An examination of the Market Impact Costs of Active Australian Equity Managers*

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INTRODUCTION AND MOTIVATION FOR RESEARCH

This study examines the implicit transaction costs incurred by active Australian equity managers, and specifically quantifies the performance leakage arising from market impact in securities trading. The study represents the first volume of two empirical research papers documenting the magnitude of performance leakage in utilising active management. Performance leakage studies are concerned with measuring the extent to which portfolio returns are reduced from the execution strategies adopted by investment managers, and are decomposed into two trading cost components — explicit costs (i.e. brokerage and taxes) and implicit costs (i.e. market impact and opportunity costs). While investors, practitioners and academics can easily identify the factors which give rise to leakage in investment performance, there is an absence of empirical evidence which quantifies the magnitude of such costs or the implications arising for investors engaging active managers in Australia.

Our research examines a sample of 26 institutions, representative of the Australian market in terms of manager style and size. We report that market impact costs are substantial for active equity managers, and there exists high variation in market impact costs that can be explained by trade size, trade direction (i.e. buys or sells), stock size, investment style, and the type of institution executing the trading package. Accordingly, our results indicate that consideration of market impact costs is an important component of analysis in the overall manager selection process, as market impact costs represent a sizeable leakage to investment performance.

Market impact quantifies the costs incurred by investment managers given movements in stock price, and is directly related to the size of the trade executed by an institution. It follows that larger trades will account for a higher proportion of total trading volume, and therefore the size of an order can cause an adverse shock in the stock’s price, which is ultimately disadvantageous to a trader. It is apparent that larger managers are expected to incur higher market impact costs. Additional implicit costs in trading are opportunity costs, which are costs incurred by patient traders seeking to avoid market impact costs (i.e. the value lost due to...
information decay). Hence, there exists a trade-off between market impact and opportunity costs. Market impact costs are ultimately dependent on an investment manager's skill in executing strategies to minimise market frictions.

One common strategy to reduce market impact costs requires disaggregating trades into smaller parcels, and trading over several days to more effectively mask (or hide) transactions that comprise a larger total trading strategy. More sophisticated strategies might also involve dividing trades among several brokers, in order to reduce the possibility that information accrues to a single broker. Identifying the types of investment managers who successfully use these strategies should aid the manager selection process, since those that are better equipped to deal with market impact will, all other things being equal, have performance advantages over competitors.

While explicit costs are more easily quantified, there is an absence of Australian evidence that provides investors with a true understanding of the total costs associated with the portfolio management process. Investors can indirectly measure the performance impact of explicit trading costs and tax by subtracting the difference between gross and net returns (after accounting for brokerage costs and other management expenses), however they cannot accurately quantify the extent to which market impact costs erode potential returns achievable in the market. The two reasons why this issue arises is due to (a) the debate concerning how market impact should be measured and (b) the absence of any legislative requirements or accounting frameworks enabling these cost elements to be reported to clients.

An empirical examination of market impact costs can also be motivated on the basis of the investment industry exhibiting high concentration, the fact that a relatively small number of large stocks dominate the S&P/ASX Indices, the revenue models which exist in the investment industry, and the style executed by active investment managers. In Australia, more than 60 per cent of total assets under management are controlled by the ten largest institutions, which translates into a higher likelihood that there exists high variation in market impact costs between large and small active managers. Size should also become an issue (eventually) for successful and growing active managers, given the high correlation between past performance and fund flows (e.g. Sawicki (2000), Gruber (1996) and Zheng (1999)). Perold and Salomon (1991) and Becker and Vaughan (2001) also highlight the irony that is likely to eventuate for successful active managers.

If superior past performance translates into growth in funds under management, given that revenue models in the industry are determined as a percentage of assets invested, active managers are incentivised to maximise their total assets. However where fund inflows are significant and the manager's total size increases, an increase in the size of funds under management eventually leads to higher trade sizes, higher trading costs, lower flexibility in the management of portfolios and lower portfolio performance. As a consequence, Golec (1996) documents larger managers having a higher propensity to invest in small-cap stocks, which themselves exhibit lower liquidity, higher transaction costs and can adversely impact portfolio performance. In terms of investment style, Keim and Madhavan (1997) find that trading costs indeed vary according to differences in investment manager objectives, given that portfolio managers differ in both their demand for trade immediacy and their order submission strategies. They report value managers experiencing lower trading costs, as the strategy is concerned with long-term fundamental value which can be more easily captured through patient trading.

This study has two objectives. First, we estimate the overall market impact costs of trading incurred by active Australian equity managers. Second, we seek to better understand the factors that are significant determinants of market impact costs for active Australian equity managers. Consistent with theory and previous empirical research, we confirm that transaction costs represent a sizable leakage to investment performance. However, transactions costs across managers are not uniform. Indeed, significant variation exists across our sample, and the evidence suggests that managerial skill is also related to the magnitude of implicit transaction costs incurred.

**RESEARCH DESIGN**

Preliminary analysis and literature review

The literature identifies a number of sources of price (or market) impact, and these have been articulated as arising due to (1) short-run liquidity costs, (2) imperfect substitution, and (3) information effects. The short-run liquidity cost hypothesis posits that a buyer (seller) of a large number of shares must offer an incentive to the counter party in order to induce a trade. This cost of liquidity, or immediacy, removed after the trade is theorised to cause a quick reversal in price following a large trade as prices return to pre-trade equilibrium. The imperfect substitution hypothesis argues that if there are no close substitutes for a particular stock, then a buyer (seller) facing an elastic upward (downward) sloping supply (demand) curve must offer a premium (discount) to induce the counter party to sell the extra shares. This creates a permanent shift in the equilibrium price of the stock, and accordingly, the imperfect substitution hypothesis predicts no reversal in security price following large trades. Permanent stock price impact may also arise due to information as a result of trading securities. If the direction and size of a trade reveals private information, then the security price impact is theorised to equal the expected value of the information revealed by the trade. All other things equal, large trades should be indicative of more valuable information, and therefore price impact should be related to trade size.

Early datasets did not contain information regarding the identity of the trading parties, or whether the trade was buyer or seller initiated. As a consequence, block trades (defined by various measures) were used, as well as a tick rule, to classify trades into notion-al “buys” and “sells”. Despite the use of these inferred measures of trading, the early literature overwhelmingly rejected the liquidity hypothesis, finding little evidence of price reversals (for example see Scholes (1972), Holthausen et al. (1990), Kraus and Stoll (1972), Ball and Finn (1989), Lakonishok et al. (1992)). Interestingly, Scholes (1972) identifies information as an important determinant of price impact. Scholes (1972) hypothesizes that corporate sellers possess superior information over non-corporate sellers and hence finds the price impact of corporate sales to be higher than that of non-corporate sales.

