

Stock Selection in Malaysia*

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ABSTRACT

We investigate the information in various firm specific attributes in forming portfolio strategies in Malaysia. This is the second of a series of papers that explores the selection mechanism in emerging markets. Our out-of-sample analysis suggests that we can achieve up to 15% out-performance of standard benchmarks with our buy portfolio.

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1. Introduction

Achour, Harvey, Hopkins and Lang (1998) present a quantitative framework for executing bottom up strategies in emerging markets. This is a second paper in a series of research that conducts market by market analysis and evaluates the ability to select stocks in both bull and bear markets.

Malaysia is a particularly interesting market because it was hit very hard by the Asian crisis that began in August 1997. From peak in early 1997 to trough (at the end of our sample in May 1998), the market lost more than 85% of its value in US dollar terms (see Exhibit 1).

[Insert Exhibit 1 here.]

In October 1998, Malaysia imposed currency controls in an attempt to stem the capital outflows. Part of our out-of-sample evaluation period falls during the Asian crisis. Importantly, we evaluate the ability of models to select stocks in both up and down markets. While Malaysia has effectively deliberalized in the short term, it is not unreasonable to think that the currency controls will be lifted in the future and full access regranted to foreign investors.

We follow closely the framework detailed in Achour et al. (1998). We combine historical data from the International Finance Corporation (IFC), Morgan Stanley Capital International (MSCI), Worldscope and IBES. We examine a number of standard attributes like book value to price, cash flow to price, earnings to price, dividends to price, earnings growth, revenue growth, debt/equity ratios, return on equity and market capitalization. In addition to these essentially historical measures, we examine prospective earnings to price ratios measured over different horizons, IBES revisions, prospective earnings growth as well as a number of momentum measures.

Our results suggest that significant value can be added by our stock selection mechanisms. Our out-of-sample results show that our buy list significantly outperforms the standard benchmarks. The margin is large enough to succumb the transactions costs in these markets.

Given that details of the framework are presented in Achour et al. (1998), we focus on the detailed factor by factor results in this paper. However, in the interest of being self-complete, we repeat many of the factor definitions and methodological details.

2. Asset selection process

2.1 Screening methodology

At the start of each holding period, firms are sorted on the observable characteristics defined below and assigned in equal numbers to a pre-defined number of portfolios

(fractiles) on the basis of its rank. For example, if all available stocks for a given characteristic are ranked in order of expected return, then top one third become the top “fractile” and the bottom (lowest scoring) third become the bottom “fractile”. If there is a tie around the portfolio breakpoints, stocks are assigned to lower portfolios. The number of fractiles that we choose depends on the number of securities available. With fewer securities, we focus on three fractiles. In countries with more securities, we use five fractiles. We calculate both equal and value weighted returns for each portfolio. For this paper, we focus most of our attention the top and bottom portfolio performance. Stocks for which no ranking information exists are excluded to an ‘NA’ category or not ranked portfolio and analyzed separately.

Our paper focuses on what we have termed ‘univariate’ sorts, i.e. portfolio formation based on a single attribute. However, for many attributes we did examine ‘bivariate’ sorts simultaneously based on two criteria. Given space constraints, it is not possible to report the results of bivariate sorts.

Our method involves performance screening in an ‘in-sample’ period that ends in December 1995. We then assign weights to each characteristic and develop a final selected portfolio. We call this the “scoring screen”. This scoring screen is then tested in the ‘out-of-sample’ period from 1996 through May 1998. Our exhibits show performance statistics over the full sample, i.e. both in sample and out of sample. However, we combine these periods only for the purposes of presentation in this paper. In our research, the in-sample and out-of-sample periods were clearly separated. Further, the reader can see the year by year performance in the in-sample and out-of-sample periods. Top-bottom spread returns are reported as well as calculated premia over a selected investment benchmark.

Returns are calculated after adjusting for splits, dividends and rights offerings and denominated in US dollars using exchange rates supplied in the IFC’s Emerging Market Database (EMDB). Value weighted portfolio returns are constructed using relevant IFC adjustment factors to replicate the index level returns on a bottom up calculation. These adjustment factors are made for corporate actions and for government and cross ownership (from November 1996). Firms with more than one share class, which IFC have included to achieve the desired index level weighting structure, are aggregated together to form a single basket of outstanding shares in our screens. Where different classes of shares are priced differently, the fundamental data used in the analysis is linked to the most liquid class of shares available to international investors. The market capitalization has been adjusted to take all classes of shares together.

2.2 Diagnostics

A battery of diagnostic criteria are presented to assist the evaluation of each screening factor. Each diagnostic is carefully defined in our performance report template that is presented in Exhibit 2.

EXHIBIT 2
Performance diagnostics:

Note :	Performance Measure/Summary Statistic	Definition ¹
1	Annualized average return ²	<i>Stock level</i> - Annualized geometric average of post-rank portfolio US Dollar total returns over all observation periods. Total return is calculated by adding the last 12 months gross cash dividend at ex-dividend date, adjusted for the length of the return period, to the closing monthly USD market price. Returns are value weighted by the market capitalization as at observation date. <i>Index level</i> - Similarly for the market portfolio, though the index return levels will be as sourced from database providers using the value weighted index returns ³ .
2	Cumulative return (indexed at 100 - start)	Value of \$100 if invested at the first observation date and compounded over intervening periods.
3	Std Deviation of returns	Annualized standard deviation of post-rank portfolio returns over all observation periods.
4	Average annual excess return - Rm.	Annualized geometric average of post-rank portfolio excess returns above the market portfolio over all observation periods.
5	Average annual excess return - Rf	Annualized geometric average of post-rank portfolio excess returns above annualized US 90 Day T-bill rate over all observation periods.
6	Std Deviation of excess rtns - Rm	Annualized standard deviation of post-rank portfolio excess returns above market portfolio over all observation periods.
7	Std Deviation of excess rtns - Rf	Annualized standard deviation of post-rank portfolio excess returns above annualized US 90 Day T-bill rate (as at observation date) over all observation periods.
8	T-stat	Test of whether average excess return is significantly different from zero.
9	Systematic risk (Beta)	Slope of regression line estimated by regressing average post-rank portfolio returns on the relevant market portfolio return over all observation periods. No lags are incorporated in the market portfolio return to allow for non-synchronous trading.
10	Alpha	Annualized intercept of the regression line estimation per Systematic risk (Beta) above.
11	Co-efficient of determination	Co-efficient of determination (R-Square) of average post-rank portfolio returns versus the market portfolio return over all observation periods.
12	Average market cap	Sum of all constituent market capitalizations in local currency divided by the total number of portfolio constituents over all observation periods.
13	% periods > market portfolio	Percentage of total observations that average post-rank portfolio return was greater than the market portfolio return over the holding period.
14	% periods > Bench up Mkt	Percentage of total observations that average post-rank portfolio return was greater than the market portfolio return when the

¹ Definition applicable to equal and value weighted fractiles and benchmark performance measures.

² See body of text on return calculations

³ Although value weighted index returns will obviously impart a known size bias (that will vary from market to market depending on the distribution of size) on the comparative benchmark returns this is unavoidable due to non-availability of an equal weighted benchmark in many markets.

		market portfolio return was greater than zero.
15	% periods > Bench Dn Mkt	Percentage of total observations that average post-rank portfolio return was greater than the market portfolio return when the market portfolio return was less than zero.
16	Max # of consecutive bmark out-performance	Longest string of consecutive observations where average post-rank portfolio return was greater than the market portfolio return.
17	Maximum positive excess return	Highest single post-rank portfolio excess positive return above market portfolio over all observation periods.
18	Maximum negative excess return	Lowest single post-rank portfolio excess negative return above market portfolio over all observation periods.
19	% periods positive returns to negative	Ratio of portfolio post-rank average returns greater than zero to post-rank returns less than zero over all observation periods.
20	% periods of negative returns	Percentage of observations that portfolio post-rank returns were less than zero over all observation periods, indicative of the historical probability of losing money.
21	Max # of consecutive negative periods	Longest string of consecutive observations where average post-rank portfolio return was less than zero.
22	Max # of consecutive positive periods	Longest string of consecutive observations where average post-rank portfolio return was greater than zero.
23	Cumulative annual returns	Value of \$100 if invested on the 1 st January of each year of the observation period and compounded over intervening observation to 31 st December. Cumulative returns for 1998 would represent a year to last observation date return.
24	Relative Performance	Average relative performance of portfolio generated on simple scoring algorithm that assigns a weight to the portfolio in each year of the observation period based on its cumulative annual return performance rank relative to its peers. Therefore, the minimum score a portfolio could obtain would be 1, maximum r and average $(n + (n+1) + (n+2) + \dots + (n+r))/r$ where n is the number of years in the observation period and r is the number of portfolios.
25	Cumulative annual returns - last 2 and 5 years	Value of \$100 if invested two or five years preceding the most recent observation and compounded over intervening periods.
26	Factor average	Arithmetic average of constituent ranking factors over all observation periods.
27	Factor median	Median value of constituent ranking factor over all observation periods.
28	Factor standard deviation	Standard deviation of constituent ranking factors over all observation periods.

