WILL AUSTRALIAN INVESTORS GET INDEX FUNDS?

By Ray Ball, Ph.D., A.A.S.A. (Snr.), A.S.I.A.
Professor of Management, Australian Graduate School of Management

(This article is based on a paper delivered at a Seminar on Portfolio Management sponsored by The Securities Institute of Australia in Sydney on March 8, 1977, under the invited title "What Happened to Beta?")

The performance of large investment portfolios has come under increasing scrutiny in recent years. If the trend in other countries continues in Australia, then portfolio performance will come under even closer scrutiny in the future.

The trend toward portfolio evaluation reflects a more basic shift which is underway in the investment community. The shift is away from thinking in terms of individual investments. It is toward a *portfolio* approach to portfolio management.

It seems almost trivial to suggest a portfolio approach to portfolio management. But it is a recent phenomenon. To illustrate the shift which is underway, we need only compare the notion of measuring a *portfolio's* performance with the approach taken in law, since the law tends to reflect what was deemed to be prudent commercial practice at some past date. To illustrate the comparison, consider two imaginary portfolios. One portfolio earned 10% over a year by investing equal amounts in 1 investment which earned −100.0% (i.e., which went into liquidation) and in 99 widely-dispersed investments, which averaged 11.1%. The other portfolio earned 5% by investing equal amounts in 10 investments which earned −40% and 10 which earned +50%. The fiduciaries in the first portfolio would experience difficulty at law in explaining the investment that went into liquidation, whereas the law would most likely leave the trustees of the second portfolio alone. The law would be more concerned about the single investment which turned out very poorly for the first portfolio than about the second portfolio's lower overall performance. In contrast, a *portfolio* approach would rate the second portfolio as better on two accounts:

(1) the rate of return *on the portfolio* was higher (10% vs. 5%); and
(2) the portfolio was much less risky, because it was more widely diversified.

This is nothing more than an illustration, but it shows that emphasis on *portfolio* performance can be inconsistent with prior commercial practices, which have been incorporated in law. The classic legal decisions on the fiduciary responsibilities of investment trustees were handed down in an era when the focus of attention was on individual investments, not on portfolios, and consequently they can be out of tune with current thinking. There *has* been a shift in emphasis.

The portfolio emphasis has spawned several major developments. Some of these are discussed below under the headings: "Portfolio Theory", "Efficient Markets", "Evidence on Portfolio Performance" and "Index Funds". This latter development is the main theme of the paper, and the other topics are discussed because they provide necessary background.

The portfolio emphasis has also spawned some exaggerated behaviour — exaggerated claims by some of its proponents and exaggerated responses from some of its opponents. Since these overreactions are neither attractive nor productive to engage in, I attempt to head them off by dealing with several common misconceptions at the end of the paper.

1. PORTFOLIO THEORY

Portfolio theory can be simply described as a portfolio approach to investing. One area of portfolio theory is performance measurement, in which portfolios' risks and rates of return are measured and evaluated. The two-portfolio illustration in my introductory remarks serves to highlight the portfolio versus individual-investment approaches to performance measurement. I note in passing that too little portfolio performance measurement is done in Australia.

Nowhere is the difference in approach more marked than in the approach that portfolio "theory" takes toward risk.

Most people regard risk as being similar to statisticians' "variance".

A risky portfolio then is one with high variance or, in other words, a very large spread of possible outcomes. A lower-risk portfolio then is one whose outcomes are more readily predictable to a given degree of accuracy. Risky portfolios, because of the higher uncertainty they bear, exhibit greater swings in value. The statistical concept of "variance" is an attempt to capture the degree of uncertainty of a portfolio's value in a way that is capable of measurement and practical application.

That is all very well and good at a portfolio level. But is it reasonable to view *an individual investment* as being risky because its outcomes are difficult to predict? Viewed on its own, in a Robinson Crusoe type of existence, that seems reasonable. But in a portfolio context, where investments sit side by side, it does not seem at all reasonable to ignore the simple, practical fact that

some risk can be reduced, even substantially reduced, by diversification. We are not Robinson Crusoes.