More recently, Chan and Lakonishok (1993) investigate the price impact of institutional trading in the US given specific knowledge of both the identity of the trader (the investment manager) and the direction of the trade (buy or sell). They find evidence of positive price impact following buy trades, and negative market impact for sells. Chan and Lakonishok (1995) extend and significantly improve their earlier work by aggregating transactions...
Further market impact costs have also been shown to be investment manager specific. Chan and Lakonishok (1995) find that while trade complexity and stock size are important drivers of market impact, the largest component of total market impact is the identity of the investment manager executing the trade packages. This evidence indicates that variation in market impact costs arises according to an institution’s identity, and suggests that performance leakage can be mitigated based on the manager’s trade execution skill.

Trading packages

Acknowledging that investment managers may break up trades into smaller parcels to reduce market impact, Chan and Lakonishok (1995) aggregate trades into trading packages. Ideally, trading packages should be formed according to the specific intentions of the investment manager; however such data is not available. Accordingly, trades made by the same investment manager, in both the same stock and same direction within five trading days of one another, are aggregated into one trading package. Trades in the same trade package are assumed to originate from a single trading decision made at the start of the package and should be acknowledged as a single event rather than a series.

Estimating transaction costs

The literature presents various measures of market impact costs, however there remains substantial debate concerning which measure most accurately quantifies price impacts from trading. Chan and Lakonishok (1995) employ three measures of market impact cost relative to:

- a volume-weighted average price;
- the opening price at the start of the package; and
- the closing price after the end of the package.

These measures quantify the cost of a manager’s executed trade package relative to their respective benchmarks. Chan and Lakonishok (1995) identify that all three methods exhibit problems, particularly where the investment manager has the ability to “game” the measure. Accordingly, the appropriateness of each measure should be evaluated given its ability to accurately reflect the deterioration in abnormal returns caused by market impact.

If investment managers engaged in an infinitely deep market, then there would be no need to trade over successive days, since an arbitrarily large trade will not adversely impact a security’s price level. Therefore, if we assume that investment decisions are made before the start of the trading day, then the abnormal return from the open of the start of the package to the close at the end of the package represents a theoretical upper limit on the return from a trade based on infinitely deep markets. However, the equity market is not infinitely deep, and the difference between the theoretical upper limit and the abnormal return gained from a manager’s implemented strategy represents the cost of trading in a finite market. This is essentially the open-to-trade measure employed in Chan and Lakonishok (1995). While this measure can be “gamed” by executing trades only if the price falls below the original opening price at the start of the package, analysts should be able to identify such behaviour by examining the abnormal returns during the life of the trade package. More specifically, if investment managers trade a portion of the package early and then follow this by trading the bulk of their package after a fall in stock price, we should find a negative abnormal return prior to the bulk of the package, and positive abnormal returns thereafter. However, Chan and Lakonishok (1995) find positive abnormal returns relative to both the open and the close of the trading package. We find consistent evidence by examining the mean abnormal return both prior to and after the largest trade in the package. The principal-weighted average abnormal return prior to the largest trade in the package is 0.11 per cent while the abnormal return after is 0.06 per cent (the mean abnormal return on the day of the largest trade is 0.05%). This indicates that managers are not unwilling to purchase the bulk of their package even after a large portion of the abnormal return over the life of the package is lost prior to the largest trade. Therefore, although this study reports market impact measures using the close, the open, and the value-weighted average price (VWAP) as benchmarks, for the purposes of our analysis, the open-to-trade measure is argued to be the most appropriate as this approach more accurately reflects the costs arising from finite markets.

The VWAP measure is not the most appropriate calculation in measuring the deterioration in trading performance, as this approach only accounts for the same day price impact (see Chan and Lakonishok (1995)). For example, an investment manager may be able to obtain the VWAP on days where the investment manager happens to trade, however in the days between trades the market price may move substantially. In order to mitigate this problem, this study includes an additional measure of market impact which assigns an equal proportion of the entire value of the trading package over each trading day of the package. This measure simulates a naive trader who diversifies the trade package over the life of the package and in so doing does not attempt to reduce market impact in any strategic manner. Skilled investment managers on the other hand would be expected to obtain higher returns from their trading packages compared to a naive trading strategy.

The trade-to-close measure estimates the abnormal return gained from the trade package measured through to the actual close arising on the day following the last day of the package. This is essentially the realised abnormal return from the package and does not actually capture an opportunity cost, yet it is a useful measure in demonstrating the ability of managers to capture abnormal returns despite market impact costs.

The implemented abnormal return (AR) can be expressed as:

$$ AR = \sum_{i=1}^{N} \frac{\text{qty}_i}{\text{total qty}} \sum_{n=1}^{N} \text{AR}(i) \quad \text{and} \quad \text{AR}_i = R_{i, n} - R_{i, o} $$

where there are $N$ trades in the package, and each trade is made $T_i$ days before the close of the day after the last trade in the package. This is simply the sum of the abnormal returns weighted by...
trade quantity. The abnormal returns are calculated by taking the difference between the return on stock \(i\) and the return on stock size (market capitalisation), the ratio of book-to-market equity, and a momentum-matched portfolio of stocks \((R_{b,t})\). This method was first proposed by Daniel, Grinblatt, Titman and Wermers (1997), and represents a significant improvement over existing studies that only control for size effects. By controlling for book-to-market, size, and momentum, the results presented in this paper account for common risk factors that have been identified in the finance literature as explaining market returns. Performance derived by a manager loading up on common risk factors should not be considered (in performance terms) as value added given a manager's skill.

Identifying the factors that drive transaction costs

The drivers of transaction costs incurred by investment managers are likely to be determined by a number of different factors. Indeed, the literature identifies these factors as important determinants in explaining the magnitude of total transaction costs, and this study is concerned with examining these factors as a means of ascertaining how portfolio managers demonstrate skill in controlling these factor drivers for the benefit of their clients. Accordingly, this study considers the following transaction cost drivers:

- **Trade complexity**: This has been suggested by the literature (Kyle (1985), and Easley and O’Hara (1987)) as an important factor in inflating trading costs. This study follows Chan and Lakonishok (1995) by proxying trade complexity in terms of trade size relative to average daily trading volume (over a 40-day period).

