following Wall Street. Even the announcement of a record current account balance of payments deficit in January - £905 million - had little impact. Against this, it was argued, other domestic indicators - a strong pound which should resist the need for higher interest rates, a fall in the yield on long-dated gilts, and announcements of healthy company priofits - all suggested a robust economy(Ref FT 44).

According to official figures published in March(Ref FT 45), the British economy grew at a faster rate in 1987 than in any year since 1973 and had showed no sign of a slowdown after October's market crash. Company reports were reported as generally very good and the outlook for dividend growth over the coming twelve months as still very healthy(Ref FT 51). In March 1988, corporate earnings growth was reported as strong in most of Europe and North America(Ref FT 53). And

Japan continued to open its markets to foreign imports(Ref FT 46). And yet, quite amazingly, by the end of March, the mood in Western markets had turned again. The markets had been slipping, and on Wall St, a 89 point drop in the Dow over March 24 and 25th had brought it back down below the 2000 level and demoralised investors. At the end of the day, it was at its lowest point since February 11th(Ref FT 50). In London, on Thursday 24th, markets lost almost 3 percent, bringing them back below 1800, and the slide continued on the 25th, making the market close at 1768, a loss of 88 on the week(Ref FT 47, FT 49). With the exception of Tokyo, all mayor markets were pursuing a downward trend. The predominant reasons given were concerns for the weakness of the dollar, and inflation, and concerns over the outlook for the U.S. economy and U.S. interest rate policy. London was judged to be following Wall Street, but now the high pound was being blamed for depressing exports, and the current account deficit for February(released on the 25th) of $720 million(compared with £840 million for January), sustained the momentum down(Ref FT 48, FT 49). Investors were reviving their worst fears about the impact of America's deficits on the economy and the potential for another severe crash(Ref FT 47, FT 52, FT 55). Even parallels with 1929 and the Great Depression were revived(Ref FT 49, FT 56). In comparison with Western markets, The Tokyo market was looking stronger than ever and had climbed within reach of its all-time highs(Ref FT 57). This dynamic performance could in part at least, be explained by the underlying economy, which with a high valued yen had also shown itself something close to amazing : company profits for the financial year March 1987-March 88, had grown by some 20 percent, with forecasts for the coming year at 10 to 15 percent(Ref FT 54). In early April, the International Monetary Fund prediction was that the U.S. trade and current account deficits and the parallel surplusses in Japan and West Germany would continue to shrink through 1988-89; but without either renewed action to cut the U.S. budget deficit or a further fall in the dollar, it saw little improvement beyond then(Ref FT 58). On April 14th, share prices in Wall Street fell by 4.5 percent in response to the trade figures for February which showed a widening of the trade deficit to $13.8 billion (from $12.4 billion in January). The news also sent the dollar reeling(Ref FT 59). In London, the FT-SE 100 shed 34 points within an hour after the trade figures were released. (Ref FT 59). And there were knock on effects in every important exchange(Ref FT 61).

Almost six months after the crash, the world markets(Japan apart) were clearly still hostage to huge swings in mood. Some relative calm, however, did return to the markets on the 15th April when European central banks together with the G7 industrialised nations intervened to stabilise the dollar(Ref FT 60). The Financial Times argued that six months after the crash, the economic fundamentals had remained essentially unchanged from how they had been before(Ref FT 53), although the crash may in fact have helped to bring the U.S. - and therefore the world - economy into a better balance(Ref FT 61). Another effect of the crash had been that it had decreased the potential of the destabilising trading strategies : Mr Robert Salomon, chief equity stategist for Salomon Brothers, estimated that the amount of equity controlled by portfolio insurance had dropped from between $80 and $90 billion to $30 billion(Ref FT 61).

Increasingly, the gentle drift downward of America's deficits became less of a crisis issue. Increasingly, it began to seem possible that America(and the world) might, at least for some time, escape having to suffer for them. This was reported to be the view of high officials in Japan's central bank and finance ministry(Ref EC 21). They assumed that there would be no deterioration in America's deficit position, but that it might not improve much either. Though not ideal, they believed it was something that the markets might be willing to finance for quite awhile yet

5. Summary of this chapter

After the stock market crash of October 1987, the Western markets found a relatively narrow range within which they have traded since, on balance, nervously heading upwards. The financial markets have not proved as fragile as was feared. They have absorbed the fall of a third in values in two days without any major failures. The Tokyo market - the one market where prior to October, the analysts had come close to predicting a crash - continued to amaze. Trading on P/E ratios averaging up in the 60s, it was the market that had in fact fallen the least, and six months later, was back to within 5 percent of its peak.

After the October crash, comparisons were inevitably made with the Great Crash of 1929. This crash had been followed by the Great Depression of the 1930s. The economist J.K. Galbraith's work, 'The Great Crash 1929' has analysed these two events, and, in particular, the relationship between them. The crucial conclusion is that the Great Crash did not inevitably lead to the Great Depression. But gross mismanagement of the economy ensured that it did. Our understanding of the mechanism of an economy and the relationship between a falling stock market and the economy has come a long way since the 1930s. After the October 1987 crash, appropriate corrective monetary policies were applied to counter the tightening of money that might be brought about by the crash. If these policies erred, then it is fair to say that they erred on the right side : the world economy continued to prosper with a measure of inflation coming through. The next task of government was to correct the fundamental flaws in the world economy - those flaws, in fact, that were viewed to have de-stabilised the stock markets and triggered the October crash. The twin American budget and trade deficits were the prime targets. The tide of these deficits, it can be stated, had actually turned prior to the crash. Subsequent to the crash, effort on the part of the leading developed countries has been not to forcefully eliminate these deficits, but rather to maintain their slowish downward trend. Economic stability thereby continues to be dependent on the stable financing - either by official government or private funds - of America's borrowing requirement.

One feature of the 1929 crash did seem to have been repeated. That was the behaviour of many investors prior to the crash. The economist J.K. Galbraith drew parallels between investors' attitudes prior to both crashes, and the participation of those investors who believe that they can take an upward ride with the prices and get out before the eventual fall : 'Their participation, needless to say, drives up prices. And the prices so achieved no longer have any relation to the underlying circumstances'. After the October 1979 crash, one commentator stated forcefully : 'What is it that can cause the world's equity markets to lose more than a quarter of their value in less than a day and a half? Certainly nothing to do with economic fundamentals.' It seemed to many that a stock market speculative bubble had, in classic fashion, simply burst. In the aftermath of the crash, leader articles in the Financial

Times and The Economist blamed government and finance ministers for the state of confusion. The markets, they said, were not the culprit. They were simply 'the messengers'. Deep in the collective behaviour of investors, it seemed, was the oracle of the markets. However, as the markets gyrated over the next six months, with some amazing inconsistency, the 'oracle of the markets' lost much of its reputation. In this time, the markets i) for no solid reason, oscillated between being bullish and bearish; ii) they ignored the U.S. twin deficits for periods, and then they revived them; iii) they moved between nervously over-reacting to economic data and choosing to play it down.

Chapter 4 : Fundamentals Theory and the Stock Market's Performance through its Rise, Crash, and Revival(1982 - 1988) : A discussion

1. The discussion

We address the question, Can the 'fundamentals' theory explain, or even be made to 'accommodate' the market movements studied herein, that is, leading up to, during and in the six month aftermath of the crash? And then we ask, In what way, if any, is the 'fundamentals' theory 'predictive'? First, we must examine the rudiments of the theory a little more closely :

i) The fundamentals equations and their practical limitations in accuracy

The 'fundamentals' analysis for the valuation of a share requires a solution to the equations in Appendix 1. Basically, the model discounts appropriately, all future anticipated dividends for a company and adds them to determine the value of the company's share. It has been concluded(Ref EC 17) that even top analysts can be appalling forecasters of companies' future earnings, and that in forecasting earnings between one and five years ahead, analysts err on average by nearly a third. The same studies suggest that in predicting a company's future earnings, there is little to rely on except the past, - and that

the company's past earnings can give only a poor clue to future earnings. The parameters used in Appendix 1 also pose problems:

Not only do we need to know the stream of future dividends that the company will provide, but we must estimate the market's required rate of return both on risk-free assets and on the representative market portfolio, as well as the company's beta; all of which can change with time. The current required risk-free rate of return, Rf, generally, can be approximated adequately with reference to the return on short dated, gilt-edged stock (since changes in inflation rates, interest rates or the risk of default are essentially zero), but this will also change over time. As for the market's required rate of return on a representative market portfolio, Rm , we can only rely on historical data. From an analysis of U.S. stocks over the period 1926-1981, Brealey and Myers(Ref B1) estimate a nominal rate of return on common stocks of 11.4 percent against a nominal rate of return on Treasury bills of only 3.1 percent(inflation had averaged 3 percent). They therefore conclude that the required risk premium for investmemt in the market averages 8.3, and so Rm can be approximated as the return on Treasury bills + 8.3 percent. However, on Figure 13, we set out the rate of inflation and the yield on selected British securities over the last 25 years. The reliability that can be placed on the 8.3 percent rule in a future time period appears to us to be very small indeed. It must be noted also that the dependence of the 'fundamental valuation' equations on Rf, Rm is not linear, and (particularly for growth shares - with high g), results can be sensitive to our judgement of these parameters.

All in all, it seems to us doubtful that, in terms of fundamental analysis, the market as a whole could be valued with very much confidence without an error band of +/- 40 percent. The price movements in the period of the crash were therefore within the 'error bounds' of fundamental analysis.

ii) October prices, P/E ratio and fundamentals

Can we go so far as to state - as did The Economist(see section 2, Chapter 3) - that share prices in early October with 'P/E ratios of 20

had always been a little crazy' ? Or for that matter, applying fundamentals, can we determine the most reasonable values for a P/E ratio ? We look at this below :

The constant growth model gives us for the present value of a share, Po, (see Appendix 1) :

$$Po = \frac{D1}{R - g} * 100$$

where D1 is the company's dividend at the end of the first year,
R is the share's calculated yield, that is, its required rate of return(expressed as a percent), and
g is the company's growth rate(expressed as a percent).