As a result, the unpredictability of the performance of a portfolio is not the simple sum of the unpredictabilities of its individual investments' performances. To see this, we need only consider two hypothetical portfolios: one committed to equity investments in one particular industry and the other with investments spread over fixed interest securities, property, commodities and equity issues from the full range of manufacturing, service and rural industries. Almost regardless of the riskiness of that one particular industry, the first portfolio would be much riskier than the second. It would have all of its eggs in one basket.

That we've all known for years. The interesting thing is a simple and in many respects obvious extension of this common knowledge: that, from the portfolio vantage, an individual investment is risky *to the extent to which it adds to the risk of a portfolio.* In our simple illustration, another equity investment from the same industry in the poorly-diversified portfolio would, in that portfolio, be very risky. On the other hand, the addition of that equity to the well-diversified portfolio could add little risk at all, if the performance of the equity were not dependent upon the same sorts of things as the performances of other investments in the portfolio. The adage, "Don't put all your eggs in one basket", can be restated very simply: "An investment is risky if, when added to a portfolio, its performance depends upon the sure sorts of factors as the performances of other investments in the portfolio".

From a *portfolio* vantage, and individual investment need not be risky, because, viewed in isolation, its future performance is very unpredictable. If a portfolio manager is concerned with the risk of the portfolio, then the relevant question is whether or not the individual investment adds to the risk of the portfolio. That in turn depends upon whether the performances of the investment and the portfolio are allied to the same factors.

This notion of interdependence of performances is captured in statistical terms by "covariance". An investment whose return tends to covary a lot with the returns of other investments in a portfolio is risky in the sense that it tends to exaggerate the swings in portfolio performance. An investment whose return tends to covary little offers little risk. It is worth noting that variance and covariance are precise, measurable concepts which portfolio theory applies to the area in lieu of the vague, immeasurable concepts of risk which preceded them.

Not all risk can be removed by diversification. An all-equity portfolio would achieve maximum diversification if it owned a share in every equity in the market index, but it would still face the risk attached to the performance of the market as a whole. An all-asset-in-the-economy portfolio would achieve maximum diversification if it owned part of the entire economy, but it would still face the risk of the performance of the economy, which has been substantial in recent times.

Unfortunately, we don't seem to be able to manage the economy in such a way as to make its total performance totally predictable (though the politicians seem to think they can, if only in their first year of office), and hence there is at least one source of covariance among investment performances. If the plug is pulled out of the economy, most of us go down the drain.

This is the so-called "beta" definition of risk which caused such controversy. A high-beta investment is one which is relatively sensitive to the same sorts of factors as other investments in a typical portfolio — and whose rate of return tends to go up and down in unison with the rates of return on a large proportion of other investments. It therefore adds a lot to the risk of a typical portfolio and, from a portfolio viewpoint (as distinct from a Robinson Crusoe viewpoint), it is a risky investment.

Portfolio theory takes this sort of thinking much further. For example, two of its propositions are:

1. rewards exist in the capital market for bearing risk which cannot be diversified away, the rewards being in the form of expected (but, of course, not guaranteed) higher returns; and
2. there are no rewards for bearing diversifiable risk, the grounds being the economic version of the dictum: "you never give a sucker an even break."

These are not relevant to the present topic of index funds, and are not discussed here*. One of the imaginative developments of portfolio theory, the construction of index funds or index-matched portfolios, is described after a background discussion of market efficiency and mutual fund performance.

2. *MARKET EFFICIENCY*

Capital markets are "efficient" because investment analysts by and large do a very good job. In searching out under-valued and over-valued investments, analysts tend to make those investments neither under-valued nor over-valued. Suppose, for example, that an item of good news makes a particular equity look attractive at its existing price. If analysts have done their homework well, then competition for that equity will increase its price. The price will tend to increase until it "fully reflects" the good news. If the market includes many good, competing analysts, the price adjustment will occur quickly. This is the cornerstone of the efficient markets concept: that analysts do a

*The Interested reader is referred to the *Australian Accountant*, March and April 1976, for discussion and evidence from the Australian context.

good job of investment analysis, and incorporate available information into prices.