In addition to the diagnostics, what we are really looking for is consistency. Quantitative measures such as the longest strings of negative and positive absolute and relative returns, performances in up and down markets and the historical probabilities of losing money add further dimensions to traditional statistical risk and expected return measures. These measures are further complemented by the simple relative performance scoring algorithm diagnostic which assigns a weight to the portfolio in each year of the observation period based on its cumulative annual return performance rank relative to its peers. Average scores across the observed periods will deliver information regarding performance consistency.

One notable absence from the table is the analysis of transaction costs. In measuring the performance of portfolios, we adopted rudimentary assumptions for turnover costs because of the well documented difficulties on capturing costs associated with different instruments traded, bid-ask spreads, market impact and opportunity costs on execution time durations. To address the issue of the effects of implementing a trading strategy, our models are run with longer holding periods to check for robustness and to identify factors with return premia which persist on longer holding periods.

2.3 Factor selection

There are many elements that enter our algorithm for factor selection. Given the number of factor screening candidates, we need to greatly reduce the dimensionality (isolate a small number of factors) for our final portfolio selection, which we will call the final scoring screen. The factor report cards detailed in Exhibit 2 yield 28 different diagnostic pieces of information. It is also important to understand the interrelationships between the various factors. This must be supplemented by correlation analysis to eliminate potentially redundant screening factors.

We calculate correlations between the portfolio returns derived from each factor screen. We do this separately for the top fractile and the bottom fractile portfolio. For this analysis, we used value-weighted portfolios. As we assign weights to both top and bottom factor portfolios in arriving at a composite factor score for firms in the universe we present matrix correlation coefficients for both. Factor returns that are highly correlated in the top portfolio may exhibit weak or negative correlations in the bottom. Some of the variation may be attributed to the collection of heterogeneous groups of stocks in certain bottom portfolios due to the nature of the sort - lumping high earnings multiple and loss making firms together in an earnings yield sort, for example. This is illustrated by the high correlation coefficients obtained in top portfolios between earnings yield and book to price ratios in Malaysia and the lower observed values in the bottom portfolio.

We find high correlations among value strategies, which is due in part to price appearing in the denominator of these ratios. Unlike value screens, correlations and factor performances among growth proxies differ visibly. Estimate revision screens (change in consensus FY1 estimates and consensus forecast earnings estimate revision ratio) have higher relative correlation coefficients with growth proxies as these type of screens generally behave better in growth oriented environments where premiums are paid for additional amounts of nominal earnings.⁴

2.4 Final portfolio selection and diagnostics

Our final portfolio selection is based on a combination of:

1. Assessment of the factor based on the 27 diagnostics presented in Exhibit 2
2. Bivariate screens that combine information in two factors (not reported)
3. Correlation analysis

⁴ See, for instance, Bernstein (1995).

4. Success ratios
5. Quadratic optimization (not reported)
6. Quantitative adjustments for high transaction costs inducing factors (not reported)
7. A final “knock-out” list.

Steps one through six are what we characterize as the “scoring screen”. This screen uses information in both the top and bottom performing fractiles. That is, our buy list is not a simple combination of the top fractiles. While it might not be possible to short stocks in the bottom fractiles, membership in this fractile is useful in penalization of a particular security or for its removal from a buy list through time.

The seventh step, the “knock out” criteria, eliminates firms that are too small for meaningful portfolio investment. It also isolates firms that have unreasonable leverage. It should be emphasized that the inputs for the scoring screen includes information, such as bivariate sorting and some additional univariate screens, which have not been included in this text.

The success ratio analysis is another diagnostic measure that gives insight into performance differentials. The success rate measures the percentage of stocks in the top portfolio that outperform the benchmark market portfolio at a particular observation and the percentage that underperform in the bottom portfolio. The average of these rates through time will reveal the depth of portfolio performance and the proportion of firms driving performance. We examine this measure for each of the screening factors. The definitions for this analysis are contained in Exhibit 3.

EXHIBIT 3

Success Rate definitions

Performance factor	Definition
Success rate	Calculated individually for both top and bottom portfolios as the percentage of stocks in the top portfolio at a particular observation that <i>outperform</i> the Market portfolio, and the percentage of stocks that <i>underperform</i> in the bottom portfolio. For example, if 10 stocks are sorted into a top factor portfolio and eight of those stocks have returns <i>greater</i> than the market then the success ratio is 80%. In the same strategy at the same observation date, if six of the 10 stocks collected in the bottom portfolio have returns <i>less</i> than the market the success ratio for that bottom portfolio would be 60%.
Average success rate	Arithmetic average of the observed success rates over all observations.
Standard deviation of average success rate	Standard deviation of the observed success rates from the average success rate over all observations.
Average success rate consistency ratio	Percentage of observations that the success rate was greater than 50%.
Success rate - Most successful	Highest observed single success rate over all observations.

Success rate - Least successful	Lowest observed single success rate over all observations.
Universe	Those constituents of the selected index (market portfolio) for which relevant ranking information exists at a particular observation date.

The success ratio analysis is a particularly useful tool in helping us assess the probabilities of type I error (incorrectly classifying a winner to the bottom fractile) and type II error (incorrectly assigning a loser to the top fractile). Indeed, no matter how favorable a screen might look, there is still a chance that losers will be assigned to a buy list. However, if one is able to do independent fundamental research on the individual firms, it may be possible to more accurately identify winners in the top fractile. Of course, our final portfolio is evaluated using a number of criteria, only one of which is the success ratio.

3. Data

3.1 Primary sources

Our data are drawn from a number of sources all contained within the FACTSET database system. We use constituent data from the International Finance Corporation (IFC), Worldscope and the Institutional Brokers Estimate System (I/B/E/S). In some of our analysis, we also use data from Morgan Stanley Capital International (MSCI). Our analysis uses returns and data on 21 firm characteristics.

The universe of stocks for all markets as well as benchmark returns are sourced from the IFC Global indices through time. The IFC is widely regarded as having the most complete emerging market data set and has been widely used in recent academic studies, for example Harvey (1995) and Rouwenhorst (1998). The IFC's Emerging Market Database (EMBD) generally has the longest histories and highest quality data sets for emerging markets. The selection of IFC facilitates the back testing of the chosen factors. It also has the advantage of being a 'snap shot' database which eliminates most survivorship biases. That is, for our sample, no data has been backfilled by the IFC.

As the principal focus of the paper is on the predictive power of local factors through time and not on the impact of investment restrictions, we have used the broader global indices that do not include adjustments made for investability. Hence, we focus on the IFC 'Global' indices rather than the IFC 'Investible' indices. The 'investible' stocks are those that are available to foreign institutional investors and which pass screens for minimum size and liquidity.

3.2 Screening factors

We classify our screening factors into three groups: historical accounting characteristics (fundamental factors); expectations (expectation factors); past returns (technical factors) and size (size factors). Fundamental, technical and size factors are from IFC where available or from Worldscope, while the expectation factors are from I/B/E/S. Each of our screening factors is detailed in Exhibit 4.

EXHIBIT 4

Details of Screening Factors

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
1 Market capitalization	IFC	<p>Number of shares outstanding for index purposes * closing monthly market price</p> <p>Note 1 : Number of shares outstanding as at the balance sheet date, adjusted for corporate actions and reduced by government and cross ownership (from November 1996) per capital adjustment factor. For firms with more than one share class, such as in Mexico, we have used whenever possible the aggregate Worldscope weights for that firm. Where the Worldscope weights are missing, we used the constituent IFC weights.</p> <p><i>Top portfolio : Small capitalization stocks</i></p> <p><i>Bottom portfolio : Large capitalization stocks</i></p> <p>Code⁶ : CAP</p>	<ul style="list-style-type: none"> Diagnostic screen to investigate performance differential between large and small capitalization stocks. [Certain screens in the study were not considered for incorporation into the selection model but were constructed to give insight into the behavior of specific market segments through time]. Size is widely regarded as a proxy for trading liquidity. Small capitalization stocks tend to have higher transaction costs. [There are well documented difficulties on capturing costs associated with different instruments traded, bid ask spreads, market impact and opportunity costs on execution time durations] Risk, as defined by volatility of historical returns, tends to increase as size decreases.⁷ If there is no risk premium associated with investing in smaller capitalization stocks, then investors are expected to migrate toward larger capitalization stocks which have lower perceived risks. IFC selects constituents for their indices based on liquidity, track record, institutional interest, and industry representation, that is, their selection is not random. Track record may preclude the selection of small capitalization emerging growth stocks, therefore small capitalization stocks may show significant value characteristics [Emerging 'growth' stocks probably enter universe as more mature mid caps]. <p>Note 2 : Market price as at date of observation in local currency (consistent across all factors).</p>

⁵ For all screening factors, stocks for which relevant ranking information does not exist are classified into a not ranked fragile and monitored separately.

⁶ Short form screen code for selected tables and text

⁷ See Bernstein (1995) for a general discussion on the behavior of market capitalization and size effects.