- **Stock size**: Since trading costs increase as liquidity decreases, firm size should exhibit an inverse relationship with market impact costs. Therefore, market impact costs should be significantly higher for active managers engaging in trades involving smaller-cap stocks.

- **Individual manager Skill**: Chan and Lakonishok (1995) document that an investment manager’s identity represents the most important determinant of market impact costs incurred. Indeed, their research identifies substantial dispersion across investment managers, and therefore demonstrates that there is variation in manager skill in terms of market impact cost controls.

- **Investment manager style**: Keim and Madhavan (1997, 1998) identify that investment manager style represents an important determinant of market impact costs. They report differences in investment style being associated with differences in a manager’s demand for trade immediacy, and therefore the speed at which orders are executed. For example, value managers trade in securities based on a stock’s long term fundamental value, and are more likely than growth managers to trade patiently using a combination of market and limit orders.

**DATA**

The database was constructed using an “invitation” approach to the largest Australian equity managers in Australia, measured on the basis of funds under management. In aggregate, 45 individual data requests were sent to investment managers, and 26 fund managers are included in the analysis. In terms of market representation of investment managers contributing data, the sample includes six of the top 10 managers, four from the next 10, four from managers ranked 21-30, and 12 managers outside the top 30 managers. The sample includes four boutique firms managing less than $A100 million each.

The investment managers were each requested to provide information for their two largest pooled active Australian equity funds (where appropriate) that were open to institutional investors. The definition of an “active” fund was defined as funds exhibiting a target tracking error of at least 100 basis points per annum. The term “largest” was defined as the marked-to-market valuation of assets under management as at 31 December 2001, and was used as an indicative means of identifying portfolios that were representative of the manager. The study uses data on the largest fund provided by the managers participating in the study, while the data on the second largest fund is used for cross checking purposes. Participating investment managers provided daily trading data for key fields that included the date, ASX stock code, quantity, price of the trade, as well as the broker and transaction costs associated with each trade. This information permits all trades to be cross-checked against the ASX Stock Exchange Automated Trading System (SEATS) for consistency. The SEATS data includes all trade information for stocks listed on the ASX and was provided by SIRCA. Accounting information on the book-to-market ratio was obtained from the ASPECT database. The period examined in this paper is 4 January 1994 to 31 December 2001.

The funds accounted for assets in excess of $A18.2 billion in funds under management at 31 December 2001. The data sample contains some managers providing as much as eight years of data, while some provided only one year of data. The mean number of ASX-listed stocks traded in the universe is 168. For the period 2 January 2001 to 31 December 2001, where all managers have corresponding data for the entire year, the median proportion of aggregate trading activity (both buy and sells) of managers was 1.2 times fund assets and ranged between 0.22 and 5.2 times. The number of buy trades exceeded the number of sell transactions, both in aggregate and for the majority of managers. Buy transactions were of a larger magnitude (in dollar terms), with the average manager exhibiting a median buy (sell) trade of $A660,360 ($A484,670).

**RESULTS**

The empirical results are presented as follows. The first two sections outline the effect of trade characteristics (i.e. trade size and stock size) on the market impact costs incurred by active equity managers in Australia. Our study finds large trades incur higher market impact costs than smaller trades. Therefore larger managers, who are expected to trade larger parcels, are more adversely affected by market impact costs than smaller managers.

The remaining sections examine market impact costs related to investment manager characteristics (i.e. investment manager skill, investment style, and fund flows). These factors directly influence the ability of managers to reduce their market impact costs. One important result is that those managers experiencing significant fund outflows exhibit a higher need for trade immediacy, which in turn leads to higher market impact costs. While manager characteristics explain some of the variation in the ability of active managers to reduce market impact costs, a large proportion of variation remains idiosyncratic to specific managers. This indicates that reducing market impact costs is an important skill that can
have significant performance effects (both positive and negative). For example, the most capable managers in reducing their market impact costs (per trade package) are found to actually benefit in performance terms by over 2 per cent, while the worst managers incur costs of over 1 per cent.

**General results**

If we accept the notion that market impact may occur during the life of a trading package, even on days where a manager has not actually traded, but has traded recently, then it is useful to divide market impact into inter-day and intra-day costs. Essentially, by acknowledging the possibility of inter-day market impact costs, we account for the possibility that the market may take several days to incorporate information regarding manager trading behaviour.

The inter-day measures are calculated by taking the weighted sum of the abnormal returns during the life of the package. The weights are the proportion of the package invested on the day. The intra-day measures disregard movements on days where the manager has not traded. In terms of the presentation of results in table 1 (page 54) and 2 (PAGE 55) for market impact costs (both the inter-day and intra-day approaches), positive numbers denote a cost to equity managers, whereas negative numbers indicate that investment managers have received a benefit. In terms of cumulative abnormal returns (CARs) reported in tables 1 and 2, these are not costs incurred by a manager. We would expect that after the start of a buy package, CARs should be positive, while in the case of sales, the reverse is true.

**Inter-day measures**

On a principal-weighted basis (weighting each package by its dollar value), the theoretical upper limit (i.e. performance achievable by active managers) is based on cumulative abnormal returns (CARs). Over the life of the package, CARs are 0.22 per cent for buys and -0.15 per cent for sells (see table 1). Of this, active Australian equity managers are able to capture 0.12 per cent for buys and -0.10 per cent for sells (denoted as a benefit of 0.12% and 0.1% for buys and sells respectively, using the trade-to-close cost measure in table 1). In other words, in terms of buy packages, active managers operating in an infinitely deep market have the ability to achieve a CAR of 0.22 per cent, however they incur costs of 0.10 per cent (open-to-trade cost), resulting in an abnormal return achieved of 0.12 per cent.

In order to gain insight into whether active investment managers are timing their trades within the duration of the package to maximize their trade performance, we can compare their implemented abnormal returns with a naive strategy that relies on trading an equal portion of the package on each day of the overall package. The naïve strategy essentially allocates the value of the package equally over each day of trading without any consideration of skill. For example, if a $1 million package is made by a manager in two equal lots and five days apart (in an attempt to reduce market impact costs), then this execution strategy has been deemed by the manager as a means of reducing market impact. Such a scenario is therefore considered by the manager to be more optimal, rather than trading all $1 million at the beginning, or $200,000 over all five days in the package. Using the $1 million trade at the beginning as the benchmark is equivalent to using an open-to-trade cost measure for market impact, while benchmarking against the $200,000 per day method is equivalent to comparing market impact against a naïve strategy. A comparison against the opening price identifies the cost, compared to the same manager trade that is made in an infinitely deep market, and is therefore a measure of market impact. Comparing against the naïve measure provides an indication as to whether the manager can trade in a finite market (a finite market is one where managers will have to take into account market impact since liquidity is not infinite) more efficiently than a fixed simple rule (i.e. naïve strategy).