Let me put it a different way. To claim that the market is inefficient is to derogate the performance of your colleagues. Are they sufficiently ill-motivated or ill-informed *systematically* to leave profitable investment propositions untaken?

There is a lot of evidence that the share market is efficient. There is a lot of casual evidence which purports to show market inefficiencies. Much of the latter is from people with vested interests in the matter, and shown that the market makes mistakes (which is hardly surprising). Of more lasting value to the portfolio manager is the question of whether the market *systematically* makes mistakes: whether in foresight, as distinct from hindsight, one can *expect* to outperform the market. As noted above, this translates into whether one can expect investment analysts as a whole to do a poor job and to leave market inefficiencies unexploited.

The evidence on how the Australian market reacts to information is not as plentiful as its U.S. counterpart. But it is growing and it is relatively consistent. It can be summarized only briefly here.

One of the first studies was Philip Brown's investigation of the effect of profit reports on Melbourne share prices. The efficiency of the market's response was confirmed in a subsequent and more detailed study of Brown, in conjunction with Phillip Hancock. The three relevant findings of these studies are:

1. Most of the adjustment of share prices to profit news occurs well in advance of the profit report;
2. On the first *day* on which there is a transaction after the *preliminary* profit announcement, there is a substantial price adjustment;
3. On subsequent *days*, there is no extra return which can be expected from utilizing profit announcements: the profit information has already been reflected in prices.

By the time the "glossy" annual profit report comes out, some time after the preliminary, it is "old hat". There is no important news in it and there is no recognizable share price reaction to it. Yet how many analysts have reasoned: "Buy company X because it has had three straight years of earnings growth?" The evidence shows this to be equally as profitable as the opposite strategy: "Buy companies with three straight years of earnings decline".

Other studies of the Australian share market have focused upon the market's reaction to a range of information sources: to dividend announcements, bonus issues, share splits, new issues and asset revaluations. Each of these tends to convey information about managements' expectations. Each therefore is associated with share price revisions. But the price reaction has occurred at or before the time of the announcements. After the announcements, systematically profitable opportunities to trade on the basis of stale information do not appear to exist.

Why would one expect otherwise? With so many professional and "amateur" analysts around the country, surely most of the lucrative opportunities have long since gone? The evidence, as I interpret it, is that investment analysis is such a competitive game that there is nothing to be gained from analysis of publicly-available information.

There are three other types of evidence which are relevant to the efficiency of Australian markets. First, "filter" tests and other statistical tests conclude that the sifting of old share price data seem profitless. For example, "filter" rules work on the assumption (implicit in most charting theories) that price movements of more than a certain percentage are signals of future price movements. These rules have been tested on Melbourne price data and they do not perform better than a rule of randomly selecting shares. Again, would one expect otherwise? If the past were a guide to predicting the future, would there not be a scramble of investors attempting to profit from that information, and would they not bid share prices up or down (as the case may be) until present share prices incorporated all available information? In one sense, proponents of chartist and cycle theories exhibit the worst traits of intellectual arrogance: they use elaborate theoretical structures combined with the assumption (however implicit) that only *they* know about persistent market price patterns. If the *market* knew about the patterns, then the patterns would disappear immediately. The evidence, as I interpret it, is that the share market works reasonably well because there is no monopoly on this type of knowledge.