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
			<ul style="list-style-type: none"> Smaller stocks tend to be regarded as lower ‘quality’ stocks [Smaller stocks due to the inherent variability in earnings and exposures to the local economy are generally regarded as being of lower ‘quality’]. Small stock effects may pervade the results of other factors described below. To this end, we examine the impact of size on all the factors below. We construct bivariate screens to test whether a candidate factor discriminates between high and low expected return stocks across all size categories.
2	Change in Return on Equity	IFC Stocks with improving returns on equity and thus ‘quality’ should outperform through time	<p>Return on equity (current year) –Return on equity (previous year)</p> <ul style="list-style-type: none"> To capture changes in the levels of a company’s return on common equity, as compared with a more traditional ‘quality’ rank. Our objective is to identify companies that investors believe are higher ‘quality’ before subsequent shifts in valuation multiples occur. For example, a company that improves its return on equity from 10% to 15% might be very attractive although this stock might not necessarily be ranked in the top portfolio of a simple return on equity sort. This screening factor might be improved by combining it with IBES expectation data and a bivariate sort. <p><i>Top portfolio : High change</i></p> <p><i>Bottom portfolio : Low change</i></p>
3	Debt to common equity ratio	Worldscope Code : CH_ROE Highly leveraged	<p>(Total debt/common equity)*100 (Long term debt + Short Term Debt + Current Portion of Long Term Debt)/</p> <ul style="list-style-type: none"> Diagnostic screen constructed to give insight into performance differential between leveraged and unleveraged stocks. [Not considered for incorporation into the selection model].

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
stocks expected to out-perform to compensate for the higher implied risks.		Common Equity *100	<ul style="list-style-type: none"> Debt/equity ratios can be used as a proxy for ‘quality’ and perceived risk⁶ and screens on ‘good’ and ‘bad’ companies. Formed portfolio returns expected to have a high correlation with certain value return screens [see earnings yield below, for example]. Data assimilated from most recent fiscal year end. Lag incorporated on assimilation of data to ensure data item is available for out-of-sample portfolio formations. Rank comparisons across some constituent sectors are difficult. This is the case in the banking sector, for example, since taking deposits is analogous to borrowing, and we exclude this sector from the screen for this reason.
<i>Top portfolio : High debt to equity</i>			
<i>Bottom portfolio : Low debt to equity</i>			
Code : DE			
4	Dividend yield	IFC Last 12 months cash dividends / closing monthly market price)*100	<ul style="list-style-type: none"> High correlation with other ‘value’ factors as these tend to be shorter duration strategies. [Duration refers to interest rate sensitivity and is defined by the relative change in an instruments return to a defined change in the level of interest rates]. Smaller capitalization stocks tend to have higher yields. All dividends expressed in local currency terms
			<p>Note: On a per share basis at ex-dividend date, using gross cash dividends.</p> <p>Adjustment made by database provider to ensure all shares issued and outstanding for index purposes receive same dividend</p>
<i>Top portfolio : High dividend yield</i>			
<i>Bottom portfolio : Low dividend yield</i>			
Code : DY			
5	One year historical earnings growth/momentum	IFC (Last 12 months trailing earnings per share) / (absolute previous last 12 months trailing earnings per share))*100	<ul style="list-style-type: none"> Earnings momentum indicator frequently used as the best growth proxy due to information deficiencies in certain emerging markets. Assumes that analysing the past has value for subsequent

⁵ Screen can be used to corroborate use of factor as part of a set of knockout criteria to control final model risk.

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
<p>high earnings momentum stocks should outperform through time.</p> <p><i>Top portfolio :</i> <i>High earnings momentum</i></p> <p><i>Bottom portfolio :</i> <i>Low earnings momentum</i></p> <p>Code : HEGR_1Y</p>		<p>Note 1: In hyperinflationary economies IFC uses adjusted earnings and book values, inflating trailing earnings and historical book values by intervening period inflation. Consistent across all factors with earnings and book value per share in formulas. Reported as opposed to operating earnings have been used throughout the study due partly to the availability and quality of the reported data but also to capture the effect of any asset write-offs that may occur during periods of falling inflation.</p>	<ul style="list-style-type: none"> • forecasts. • Useful indicator to identify those stocks with rising expectations among investors prior to their establishing a track record. • We conducted the analysis excluding negative historical previous earnings for comparison purposes. • Can be screened with estimate revision ratios [see Consensus forecast earnings estimate revision ratio below for definitions] to identify future earnings surprises and recovery situations. This directly introduces market expectations of earnings growth rather than relying on changes in historical earnings.
<p>6</p> <p>Three year historical earnings growth rate</p> <p>Stock exhibiting best long term track records should continue to provide superior growth rates</p>	IFC	<p>The rate of change in reported last twelve month earnings per share over the three year time interval terminating on the date of the last interim period for which earnings were announced.</p>	<ul style="list-style-type: none"> • A traditional growth proxy highlighting a stock's historical track record and stability. • Stocks which pass factor criteria have a visible track record, a perceived rarity in the volatile emerging markets and should therefore trade at high premiums even though it is generally accepted that naive extrapolations in these volatile markets are futile. • Does not incorporate the element of expectation but rather known growth, which is effective for identification of a

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation	
and return premiums		(where applicable) earnings data over the specified period. The following rules hold for factor rank :	<ul style="list-style-type: none"> ‘quality’ universe of stocks. In order to include a larger number of stocks in the analysis, when less than three years of data were available, we included stocks that did include a full two-year data history. 	
<i>Top portfolio :</i> <i>High earnings growth</i>		<i>Bottom portfolio :</i> <i>Low earnings growth</i>	<p>Code : HEGR_3Y</p> <p>7 Earnings yield</p> <p>IFC</p> <p>(Last 12 months trailing earnings per share/closing market price)*100</p> <p>Per share data – Aggregate reported earnings divided by the total number of shares outstanding (all classes) as of the balance sheet date, adjusted for corporate actions and reduced by government and cross ownership (from Nov 96) per capital adjustment factor. This is consistent across all factors constructed using IFC per share data.</p> <p><i>Top portfolio :</i> <i>High earnings yield</i></p> <p><i>Bottom portfolio :</i> <i>Low earnings yield</i></p> <p>Code : EY</p>	<ul style="list-style-type: none"> Traditional ‘value’ / ‘growth’ proxy used by investors. Value stocks generally are riskier as they are usually firms under distress, have high financial leverages and face substantial uncertainty in future earnings. Much has been written about the shortcomings of the incorporation of traditional measures such as earnings yield. One can argue that these measures may be influenced by accounting practices, may not incorporate risk or the time value of money and may be seen as a function of value and not a determinant of value. On the other hand, for many common stocks, the average relation between price and reported may reflect the views of investors as to the quality and growth of the issue. It may give information about, inter alia, the quality of management, the firm’s individual prospects, the competitive position, the stability and growth of past earnings and its financial strengths. Though there are benefits in using yield and value ratios, data quality and history often preclude their effective implementation. The use of earnings yield as a factor can result in sorting on incorrectly identified ‘value’ companies. Anticipatory stock price movements could induce a migration into ‘value’

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
8	a) Change in Consensus FY1 estimate - last 3 months b) Change in Consensus FY1 estimate - last 6 months	IBES estimates a) ((Consensus forecast earnings per share Fiscal Year 1 (FY1) at date of observation/ consensus forecast earnings per share FY1 3 months preceding date of observation)-1)*100 b) ((Consensus forecast earnings per share Fiscal Year 1 (FY1) at date of observation/ consensus forecast earnings per share FY1 6 months preceding date of observation)-1)*100	<p>territory before the next round of reported financial information alters the multiple. Combining the historical factor (earnings yield) with an expectational factor [such as a revision ratio sort, for example] in a bi-variate sorting model could partially alleviate this problem [this will also apply to other ‘value’ screens below].</p> <ul style="list-style-type: none"> Inverting traditional price to earnings ratio will result in the collection of loss making stocks in the bottom ranked portfolio. The relative performance of this group may be investigated by exclusion through time. Without some form of relative attribution adjustment, sectoral influences could appear in ranks through time. <p>Factor indicates the magnitude of change in Fiscal Year 1 consensus forecast earnings estimates over the preceding 3 and 6 month period from observation date.</p> <ul style="list-style-type: none"> Good indicator to isolate companies with changing earnings expectations and those that have provided interim earnings surprises. [The screen’s design will discriminate between stocks with both rising and falling earnings expectations.] Should have high correlation with growth proxies as revision screens generally behave better in growth oriented environments. <p>Generates insight into behavioral aspects of estimates revisions as estimation precision increases with approaching fiscal year end.</p> <ul style="list-style-type: none"> Frequency of estimate revisions and magnitude of variation from mean estimates will increase in volatile macro environments. Similar to the Consensus forecast earnings estimate revision ratio below but captures the magnitude of change in the revisions over the preceding period. <p>Note : Average EPS estimate known as consensus forecast is calculated by adding current EPS estimate data for the specified periods from all contributing IBES firms and dividing by the number of EPS estimates that enter into the calculation. A composite forecast of earnings per share that distills current EPS estimate data for the specified fiscal time period into a single expectation. Gains from combining</p> <p><i>Top portfolio : High change in estimate</i></p> <p><i>Bottom portfolio : Low change in expectation</i></p>