To simplify, let us assume that real growth is zero(that is, the company's earnings stay in line with inflation) and all earnings are paid as dividends. Then,

$$Po = \frac{Eo*(100+i)}{R-i}$$

where i denotes the inflation rate(expressed as a percent) and Eo represents the company's present earnings. Then with P/E = 20, we have

$$R = \frac{(100+i)}{20} + i$$

that is :

$$\text{real rate of return} = \frac{(100+i)}{20} = 5 + \frac{i}{20}$$

showing that the share provides a rate of return of more than 5 pecent over and above the inflation rate.

For a growth share, the real rate of return provided would be,

$$R = 5*(1+i)*(1-b) + g \ , \quad b = \text{retention ratio.}$$

(it is noted that P/E ratios quoted in the financial press are generally based on the latest reported earnings and therefore are Po/Eo; while investment analysts tend to employ prospective ratios, Po/E1.)

Our company therefore is offering a real(that is, over and above the inflation rate) rate of return of upward of 5 percent. This needs to be compared with the rates of return offered by risk-free assets. The market rates of return that were being offered on 10-year government bonds on October 16th were 10.21, 5.85, 10.49 percent, respectively for the U.S., Japan, and U.K.(Ref FT 30). These however are a function of anticipated levels of inflation. More instructive, therefore, is to know the market's return on index - that is, over and above inflation - linked government bonds. In the U.K., it can be said that the interest rate on index-linked bonds has generally been close to 3.5 percent since their introduction in 1981. On a P/E ratio of 18 (the pre-crash value in London), our company without growth prospects is therefore offering a risk premium of about 2 percent over and above index-linked stocks. If the long range growth prospects for U.K. companies is supposed to be 3 - 3.5 percent(Ref FT 45, FT 51) with an earnings retention of say, 60 percent, then, real rate of return is closer to 7 percent - roughly twice the return offered by index-linked bonds. The risk premium in early October, therefore, while without doubt being below historical values, is not of itself, self evidently 'crazy'.

iii) The 1987 rise in the markets and fundamentals

Even if it is accepted that P/E ratios as high as 20 are not inconsistent with 'fundamentals', we must question why the world's equity prices should have abruptly begun to rise rapidly from about end 85, in the U.S. market, early 86, in the Japan market, and late 86 in the U.K. market to levels that challenged historical precedent (Figures 6-9). Both economic growth and company profits had continued to prosper through this period. But against this, could be set the fact

that the Louvre Accord and its support for the dollar - which, as we have seen, was a linch-pin for the world economy - had been under increasing strain from around the start of 1987. And frustrations had continued to mount as the U.S. current account deficit improved only slowly. And the Reagan administration had been paying little more than lip-service to solving the underlying problem of the budget deficit. Also, through 1987, interest rates had been almost continually rising globally. The markets, therefore, had chosen a period that was not all of economic euphoria, but one that also could be described as a period of fundamental economic tension and uncertainty, in which to break through P/E ratios that traditionally it had been more comfortable with.

In fact, all else being equal, it was being argued that share prices should have been going *down* as interest rates rose steadily from around the end of 1986. This was supposed to be well understood in terms of 'fundamentals' : a rise in interest rates increases the risk-free rate of return, Rf, and therefore the market's required rate of return, R (=Rf + risk premium), thereby decreasing the market valuation as given by the above equations. This rule had always been well recognised(eg Ref D5, Ref E3), and Figures 6 to 9 show how it has been historically so. So, for example, in section 1 of Chapter 1, the beginning of the bull run was associated with the lowering of interest rates. The market's blatant contradiction of the rule through 1987 as interest rates rose - 'decoupling' as the buzz-word was(Ref FT 6) - was taken as proof that the market and 'fundamentals' had parted company. If the market was indeed moving without acknowledgement of either interest rates or the real economy, then the market's value is clearly unrelated to 'fundamentals' at this point in time. In the paragraphs below, we will examine whether this was so.

iv) Decoupling

We consider that a comparison of a share's P/E ratio with the nominal, that is, the inflation-risked -interest rate, - the 'reverse yield gap', as it is called(Ref E3) - will generally be misleading. This follows because a reverse yield gap compares an essentially *real* rate of return(the P/E ratio) with a *nominal* rate of return. The difference

is therefore a function of inflation as well as the market's risk premium, and thereby, it can not tell us anything clearly about either. Our observation (paragraph ii) above, that, assuming zero real 'expansionary' growth, the earnings of a portfolio of companies are expected to rise in line with inflation, leads us to the important conclusion that it makes much more sense to compare a share's current yield or P/E ratio(price to *present* earnings, as quoted in the financial press) with the *index* - that is, the over and above inflation -linked rate of interest. The index-linked rate of return for long term bonds did not change significantly (from around the 3.5 percent mark) through 1987. This of itself leads us to conclude that increases in nominal interest rates in this time did not dictate any increase in the market's required rate of return(R). Higher inflation rates through 1986/87 were very much profit driven and were therefore indicative of a vibrant economy. However, against this, it should be emphasised that *high 'run-away'* inflation along with increased *uncertainty* about inflation both work to make investment and business decisions more difficult. They create a less favourable business environment. It is on this account, that company profits and hence share prices might be expected to suffer in conjunction with higher inflation and attendant higher interest rates.

v) The crash and the aftermath of the crash

The statement above(in paragraph i) that a market movement of 40 percent is within the error bounds of a fundamental analysis, does not of itself explain the crash - it is hardly likely that investors simply revised their market evaluations on the basis of fundamentals and consequently knocked of about a third in a couple of days. We ask, What was there in the forming perceptions of the economic environment in October that might have justified the market re-evaluation that took place. In short, Can the crash be rationalised in terms of fundamentals? Our analysis of Chapter 1, concluded that the biggest threat to the economic system would have been the event of a crash landing of the dollar. To review:

At the end of 1986, foreigners owned an estimated $146.4 billion of American stocks. If stocks and bonds were combined, this figure

would be even higher. During the first six months of 1987, foreigners put $18 billion of new money into Wall Street(Ref D8). Any fears that foreigners would pull out would be bound to have a dramatic effect on the market. Through 1987, the dollar's 'soft landing' to a stable exchange rate had been heavily dependent on official intervention in the money markets by the Group of Seven(G7) nations. If that support and co-operation were now abruptly viewed as being no longer there, there was, equally abruptly, a distinct possibility of a self-fuelling dollar collapse - leading to U.S. inflation, followed by high re-active increases in U.S. interest rates. This would lead on to a U.S. recession and subsequently to a global recession brought about by the abrupt deletion of U.S. buying power abroad. It could be argued therefore that the open conflict in mid-October between America and West Germany warranted the market response that in fact ensued. In this view, far from being an over reaction, the market had shown itself reacting remarkably impressively to relevant data.

However, as Chapter 3 has emphasised, G7 open war did not ensue. The Crash brought home to the G7 members the importance of their co-operation and its Louvre Accord and both were re-affirmed - at least as convincingly as they had been before. As Chapter 3 also emphasises, all economic indicators remained at least as encouraging as they had been prior to the crash, with Japan exceeding most expectations. The obvious implication is that after the 'scare', markets should have returned to their previous valuations. In fact, - with the exception of Japan - they proceeded to firm up only slightly over the next six months. Can we therefore state categorically, that the application of 'fundamentals' around the time of the crash, must be denied? This we examine further in the following paragraph :

vi) The 'psychology' aspect of the 'fundamentals' equations

Through 1987, shares were made more popular. Shares somehow had become 'with-it', and as the Investors' Chronicle pointed out above, even governments tried positively to popularise them. There was in fact, the social phenomenon of something having been made 'fashionable' and 'appealing' (Ref D1). Like betting on the Derby, or the Grand National, the exposure to risk that has previously deterred, now almost appeals -

or perhaps even definitely appeals - because of the social climate. Most of us now, rationally, fear war for example, but the right social pressure can have us marching off. It could be argued, therefore, that the 'risk premium' required to tempt participation in the market was continually decreasing. This is something about which the fundamental theory can say nothing - the risk premium is an input parameter in the formulations. Money leaving the safe haven of cash investment or bond accounts for share investment would simultaneously be lowering the yields on shares and raising them on bonds. A decoupling of the risk-free rate of return Rf, and the price of equity shares - that is, their moving in the same direction - is not therefore necessarily inconsistent with 'fundamentals' theory.

This understanding of the movement in share prices through 1987, could also explain why, after the crash - which we explained as a legitimate 'scare' in paragraph v above - share prices in the West did not resume their former values. The explanation is that the losses of investors created a heightened awareness to the 'riskiness' of the market. These perceptions increased the required risk premium to values it had had prior to 1987. Again, we emphasise that this would not refute the 'fundamentals' theory: the theory tells us how the risk premium affects the share price - not how the risk premium should itself be determined.

The fact that increased uncertainty in the market - either real or imagined - increases the market's required risk premium and thereby decrases share prices, can also explain why downturns in the market might tend to be steeper than the upturns: When new information is received, uncertainty is increased while the implications are considered. In the case of good economic news, this higher market uncertainty requires that the likely higher recipts of companies be discounted at a somewhat higher rate, R, than is normally used. The good news and the uncertainty about it act in opposite directions. Bad news and the uncertainty it brings act together to bring down the share price. There is, therefore, an asymmetric impact of information on the markets.

vii) Summary of the discussion so far

Our discussion so far, has shown that 'fundamentals' theory can 'accommodate' the stock market price movements leading up to, during and in the aftermath of the crash. In summary, the market rose through 1987 as the market risk premium decreased(social persuasion), it crashed on the basis of a legitimate scare(markets tend to go down steeper than they rise), and it didn't resume its former high values because the risk premium was now higher(heightened awareness of risk after the crash). But this does not of itself say very much for the theory. It is appropriate to quote the quote used by Copeland and Weston at the head of their chapter on the CAPM(Ref C1):

Lucy: 'I've just come up with the perfect theory. It's my theory that Beethoven would have written even better music if he had been married.'
Schroeder: 'What's so perfect about the theory?'
Lucy: 'It can't be proved one way or the other!
(Charles Schulz, Peanuts 1976.)