The second type of evidence that is relevant to the efficiency of the Australian share market is the effect of large transactions on share prices. A common belief is that large sales can only be made at reduced prices, because the share market is "thin". That is, an increase in the supply of scrip to the market it is supposed to depress market prices, demand being assumed to be held constant. On reflection, this theory implies two strange things: (1) that there are price recoveries after large sales, when the supply of scrip returns to normal; and (2) that potential buyers of large parcels (e.g. the institutions, funds, large companies) should bid against each other to acquire the parcels, which will be purchased at lower prices and higher yields. This bidding should continue until their prices are bid back up to approximately their market price prior to the large offering. In a well-functioning market, large sales should not depress share prices because of market "thinness" — there is always an incentive for astute buyers to bid against each other and force prices back up.

The question is best settled by the evidence. A study of 167 large sales on the Sydney Exchange, ranging in size from 0.005% to 39.5% of the issued shares of the companies concerned, found that, after allowing for market-wide price movements:

1. On average, the price at which the large transaction was executed was two-tenths of one percent *higher* than the previous transaction for that share;
2. For the 49% of the large transactions where the executed price exceeded the prior price, there was a slight tendency for the executed price to increase with the percentage of outstanding shares which was traded;
3. For the remainder, there was an extremely slight tendency for the executed price to decrease with the percentage traded; and
4. there was no price recovery.

It seems extremely difficult to find evidence of large transactions directly influencing prices on the Sydney Exchange. If there is any influence, it appears to be an indirect one — there is some slight evidence in the data that large transactions occur around the time that information comes to the market and influences share prices. The general pattern is that the Sydney Exchange processes large parcels without adverse price effects.

The third relevant source of evidence is the performance of investment funds, to which we now turn.

3. *THE PERFORMANCE OF INVESTMENT FUNDS*

There has been an increasing tendency for the performances of investment funds to be scrutinized. One can speculate on the reasons for this tendency. For example, it is clear that the low *net* performance of the funds (net of all expenses) have attracted general attention. In addition, the increase in popularity of pension (superannuation) funds has brought company managers in close contact with these funds and, naturally enough, they have had opinions about the funds' management. Finally, in the U.S., the unions and the Department of Labor have exercised their obvious interest in pension fund performance.

Whatever the reason, performance evaluation is on the increase. There are several institutional sources of performance evaluation: in Australia, performance evaluation is provided by the consulting actuaries (Campbell & Cook, and the E. S. Knight — P.T.O.W. service operating as Investor Measurement Services). Several major studies of investment-fund performance have been conducted, and they indicate that, on average, the *net* returns on funds are surprisingly low.

In the U.S., the net results are disappointing. The major investigators have been: Friend (in the study for the S.E.C.); Treynor; Sharpe; Jensen; and Friend, Blume & Crockett. In addition the brokerage firm of A. G. Becker provided data on several thousand pension (superannuation) funds in the U.S., many for up to 15 years. The data were intended as part of a portfolio appraisal system, comparing the funds among themselves, but they have also been used to compare the funds against the market index. Praetz has studied some Australian funds over a short (16-quarter) period, and a student at the University of Western Australia has done likewise.

The consistency of the results across the various studies is striking. They show that:

1. On average across all funds, the risk-adjusted returns on funds are less than that of the index. That is, after adjusting for differences in risk among funds and between funds and the index, fund managers would on average have done better by buying the index (risk-adjusted by positions in fixed-interest securities).
2. The funds' performance deficiency is, on average, very close to their average cost of administration, brokerage, analysis, etc.
3. There is a very low correlation between funds' excess returns in one year and in the next. For example, a fund that does relatively well in 1976 does not tend to do better than average in 1977 and subsequent years. This implies that not only do the funds as a group appear to do poorly, but there is little or no persistent tendency for individual funds to stand out. The obvious implication is that poor or good performance in any one period is due to poor or good fortune, and is not repeated.
4. The data from Becker Securities show a strong *negative* correlation between turnover and performance. The funds which turn their investments over more frequently tend to do worse. Those which restrict turnover do better. As *Fortune* Magazine commented: "but not even the low-turnover funds did as well as the S. & P., which, of course, has no turnover costs at all".
5. The funds do not appear to be able to forecast the market index, in that they do not appear systematically to change their equity positions in advance of movements in the market.