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
<i>estimate</i> Code : CH_FY1_3M	IBES estimates	security analysts forecasts arise from using more information in the aggregate than is used by any individual, and from the reduction of individual analysts' forecasts error through diversification.	have IBES data
9 Consensus FY2 to FY1 estimate change <i>Stocks with high changing medium term expectations should outperform through time.</i>	IBES estimates	Consensus forecast earnings per share Fiscal Year 2 (FY2) / Consensus forecast earnings per share Fiscal Year 1 (FY1))-1)*100 Consensus forecasts at date of observation.	<ul style="list-style-type: none"> Change in estimate captures the rate of change in earnings per share that is expected for the company into Fiscal Year 2. Identifies stocks with changing medium term earnings expectations.
<i>Top portfolio : High change in estimate</i> <i>Bottom portfolio : Low change in estimate</i> Code : CH_FY2_FY1	IBES estimates	((Sum of trailing 3 months upward FY1 estimate revisions) - (Sum trailing 3 months downward FY1 estimate revisions)) / (Total trailing 3 months FY1 estimates)	<ul style="list-style-type: none"> Good proxy for isolating pre-earnings momentum stocks and stocks with changing earnings expectations. Similar to Change in Consensus FY1 estimate - 3 and 6 months factors above but may also measure the degree of sentiment. Ratio also effective in isolating changing expectations of companies which suffer relative neglect by the investment
10 Consensus forecast earnings estimate revision ratio <i>Stocks exhibiting high earnings revisions and rising</i>	IBES estimates	The ratio of the number of net upward or	

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
expectations should outperform through time.		downward current EPS estimates for fiscal year one over the preceding three months to the total number of estimates made over the same period.	<ul style="list-style-type: none"> The ranked universe can be split using a portfolio midpoint to isolate homogenous groups of upward, downward and zero revisions. <p><i>Top portfolio : High revision ratio</i></p> <p><i>Bottom portfolio : Low revision ratio</i></p>
Code : IREV_3M			
11	Book to price ratio	IFC $(\text{Historical book value per share}/\text{closing monthly market price}) * 100$ <p>Note : Historical book value per share - most recent annual book value as reported on balance sheet at the latest fiscal year end (with interim figures used if available). This will be adjusted between balance sheet report dates by the amount of capital raised by rights issues, and in the case of hyper inflationary economies, by intervening inflation adjustments.</p> <p><i>Top portfolio : High book to price ratio</i></p> <p><i>Bottom portfolio : Low book to price ratio</i></p>	<ul style="list-style-type: none"> Traditional ‘value’/‘growth’ proxy. Conventional wisdom suggests that the book-to-price ratio is one of the most straightforward and effective investment factors in the emerging markets. Developed market studies show high correlation between size and book value, though small capitalization stocks will tend to be small cap ‘value’ stocks with relatively high levels of distress. Technically insolvent companies are included in bottom portfolios with high premium stocks, though the relative performance of this group may be investigated by exclusion through time. Without some form of relative attribution adjustment sectoral influences could appear in ranks through time.
Code : BPR			
12	Cash earnings to price yield	IFC $(\text{Cash earnings per share} / \text{closing market price}) * 100$ <p>Note 1: Cash earnings per share - last 12 months trailing earnings per share plus</p> <p>High cash earnings to price yield stocks</p>	<ul style="list-style-type: none"> Traditional ‘value’ proxy which facilitates cross sectional comparisons by removing the effect of depreciation policies on earnings. Not a true cash flow per share factor though should provide

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
<p>should outperform through time.</p> <p><i>Top portfolio :</i> <i>High cash earnings to price yield</i></p> <p><i>Bottom portfolio :</i> <i>Low cash earnings to price yield</i></p> <p>Code : CEY</p>		<p>depreciation as reported in the Cash Flow Statement divided by the total number of shares outstanding.</p>	<ul style="list-style-type: none"> some information regarding a company's ability to leverage itself, to pay dividends and to enjoy financial flexibility. Obvious shortcomings in availability and "quality" of data and noise inherent in reduced samples of firms [companies that do not report depreciation figures are excluded from the factor sort]. There is potential information in investigating stocks collected in bottom portfolio and premiums paid for higher quality cash earnings. Inverting the traditional price-to-cash earnings ratio will result in the collection of deficit cash flow stocks in the bottom ranked portfolio, though the relative performance of this group may be investigated by exclusion through time.
<p>13 a) One month price momentum b) One year price momentum</p> <p>A firm's past return Helps to predict future returns, and past momentum stocks should continue to outperform.</p> <p><i>Top portfolio :</i> <i>High momentum</i></p> <p><i>Bottom portfolio :</i> <i>Low momentum</i></p> <p>Code : PM_12M, PM_1M</p>	IFC	<p>a) One month USD price change b) Last 52 week USD price change</p>	<ul style="list-style-type: none"> Momentum or relative strength portfolios are formed by ranking stocks on past one and twelve month returns. As shown in other research for developed markets, momentum returns accrue gradually over a period of up to one year after ranking. Strategy has higher implied portfolio turnover. Previous research has introduced a one month lag in portfolio formation after observation date to compensate for bid-ask bounce. We check the sensitivity of our results by excluding the first lagged month in the one-year momentum screen. Collection of extreme rankings in outlier portfolios of one month momentum strategies may pre-empt a degree of reversal. Momentum effects more evident with longer horizon (52 week) price changes.

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
14 12 months prospective earnings growth rate Stocks with highest expected short to medium term growth rates should outperform through time.	IBES Estimates	$((\text{Rolling 12 month consensus forecast earnings per share} - \text{historical trailing earnings per share}) / \text{absolute}^{14}(\text{historical trailing earnings per share})) * 100$ <p>The rate of change in earnings per share that is expected for the stock over the specified period, expressed as a percentage.</p> <p>Note 1: Rolling 12 month forward IBES estimates calculated as follows :</p> $((M1 * F1) + ((12 - M1) * F2)) / 12$ <p>Where :</p> <p><i>Bottom portfolio : Low prospective growth</i></p> <p><i>Code : PEGR_1Y</i></p>	<ul style="list-style-type: none"> Traditional short to medium term growth proxy that discriminates on differential earnings expectations. Trends over short term period may be dominated by the business cycle, or in some cases the industry cycle. The use of rolling 12-month forward estimates reduces the inherent redundancy that accrues as fiscal year end is approached. Stocks with the highest expected earnings could have the greatest propensity to disappoint or torpedo, as surprises are more likely on the down side. When the IBES database had missing financial ratios, we elected to use the IFC data to fill in the missing data. <p>Rolling 24 month data will be constructed on the same principle as above but will access FY3 estimates to preserve the two year forward window.</p> <p>Note 2 : See factor 5 for explanation on use</p>

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
15 Three year prospective earnings growth rate	IBES Estimates	The expected rate of change in Consensus forecast earnings per share over a three year time horizon. A composite forecast of the anticipated annual growth rate in earnings per share over the longer term.	<ul style="list-style-type: none"> Growth rate provides a more robust view of a stock's longer term earnings expectations. Longer forecasts are often used to justify the high multipliers of earnings some-times commanded by growth stocks. Provides insight into extrapolation of past growth trends. Higher premia paid for 'growth' stocks built on the rationale that a dollar of retained earnings in a firm with greater opportunities to invest at higher rates, has a higher perceived investment value. Three years forward is the maximum available time window, longer forecasts incrementally lose value in volatile markets.
		Stocks with highest expected medium to longer term growth rates should outperform through time. <i>Top portfolio : High prospective growth</i> <i>Bottom portfolio : Low prospective growth</i>	Note 1 : See factor 6 for definitions of rate function Note 2: Due to the fact that certain markets have infrequent fiscal year three estimates, the best expectation of longer term growth in those markets will be constructed using FY2 data.
16 a) 12 month prospective earnings yield b) 24 month prospective earnings yield	IBES Estimates	Code : PEGR_3Y	<ul style="list-style-type: none"> (Rolling 12 month consensus forecast earnings per share / Closing market price)*100 (Rolling 24 month consensus forecast earnings per share / Closing market price)*100 <p>Stocks with the greatest perceived</p>

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
expected ‘value’ should outperform through time. <i>Top portfolio : High prospective yield</i>			<ul style="list-style-type: none"> Inverting price to prospective earnings ratio will result in the collection of prospective loss making stocks in the bottom portfolio, though the relative performance of this group may be investigated by exclusion through time.
<i>Bottom portfolio : Low prospective yield</i>			
Code : PEY_12M, PEY_24M			<p>17 Revenue growth</p> <p>Worldscope $\frac{((\text{Current years Net Sales or Revenues}/\text{Previous years Net sales or Revenues}) - 1) * 100}{\text{For industrial companies revenue represents gross sales and other operating revenues less discounts, returns and other allowances; banks, insurance and other financial companies revenues represent the total operating revenue of the company.}}$</p> <p>Stocks with real perceived growth rates should outperform through time.</p> <p><i>Top portfolio : High growth</i></p> <p><i>Bottom portfolio : Low growth</i></p> <p>Code : RGR</p>
18 Rate of re-investment	IFC	$\frac{(\text{Last 12 months trailing earnings per share} - \text{Last 12 months dividend per share}) / (\text{Last year book value per share}) * 100}{\text{Growth and emerging growth stocks with}}$	<ul style="list-style-type: none"> Rate of reinvestment used to discriminate ‘growth’ companies that provide higher rates of returns on invested capital but reinvest earnings to generate internal growth rather than returning capital to shareholders. It is generally considered sound corporate policy, usually in