The important aspect of a theory is not so much its 'correctness' - a theory must set itself up to be knocked down, - so much as its 'usefulness'. A theory that is useful must, as well as being able to accommodate the facts, *must, in some way, be predictive.* We have shown that the investor looking at fundamentals, must, as well as looking at what Keynes called the 'enterprise' of the company, must anticipate also the social environments that will make people more or less risk-averse. But if such collective pschological turns in society - what Keynes called 'the herd instinct' - influence price increases by 30 percent plus in less than a year, as well as reversals of these gains in a day, the 'fundamentals' theory has brought us back to where we started: namely, with Keynes' belief that the best basis of investment success is to anticipate the behaviour of the crowd.

But the above does not mean that the 'fundamentals' and 'speculation' theories have been unified. A reduction in the required market risk premium is one thing; buying/selling shares in the belief - without any regard to fundamentals - that they can only go up/down, is something else. These are the classic bubbles and bursts where bouts of buying (-

or selling) in the belief that prices can only rise (- or fall) become self-fulfilling. Speculation in this sense makes the determination of share prices a boot-strap affair - one price is as appropriate as another. The 'fundamentals' theory is unequivocally unaccommodating of such speculation. If it could be shown that such speculation either did not exist or was somehow contained or restricted by the performances of the underlying companies, then fundamental theory would be useful : it would be able to set some limits on the behaviour of share prices. With this in mind, we review the investment decision process both as it was exposed at the time of the crash and as we view it now in retrospect in the time leading up to the crash:

viii) Speculation during the market's bull run and crash

The conclusion of 'The Report of the U.S. Presidential task force on market mechanisms' is clear : the initial market decline ignited mechanical price-insensitive selling by a number of institutions. These institutions had believed that they could defend themselves against a downturn in the market - that their shares could always be disposed of in advance of a significant decline - 'the illusion of liquidity,' as the report called it(Ref A1). Further, it was this belief that had made these institutions follow stategies of increasingly investing into rising markets, and this of itself had no doubt contributed to the market's rise(Ref A3). The report concluded that a market that could be so influenced by the strategies of what were shown to be surprisingly few institutions, was 'vulnerable'(Ref A4).

But this investment attitude, that is, of buying into a rising market because it was rising, was probably spread quite widely among professional investors . These typically quite young people were investing not their own money, but that of their clients, and they were driving the market. Their performances and bonuses were being judged not on any long term basis, but on their daily performance against the market. As the Investors' Chronicle described it, 'It was more than their jobs were worth to miss the party. Instead they missed the exit'(Ref IC 3).

At least in Britain, a belief in the wisdom of chasing rising share prices was being sold to the individual investor. The government was

keen on privatisation and had a vested interest in a mentality to share prices of, 'it was like exchanging fivers for tenners' (Ref D3). Privatisation programmes were being pushed also in France, Japan, Singapore and Canada.

Therefore, from large investment institutions to professional money managers to individual investors, we have identified the belief in buying shares because the share prices are observed to be rising; that is, we have identified speculation in a form that can not be accommodated by the 'fundamentals' theory. Such speculation drives share prices quite independently of the tenants that under-pin any idea of fundamentals; that is, share prices are made to be independent of the companies' underlying enterprise or performance. The only question that is left is, is such speculation 'rampant', or is it contained or restricted by a regard to fundamentals? As Keynes expressed it, are fundamentals or enterprise merely the bubbles in the whirlpool of speculation, - in which case the position is serious, or is speculation the bubbles on a steady stream of enterprise? Our best hope that speculation is contained by a regard for fundamentals, is the crash itself. In other words, although the market from some time before 1987, had started to move with the assistance of a self-fulfilling belief in forever higher prices, it was only allowed to move so far before a regard for fundamentals brought it, as The Financial Times put it(above), down to earth. This we look at below :

ix) The influence of 'fundamentals' on the markets in the West

The day after the crash, The Economist declared that 'P/E values close to 20 had always been crazy, hadn't they?' We have argued that since they were not in conflict with any 'fundamentals' analysis, they could not be said to be altogether crazy(paragraph ii above). But they were historically high. And if analysts such as The Economist do feel uncomfortable when P/E ratios are lifted towards this number, it might well be that doubts about the market are intensified as this number is approached. We have seen that as P/E ratios rose to achieve their historical highs, the value of the market was put in question. In short, it might well be that, if there are speculative forces driving the market - by which we mean a belief in the reality of ever increasing prices -, then once P/E values rise beyond a cerain value,

the likelihood is increasingly, that the speculative run will be reversed. In other words there would be, as Alan Greenspan, the Chairman of the U.S. Fedeal Reserve, put it, 'a crash waiting to happen'.

It has seemed to us that much of the upward trend of share prices through 1987 did lack a real economic justification(paragraph iii above), and that speculation - in the sense of a self-fulfilling belief in future higher prices - was undoubtedly significant in driving the bull market up beyond the kind of values it enjoyed at the end of 1986(paragraph viii above).

At the end 1986, however, share price yields were by no means out of line with those that had been sustained previously during periods of economic prosperity, - see Figures 6-9. In the U.S., a P/E hovering about the 16.5 mark had proved sustainable through the 1960s and into the 1970s, and in the U.K. markets, a P/E of something like 14.5 had marked previous highs through the bull period. Interestingly, these are the P/E ratios that the market returned to after the crash and around which they have since settled.

In other words, these numbers *already had something to mark them out.* And perhaps the crash has served to re-enforce their significance. History, therefore, might well repeat itself about these kind of numbers: P/E ratios will rise above the 15-17 mark, reasons will be given for and against why the economic situation should be 'different this time around'; but the tension will have been raised, and the momentum of speculation will be jolted and then reversed as each subsequent economic uncertainty is made into a crisis for investors. It is in this rather crude manner that it is supposed that 'fundamentals' will again impose themselves on any speculative runs.

x) The Japanese market

Our analysis and discussion so far have not too much emphasised the Tokyo market. With P/E ratios in the range between 55 and 70(Ref EC 8), it was the one market where analysts had predicted a crash. After all, in a shares market that was supposed to be global, why was profit from

these companies costing four times as much as anywhere else? Instead, it was the market which fell the least. While share prices in the U.K. and New York lost all of their gains of 1987, share prices in Japan were still 20 percent up on their levels at the beginning of the year. This resilience of the Japanese markets had proved embarrassing to the experts. Foreigners had been selling out of Japan since 1985 and had missed out on some heady gains - up to the point that foreigners now owned only 3.5 percent of what had become the world's largest stock market with over 40 percent of global capiltalisation (Ref EC 13). In early November, while the crash in the U.K. had left the government grappling with the collapse of its U.K. sell-off of its stake in the BP oil company, Japan's privatisation of 12.5 percent of the state telephone company NTT (Nippon Telegraph and Telephone) had gone smoothly ahead. Japan's investors paid $38 billion(three times the size as the BP issue) at a P/E ratio of over 250 ! - making it the world's most expensive share(Ref EC 8). For The Economist - 'A crash waiting to happen', in early November 1987 - this was all too much. The whole thing, it declared, was evidently 'a creation', with the faith of the investor supported by props. It pointed out that (i) three-fifths of Japanese share trading passes through four big security houses, (ii) two-thirds of Japanese shares are held by loyal companies and investing institutions, and (iii) life insurance fund managers must invest 70 percent of their inflow of funds within Japan. These institutions and the government all benefited from rising shares. They were, according to The Economist, together rigging the market for the sake of the NTT issue.

In the same week, The Investors' Chronicle decided that the Japanese market was proving as inscrutable to Western eyes as its people are held to be(Ref IC 4). Endorsing The Economist's view of informal agreement between government and the security houses, it reported that the big four had been 'informally requested' by the Ministry of Finance to buy into the NTT issue. The government would be further sustaining the market next year with its abolition of tax concessions on post office deposit accounts. A massive $2 trillion would thereby be encouraged towards risk investment. Adding to confidence in the market was the strength of the Japanese economy and the 'weight of money' of Japanese savers. The 'weight of money' factor of Japanese savers has been emphasised also by Andrew Smithers - described by the Financial

Times as S.G. Warburg's economic guru in Japan(Ref FT 42) - who points out that Japanese investors are disinclined to sell their shares simply because they don't need the money. Their savings are so high that they can typically generate new cash requirements simply by not purchasing new shares. Annually, the Japanese save about 109,000 billion yen - equal to about 64 percent of the total value of the Tokyo Stock Exchange. By comparison, American savings amount to 19 percent of the value of the New York Stock Exchange. Smithers concludes that the 'weight of money' argument is 'unusually helpful for forecasting the likely course of the Tokyo market over the next year', and that downside risks 'seem small'(Ref FT 42). But The Economist considered that 'weight of lunacy' was more like it. It had to be better to have a bank deposit paying 3 percent than a share that would take over 250 years of profits to repay and which could lose 20 percent in one month. Tokyo prices had also, it observed, been helped by the currency risk of investing outside Japan. Japanese investors had been burnt, in particular, by a falling dollar. But once the dollar looked too low to go down much further, Japanese institutions would rethink their investment priorities. This time around, The Economist was confident enough, in early November 1987, to tell us of the inevitability of a coming crash in advance : 'When the big fall on the Tokyo market eventually comes, it will look as logical as Wall Street's did after last month's events'(Ref EC 8).