For those who do not like calendar periods, Becker have also measured performance over cycles — peak to peak, etc. They found that, of the last seven cycles, there was only one cycle in which more than one-half of the funds outperformed the S. & P. The results hold up in both bull and bear markets, over differing time periods. Jensen, for example, studies the 1950's and 60's.

Becker covered the 1960's and 70's.

The consistent explanation of these results is that the funds tend to over-engage in investment analysis. Apparently, too much of this involves analysis of *old* information which, in any "efficient" stock market, is already reflected in prices. Successful investment analysis in an "efficient" stock market implies digging up something the others haven't got. If enough others have it already then don't waste your time and costs: they have already traded it into the price. The evidence on investment fund performance is that funds choose to or are required to ignore this logic and thus they duplicate research which already is reflected in the prices they pay for shares. From a social point of view, the duplication is wasteful. From an investor's point of view, the duplication tends to a lower net return on investment.

Once again, I should point out that the evidence on investment fund performance in Australia is not nearly as plentiful as its U.S. counterpart. Nevertheless, I would be surprised if Australian funds measured up better in terms of net risk-adjusted performance.

The evidence is both ego-inflating and ego-deflating. The ego-inflation occurs because the efficient market hypothesis obviously implies that market makers such as yourselves are making a good market. But that doesn't make life easy for those of us whose egos depend upon beating the market. The three constructive points which arise from the evidence are:

1. The share market quickly incorporates information into prices, once the informations becomes publicly-available, and the expected gain from analysing old information is zero;
2. The expected gain from superior access to information is positive, and thus the way to "beat the market" is to beat it to information; and
3. Large investment funds, for one reasons or another, do not appear systematically to beat the market to sources of information, though they seem to incur cost structures and turnover rates consistent with the belief that they do.

In relation to the second and third points, I should be careful to point out that the evidence cannot be construed to mean that investment analysis is a waste of time. Quite the opposite is true. Someone, or some institution, clearly has to carry it out. The appropriate conclusion is that large investment funds, for one reason or another, have been a clumsy vehicle for carrying it out.

4. *INDEX FUNDS*

The sheer weight of the U.S. evidence has had a profound impact in that country. Market efficiency is taken for granted in many places, including sizeable chunks of the investment community and in various regulatory bodies. Combined with the availability of data on fund performance and the poor record which the data expose, this attitude has generated awareness of fund performance as an issue. One outgrowth has been index funds and index-matched funds.

An index fund is one which selects a type or types of investment which it wishes to market as a portfolio, attempts to achieve complete diversification within that type and does little or no individual selection of investments. For example, an all-equity index fund would attempt to hold all available equities and would do no analysis of individual equities. An "index-matched" equity fund would attempt to hold a sub-set of all the available equities (such as the top 50% by value or by turnover), in such a way as to approximate closely the index.

Index funds cater for the varying tastes for risk among the investing public and, at the same time, achieve as close-to-complete diversification as possible. Funds achieve different levels of risk by varying the proportions invested in risky assets and fixed-interest securities. More-risky portfolios would borrow on fixed-interest commitments, and and less-risky portfolios would invest in them, as most of our marketed portfolios do. (For various reasons, borrowing normally is executed directly by investors, with the result that investment funds normally are less risky than the average investment in the equity market).

In 1973, Wells Fargo in San Francisco floated a levered index fund designed to duplicate the New York Stock Exchange. In 1974, American Express offered an unlevered fund marketed through Blyth, Eastman, Dillon in New York. Amex have since abandoned it. Dean LeBaron, Research Director of Keystone Funds, left in 1969 to set up Batterymarch Financial Management Corporation in Boston. Batterymarch offer an index-matched fund based on the S. & P. 500, getting 90% coverage in market value with 250 (50%) of the shares. Various banks, such as the American National Bank and Trust Co. of Chicago, have index funds going. As of one year ago, these institutions had a total of $500m invested (still a small percentage of the $200 billion U.S. market). More importantly, their business is growing rapidly.