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
<p>high internal growth rates should outperform through time.</p> <p><i>Top portfolio :</i> <i>High rate of reinvestment</i></p> <p><i>Bottom portfolio :</i> <i>Low rate of reinvestment</i></p>		<p>and book to price ratio factors above for definitions on ratio constituents.</p> <ul style="list-style-type: none"> If the firm has good prospects, we would expect a high reinvestment rate. Usually has high correlation with other growth and “quality” proxies. 	<p>the interest of shareholders, to retain an appreciable amount of an average years’ earnings to, inter alia, strengthen liquidity, invest in infrastructure and product expansion, prepare for ‘rainy days’ and maintain dividend rate in low earning years.</p>
<p>Code : RIR</p>	<p>19 Return on equity</p> <p>IFC</p>	<p>(Last 12 months trailing Earnings per share / last year book value per share)*100</p> <p>Note : See earnings yield and book to price ratio factors above for definitions on ratio constituents.</p>	<ul style="list-style-type: none"> Return on equity fundamental in screening of companies providing returns on invested capital. Good traditional ‘quality’ and risk proxy to investigate the performance differential between perceived ‘good’ and ‘bad’ stocks through time. While nominal ROE does not provide significant insight into a stocks ability to create intrinsic value. It is thought to be a good and simple proxy for management quality and the ability of management to leverage rate of return on equity by incurring debt. Return on equity will to a degree demonstrate the efficiency of the company’s management of assets, the ability to meet competitive challenges and implement a pricing strategy, the ability to weather credit market conditions and to instill an overall financial policy and the ability to take advantage of fiscal incentives. Though there are perceived benefits in the use of advanced return and value ratios, data quality and history often preclude their effective implementation.

Factor, hypothesis and ranking strategy	Data source	Formula and definitions ⁵	Interpretation
<ul style="list-style-type: none"> • High ROE stocks are visible ‘quality’ stocks and sometimes trade on high multiples. 			

4. Results

4.1 Market settings in Malaysia

The Malaysian economy experienced real GDP growth of 7.5% per annum between 1988 and 1996 with an average inflation rate of only 3.5%. Although the current account deficit was rising, this was primarily due to large capital imports for investment purposes, not because of debt servicing or weak exports.

The stock market grew from a market capitalization of US\$18.6 billion in 1988 to US\$183 billion in March 1997 and the number of listed companies grew from 62 to 157. The economic boom meant that there were few political or social pressures. At the time of the Mexican crisis, the Malaysian market dipped, but soon resumed its steady rise since Malaysia did not exhibit any of Mexico's problems. Public sector external debt was low, short-term debt was low and the government accounts were in surplus.

However, years of low interest rates, strong growth in domestic demand and a stable exchange rate led companies to borrow heavily, at home and abroad, and to pay little attention to the productivity of investment. For the same reasons, investors were not concerned about the relative lack of transparency in the market. By 1997, private sector debt stood at over 140% GDP compared with a mere 9% in Mexico in 1994. The Asian currency crisis in mid-1997, revealed the weaknesses of the corporate sector and sent Malaysian share prices tumbling, exacerbated by the heavy weighting in the index of interest-rate sensitive stocks (40% of the index is composed of property and financial sector stocks). The Malaysian authorities have started to take steps to increase foreign participation in the market and will come under mounting pressure to improve transparency of accounts and access to information.

However, in October 1998, the Malaysia government imposed currency controls. This effectively deliberalized the financial markets. While foreigners can invest in Malaysian equities, it is difficult to translate funds back to the foreign currency.

For a detailed chronology of events in each of these emerging markets, see

http://www.duke.edu/~charvey/Country_risk/chronology/chronology_index.htm

4.2. Screening results for Malaysia

Summary

During our sample, the Malaysia index return average -2.6% per year. Most of this negative performance came from 1997 when the value of \$100 dropped to \$28.34. Over the entire sample (114 observations) since December 1988, the market increased 64 months (56% of the time) and decreased in 50 months (44% of the time). During the out-

of-sample period (30 observations), the market increased in only 13 months and decreased in 17 months.

To run the out-of-sample analysis in such a market upheaval, might at first, appear unfair to the stock selection model. However, in our opinion, this is a real test of our scoring screen. One expects episodes of extreme volatility and contagion in emerging markets. A successful stock selection method must be able to perform in both up and (extreme) down markets.

To summarize our results, our top fractile portfolio was able to achieve 10.59% performance. Our bottom fractile achieved a -19.6% performance. Hence, the spread between top and bottom exceeded 30% per year. Importantly, our top fractile beat the market in each of the out-of-sample years, 1996-1998. Our bottom fractile greatly underperformed the market benchmark in the out-of-sample period.

Factor screens

Exhibit 5A-V presents the detailed factor by factor results. Exhibit 6 summarizes these results. The average returns of the highest and lowest fractile portfolios are presented in Exhibit 7. Further, the percent of periods that the top and bottom fractile outperformed the benchmark is presented in Exhibit 8. Some general observations are:

- Greater than 10% average annualized excess returns are earned from top portfolio dividend yield and change in consensus FY1 estimate over the preceding six month strategies with excess returns (over the benchmark) of 18.66% and 10.01% per year, respectively.
- Greater than -10% average annualized returns are obtained from bottom portfolio earnings yield and cash earnings yield with average annual excess returns of -13.74% and -10.64 respectively.
- Greatest discrimination on top minus bottom performance is produced by dividend yield and change in consensus FY1 estimate over the preceding six month strategies with annual average spreads of 25.15% and 15.30% respectively.
- These two strategies are also the most successful in terms of benchmark outperformance, beating the benchmark in 67.62% (dividend yield) and 62.75% (change in consensus) of the total number of observations.
- Revenue growth and change in consensus earnings over the preceding six months are the best value weighted top portfolio strategies in an up market with outperformance in 71.43% and 68.75% respectively of up market observations.
- Dividend yield and consensus forecast revision ratio are the best value weighted top portfolio strategy performers in a down market with outperformance in 82.98% and 67.39% of down markets observations.

- Greatest value-weighted top portfolio cumulative last two year performance are delivered by dividend yield where the value of \$100 fell to \$47.32, one month price momentum where the value of \$100 falls to \$32.69 and return on equity with the value of \$100 falling to \$28.09. During this period, a passive \$100 investment in the benchmark fell in value to \$21.99.

[Insert Exhibits 5, 6, 7, 8 here]

Fundamental factors

Though the collective ‘value’ (earnings yield, prospective earnings yield, book to price yield and cash earnings to price yield) strategies do have high correlation coefficients, they behave differently through time, as indicated by reported top bottom spreads and market portfolio outperformance.

Exhibit 9 details the performance of the dividend yield screen. In all but one year, the highest fractile outperforms the lowest fractile. In every year, the highest fractile outperforms the benchmark.

[Insert Exhibit 9 here]

The size effect pervades much of the results and, with the exception of cash earnings to price strategy, on average the smallest firms are collected in the top portfolios of the value strategies through time. There is large size effect occurring within the top and bottom portfolios (not shown in exhibits). For example, the average small capitalization-large capitalization annualized spread within the top book-to-price ratio portfolio is 18.5%, while the spread on small capitalization stocks between the top and bottom portfolios is a 40.8% per year.

The return on equity and change in return on equity factor screens both generated large return premiums through time though much of that was generated in one year (in the large bull market of 1993) in the case of the change screen. The return on equity screen seems to proxy for ‘quality’ in down market observations as exhibited in the cumulative last two year performance in extremely volatile market conditions.

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Expectation factors

The revision screens (consensus forecast earnings revisions and change in consensus FY1 estimates) provided the most consistent results through time and performed well in both up and down markets. The “last six months” estimate change was the most consistent producing a factor relative score of 3.00 in the equal weighted panel and 2.78 in the value weighted, underperforming marginally on a value-weighted basis in only one year out of nine. The last six-month screen also exhibited the second highest risk adjusted performance of the factor universe (not shown in exhibits). The revision screens displayed the highest correlation coefficients with our one year momentum technical indicator.

Prospective earnings growth screens showed large disparity in performance in a dichotomous market, though these factors tend to work better in bivariate screening.

Technical indicators

Momentum effects more evident with longer horizon (52 week) price changes, with the top portfolio one-year momentum indicator producing an average excess return of 6.17%, performing better in an up-trending market. Little benefits accrued to the shorter-term indicator, though it did produce fairly substantial outperformance in the volatile markets of 1996 and 1997.

Size

In line with our prior expectations on ‘quality’ and ‘value’ top portfolio (small capitalization) stocks exhibited high risk though insignificant returns spreads through time. Despite an almost 60% outperformance in the bull market of 1993, small capitalization firms still delivered an average annual excess return of only -2.06%. This is illustrated by the severe underperformance in the turbulent market of 1997 and 1998. The value of a \$100 investment in small stocks over the past two years fell to \$10.68, as investors appear to have gravitated to less risky larger capitalization firms.

The scoring screen

The performance of the scoring screens is detailed in Exhibits 10A-D. The performance is summarized in Exhibit 11. The first three exhibits show the impact of rebalancing, monthly, quarterly and semiannually. The last exhibit imposes the final step in our analysis - the knock out criteria. For example, the performance of the top fractile with monthly rebalancing is 10.59% per annum (compared to the benchmark of -2.62%). With quarterly rebalancing, the average return decreases to 6.68%. While this return is lower, notice in the quarterly rebalancing, our top fractile beats the benchmark a remarkable 81.58% of the time. In addition, the quarterly rebalanced portfolio exceeds the benchmark in the difficult 1996-1998 out-of-sample period.