In a reply to the above article in the The Economist, a representative of the biggest of the Japanese security houses, 'Nomura', counter-argued(Ref EC 13) that not only would the Tokyo market not crash, but that the Tokyo market would continue to out-perform the other major markets. The Tokyo market was held stable, he argued, on account of : (i) strong corporate cross-holdings, (ii) a consensus between the finance ministry, the brokers and the investing institutions, (iii) prudent regulation and share price movements limited by market rules. And the economy was strong. But the force of the argument for rising prices was the 'weight of money' one : as mentioned above, the tax break on (the $2 trillion) postal savings accounts had been abolished - encouraging its holders to buy into shares. Also, Japanese interest rates would stay low, keeping bank deposits and bonds uninviting. It was therefore forecast that over the next 18 - 24 months, individuals would raise equities from 10 percent of their total financial assets up

to 15 percent, providing a net inflow of another 30 trillion Yen. Another important factor, it was argued, was that, at present, Japanese institutions were massively under-exposed to equities compared to their Western counterparts and this would tend to be readdressed. For example, the three largest pension funds - state, post office and public employees - had, in effect, no equity investments. Changes in regulations would now allow them to put 20 - 30 percent of their assets into equities over the next five years. Current assets of these three funds alone stood at over 700 billion Yen. (For comparison, British and American pension funds were quoted as having 77 and 54 percent, respectively, of their assets in equities.) By the year 2010, these institutions would have to support a population in which 20 percent of the population would be over 65. Pressure would therefore be on them to achieve the kind of capital growth that fixed income was unlikely to provide.

We ask, Can 'fundamentals' theory justify the high P/E ratios of Tokyo's shares? It has to be recognised that the underlying Japanese economy was still booming through 1987-88 at 3.7 percent(Ref FT 58), and corporate earnings per share were growning by an average of 12 -15 percent(Ref EC 18, FT 54). Articles(Ref FT 54) also reported a sense of solid confidence of Japanese investors in their own country. If we apply the 'fundamental' formulae with the growth rate, g, set to zero, the real rate of return on Japanese shares would evidently be negligible. The growth rate of Japanese companies, we know, is high. But Japan's high growth rates of 12 to 15 percent can not endure indefinitely. Also, it should be stressed, the further we look ahead, the more risk is embodied in our assumptions. Technically, the further we look ahead, the more non-diversifiable market risk is encountered in our calculations, so that a company whose earnings are judged to intensify in the future, must be accorded a higher beta on that account. The required rate of return - that is, the discount factor - for a high growth company will therefore be higher than for a no growth company. Very roughly speaking, an estimated growth rate of 12 to 15 percent might rather more than double the worth of the company in about 5 years. But, on account of its higher beta, that would justify something much less than a doubling of its P/E ratio compared to that of a no growth company. Based on 'fundamentals', and making a comparison of

Western shares with non-Japanese shares, Japanese shares are incredibly over-priced.

Various models have been proposed to account for the high P/E ratios of Tokyo's shares. Salomon Brothers claimed to have a formula on the basis of which the Japanese market was, in fact, 'fairly valued'. The model accounted for interest, growth and inflation rate - as must any 'fundamentals' theory - but the final ingredient was reported to be 'the country's incredible self-confidence' (Ref IC 4).

Another model was based on the supposition that Japanese accounting systematicly under-estimates earnings and so distorts the idea of a P/E ratio. This idea has been developed in The Economist. In February (Ref EC 18), it claimed that rather than looking at the often artificial profit figure, it was perhaps more appropriate to compare gross cash flow with share price. P/E ratios were then 'only' double western ones.

In August (Ref EC 19), The Economist article (titled, 'Why Japan's stock market is cheaper than you think'), was reporting on a theory which claimed that due recognition should be given to the fact that as much as 70 percent of Japanese shares are held by companies and investing institutions, not for anticipated dividend or capital gain, but to consolidate business relationships. For example, because holding companies as such are banned in Japan, groups use complex webs of cross-holdings of shares to identify their interests and alliances. Also, companies will often own shares in their clients or suppliers as tokens of good faith and long-term support. According to the theory, share prices thereby reflect a 'premium' for the low amount of marketable equity. Applying the theory was supposed to bring the P/E ratio for Nippon Telegraph and Telephone down from 249 to 12! Applied to the Japanese market as a whole, the theory reportedly brought Tokyo's end of 1987 P/E ratio down from 52.7 to less than 13. A basis for the theory was that, 'if 70 percent of shareholders are there for the long-haul, then the remaining 30 percent have little choice but to look for capital gains'. This might be fair enough as an explanation for low dividends, but it seems to us that it goes no way at all to explaining why the 30 percent 'have little choice but to accept low *yields*'. Another point is that P/E ratios in Japan have not always been so high. For much of the past decade, the average P/E ratio on the

Nikkei index had swung between 20 and 30. The cross-holding or tactical-use aspect of a share - which is the whole basis for the theory - has hardly changed so significantly as to explain this staggering rise in P/E ratios.

In short, we believe that, the high P/E ratios of Japanese shares can not satisfactorily be explained in terms of either i) the basic form of the 'fundamentals' theory of Appendix 1, or ii) any of the alternative variations of this model outlined above. It appears rather, that the valuation of a share in Japan is not unrelated to the valuation of a work of art in the West : one price is as valid as another. The decision to buy rests on the supposition that 'the future market' for that product appears relatively favourable. So, for example, the art critics of Amsterdam in Rembrandt's time would be aghast at the high valuations we now place on the works of their masters. But a lesser-known Rembrandt today would still represent a sensible investment if, for whatever reason, it is anticipated that much more money will want to enter the market for that kind of product. In other words, the Tokyo market is a 'trend' market. This, after all, is at base, the argument of the writer replying on behalf of 'Nomura International Finance' (Ref EC 13, above) : the present price of the product represents a base price; - if it is anticipated that money is about to enter the market, the price is bound to go up. By this argument, we are saying that the present price of Japanese shares is based on speculation in the sense of a collective belief in future higher prices. Japanese shares are different from non-Japanese shares by virtue of the reasons given above. At present that makes their earnings worth over four times that of 'non-Japanese' shares. But it is difficult not to be reminded of Galbraith's warning (see section 3 of Chapter 3):

'The collapse in the stock market in the autumn of 1929 was implicit in the speculation that went before. The only question concerning that speculation was how long it would last. Sometime, sooner or later, confidence in the short-run reality of increasing common stock values would weaken. When this happened, some poople would sell, and this would destroy the reality of increasing values. Holding for an increase would now become meaningless; the new reality would be falling prices. There would be a rush, pellmell, to unload. This was the way past

speculative orgies had ended. It was the way the end came in 1929. It is the way speculation will end in the future' (Ref F2).

Rembrandt's paintings are unique and have stood a certain test of time. Dutch tulip bulbs didn't stand the test of such time before it was decided that they weren't quite so unique and their price crashed dramaticly.

2. Summary of this chapter

The practical limitation in accuracy of the 'fundamentals' model has been emphasised. It is difficult to believe that future dividend streams can be estimated with much confidence without something like a 40 percent error band. Another limitation of the 'fundamentals' model is that it is not independent of the 'psychology' factor in human behaviour. The risk premium in the model is a direct function of crowd psychology.

It is believed that 'optimism' based on a collective belief in future higher prices - and quite unrelated to any detached appraisal of likely future company profits - drove the market's rise prior to the crash. It must be emphasised that such speculative or self-sustaining rises in the market can *not* be accommodated by the 'fundamentals' model.

We believe that in a not particularly sophisticated fashion, stock prices firm upward on the advent of good economic news, and they bump downward with bad economic news. In the West, 'fundamentals' impose themselves on the market in a rather crude way via investors' regard for the P/E ratio. When values rise above the 15 - 17 mark, the value of the market is increasingly put in question - and so it becomes increasingly likely that any unfavourable economic news will reverse any speculative rise - that is, a market rise brought about by investors' self-fulfilling belief in continuing rising prices. We can say that once such speculation gains momentum, there is 'a crash waiting to happen'. In summary, we say that the 'psychology' of investment can dominate the market's price movements over time periods of anything from minutes or hours to a year; but that 'fundamentals'

'set bounds' within which prices can move and therefore they dominate the long term market trend.

The concept of 'the reverse yield gap' is not a good one. This is because it compares what is closer to being a *real* rate of return(P/E ratio) with a *nominal* rate of return(on bonds). It is more instructive to compare the *index* - that is, the over and above inflation -linked rate of return with a share's P/E ratio. The impact of inflation on the prospects for companies' profits can then be assessed separately. Since their introduction in 1981, the return on U.K. index-linked bonds has in fact remained fairly stable - at around 3.5 percent.

The views of the financial community in section 3 of Chapter 3 that 'personified' the markets, attributing the October crash to a 'message' or 'statement' from the markets related to imbalances in the world economy - the 'oracle of the markets' -, is viewed here as crediting the markets with more sophistication than they merit. The simpler statement that the October crash was the pricking of a speculative bubble is accepted.

The high valuation of Japanese shares (P/E ratios upward of 60) can not be justified in terms of our 'fundamentals' model. In the literature, various adjustments have been made to the model in order to accommodate Tokyo's high P/E ratios. But none can be said to be satisfactory. None of them can explain the staggering rise in Tokyo's P/E ratios. All of them, in effect, rely on a new non-fundamental-market parameter and its value is that which allows the model to fit the current facts. We rather believe that the Tokyo market is a 'trend' market and that it is the 'psychology' of investment that drives it. 'Fundamentals' models simply do not apply. Japanese shares are different to Western ones - particularly, because government and the finance institutions co-operate to support share prices, and because the possession of shares in a Japanese company can be of importance in establising business agreements with that company. But it very much remains to be seen whether the government and financial authorities can continue to sustain the Tokyo market - or even effect a soft landing if prices start to fall. If there is a Tokyo crash, it will, of course, with hindsight, appear to have been every bit as logical as every previous financial crash.