This naïve strategy earns 0.09 per cent for buys and -0.06 per cent for sells, which is less than what managers achieved (0.12% for buys and -0.10% for sells). This indicates that although a substantial portion of the abnormal returns over the life of a trading package are not realised, active managers are indeed timing their trades to extract more benefit from their package over and above a naïve strategy.

The inter-day market impact costs calculated using the open-to-trade approach is 0.10 per cent for buys and 0.05 per cent (open-to-trade) for sells, which appears to be small in magnitude; however, these represent a substantial proportion of the cumulative abnormal returns earned over the life of the package. In table 1 we identify that the market impact cost of 0.10 per cent is approximately one-half of the CAR of 0.22 per cent over the life of a buy package, while for sells, market impact costs account for approximately one-third of the -0.15 per cent CAR over the life of the package. The asymmetry between the market impact costs may reflect the higher probability of liquidity trading when selling rather than purchasing securities.

**Intra-day measures**

An additional cost incurred by managers is lost performance after the market opens through to just immediately prior to a trade being executed. For example, if a trade is made midway through the trading day, then any movements in price prior to the trade will not accrue to the investment manager. This cost is measured by the single day cost measures documented in table 1. The principal-weighted average difference between the open and the trade is -0.13 per cent for buys indicating a net benefit given that buys are transacted at slightly lower prices than the opening price. However, for sales, the difference is 0.25 per cent indicating a net cost, i.e. the sale arises at a price lower than the opening price. These lost opportunities of not trading at the open represent a round-trip cost of 0.12 per cent (i.e. 0.25%-0.13%).

**Total market impact costs**

The total market impact costs for a round trip transaction is the sum of inter and intra-day costs for both buys and sells. The inter-day costs (open-to-trade measure) are 0.10 per cent and 0.05 per cent for buys and sells respectively. The intra-day costs (open-to-trade) are -0.13 per cent (a net benefit) and 0.25 per cent. The sum total of the market impact costs for a round trip package is therefore 0.10% + 0.05% + -0.13% + 0.25% = 0.27%. While the 0.27 per cent cost may seem small, when compared to the mean cumulative abnormal return achieved by managers of 0.39 per cent and -0.53 per cent (0.92% round trip abnormal return) in the 60 trading days after the start of a buy and sell package respec-

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2 The CAR over the life of the package is equal to the CAR from the open to the close of the package. This is equal to the addition of the open-to-trade cost and the negative of the trade-to-close cost.
It becomes apparent that market impact costs can have a significant effect on performance. Both the abnormal returns measured over the life of the package and the measured market impact is consistent with US studies. However, Chan and Lakonishok (1995) report larger abnormal returns and market impact costs. The difference may be attributable to the difference in methodology. Alternatively, Chan and Lakonishok (1995) employ benchmark returns that only account for stock size, while this study utilizes additional risk proxies controlling for size, book-to-market and momentum.

Trade complexity and stock size

*Inter-day measures*

Characteristics of the trading package, including trade complexity and stock size, influence market impact costs through a variety of mechanisms. With larger and more complex trades, the total volume of the trade represents a larger proportion of daily trading volume, and therefore the package becomes more difficult to mask. All other things being equal, larger trades are more indicative of information content and therefore heavier volume traded in a certain direction is likely to move prices in the same direction as the trade. Additionally, since the ability to transact is affected by the availability of counterparties, liquidity will be a key factor in determining market impact costs incurred by active managers. As such, given that small stocks exhibit lower liquidity, stock size is hypothesised to be an important factor in market impact. Table 2 indeed documents that large trade packages (see panel B) incur the highest market impact costs, increasing from almost zero per cent for all smallest quintile trades to 0.30 per cent for the largest trades (open-to-trade measure). This result is also supported by the trade-to-close measure. Furthermore, we find the dispersion of inter-day market impact costs increases with trade size. The standard deviation of open-to-trade costs increases from 1.2 for the smallest quintile of trades to 2.81 for the largest quintile (see table 2, panel B). The high dispersion of market impact costs for large trades may occur for a few reasons; firstly, larger trades are indicative of information, and to the extent that information is noisy, we would expect higher variability in impact costs for large trades. Furthermore, for every buyer there is a seller, so while one manager may be transacting given private information (and incurring market impact costs), another trader (perhaps another manager) will be offering liquidity at a premium. Therefore, some managers are likely to incur higher costs for large trade packages, while others may actually benefit when offering liquidity. These results are also supported by the trade-to-close measures. The relationship between market impact and trade size has important implications for the investment management industry as it reveals that larger funds trading larger packages will on average incur higher market impact costs. If these higher market impact costs are not compensated in part by an active manager’s access to valuable information, then larger investment vehicles will experience significantly higher performance leakage. The results in table 2 also reveal that stock size is indeed an important determinant of market impact costs. Trades in the bottom two quintiles by stock size (panel A) incur inter-day costs of 0.25 per cent and 0.45 per cent, while trades in the top two quintiles incur inter-day costs of 0.13 per cent and 0.14 per cent. These results are also supported by the trade-to-close measure. However, these higher inter-day market impact costs arise from trades in small stocks are mitigated by increased informational value exploited by active managers, where the executed abnormal return from trading in small stocks remains very high (i.e. see the CAR measures). This indicates that while active investment managers face higher inter-day market impact costs from trades in small stocks, they choose to do so only when their private information translates into commensurately higher returns. As with trade size, the dispersion of inter-day market impact costs is related to stock size. For smaller stocks, the standard deviation of open-to-trade cost is 2.42 while that of the largest quintile of stocks is 0.94. Again, this may reflect the need for some managers to incur market impact costs, while others offer liquidity at a premium. This mechanism is likely to be more pronounced for small stocks since there are less liquidity traders in the market to offer liquidity inexpensively.