[Insert Exhibits 10A-D, 11 here]

The performance is similar when semi-annual rebalancing is considered. This is evident in Exhibit 12 and 13 which summarize the average returns for the top and bottom scoring fractile as well as the percentage of periods that the benchmark is exceeded.

[Insert Exhibits 12, 13 here]

The consistency of the scoring screen is particularly important. Exhibit 14 presents the year-by-year results for the monthly rebalance screen. In every year except for 1989, the top fractile return exceeds the bottom fractile return. This is especially evident in the out-of sample period.

[Insert Exhibit 14 here].

Success rates (proportion of stocks in the top portfolio that beat the benchmark and the proportion in the bottom portfolio that underperform the benchmark) are detailed in Exhibit 15. The success rates are greater than 50% in all cases. The strength of the screens is robust across rebalancing periods. Average success consistency ratios further highlight the strength of the screen through time. For example, in 79% of the rebalancing periods, more than 50% of the stocks beat the benchmark in the top portfolio (semi-annual rebalancing after knockout).

In the first five months of 1998, the monthly re-balancing value weighted top-bottom spread is 32.46%. The excess return on the top portfolio is 17.65%, which is marginally better than the quarterly re-balancing.

[Insert Exhibit 15 here]

Exhibits 16 provides a graphical representation of the scoring screen results that focusses on the differential performance in the in and out-of-sample period. In Exhibit 16, the cumulative performance of the top and bottom portfolios is compared to the benchmark. We separate the in-sample from the out-of-sample analysis. We track the value of \$100 invested in December 1988 through December 1995 (the in-sample period) presented on the right axis. We then track the value of \$100 invested in December 1995 through May 1998 (the out-of-sample period). Exhibit 16 shows the substantial ability of the top and bottom portfolios to discriminate among stocks in the out-of sample period.

[Insert Exhibits 16.]

5. Conclusions

Indeed, the recent turmoil in Asia and many other emerging markets, emphasize the importance of the country selection mechanism. For example, even though we show considerable ability to identify relative winners and losers in Malaysia (top portfolio performance is sharply better than the bottom portfolio), any investment in Malaysia in 1997 and the first part of 1998 is a bad investment. An investment of \$100 in our top portfolio at the beginning of the out-of-sample period falls in value to \$38 by May 1998.

So it is obvious that the country selection mechanism is very important. However, perhaps more than at any other time, stock selection is important. Prices are relatively low (compared to last year) suggesting that top-down value based strategies might find some of these markets attractive. An important question is which stocks should be purchased and which should be sold. Our analysis is useful in that we provide detailed information on the performance various screening factors in both up and down markets.

Another useful part of our analysis is related to the bottom portfolio. While it is virtually impossible to execute long-short (hedge) strategies in most emerging markets, the bottom portfolio yields important information about stocks to avoid. With the recent volatility in many emerging markets, this type of risk control is increasingly important for active portfolio management.

The next two countries we will present are Mexico [Achour et al. (1999a)] and South Africa [Achour et al. (1999b)].

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SHORT BIOGRAPHIES

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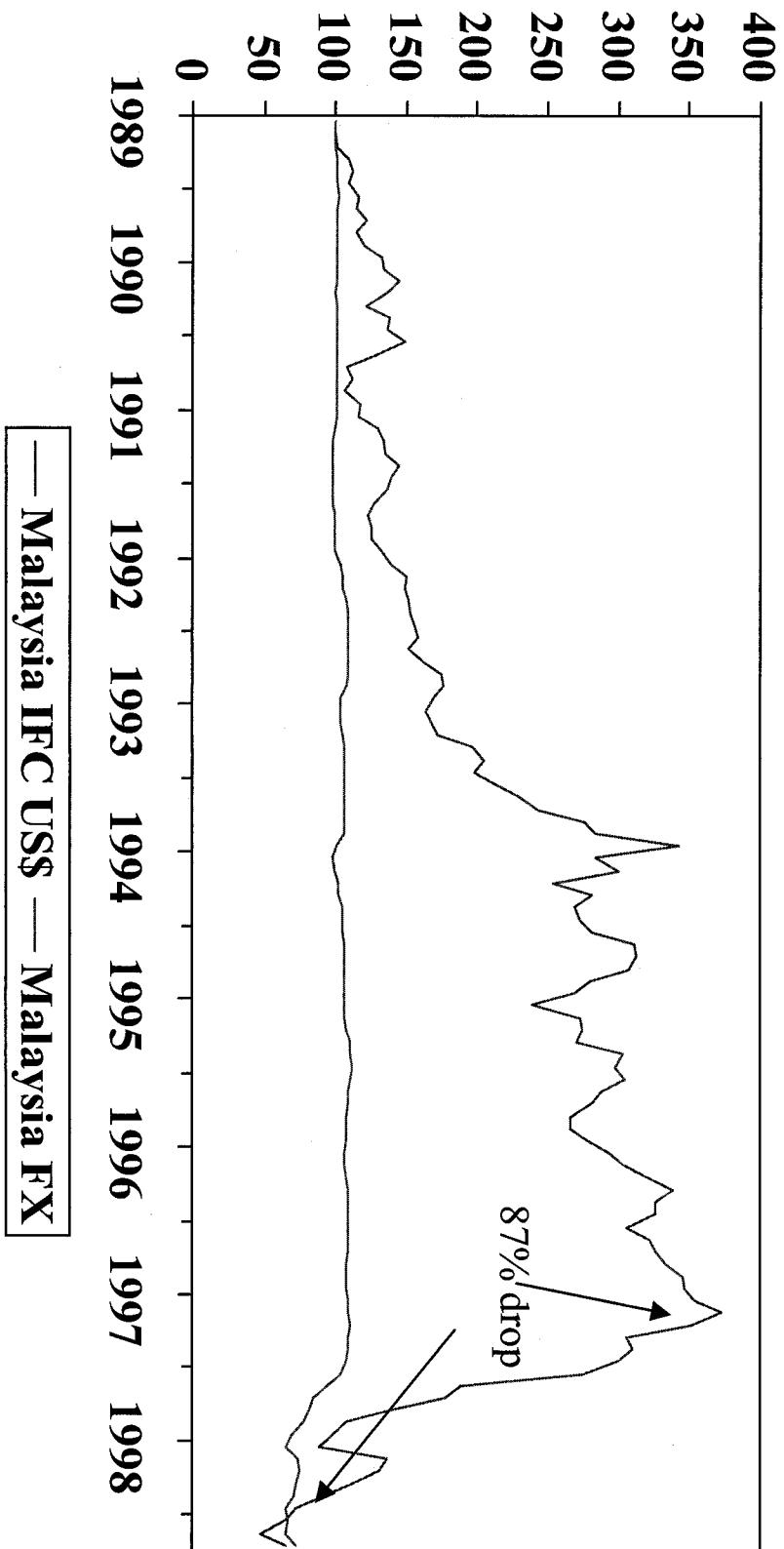
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EXHIBIT 1