A newcomer to the field is the First Index Trust Fund. In its Preliminary propectus it made the following statements:

> The Trust's investment policy will be to attempt to duplicate the investment performance of the Index by owning as many of the 500 stocks contained in the Index as is feasible. These stocks will generally be selected for the Trust's portfolio in order of their weightings

in the Index (based on each stock's total market value), beginning with the heaviest-weighted stocks. The Trust will own no fewer than the 200 stocks having the largest weightings, which presently represent more than 85% of the total weighting of the Index and thus are largely responsible for its performance. These stocks would also presently represent more than 85% of the value of the Trust's portfolio.

The remainder of the portfolio may include both a representative sampling of the other 300 stocks in the Index and slightly larger proportionate holdings of the first 200 stocks, which will be selected according to statistical methods approved by the Trustees. It is believed, that this policy will result in a close correlation between the investment performance of the Trust and that of the Index.

An important development is the interest of corporations in experimenting with mixed strategies. For example, A. T. & T. already has $290m in index funds, and aims for about one third of its pension money (which totals $7 billion) to end up there. Interlake, Inc. in Chicago also plans a mixed strategy of one-third each in fixed-interest, indexed equity and conventional equity funds. Illinois Bell, Exxon Corp. and others are reported to be in the wings.

The selection of investment types is a marketing as well as a forecasting problem, with the typical Australian solution being some mix of equities, fixed-interest securities and property. It involves marketing considerations, because the degree of risk offered to investors is involved. One's stance on index funds does not depend upon the type of investments chosen, nor does it depend upon one's beliefs about forecasting the market index. The disadvantages of investment analysis as we know it are twofold:

1. The portfolio bears additional risk because it does not achieve complete diversification. Trading on the basis of investment analysis leads to excessive weight being given to some investments and, conversely, insufficient weight being given to others. Unbalanced portfolios inevitably are exposed to risks which could be removed by redressing the imbalance. Suppose that a particular portfolio is keen on the prospects for (say) retailers. Another is keen on (say) miners. In this purely hypothetical example, each portfolio has put many of its eggs into one basket: One has gambled on retailers, and the other on miners.
2. Trading on the basis of investment appraisals incurs substantial costs of appraisal, administration, brokerage, stamp duty, etc. — which can be drastically reduced by "indexing", as we shall see in a moment. In the U.S., these costs run in the order of 2.5% of the value of the average portfolio. One suspects that the proportion is higher in Australia.

In the U.S., corporations appear to be increasingly unconvinced on the superior performance which conventional funds typically claim, and rightly so. My belief is that pressure from corporations, unions and government will cause rapid growth in the indexing of pension (superannuation) funds. Individual investors will have their part to play in that pressure, but I expect that, over time, the U.S. experience of pressure from corporations, unions and governments will emerge in Australia.

5. *EVIDENCE ON PERFORMANCE OF INDEX FUNDS AND INDEX-MATCHED FUNDS*

In contrast to the performance of conventional funds, the performance of index funds and index-matched funds has been very good. Remember that conventional funds don't beat the index. Remember also that index funds and index-matched funds can come very close to being identical to the index. Given the poor performance of conventional funds relative to the index, the strategy of holding the index therefore has to be superior. Let's look at the evidence.

An index fund normally has to turnover about 4% of its portfolio each year. Approximately 1% is due to new issues, rights issues, delistings and miscellaneous changes in the index. The rest is reinvestment of dividends. This incurs brokerage, management and other costs. Marketing and accounting costs have to be considered.

The American National Bank and Trust's experience is worth noting. American National runs a stratified sample of about half of the S. & P. 500, and duplicates the S. & P's gross return almost exactly. The net return on the fund was only twenty-eight one-hundredths of one percent less than the S. & P. index's return over 1974 and 1975.