Chapter 5 : The Conclusions of the Project

The conclusions of the project may be summarised :

1. The world stock markets' sharply upward trends through the greater part of 1987 were driven by a self-fulfilling belief in rising prices. To this extent, the rises were unrelated to the detached appraisal of likely future company profits. These speculative rises were reversed dramaticly in October when markets lost over a quarter of their value in a few days. During the stock market crash itself, downward movement of prices became self-sustaining as they hit freefall. In our view, therefore, the crash represents the classic bursting of a speculative bubble.

Examples of market fluctuations and over-reactions to economic data have been identified in the (six month) aftermath of the crash. Though less dramatic than the crash, these market movements have changed prices by as much as ten percent over a week or so, and even by three or four percent in one day.

We have concluded, therefore, that the 'psychology' of investors has been of a major importance in the movement of share prices in the periods leading up to, during, and in the aftermath of the October crash.

2. The reason why the 'psychology' of investment can come to dominate is that there is a practical limitation in accuracy in applying any 'fundamentals' analysis. It is unlikely that future dividend streams can be estimated with much confidence without a +/- 40 percent error band. This limitation of the 'fundamentals' equations 'makes room' for the 'psychology' of human investment.

3. We believe that stock prices, in a not particularly sophisticated fashion, firm upward on the advent of good economic news, and they bump downward with bad economic news. In the West, 'fundamentals' influence the valuation of market shares via a 'regard' for the P/E ratio(price to earnings ratio) of a share. Through 1987, as P/E ratios rose above the values that had marked previous historical highs (the 15 to 17 mark), the market's value began to be questioned, and it would increasingly be so as P/E values continued to rise. And so it became increasingly likely that any unfavourable economic news would reverse the speculative rise - that is, a market rise brought about by investors' self-fulfilling belief in continuing rising prices. In other words, once such speculative rises gain momentum, there is, as Alan Greenspan, the Chairman of the U.S. Fedeal Reserve, put it, 'a crash waiting to happen'. *In summary, we say that the 'psychology' of investment can dominate the market's price movements over time periods of anything from minutes or hours to a year; but that 'fundamentals' 'set bounds' within which prices can move and therefore they dominate the long term market trend.* It is in this somewhat 'crude' manner that we believe that 'fundamentals' are imposed on Western markets.

4. The valuation of the Tokyo stock market is not constrained by such a regard for 'fundamentals' or P/E ratio. The Japanese market is 'a trend market' in which the 'psychology' factor is all. At present, investor confidence remains strong, not just in the Tokyo Stock

Exchange, but also in the Government and its ability to keep things working smoothly. There are reasons why Japanese shares are different - in particular, they are i) supported by active co-operation between government and the finance institutions, and ii) they possess a strategic value in business in that possession of shares in a company can be used to establish confidences and agreements with that company. In the literature, various adjustments have been made to the basic 'fundamentals' models to accomodate Tokyo's high P/E ratios(upward of 60). But none are deemed here to be satisfactory. None of them can explain the staggering *rise* in Tokyo's P/E ratios. Our view is that 'fundamentals' models are simply not relevant to the Tokyo market. It remains to be seen whether Tokyo's almost unbelievably high P/E ratios can be maintained. If there is a Tokyo crash, it will with hindsight, appear to have been every bit as logical as every previous financial crash.

5. Parallels with the Great Crash of 1929 and its aftermath - the Great Depression of the 1930s, allow us to comment that economic insight and its policy implementation have at least come a long way since the 1930s. The relationship between falling share prices and the real economy - the 'liquidity principle' - was well understood this time around. The gross errors of the aftermath of the 1929 crash were not repeated.

6. A number of technical insights regarding the 'fundamentals' models have been made. So far as is known, these points have not previously been adequately highlighted, and so they contribute to the value of this project:

(i) interestingly, the 'fundamentals' model is not independent of the 'psychology' of investment. This is because investors' attitude to risk is not independent of the social climate. So, for example, because of the losses inflicted in the October crash, investors' perception of the 'riskiness' of the market place has been heightened. In the West, a higher expected return is now required for undertaking the same unit of market risk, and this has the effect of lowering share prices.

(ii) there is high 'uncertainty' in the immediate term associated with the arrival of most new economic data - this persists while its implications are being digested and worked out. This implies a higher variance and hence a higher discount factor for the new likely dividend streams. Therefore, for favourable new economic data, the 'uncertainty' effect lessens the impact. For unfavourable data, 'uncertainty' heightens the impact. Thus, in general, prices should tend to 'firm up' less dramatically than they sometimes 'crash' down. This goes some way to explaining the severity of the October crash.

(iii) the further we look into the future, the less our confidence. Hence the greater the variance or uncertainty that must be associated with future time periods. This implies a higher discount factor for future anticipated earnings. A high growth company therefore has a higher beta than a company in the same line of business but which plans to make its profits sooner rather than later. Japanese companies that anticipate improved future profits should discount those profits with a higher beta.

(iv) the concept of 'the reverse yield gap' is not a good one. This is because it compares what is closer to being a *real* rate of return(P/E ratio) with a *nominal* rate of return(on bonds). It is more instructive to compare the *index* - that is, the over and above inflation -linked rate of return with a share's P/E ratio. The impact of inflation on the prospects for companies' profits can then be assessed separately. Since their introduction in 1981, the return on U.K. index-linked bonds has in fact remained fairly stable - at around 3.5 percent.

Finally, it is perhaps not inappropriate to make our own comment on the quality of the financial reporting in the three publications that we have used for this project. The Investors' Chronicle, in its own words, attempts to value particular shares 'relative to the market'. This has limited its use to us since we are concerned more

with the market as a whole. The Economist always presents a timely overview of economic events and it is not afraid to attempt to be predictive. But it does gloss over the shortcomings of its predictive insight, (for example, in 'predicting' the October crash after the event(leader article of 24/10/87) and in telling us 'Why Japan's stock market is cheaper than you think' - title of article of 6/8/88 - without reference to its earlier assertion that Japan's market was 'A crash waiting to happen'(14/11/87)). The Financial Times does not seek to be predictive so much as to make analysis and rationalisation of the day's economic events. A glance at the references for this project indicates the extent to which we are indebted to the Financial Times, and in particular to the editorial articles and the articles of Samuel Brittan. Since Samuel Brittan is also deputy editor of the Financial Times, his contribution to this project through the Financial Times should perhaps be emphasised.

APPENDIX

Appendix 1

The 'fundamentals' valuation of shares

(The theory in this appendix is most easily developed if all rates of return are expressed as a fraction. For example, a rate of return of 5 percent is written as 0.05)

(i) The Capital Asset Pricing Model (CAPM) of share valuation.

A 'fundamental' valuation of shares says that the value of a share (or a portfolio of shares) is the value of the stream of future dividend payments that would accrue to the investor who holds that share (or portfolio of shares) for good. Its value at the present time, Po, can therefore be written,

$$Po = \frac{D1}{(1+R1)} + \frac{D2}{(1+R2)^2} + \frac{D3}{(1+R3)^3} + \text{- - - - -} \qquad (i)$$

where,

Di = the dividend provided by the share at the end of year i,
Ri = the required annual rate of return over an i year period.
(R = the required annual rate of return assumed constant)

The required annual rate of return, R(or Ri), is assumed to be equal to the rate of return Rf that could alternatively have been obtained by investment in a risk free asset(such as Government bonds) augmented by some increment rate of return that is required to induce investment in a risky asset such as the stock market. This increment rate of return is called the market premium for risk.

To arrive at an equation for R, we first define Rm as the required rate of return on a representative sample of all market shares. We can then write,

$$Rm = Rf + (Rm - Rf) ,$$

where (Rm - Rf) represents the market premium for risk.

Our particular share (or portfolio of shares) may not carry the same exposure to the market's risk as the above representative sample of all market shares(with required rate of return Rm). This 'risk of the market' is impounded more in some companies than in others. For example, a company that depends on the sale of 'luxury' goods(such as holidays abroad) is more susceptible to upturns/downturns in the economy than is a company that sells 'essential' goods(such as basic foods). The exposure to market risk is 'geared up' for the seller of 'luxury' goods and is 'geared down' for the seller of 'essential' goods. We can therefore write,

$$R = Rf + \beta*(Rm - Rf), \qquad \text{(ii)}$$

where β is the factor by which we have exposed ourselves to the market risk of a representative sample of all market shares.

In summary, to determine the required rate of return, R, for a company, we need to know two 'base' required rates of return, Rf and Rm, as well as the company's own β factor.

(ii) <u>The constant rate of growth model.</u>

see over

(ii) The constant rate of growth model.

This provides us with a simplification of equation (i) above. We assume that a company has a constant rate of growth, g, that is, earnings in any year = earnings in previous year * (1 + g). To simplify the arithmetic, we further assume,

(i) all investment is financed from retentions, a constant proportion of earnings being retained in each time period,

(ii) the rate of return on a firm's investment is constant over time and the payoffs from investments occur in the form of perpetuities,

(iii) the required rate of return, R, is constant for the time period,

then equation (i) can be written,

$$Po = \frac{D1}{R - g} \qquad \text{(iii)}$$

The growth rate of the company, g, can be expressed as the product of the fraction of earnings that are re-invested, b, times the rate of growth on the investment itself, s :

$$\text{growth rate of the company, } g, \quad = b * s \qquad \text{(iv)}$$

For example, a company re-invests half of its earnings at a growth rate of 30 percent. The company therefore has a growth rate, g, of

$g = 0.5 * 0.3 = 0.15$, that is 15 percent.