*Intra-day measures*

Confirming the inter-day results, in table 2 we document a positive relationship between trade size and intra-day market impact costs. The intra-day open cost for the largest quintile by trade size is 0.24 per cent (panel B, open-to-trade measure) while trades in the smallest quintile actually receive a net benefit of 0.04 per cent. The implication of this result is that larger trades incur higher costs, both on an inter-day and intra-day measurement approach. Therefore large managers, who may be expected to execute larger trading packages, will be likely to incur substantially higher total market impact costs. The intra-day measures according to stock size do not reveal any meaningful relationships.

*Manager size*

Larger managers are expected to execute larger trade parcels, and therefore, other things being equal, we would hypothesise larger managers to incur higher market impact costs. Our sample collected the largest institutional funds available to investors, and accordingly, the analysis relies on these funds as an accurate proxy of relative manager size. Indeed, our analysis confirms that fund size is an accurate proxy for the aggregate institutional manager’s size, in terms of funds under management. Figure 1 shows the average total market impact cost by manager size quartiles, where manager size is defined by the dollar value of the fund (at 31 December 2001). Figure 1 also plots the percentage of dollar value trading in the top quartile of trades (by relative trading volume). The graph shows that the largest managers (i.e. top quartile) incurred significant market impact costs, at least partly due to the fact that on average, over 70 per cent of their trade packages are accounted for in the top quartile of trade package size. Interestingly, the smallest quintile of managers (i.e. bottom quartile) also incurred high market impact costs. It is possible that small managers tend to trade in small stocks more frequently than larger managers, thereby incurring high market impact costs. Indeed, our analysis finds that the bottom quartile of managers traded 18.18 per cent of their trades by dollar value (on average) in the bottom 85 per cent of stocks (by market capitalisation). In contrast, the top quartile of managers traded only 7.56 per cent in the bottom 85 per cent of stocks.

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3 Three investment managers were excluded as these institutions provided data of less than 100 trades.
4 Performance is evaluated over the quarter (65 trading days) since managers are themselves often monitored on a quarterly basis.
Investment manager skill and investment style

The extent to which market impact costs vary across institution, either on the basis of trade execution skill or investment style adopted remains an empirical issue for active managers in Australia. A closer examination of market impact costs partitioned on individual managers indicates substantial variation in costs. While the median market impact cost for active equity managers is 0.44 per cent, the distribution depicted in figure 1 documents that almost two-thirds of active managers incur market impact costs detracting from investment performance. The minimum market impact cost for the best performing institution was –2.39 per cent (where a negative number denotes a benefit), indicating the investment manager benefited from price movements over the course of their trading packages, while the maximum market impact was 1.68 per cent (positive number denotes a cost), equivalent to a performance differential between the top ranked and bottom ranked institutions of 4.07 per cent.3

The wide range in mean market impact costs across individual managers is indicative of the varying characteristics and skills by institutions in reducing their market impact costs. While some managers incur high costs, others actually benefit. The implication here is that selecting active equity managers only on the basis of stock picking ability ignores another important component of the overall selection decision. Market impact costs are also critical, as these can significantly erode a proportion of any abnormal returns gained through trading (especially those market impact costs incurred by the least performing managers).

Partitioning by trading performance, figure 3 shows the mean market impact cost across quartiles of managers ranked by mean trading performance. The figure reveals that investment managers in the top quartile in terms of abnormal return 65 days after the start of a trading package exhibit significantly lower mean market impact than is the case for active managers with less successful trading performance. The figure also shows the mean performance of the managers ranked by trading performance. Managers with successful trading performance (above median) not only earn higher abnormal returns, but are also more capable in reducing market impact costs. An important implication of this finding is that analysts should not neglect market impact costs, as this performance variable represents an important component of overall investment manager skill.

An active manager’s investment style has also been shown to have an important impact on an investment manager’s trading behaviour. Keim and Madhavan (1997) identify that trade immediacy and execution strategy will vary according to the investment objective implemented by investment managers. Value managers generally adopt more patient execution strategies, given that a manager’s investment process relies on long-term fundamental value which can be captured using patient working (limit) orders. Figure 4 supports the US evidence that value managers are indeed more patient, and as a result incur substantially lower market impact costs. These results however, are not controlled for manager size, and therefore multivariate results are presented in following sections.

Fund flows

Managers that experience significant inflows or outflows will be required to trade large parcels of shares within a short period of time. As a result, such managers are likely to incur higher market impact costs due to the requirement for immediacy in trade execution. Figure 5 shows the mean total market impact costs for a round trip transaction partitioned by fund flow. For each trade package in the sample, a quartile ranking based on fund flow is calculated over the previous 12 months by a comparison against the inflow (or outflow) experienced by the rest of the managers in the sample. The graph shows that on average, packages transacted by managers experiencing significant outflows or inflows over the previous 12 months incurred high market impact costs. Since managers have contractual obligations to fulfill redemptions within certain time periods, the need for immediacy is greater for large outflows than for inflows. Therefore, it is expected that significant outflows will cause higher market impact costs than significant inflows. Indeed, Figure 5 shows that packages by firms experiencing significant outflows incurred the highest market impact costs (0.62%).
CONCLUSIONS

This study examines the market impact costs arising from the daily trading activities of active Australian equity managers, as well as quantifying the extent of leakage in investment performance attributable to implicit trading costs. The literature finds that transaction costs in trading are economically significant, and accordingly can have substantial consequences for investors who engage active managers ignoring the importance of transaction cost controls. This research documents that market impact costs are indeed substantial for active Australian equity investors, and that variation in market impact costs arises on the basis of trade complexity, stock size, the type of institution executing trades, and the investment style adopted by active managers. The most significant findings reported in this study are as follows:

- The overall principal-weighted (or dollar weighted) mean market impact cost for a round-trip trade package for the 26 managers in the sample was 0.27 per cent.

Larger trade packages incur higher market impact costs than smaller trade packages.

- Trades in smaller stocks incur higher market impact costs than trades in larger stocks.

- Individual managers exhibit a high degree of variation in terms of their market impact costs. Furthermore, market impact costs are related to an individual investment manager's skill.

The main implication of this study is while market impact costs are to a certain extent controllable, a number of active investment managers are shown to be more adept in mitigating market impact costs than some of their competitors. The managers exhibiting the best abilities in minimising the performance leakage arising from market impact are generally the same managers exhibiting the best skills in identifying value-adding trading opportunities.