Batterymarch Financial Management's experience is similar. Their total operating costs are approximately one-ninth of the costs of operating a conventional portfolio. Since conventional portfolios tend to chew up about 2½% of their gross returns in operating costs, one-ninth of 2% is very close to American National's figure.

The above numbers relate to *average* performance. Of equal relevance is the level of *risk* which the index funds have been able to achieve. In contrast to portfolios which expose investors to additional risk in attempting to best the index, the index funds have not tended to expose investors to much more than the risk of the index. (And no amount of diversification can eliminate or reduce the role of the index, which must be held by someone).

For example, on a quarter-by-quarter basis over the period 1974—1976, American National's index fund returned, in absolute terms, an average of three-tenths of 1% different from the S. & P. 500 — during which period the range of the S. & P. 500 was —25.19% to +22.93%.

Thus, in terms of both average return and risk, the index funds have been able almost to match the market. In contrast, conventional funds have earned lower returns and have exposed their investors to greater risk.

6. *SOME THINGS THAT I'M NOT SAYING*

This sort of message is bound to generate misunderstandings. Since I think that there are clear benefits from the intermingling of new ideas and commercial practice, I'm keen to dispel some of them. I hope that you will respond in a similar spirit. The major misunderstandings which I can anticipate are dealt with below. Most arose in the early days in the U.S., and it would be a shame to see them duplicated here.

6.1 Is Security Analysis Worthwhile?

The answer clearly is yes. The waste of time and money is the analysis of old data. And the evidence appears to be that it doesn't have to be too old to be worthless.

The problem with conventional funds appears to be that they spend too much time and money on warming over old data. They are also restricted (at least on paper) by insider trading laws, which limit them using much of the data that are not old. The funds therefore have a decreasing incentive to trade as insider trading laws become more effective.

But someone or somebody still has to trade on the basis of data as they are released, in order to incorporate the data into market prices — indeed, in order to make the market "efficient". The evidence simply is that conventional funds are clumsy, expensive vehicles for doing that.

6.2 What Happens to the Dogs?

Who holds shares like Penn Central? Two points are relevant.

First, there is no inherent reason not to buy a "dog" in a well-diversified portfolio. The price you pay reflects the poor performance of the particular issue, and it should be neither over-priced nor under-priced at the point of purchase. Of course, experience will inevitably prove that purchase price to be wrong, one way or another. But "dogs" can go up or down like any other security, and that is a risk that can be absorbed in a well-diversified portfolio.

Second, there probably is a roundabout reason for not buying such issues. "Dogs", and other issues with a low capitalised market value just aren't worth chasing in a large portfolio. While every issue is an additional source of risk reduction via diversification, the small issues have a trivial impact.

6.3 Rebalancing Frequency

Index funds clearly cannot rebalance their holdings on a continuous basis. They don't, for example, snap up X% of every new issue, rights issue, etc. That would incur too many costs. Purchases and sales must be discrete and in marketable parcels. Computer programs exist which allow the manager to determine the tradeoff between rebalancing costs and risk reduction via diversification. Common sense obviously plays a part.

6.4 Legal issues.

It can be argued that the legal responsibilities of trustees have been decided in law in terms of individual investments, not portfolios. For example, what legal (as distinct from financial) obligation is there to sell a "dog", even after its price has fallen to a realistic level?

The position in the U.S. is exaggerated by the Employee Retirement Income Security Act of 1974, known as ERISA. The definition of "prudent investment" is now out of common law and within the administrative role of the U.S. Department of Labor. The Department has issued a policy statement that, in administering ERISA, it regards diversification as important and will look at portfolio concepts. There remains some uncertainty as to what this means.

Posner's argument on common law grounds is perhaps more relevant to Australia, though it is worth noting that an Australian version of ERISA is not out of the question, especially if corporate supernnuation funds occasionally get into trouble. Posner argues that the common law will soon adapt to "what is the best understanding of the investment problem facing trustees". He points out that most legal concepts predate the concept of a well-diversified portfolio and the empirical results on portfolio performance. If the common law evolves in response to these factors, then portfolio managers will be freer than before, though they might have difficulty in justifying high costs.