Malaysia Benchmark Return and Exchange Rate



Data through September 1998

EXHIBIT 5 A

Market:	Malaysia
Screen Name:	Market Capitalization
Sample period:	12/88 - 5/98
Number of observations:	114 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted					Portfolios - value weighted					Market portfolio	
		-1-	-2-	-3-	-4-	-5-	-1-	-2-	-3-	-4-	-5-		
Annualized average return (USD)	1	-3.31	-1.34	-2.54	-3.84	-2.49	-4.68	-1.84	-1.78	-4.62	-1.40	-2.62	
Cumulative return (indexed at 100 - start)	2	72.61	87.95	78.30	68.94	78.72	63.42	83.83	84.30	63.79	87.49	77.72	
STD Deviation of returns	3	59.38	53.77	50.60	41.39	32.47	58.81	54.10	50.71	39.86	30.22	34.12	
Average annual excess return	Rm	-0.69	1.28	0.08	-1.22	0.13	-2.06	0.78	0.84	-2.00	1.22		
	Rf	-8.19	-6.31	-7.45	-8.69	-7.40	-9.49	-6.78	-6.72	-9.43	-6.36		
STD Deviation of excess rtns	Rm	6	33.50	26.02	22.04	12.20	6.05	32.60	26.25	22.13	10.84	8.09	
	Rf	7	59.37	53.77	50.60	41.40	32.48	58.81	54.10	50.71	39.87	30.24	
	8												
Systematic risk (Beta)	9	1.53	1.45	1.39	1.17	0.94	1.53	1.46	1.39	1.13	0.86		
Alpha	10	0.70	2.50	1.12	-0.80	-0.03	-0.73	2.02	1.90	-1.72	0.88		
Co-efficient of determination	11	0.78	0.85	0.88	0.93	0.97							
Average market cap	12	318.73	745.05	1272.74	2211.77	7556.21						2420.90	
% periods > Benchmark	13	48.25	50.00	45.61	46.49	45.61	48.25	46.49	47.37	46.49	55.26		
% periods > Bench up Mkt	14	67.19	64.06	59.38	54.69	39.06	65.63	60.94	59.38	54.69	42.19		
% periods > Bench Dn Mkt	15	24.00	32.00	28.00	36.00	54.00	26.00	28.00	32.00	36.00	72.00		
Max # of consecutive bmark outperformance	16	4	6	5	4	4	4	5	5	4	10		
Maximum positive excess return	17	50.32	52.56	52.32	22.62	5.62	51.43	54.41	53.63	17.12	7.06		
Maximum negative excess return	18	-28.01	-20.48	-16.34	-9.26	-5.35	-28.24	-21.33	-15.10	-9.15	-12.68		
% periods positive returns to negative	19	119.23	107.27	103.57	107.27	119.23	119.23	107.27	107.27	111.11	115.09		
% periods of negative returns	20	45.61	48.25	49.12	48.25	45.61	45.61	48.25	48.25	47.37	46.49	43.86	
Max # of consecutive negative periods	21	7	11	11	8	8	7	11	11	8	8	8	
Max # of consecutive positive periods	22	6	7	5	6	6	6	7	5	6	10	7	
Cumulative annual returns -	23												
	In sample	1989	220.16	193.61	155.60	167.13	135.79	210.82	190.63	154.47	165.04	133.48	144.04
		1990	92.69	111.67	90.70	81.03	94.40	86.68	110.83	92.52	81.39	94.64	88.80
		1991	118.85	101.18	115.58	106.54	114.49	121.84	103.17	113.82	105.13	115.50	112.08
		1992	115.97	133.61	120.28	114.77	121.82	114.43	132.87	121.41	113.61	133.92	127.94
		1993	261.55	238.47	208.26	231.62	192.18	261.54	237.55	210.58	229.07	187.00	202.86
		1994	80.74	92.47	87.03	77.72	85.04	79.14	91.48	88.09	76.34	79.58	78.50
		1995	83.45	100.58	98.13	93.82	107.90	81.80	100.94	97.79	94.68	109.22	103.56
	Out of sample	1996	141.01	114.35	134.90	138.75	120.32	136.16	113.85	136.43	136.57	119.79	124.51
		1997	12.80	15.24	20.43	24.54	28.27	13.32	15.05	20.97	24.52	32.13	28.34
		1998	81.18	77.85	81.43	72.39	73.39	81.06	77.00	82.24	71.70	71.57	72.82
Relative Performance -	24												
		1989	5	4	2	3	1	5	4	2	3	1	
		1990	3	5	2	1	4	2	5	3	1	4	
		1991	5	1	4	2	3	5	1	3	2	4	
		1992	2	5	3	1	4	2	4	3	1	5	
		1993	5	4	2	3	1	5	4	2	3	1	
		1994	2	5	4	1	3	2	5	4	1	3	
		1995	1	4	3	2	5	1	4	3	2	5	
		1996	5	1	3	4	2	3	1	4	5	2	
		1997	1	2	3	4	5	1	2	3	4	5	
		1998	4	3	5	1	2	4	3	5	2	1	
Average Relative Performance -			3.30	3.40	3.10	2.20	3.00	3.00	3.30	3.20	2.40	3.10	
Cumulative annual returns -	25												
Last two years		10.43	12.00	17.96	20.24	21.61	10.68	11.69	18.81	19.95	24.40	21.99	
Last five years		17.42	24.91	33.91	32.95	37.21	16.94	23.99	35.73	31.30	39.98	36.15	
Factor average	26	318.73	745.06	1272.74	2211.77	7556.21						2420.90	
Factor median	27	260.58	763.26	1351.17	2250.01	4903.29						1237.73	
Factor standard deviation	28	241.25	416.95	604.25	878.76	7984.39						1584.70	

*All definitions in Exhibit 2

EXHIBIT 5 B

Market:	Malaysia
Screen Name:	Change in Return on equity
Sample period:	12/88 - 5/98
Number of observations:	114 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted					Portfolios - value weighted					Market portfolio	
		-1-	-2-	-3-	-4-	-5-	-1-	-2-	-3-	-4-	-5-		
Annualized average return (USD)	1	1.64	-4.43	-3.20	0.95	-1.05	1.95	-9.42	-1.94	-2.19	-1.30	-2.62	
Cumulative return (indexed at 100 - start)	2	116.72	64.99	73.45	109.38	90.46	120.16	39.08	83.00	81.02	88.31	77.72	
STD Deviation of returns	3	46.05	44.82	45.64	49.29	49.78	41.02	35.87	35.62	35.50	33.15	34.12	
Average annual excess return	Rm	4	4.26	-1.82	-0.58	3.57	1.57	4.57	-6.80	0.68	0.43	1.32	
	Rf	5	-3.46	-9.26	-8.07	-4.12	-6.03	-3.16	-14.01	-6.88	-7.12	-6.27	
STD Deviation of excess rtns	Rm	6	16.89	16.06	16.96	21.01	23.48	12.82	8.89	9.18	11.11	12.44	
	Rf	7	46.05	44.83	45.65	49.28	49.76	41.03	35.88	35.65	35.48	33.17	
		8											
Systematic risk (Beta)	9	1.29	1.25	1.27	1.35	1.33	1.15	1.02	1.01	0.99	0.91		
Alpha	10	5.04	-1.21	0.13	4.53	2.46	4.99	-7.15	0.71	0.41	1.09		
Co-efficient of determination	11	0.91	0.91	0.90	0.88	0.83							
Average market cap	12	2610.98	2903.76	2679.48	3086.96	1766.51						2609.54	
% periods > Benchmark	13	50.00	44.74	49.12	46.49	46.49	51.75	48.25	50.00	46.49	46.49		
% periods > Bench up Mkt	14	64.06	46.88	54.69	62.50	54.69	57.81	45.31	51.56	37.50	40.63		
% periods > Bench Dn Mkt	15	32.00	42.00	42.00	26.00	36.00	44.00	52.00	48.00	58.00	54.00		
Max # of consecutive bmark outperformance	16	7	4	6	5	6	8	4	8	5	5		
Maximum positive excess return	17	31.60	34.80	35.16	41.77	41.05	17.95	6.84	8.75	10.34	13.40		
Maximum negative excess return	18	-10.91	-13.26	-13.46	-11.56	-21.22	-10.94	-10.06	-6.06	-8.53	-8.96		
% periods positive returns to negative	19	128.00	103.57	123.53	128.00	103.57	142.55	111.11	111.11	111.11	111.11		
% periods of negative returns	20	43.86	49.12	44.74	43.86	49.12	41.23	47.37	47.37	47.37	47.37	43.86	
Max # of consecutive negative periods	21	8	11	11	8	10	8	8	8	6	11	8	
Max # of consecutive positive periods	22	7	6	6	6	6	8	6	6	6	6	7	
Cumulative annual returns -	23												
	In sample	1989	194.83	140.80	159.36	209.85	177.64	179.95	134.10	142.02	198.66	127.02	144.04
		1990	96.53	89.89	83.48	84.75	137.50	104.41	87.82	76.72	78.31	117.67	88.80
		1991	110.42	106.31	105.77	112.18	112.54	113.79	101.86	108.25	114.31	98.95	112.08
		1992	142.07	111.87	120.15	118.20	119.87	150.67	119.12	120.84	111.95	121.99	127.94
		1993	254.45	232.81	233.51	214.01	205.65	265.42	188.06	230.59	163.83	193.15	202.86
		1994	92.10	76.65	84.00	93.01	89.19	72.99	71.17	83.89	89.15	97.99	78.50
		1995	91.91	101.03	98.79	105.58	104.64	103.24	102.76	100.94	109.21	108.83	103.56
	Out of sample	1996	121.82	127.76	131.46	137.93	116.13	124.00	120.68	128.71	122.96	112.25	124.51
		1997	21.11	21.79	23.38	18.89	15.05	22.47	21.06	34.69	30.32	27.00	28.34
		1998	71.41	86.03	72.93	84.69	81.84	66.93	78.26	66.79	68.44	78.40	72.82
Relative Performance -	24												
		1989	4	1	2	5	3	4	2	3	5	1	
		1990	4	3	1	2	5	4	3	1	2	5	
		1991	3	2	1	4	5	4	2	3	5	1	
		1992	5	1	4	2	3	5	2	3	1	4	
		1993	5	3	4	2	1	5	2	4	1	3	
		1994	4	1	2	5	3	2	1	3	4	5	
		1995	1	3	2	5	4	3	2	1	5	4	
		1996	2	3	4	5	1	4	2	5	3	1	
		1997	3	4	5	2	1	2	1	5	4	3	
		1998	1	5	2	4	3	2	4	1	3	5	
Average Relative Performance -		3.20	2.60	2.70	3.60	2.90	3.50	2.10	2.90	3.30	3.20		
Cumulative annual returns -	25												
Last two years		15.84	19.88	18.57	17.55	11.72	16.18	17.69	26.00	22.35	20.41	21.99	
Last five years		32.57	34.61	35.77	34.79	20.90	28.02	26.05	49.77	36.62	38.15	36.15	
Factor average	26	31.52	3.04	-0.05	-3.73	-32.45						0.01	
Factor median	27	12.40	2.80	-0.05	-3.18	-13.24						0.00	
Factor standard deviation	28	86.00	1.99	1.60	2.93	111.94						45.33	