TABLE 1: ABNORMAL RETURNS OVER THE LIFE OF A TRADING PACKAGE

Principal-weighted average trading package and single day market impact costs (in percentage terms)

![Table showing abnormal returns over the life of a trading package.](image)

This table reports the average market impact costs weighted by package dollar value. The cumulative abnormal return (CAR) is the sum of the abnormal returns over the life of the package available to active managers. Abnormal returns are calculated as the difference between the return on stock i and a size, book-to-market, and momentum matched portfolio. The open cost is measured by calculating the weighted average cumulative abnormal return from the open of the start of the package to each trade in the package. The close cost is calculated by cumulating the abnormal returns from each trade within the package to the close of the day following the final trade in the package. The naive strategy is the abnormal return obtained by equally proportioning the value of the package over the life of the package. The volume-weighted average price (VWAP) measure is the difference between the volume-weighted average price and the trade price, averaged over each day in the package where the investment manager has traded. In order to isolate inter-day costs, we assume trades are made at the opening price for the purposes of calculating inter-day costs. Intra-day costs are calculated using same-day benchmarks.

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TABLE 2: ROUND-TRIP PRINCIPAL-WEIGHTED AVERAGE TRADING PACKAGE AND SINGLE DAY MARKET IMPACT COSTS
(in per cent) by relative trade size and stock size
(for inter and intra-day costs, a positive number denotes a cost; a negative number denotes a benefit)

This table reports the average market impact costs by relative trade size and stock size weighted by package dollar value. The cumulative abnormal return (CAR) is the sum of the abnormal returns over the life of the package available to active managers. Abnormal returns are calculated as the difference between the return on stock i and a size, book-to-market, and momentum matched portfolio. The open cost is measured by calculating the weighted average cumulative abnormal return from the open of the start of the package to each trade in the package. The close cost is calculated by cumulating the abnormal returns from each trade within the package to the close of the day following the final trade in the package. The naïve strategy is the abnormal return obtained by equally proportioning the value of the package over the life of the package. The volume-weighted average price (VWAP) measure is the difference between the volume-weighted average price and the trade price, averaged over each day in the package where the manager has traded. In order to isolate inter-day costs, we assume trades are made at the opening price for the purposes of calculating inter-day costs. Intra-day costs are calculated using same-day benchmarks.

PANEL A – MARKET IMPACT COSTS BY STOCK SIZE

<table>
<thead>
<tr>
<th>Measure</th>
<th>Smallest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Largest</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR over package</td>
<td>0.53</td>
<td>1.37</td>
<td>-0.79</td>
<td>-0.51</td>
<td>0.34</td>
<td>0.37</td>
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<tr>
<td>Naïve</td>
<td>0.16</td>
<td>0.74</td>
<td>-0.38</td>
<td>-0.47</td>
<td>0.15</td>
<td>0.15</td>
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<tr>
<td>Inter-day measures</td>
<td>Trade-to-close</td>
<td>0.29</td>
<td>0.93</td>
<td>-0.37</td>
<td>-0.64</td>
<td>0.20</td>
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<tr>
<td></td>
<td>St dev (trade-to-close)</td>
<td>4.76</td>
<td>4.84</td>
<td>3.56</td>
<td>3.60</td>
<td>1.98</td>
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<tr>
<td></td>
<td>Open-to-trade</td>
<td>0.25</td>
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<td>St dev (open-to-trade)</td>
<td>2.42</td>
<td>2.72</td>
<td>1.90</td>
<td>1.82</td>
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<tr>
<td>Intra-day measures</td>
<td>VWAP</td>
<td>0.41</td>
<td>0.35</td>
<td>0.21</td>
<td>0.32</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>St dev (VWAP)</td>
<td>1.60</td>
<td>1.25</td>
<td>1.40</td>
<td>1.57</td>
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<td>Trade-to-close</td>
<td>-0.32</td>
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<td>-0.12</td>
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<td></td>
<td>St dev (trade-to-close)</td>
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<td>Open-to-trade</td>
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<td>St dev (open-to-trade)</td>
<td>2.35</td>
<td>2.10</td>
<td>2.02</td>
<td>2.14</td>
<td>2.02</td>
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PANEL B – MARKET IMPACT COSTS BY TRADE SIZE

<table>
<thead>
<tr>
<th>Measure</th>
<th>Smallest</th>
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<th>3</th>
<th>4</th>
<th>Largest</th>
<th>All</th>
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<tbody>
<tr>
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<td>0.68</td>
<td>0.37</td>
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<tr>
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<td>Inter-day measures</td>
<td>Trade-to-close</td>
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<td>-0.14</td>
<td>0.39</td>
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<tr>
<td></td>
<td>St dev (trade-to-close)</td>
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<td>3.89</td>
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<td>0.30</td>
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<td>St dev (open-to-trade)</td>
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<td>2.19</td>
<td>2.81</td>
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<td>Intra-day measures</td>
<td>VWAP</td>
<td>0.15</td>
<td>0.04</td>
<td>-0.03</td>
<td>0.09</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>St dev (VWAP)</td>
<td>2.00</td>
<td>1.46</td>
<td>1.56</td>
<td>1.48</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>Trade-to-close</td>
<td>-0.02</td>
<td>-0.06</td>
<td>-0.13</td>
<td>-0.09</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>St dev (trade-to-close)</td>
<td>1.97</td>
<td>1.59</td>
<td>1.74</td>
<td>1.88</td>
<td>1.78</td>
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<tr>
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<td>-0.04</td>
<td>-0.16</td>
<td>-0.07</td>
<td>0.24</td>
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<tr>
<td></td>
<td>St dev (open-to-trade)</td>
<td>2.19</td>
<td>2.04</td>
<td>2.23</td>
<td>2.17</td>
<td>1.95</td>
</tr>
</tbody>
</table>
TABLE 3. TOTAL MARKET IMPACT COSTS AND TRADE SIZE, STOCK SIZE AND MANAGER STYLE

This table reports regression results for the following regression equation:

\[
\text{Cost}_{\text{mgr}} = \alpha_0 + \sum_{i=1}^{1} \beta_i \text{Style} + \sum_{i=1}^{3} \delta_i \text{MgrSize} + \phi \text{SmallStocks} + \epsilon_{\text{mgr}}
\]

The market impact costs are calculated by summing the open-to-trade and intra-day market impact costs. The intra-day open-to-trade costs are calculated by taking the difference between the opening price and the trade price, and then weighting by the dollar value of the trade. The intra-day open-to-trade costs are calculated by taking the difference between the opening price at the start of the package and the trade weighted average price of the package. This difference is adjusted relative to a size, book-to-market and momentum controlled portfolio. The investment style classifications are self proclaimed by the investment.