6.5 Picking Stocks and Forecasting the Index.

In order to believe in index funds, you only have to believe that you can't make money, net of all expenses, from picking stocks. You don't have to believe that you can't forecast the index.

In fact, proponents of index-forecasting should see index funds as a natural means of implementing their forecasts. The best way to achieve both risk-reduction via diversification and the possible fruits from index-forecasting is to invest in both fixed-interest securities and an indexed portfolio, with proportions varying according to your forecast, If you're forecasting an increase in equity prices, the proportion of fixed-interest should be negative: i.e., you should borrow. Investments in an indexed fund are more liquid than separate investments in individual equities, in that you can buy and sell the lot at once. Index forecasting strategies are thus

easier to implement when a diversified equity fund is available.

Note that someone has to hold the equities. For every buyer there is a seller. The only issue is how they should be held: in a widely-diversified fund, or in one that: (i) incurs analysis costs, brokerage costs and other costs in attempting to chase (as the evidence suggests) an elusive superior performance; and (ii) also probably bears too much risk in holding too much of favoured investments and too little of others. Either way, someone will hold the stocks, and the argument that they should be held in diversified portfolios seems persuasive. Investors can only disagree on the market index: if they all agree that the market will fall, they will all attempt to get into fixed-interest securities and/or other investments and their selling actions will cause the market to fall immediately, until someone is prepared to hold them at that price.

6.6 What About the Stockbrokers?

In my view, stockbrokers tend to react in a short-sighted fashion to suggestions such as index funds. Given the poor turnover situation at the moment, that is somewhat understandable. One cannot help sympathizing with their plight. But it is not clear that index funds would make stockbrokers worse off. Two points are relevant.

> First, there has to be a benefit in the evidence that warming over old information is worthless. In other language, it tells the stockbroker where research is productive and where it isn't. Direction of resources into more productive activities will be rewarded in the long run. You can't "con" investors with stale analyses forever.
>
> Second, and perhaps most important, is the effect of index funds on increasing the net return to investors. Consider the magnitude of (say) 2% administrative costs relative to (say) an average gross return of 9%. It is difficult to believe that increasing the net return on equities from 7% to 8¾% would not lead to an expansion of the amount of equity issues. Who would gain from that?

In relation to the last point, I think there has developed a "go-go" mystique which is completely without foundation. I have seen claims that increased fund performance can be achieved by increasing turnover. Robert Gottliebsen's article in the National Times on July 28, 1975 is a case in point. The evidence is very much against it. Not only do funds on average not recover their turnover costs, but A.G. Becker's evidence points to a negative correlation between funds' turnovers and their net returns. Using Gottliebsen's terminology, "the only hope for the stockmarket" might be to increase the net return to investors, not the gross fund return. After all, its the customers who count, even in stockbroking.

7. *CONCLUSIONS*

Index funds really aren't all that new. Most portfolios have an inactive component anyway. And the 10% or 15% maximum ownership rules of large funds goes some way towards imposing an index-fund discipline upon them. What characterizes the U.S. experience is the extent to which some sensible and responsible financial institutions have taken the evidence for what it implies. Funds tend to do poorly on a net-of-costs basis, so one logical strategy is to offer maximum diversification at minimum cost. Index-matched funds appear to be the way of implementing that strategy.

The major problem has been marketing. Investors want to believe in analysing old data, even though it's too late. But the impetus in the U.S. has come from the corporations with a keen eye to pension fund performance. It will be assisted by legislative and common law changes.

I think that index funds will provide a real challenge in Australia, even if they come after the conventional ten-year lag. As LeBaron from Batterymarch says, "the client (of a fund) is a potential competitor". He might have added that new funds, actuaries, merchant banks and other institutions are potential competitors. Running index funds and index-matched funds is easy: the problem is partly marketing and it is partly legal. Whether or not Australian investors will get index funds remains to be seen.