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FT 56	A chill spring wind of fear		2/4
FT 57	Tokyo tilts at a psychological barrier	Stefan Wagstyl	2/4
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FT 59	Wall St and $ dive on wider U.S. trade deficit		15/4
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FIGURES

U.S. MARKET

S&P 500 Index

January 1982 to November 1987

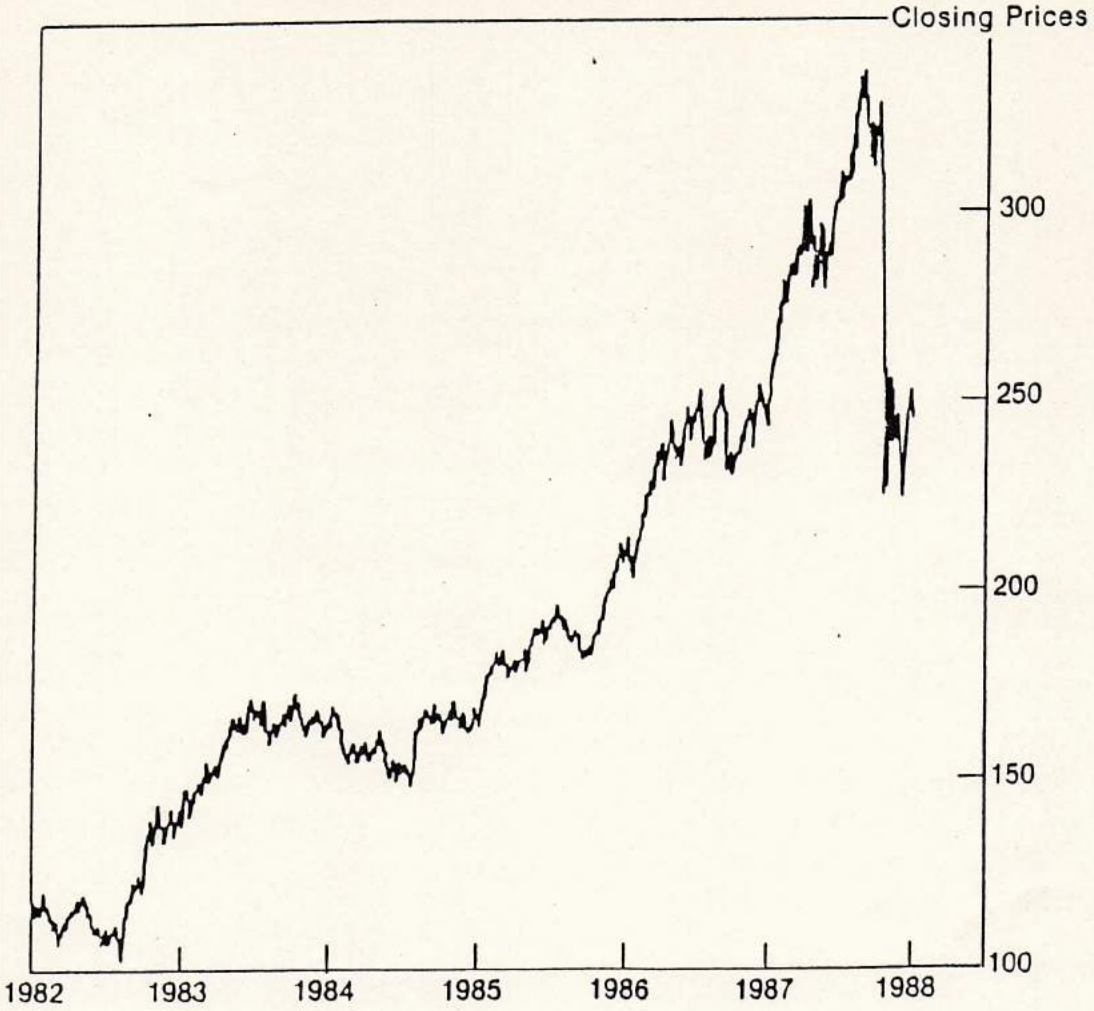

FIGURE 1

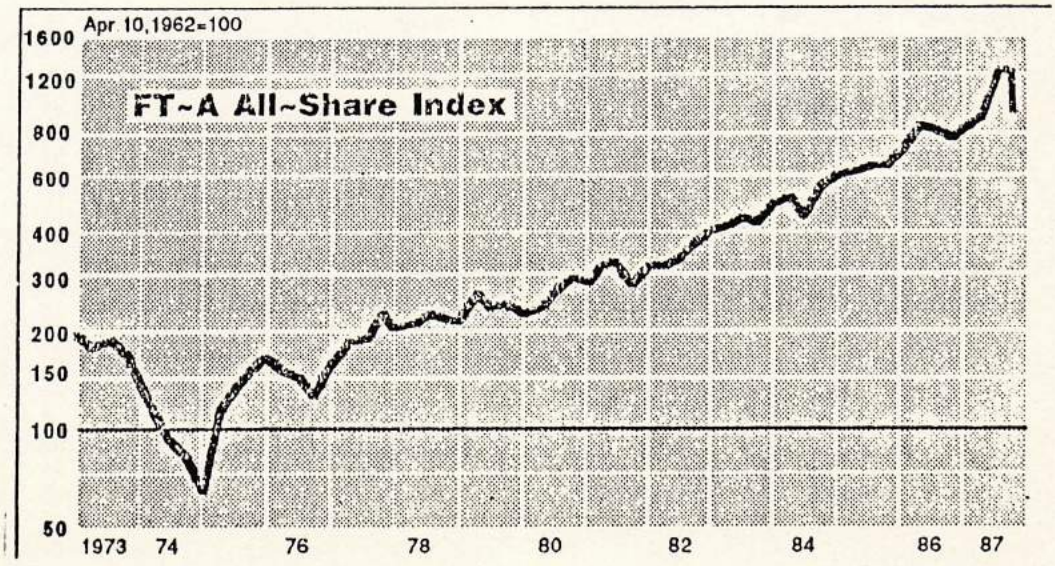

FIGURE 2

JAPAN MARKET

Tokyo SE New Index

January 1982 to December 1987

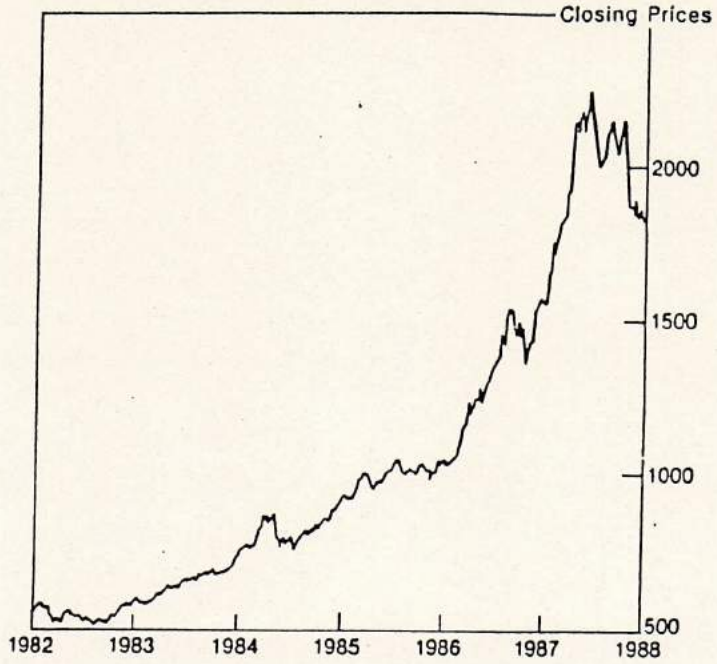

FIGURE 3

LONDON MARKET

FTA All Share Index

January 1982 to December 1987

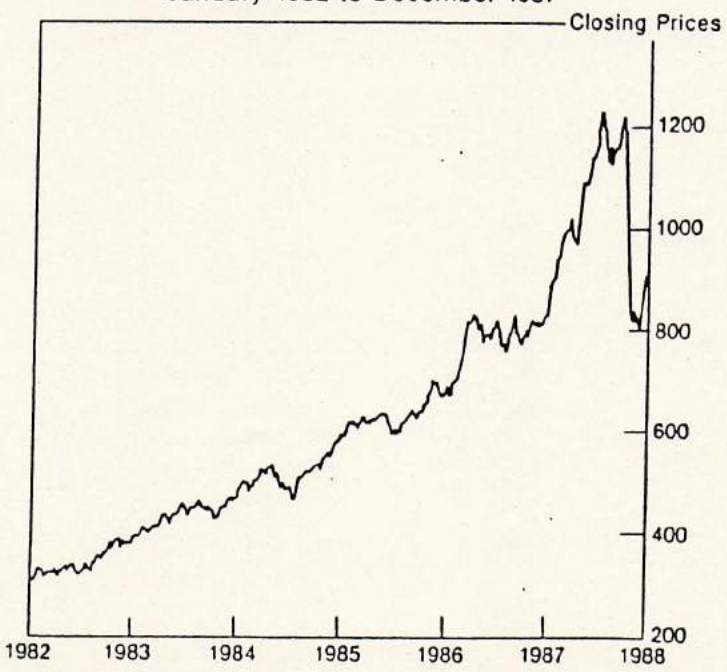

FIGURE 4

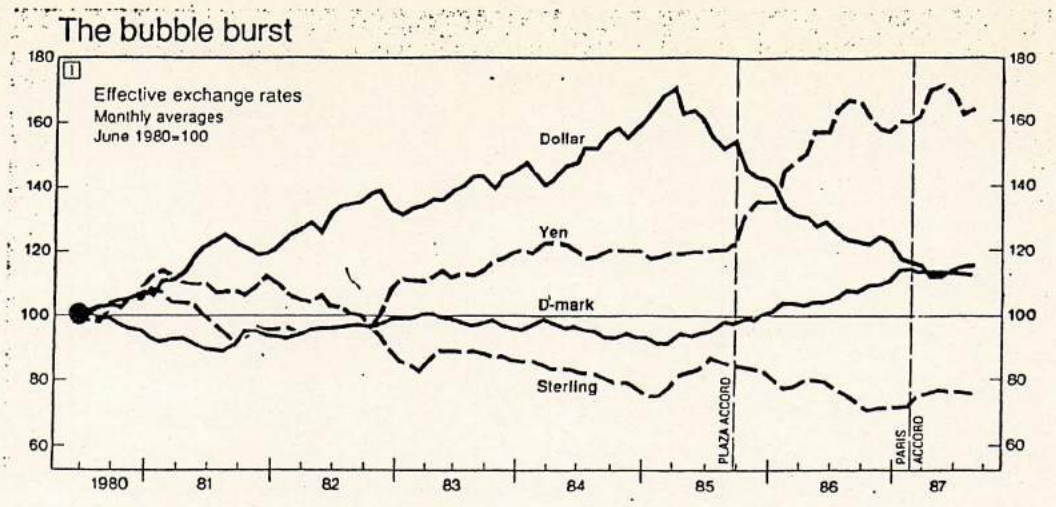

FIGURE 5

U.S. MARKET

Price/Earnings Multiple vs Long Term Govt. Bond Yield

January 1950 to November 1987

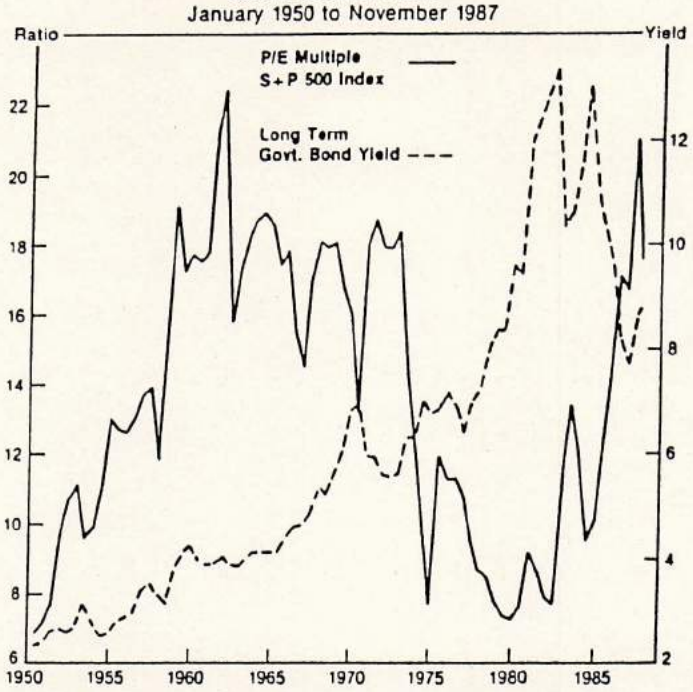

FIGURE 6

U.S. MARKET

Price Earnings Multiple vs Long Term Bond Yield

January 1982 to November 1987

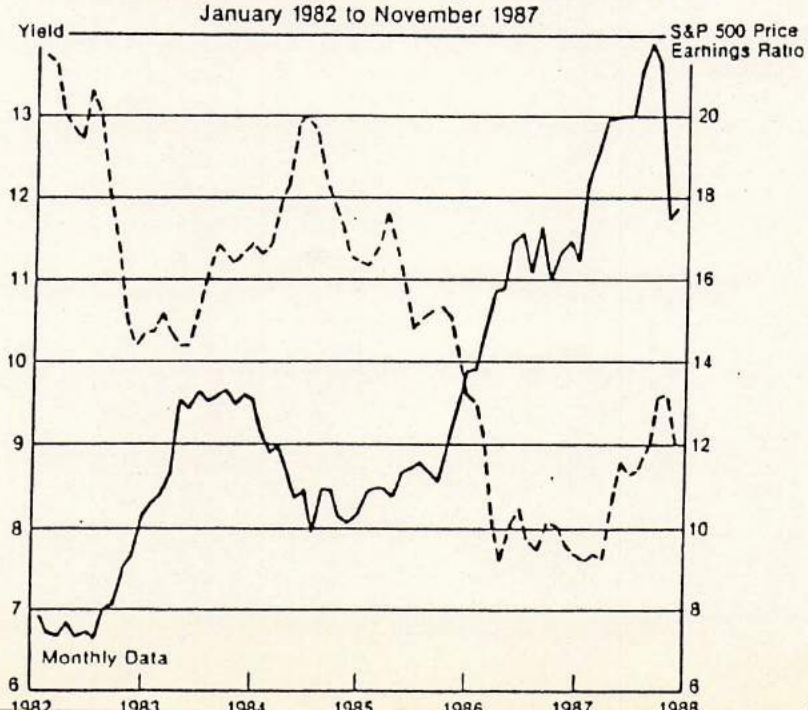

FIGURE 7

JAPAN MARKET

Price/Earnings Multiple vs Long Term Govt. Bond Yield

January 1982 to November 1987