| R-square | 60.11% |
| Adjusted R-square | 35.56% |

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>t-stat</th>
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<tbody>
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<td>Intercept of Regression</td>
<td>Style neutral, smallest managers</td>
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<tr>
<td>Investment Style</td>
<td>Growth</td>
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<tr>
<td></td>
<td>Value</td>
</tr>
<tr>
<td></td>
<td>GARP</td>
</tr>
<tr>
<td>Manager Size</td>
<td>26th–50th percentile managers by size</td>
</tr>
<tr>
<td></td>
<td>51st–75th percentile managers by size</td>
</tr>
<tr>
<td></td>
<td>Largest managers</td>
</tr>
<tr>
<td>Skill</td>
<td>Manager trading skill</td>
</tr>
<tr>
<td>Trade Composition</td>
<td>Small stock trades</td>
</tr>
</tbody>
</table>

***, **, * indicate significance at the 1 per cent, 5 per cent, and 10 per cent levels respectively.

FIGURE 1: MARKET IMPACT BY INVESTMENT MANAGER SIZE

(A positive number denotes a cost; a negative number denotes a benefit)

The total market impact cost is measured using the open-to-trade approach (measured in percent). The open cost is measured by calculating the weighted average cumulative abnormal return from the open at the start of the package to each trade in the package. Manager size is defined as total dollar value of the fund as at 31 December 2001. Trade size is defined as the difference between the dollar value of the trade package and the mean daily trading volume calculated over the preceding 40 days.

FIGURE 2: MARKET IMPACT BY INVESTMENT MANAGER

(A positive number denotes a cost; a negative number denotes a benefit)

The total market impact cost is measured by the open-to-trade measure. The open cost is measured by calculating the weighted average cumulative abnormal return from the open at the start of the package to each trade in the package. The frequency distribution includes managers in the histogram for each respective total market impact cost that is bounded between both market impact cost intervals.
FIGURE 3:
MARKET IMPACT BY MANAGER TRADING PERFORMANCE
(A positive number denotes a cost; a negative number denotes a benefit)
This figure shows the mean total market impact cost by quartile of manager trading performance. The total market impact cost is measured using the open-to-trade measure. The open cost is measured by calculating the weighted average cumulative abnormal return from the open of the start of the package to each trade in the package. Trading performance is measured by the mean cumulative abnormal return (CAR) obtained 65 trading days after the start of the package.

FIGURE 4:
MARKET IMPACT BY INVESTMENT MANAGER STYLE
(A positive number denotes a cost; a negative number denotes a benefit)
This figure gives the mean total market impact cost by investment manager style. The total market impact cost is measured using the open-to-trade measure. The open cost is measured by calculating the weighted average cumulative abnormal return from the open of the start of the package to each trade in the package. Investment style is determined based on the equity manager’s self declared style. Fund size is dollar value of fund as at 31 December 2001.

FIGURE 5:
MARKET IMPACT BY INVESTMENT MANAGER FUND FLOW
(A positive number denotes a cost; a negative number denotes a benefit)
This figure gives the mean total market impact cost by investment manager fund flow. The total market impact cost is measured using the open-to-trade measure. The open cost is measured by calculating the weighted average cumulative abnormal return from the open of the start of the package to each trade in the package. Fund flow is calculated over the 12 months prior to each trade. The fund flow prior to each package is compared to that of the other managers in the group to form quartile partitions.
REFERENCES


dividend re-investment and are constructed from underlying market values. The MSCI index series adjusts the market capitalisation of index constituents for free float and targets for index inclusion 85 per cent of free float-adjusted market capitalisation in each industry group, in each country.3 The MSCI indices are broadly representative of each country’s market composition.4 The monthly equity returns, are selected from January 1995 to December 2002 which corresponds to the years that governance data is available. Governance data is not available beyond 2002 and therefore this study is exploratory in relation to the impact of governance upon both developed and emerging market returns. However the study finds some very useful insights into the impact that governance plays both pre and post 1998 emerging market crises.

GOVERNANCE PORTFOLIOS

It is hypothesised that countries with better developed institutions have higher returns on equity and lower levels of risk. Aggarwal et al. (2003) provide evidence that international investors systematically direct less funds towards poor corporate governance firms and that the proportion of such firms is larger in poor governance environments. Gelos and Wei (2003) also find that international funds are invested less into countries with lower levels of transparency which is key constituent of governance.

METHODOLOGY

The sample of 50 countries is ordered according to their governance scores from lowest to highest for each governance indicator. Fifteen countries with the lowest governance ratings and fifteen countries with the highest governance ratings are selected from each indicator to form the countries underlying the “good governance” and “poor governance” portfolios. These countries are listed in table 1.

Monthly returns on the MSCI index for each country in excess of the US one-month T-bill rate are used to determine portfolio returns from January 1995 to December 2002. Both equally-weighted and value-weighted portfolios are constructed for the good governance and poor governance country sets. The value weightings are determined by the MSCI index value in US dollars (USD) for each country at the beginning of 1995.

The portfolio performance measures examined are the total holding period return (HPR), the monthly variance of returns on the portfolio and the Sharpe ratio for each portfolio. The HPR is calculated by multiplying the average monthly return on the portfolio by the number of months the portfolio is invested into. The Sharpe ratio is calculated as the excess average monthly return on the portfolio as a proportion of the average monthly standard deviation of return \( \left( \frac{r_t - r^f}{\sigma} \right) \).

To determine whether the differences in the performances of the portfolios are statistically significant a number of test statistics are computed. For the difference in HPR’s between portfolios the test statistic is determined as:

\[
T = \frac{d}{\sigma_d / \sqrt{N}} - t_{05}
\]

where \( d = \bar{r}_G - \bar{r}_P \), which represents the mean difference between the monthly returns on the good governance portfolio and the poor governance portfolio, \( \bar{r}_G \) is the standard deviation of \( d \), and \( t \) is a student-t distribution with 95 degrees of freedom \( (t_{05}) \). To test the statistical difference between the Sharpe ratio of the two portfolios a test statistic derived from Jobson and Korkie (1981) is used. This can be described as:

\[
T_{jtk} = \frac{1}{\sqrt{96}} \left[ 2\bar{r}_G^2 - 2r_G \sigma_G \sigma_P + \frac{1}{2} \bar{r}_G^2 + \frac{1}{2} \mu_G - \frac{\mu_P \bar{r}_G}{\sigma_G \sigma_P} \right] - t_{05}
\]

where \( \mu_G \) and \( \mu_P \) are the average monthly excess returns on the poor governance and good governance portfolios respectively, \( \sigma_G \) and \( \sigma_P \) are the standard deviation of returns, \( \sigma_{GP} \) is the covariance of excess returns between the two portfolios and \( T_{jtk} \) follows a student-t distribution with 95 degrees of freedom.