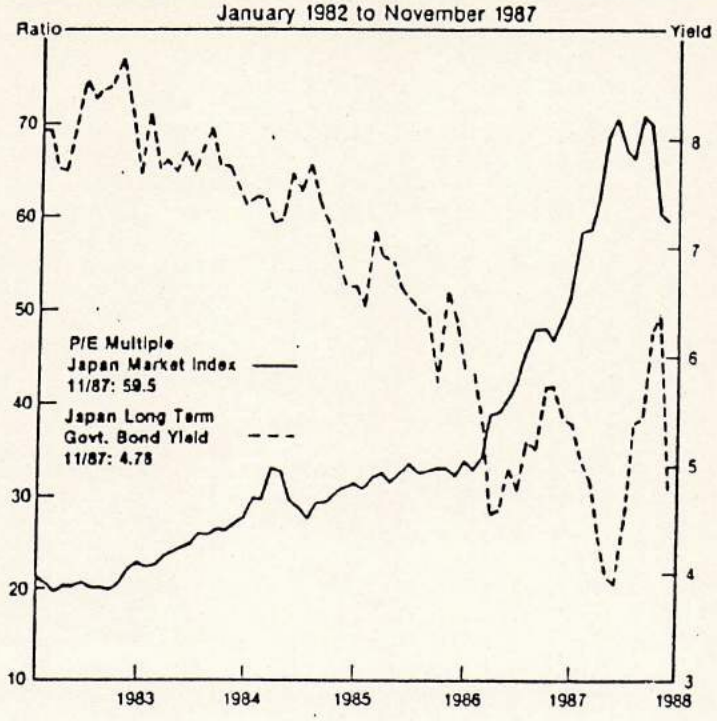

FIGURE 8

UK MARKET

Price/Earnings Multiple vs Long Term Govt. Bond Yield

January 1982 to November 1987

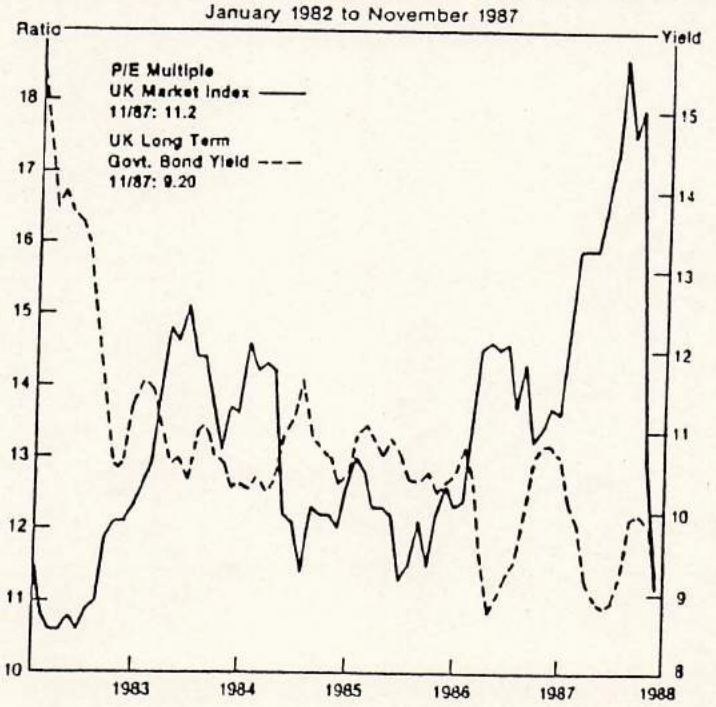

FIGURE 9

DOW JONES INDUSTRIAL ONE MINUTE CHART

October 14, 1987 to October 20, 1987

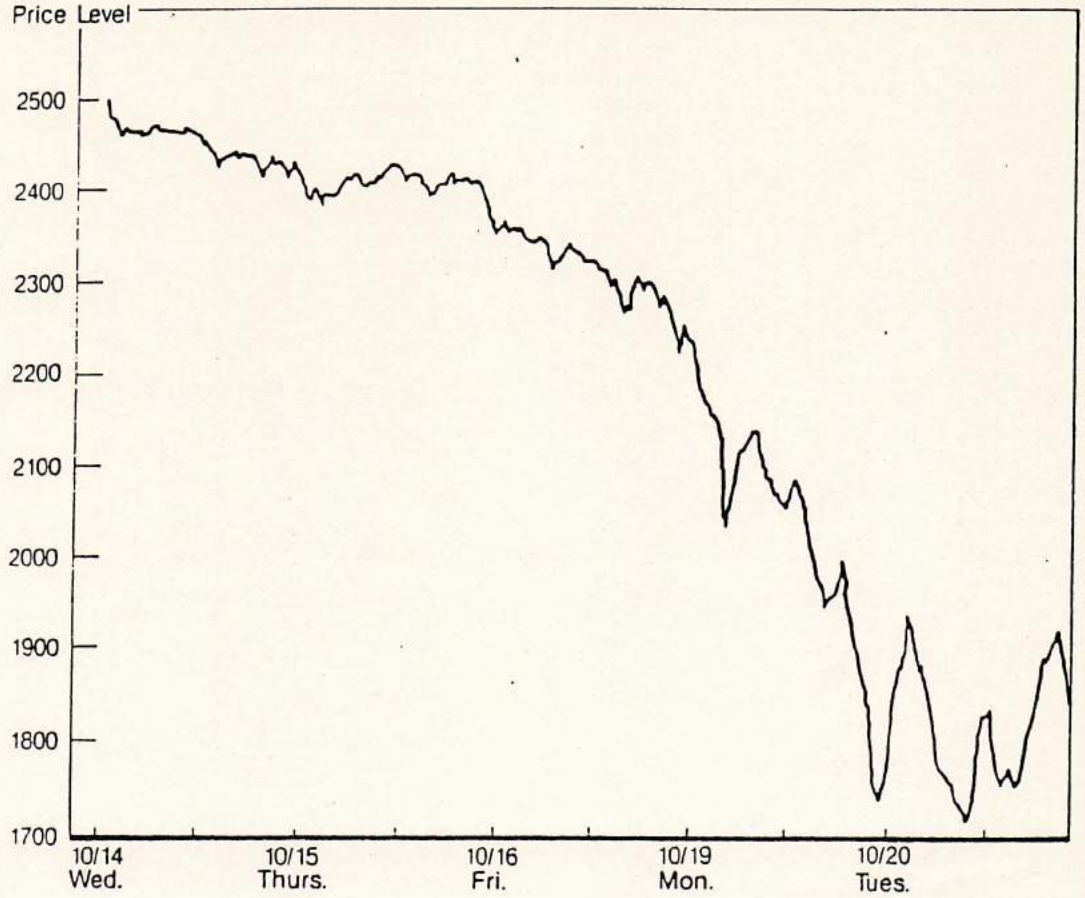

FIGURE 10

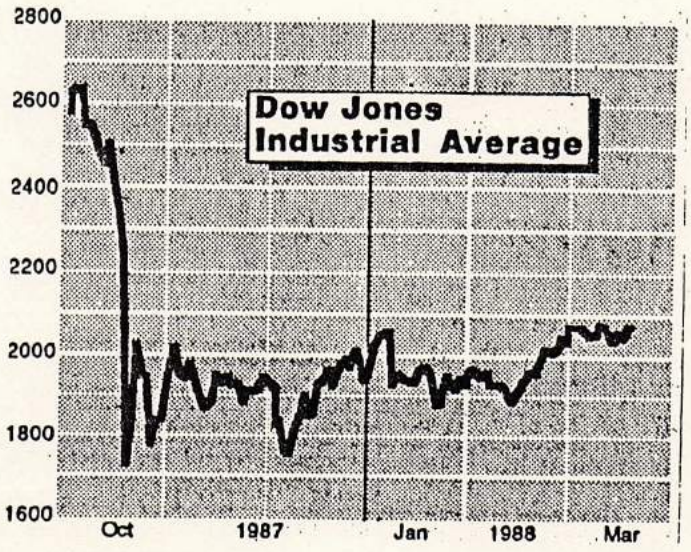

FIGURE 11

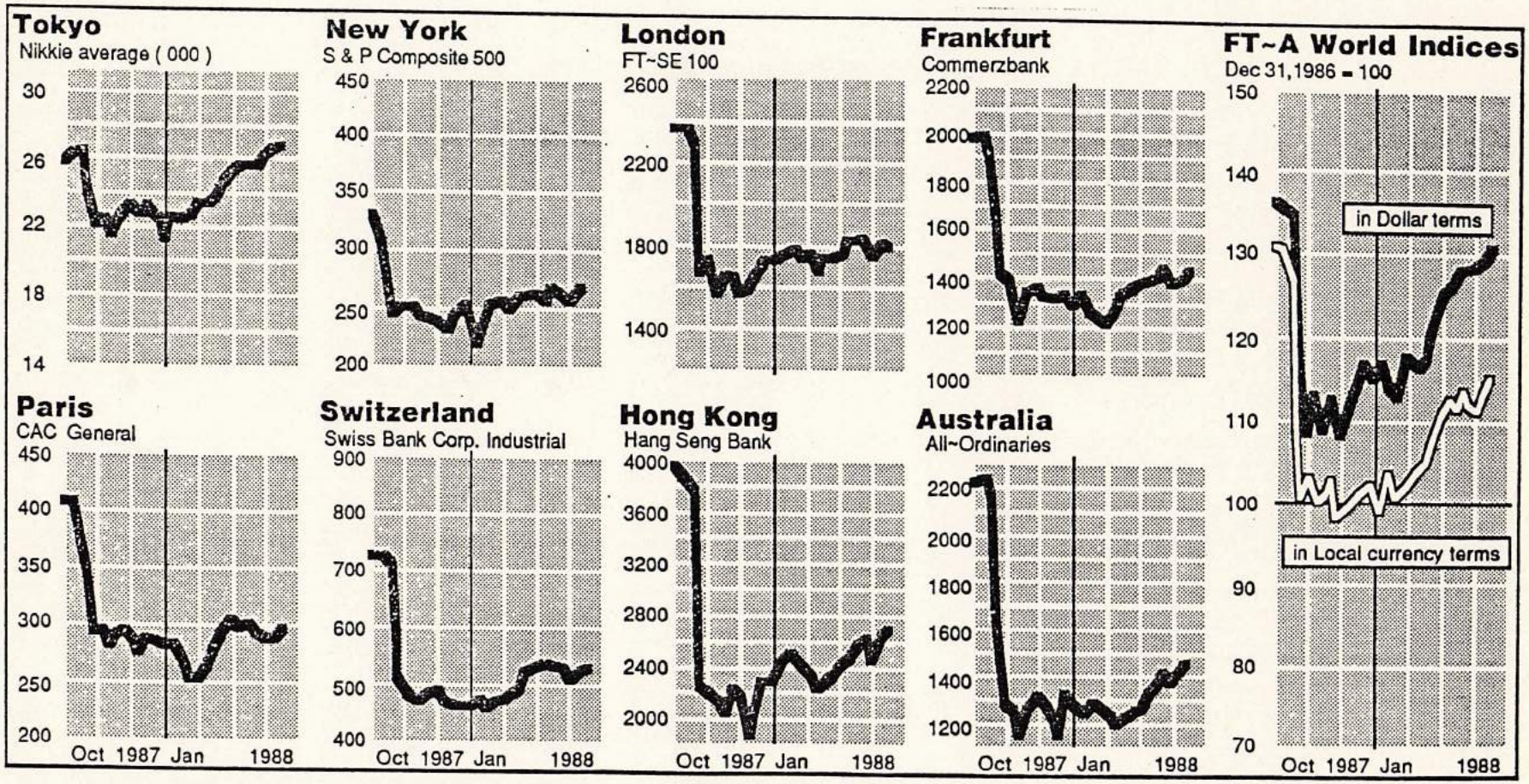
Tokyo
Nikkie average (000)
30
26
22
18
14
New York
S & P Composite 500
450
400
350
300
250
200
London
FT-SE 100
2600
2200
1800
1400
Frankfurt
Commerzbank
2200
2000
1800
1600
1400
1200
1000
FT-A World Indices
Dec 31,1986 = 100
150
140
130
120
110
100
90
80
70
in Dollar terms
in Local currency terms
Paris
CAC General
450
400
350
300
250
200
Switzerland
Swiss Bank Corp. Industrial
900
800
700
600
500
400
Hong Kong
Hang Seng Bank
4000
3600
3200
2800
2400
2000
Australia
All-Ordinaries
2200
2000
1800
1600
1400
1200
Oct 1987 Jan 1988

FIGURE 12

INFLATION AND YIELDS
1960 - 1987

Year	Rate of general price change per cent	Yields on government debt			Ordinary shares	
		2.5pc Consols	long dated (20 years)	short dated (5 years)	average gross dividend yield	average gross earnings yield
1960	1.0	5.42	5.77	5.44	4.26	9.02
1961	3.4	6.20	6.27	5.71	4.87	9.62
1962	1.6	5.98	5.89	5.24	5.49	8.88
1963	2.0	5.58	5.29	4.74	4.40	7.73
1964	3.3	6.03	5.80	5.24	4.63	8.07
1965	4.8	6.42	6.42	6.69	5.54	9.81
1966	3.9	6.80	6.90	6.93	5.67	7.69
1967	2.5	6.69	6.80	6.66	5.16	6.89
1968	4.7	7.39	7.55	7.59	3.69	4.92
1969	5.4	8.88	9.05	8.81	3.90	5.77
1970	6.4	9.16	9.25	7.89	4.52	6.86
1971	9.4	9.05	8.24	6.68	3.96	6.06
1972	7.1	9.11	8.97	7.68	3.31	5.42
1973	9.2	10.85	10.78	10.45	4.10	9.46
1974	16.1	14.95	14.77	12.51	8.00	21.90
1975	24.2	14.66	14.39	11.48	6.70	19.33
1976	16.5	14.25	14.43	12.06	6.16	15.40
1977	15.8	12.32	12.73	10.08	5.50	15.39
1978	8.3	11.92	12.47	11.32	5.48	16.15
1979	13.4	11.38	12.99	12.64	5.69	15.91
1980	18.0	11.86	13.78	13.84	6.55	19.00
1981	11.9	12.99	14.74	14.65	5.96	14.68
1982	8.6	11.90	12.88	12.79	5.47	12.34
1983	4.6	10.24	10.80	11.19	4.60	10.12
1984	5.0	10.15	10.69	11.29	4.46	10.56
1985	6.1	10.11	10.62	11.13	4.38	10.38
1986	3.2	9.47	9.87	10.01	3.93	9.15
1987	4.2	9.31	9.47	9.36	3.41	7.63

Source: Economic Trends, Central Statistics Office
Financial Statistics, Central Statistics Office

FIGURE 13