The holding period return (HPR), Sharpe ratio and portfolio variance are used to measure portfolio performance over the period January 1995 to December 2002. The last column in each panel represents the difference in performance between the good governance and poor governance portfolios, and in parentheses the p-value of whether the difference is statistically significant is reported. For the Sharpe ratio the null hypothesis of the test-statistics is that the difference in performance measures is 0 and for the portfolio variance the null hypothesis is that the ratio of the two variances is equal to 1.

<table>
<thead>
<tr>
<th>Panel A – weight factors</th>
<th>Panel B – weight factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GEW</strong></td>
<td><strong>PEW</strong></td>
</tr>
<tr>
<td>HPR</td>
<td>-0.1556</td>
</tr>
<tr>
<td>Sharpe ratio</td>
<td>-0.0329</td>
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<tr>
<td><strong>GEW</strong></td>
<td><strong>PEW</strong></td>
</tr>
<tr>
<td>Variance</td>
<td>0.0024</td>
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</tbody>
</table>

* *, **, *** indicate significance at the 10%, 5% and 1% levels respectively.

3. MSCI defines the free float of a security as the proportion of shares outstanding that are deemed to be available for purchase in the public equity markets by international investors.

4. Harvey (1991) note that the returns computed on the basis of these indices are highly correlated with widely quoted country indices, such as the NYSE value-weighted return [calculated by the Center for Research in Security Prices (CRSP) at the University of Chicago], or for the Nikkei 225 index for Japan.
measure the statistical difference in portfolio variances of the
good governance portfolio and poor governance portfolio, the
variance-ratio test was used. This is written as:

$$F = \left( \frac{\sigma_x^2}{\sigma_y^2} \right) - \text{F}_{95,95}$$

where $\sigma_x > \sigma_y$, and follows as an F-distribution with 95 degrees
of freedom for the numerator and denominator ($F_{95,95}$).

RESULTS

The portfolio performance results are presented in Table 2. Panel A provides the results for the equally weighted portfolios and panel B presents the results for the value weighted portfolios. The difference between portfolio measures is reported in the final column of each panel, and the p-value of the statistical significance of the difference is given below the numeric difference. The null hypothesis under each test statistic is that there is no difference between the two performance measures.

The results for the equally weighted portfolios do not demonstrate any statistically significant difference between the holding period returns of the good governance portfolio (GEW) and the poor governance portfolio (PEW). The variance of the GEW portfolio is found to be lower than the variance of the PEW portfolio, and this difference is statistically significant at the 1 per cent level.

In the case of the value weighted portfolios under panel B, the HPR for the GVW portfolio was found to be 12.57 per cent over the study period, and the HPR for the PVW portfolio was only 3.07 per cent. However, the difference in HPR for the two portfolios is not statistically significant. The Sharpe ratio for the GVW portfolio is higher than the Sharpe ratio for the PVW portfolio indicating that the risk adjusted excess return on the good governance portfolio is higher than that of the poor governance portfolio. However, under the results obtained from the Jobson-Korkie test statistic the difference is not significant. The portfolio variance is again found to be lower for the good governance portfolio and that the difference is significant at the 1 per cent level.

The analysis of portfolio returns in investing in countries with
better quality governance. Under both value weighted and equally weighted portfolios, the holding period returns in investing in countries that have better developed institutions are higher than countries with poorly developed governance environments. In the case of the value weighted portfolio, the Sharpe ratio is higher for investing in the portfolio of good governance countries, although the difference is not statistically significant. Finally, the portfolio composed of countries which rate highly on governance is found to have significantly lower variance of returns than that of the poor governance portfolio.

Figure 1 (value weighted portfolios) and figure 2 (equally weighted portfolios) show the value of our portfolios overtime. For our passive investment strategy figure 1 shows very little difference between the “good governance”, “poor governance” and world market portfolios until the onset of the emerging financial markets crash that occurred in 1998 that was the fallout from the Asian financial crisis of 1997. There is then a huge decrease in the value of “poor governance” portfolios over the time period January 1998 until September 1998 whilst there is a moderate
drop in “good governance portfolios” and the MSCI world market values over this time period. Figure 1 also shows that the “good governance” portfolio quite closely tracks the world market portfolio but does not beat it. It is a point worth making that towards the end of 2002, there is a convergence of the values of “good governance” portfolios and “poor countries” portfolio which may be that after the emerging financial markets crash of 1998 there was much emphasis placed upon governance environments by multilateral institutions like the World Bank and International Monetary Fund and investor surveys were generally reporting that international investors were willing to pay a premium for good corporate governance. It appears that this may well have been a fad and that investors have now returned to pre-financial crisis perceptions about governance. This issue would certainly be worthy of further exploration for academics and practitioners since it is quite clear from figures 1 and 2 that around the time of the crash in emerging markets there is a considerable widening of the gap between “good governance” and “poor governance” portfolios (during 1998) which then tapers in from then onwards.

SUMMARY OF RESULTS

The purpose of this paper is to examine the portfolio returns on investing into countries with better developed institutions over an eight year investment period. Under the value weighted portfolios, the performance of the good governance countries portfolio was higher than the poor governance countries portfolio.

The results of this paper demonstrate that the quality of macro-governance environments is positively associated with financial market performance. Countries which have efficient institutional environments have higher returns on their stock markets and lower levels of risk. It can be argued that such a risk-return situation could not persist in equilibrium since risk-averse investors would not invest in countries that are not mean-variance efficient. However this argument does not consider international market segmentation and the diversification benefits arising from poor governance countries. The same reason that certain stocks in a market with higher risk and lower returns are still held by risk-averse investors, due to the portfolio diversification benefits they provide, can be applied to the present context. We present evidence of a possible time-varying importance placed upon “good governance” and whilst the World Bank and IMF have been energetic in promoting enhanced financial architecture and legal infrastructure, the premium paid for good governance may have already dissipated.

REFERENCES