*All definitions in Exhibit 2

EXHIBIT 5 H

Market:	Malaysia
Screen Name:	Change in Consensus FY1 estimate - Last 3 months
Sample period:	12/89 - 5/98
Number of observations:	102 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted			Portfolios - value weighted			Market portfolio
		-1-	-2-	-3-	-1-	-2-	-3-	
Annualized average return (USD)	1	-3.03	-5.14	-11.56	1.16	-6.18	-10.18	-7.00
Cumulative return (indexed at 100 - start)	2	76.98	63.83	35.21	110.31	58.12	40.15	53.96
STD Deviation of returns	3	39.79	44.20	49.69	32.95	34.94	43.61	35.45
Average annual excess return	Rm	4	3.97	1.86	-4.55	8.16	0.82	-3.18
	Rf	5	-7.62	-9.64	-15.77	-3.61	-10.64	-14.46
STD Deviation of excess rtns	Rm	6	10.01	14.03	19.49	11.29	7.71	13.84
	Rf	7	39.84	44.23	49.74	33.00	34.97	43.66
	8							
Systematic risk (Beta)	9	1.09	1.20	1.33	0.88	0.96	1.18	
Alpha	10	4.81	3.41	-2.58	7.53	0.59	-2.15	
Co-efficient of determination	11	0.94	0.92	0.90				
Average market cap	12	3080.44	3601.09	2554.21				3078.58
% periods > Benchmark	13	57.84	47.06	38.24	59.80	54.90	42.16	
% periods > Bench up Mkt	14	73.21	50.00	50.00	64.29	39.29	46.43	
% periods > Bench Dn Mkt	15	39.13	43.48	23.91	54.35	73.91	36.96	
Max # of consecutive bmark outperformance	16	8	5	5	9	10	6	
Maximum positive excess return	17	6.57	33.80	45.26	7.37	10.16	29.60	
Maximum negative excess return	18	-12.88	-5.80	-10.23	-21.92	-6.69	-9.81	
% periods positive returns to negative	19	117.02	100.00	85.45	131.82	108.16	88.89	
% periods of negative returns	20	46.08	50.00	53.92	43.14	48.04	52.94	45.10
Max # of consecutive negative periods	21	8	8	11	8	6	11	8
Max # of consecutive positive periods	22	7	6	6	8	6	6	7
Cumulative annual returns -	23							
<i>In sample</i>	1990	95.34	100.69	84.74	93.40	102.82	79.76	88.80
	1991	111.48	115.37	106.84	115.39	117.51	109.86	112.08
	1992	124.34	113.67	119.43	149.65	112.36	115.58	127.94
	1993	253.73	204.70	220.62	235.46	181.10	214.55	202.86
	1994	89.67	83.68	85.59	85.88	75.07	88.55	78.50
	1995	108.97	106.53	87.86	114.93	107.11	96.40	103.56
<i>Out of sample</i>	1996	130.22	129.71	127.22	128.11	124.65	118.68	124.51
	1997	22.34	25.01	20.23	29.13	33.17	25.46	28.34
	1998	80.77	81.66	76.28	78.87	71.11	71.64	72.82
Relative Performance -	24							
	1990	2	3	1	2	3	1	
	1991	2	3	1	2	3	1	
	1992	3	1	2	3	1	2	
	1993	3	1	2	3	1	2	
	1994	3	1	2	2	1	3	
	1995	3	2	1	3	2	1	
	1996	3	2	1	3	2	1	
	1997	2	3	1	2	3	1	
	1998	2	3	1	3	1	2	
Average Relative Performance -		2.56	2.11	1.33	2.56	1.89	1.56	
Cumulative annual returns -	25							
Last two years		19.90	22.39	15.39	25.48	25.38	18.64	21.99
Last five years		45.33	37.30	26.54	54.39	37.08	33.47	36.15
Factor average	26	11.04	-0.54	-15.69				-1.80
Factor median	27	5.98	0.00	-6.59				0.00
Factor standard deviation	28	18.36	3.12	72.27				21.48

*All definitions in Exhibit 2

EXHIBIT 5 I

Market:	Malaysia
Screen Name:	Change in Consensus FY1 estimate - Last 6 months
Sample period:	12/89 - 5/98
Number of observations:	102 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted			Portfolios - value weighted			Market portfolio	
		-1-	-2-	-3-	-1-	-2-	-3-		
Annualized average return (USD)	1	2.08	-8.39	-12.54	3.01	-9.22	-12.29	-7.00	
Cumulative return (indexed at 100 - start)	2	119.12	47.47	32.03	128.62	43.94	32.80	53.96	
STD Deviation of returns	3	40.64	44.10	48.57	33.76	33.39	42.38	35.45	
Average annual excess return	Rm	4	9.08	-1.39	-5.53	10.01	-2.22	-5.29	
	Rf	5	-2.73	-12.75	-16.71	-1.85	-13.54	-16.48	
STD Deviation of excess rtns	Rm	6	9.75	14.08	18.40	10.07	8.01	13.08	
	Rf	7	40.67	44.14	48.61	33.80	33.42	42.42	
		8							
Systematic risk (Beta)	9	1.12	1.19	1.30	0.91	0.92	1.15		
Alpha	10	10.16	-0.09	-3.88	9.57	-2.99	-4.75		
Co-efficient of determination	11	0.95	0.92	0.91					
Average market cap	12	3149.59	3638.48	2517.91				3101.99	
% periods > Benchmark	13	68.63	44.12	37.25	62.75	46.08	42.16		
% periods > Bench up Mkt	14	82.14	48.21	46.43	71.43	28.57	41.07		
% periods > Bench Dn Mkt	15	52.17	39.13	26.09	52.17	67.39	43.48		
Max # of consecutive bmark outperformance	16	8	4	5	9	8	5		
Maximum positive excess return	17	8.57	33.27	40.80	8.08	8.84	27.18		
Maximum negative excess return	18	-10.71	-6.60	-11.35	-17.69	-7.75	-10.15		
% periods positive returns to negative	19	126.67	92.45	92.45	142.86	104.00	92.45		
% periods of negative returns	20	44.12	51.96	51.96	41.18	49.02	51.96	45.10	
Max # of consecutive negative periods	21	8	8	11	8	6	11	8	
Max # of consecutive positive periods	22	7	5	6	8	5	6	7	
Cumulative annual returns -	23								
	In sample	1990	112.80	85.65	89.46	104.50	89.86	82.99	88.80
		1991	120.07	102.94	106.04	119.98	99.09	102.19	112.08
		1992	127.18	110.64	118.56	146.46	112.70	115.91	127.94
		1993	243.25	214.69	221.33	246.76	182.95	195.58	202.86
		1994	96.21	87.44	76.67	84.67	79.33	78.49	78.50
		1995	111.40	103.38	88.99	112.61	112.32	95.04	103.56
	Out of sample	1996	136.73	131.41	120.59	133.53	125.11	113.06	124.51
		1997	23.22	23.09	21.40	28.06	29.34	30.81	28.34
		1998	83.54	82.64	73.08	79.46	73.16	65.66	72.82
Relative Performance -	24								
		1990	3	1	2	3	2	1	
		1991	3	1	2	3	1	2	
		1992	3	1	2	3	1	2	
		1993	3	1	2	3	1	2	
		1994	3	2	1	3	2	1	
		1995	3	2	1	3	2	1	
		1996	3	2	1	3	2	1	
		1997	3	2	1	1	2	3	
		1998	3	2	1	3	2	1	
Average Relative Performance -		3.00	1.56	1.44	2.78	1.67	1.56		
Cumulative annual returns -	25								
Last two years		22.01	20.44	15.69	25.63	22.88	20.47	21.99	
Last five years		55.56	36.55	22.82	57.49	35.78	29.31	36.15	
Factor average	26	20.29	-0.66	-21.89			-0.91		
Factor median	27	11.91	0.00	-12.34			0.00		
Factor standard deviation	28	32.38	6.01	68.03			29.99		

*All definitions in Exhibit 2

EXHIBIT 5 J

Market:	Malaysia
Screen Name:	Consensus FY2 to FY1 estimate change
Sample period:	12/89 - 5 /98
Number of observations:	102 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted					Portfolios - value weighted					Market portfolio
		-1-	-2-	-3-	-4-	-5-	-1-	-2-	-3-	-4-	-5-	
Annualized average return (USD)	1	-10.35	-5.03	-5.88	-4.11	-7.71	-10.68	-5.41	-6.88	-3.99	-7.22	-7.00
Cumulative return (indexed at 100 - start)	2	39.51	64.51	59.77	69.98	50.57	38.27	62.31	54.55	70.76	52.88	53.96
STD Deviation of returns	3	45.12	44.09	40.05	44.23	52.61	37.88	37.32	34.01	34.13	48.71	35.45
Average annual excess return	Rm	-3.35	1.98	1.13	2.89	-0.71	-3.68	1.59	0.12	3.01	-0.22	
	Rf	-14.62	-9.53	-10.34	-8.66	-12.09	-14.94	-9.90	-11.30	-8.54	-11.63	
STD Deviation of excess rtsns	Rm	15.94	14.69	9.76	15.03	22.88	14.01	13.23	11.04	10.56	19.78	
	Rf	45.17	44.14	40.09	44.26	52.64	37.92	37.38	34.07	34.16	48.75	
	8											
Systematic risk (Beta)	9	1.21	1.19	1.10	1.19	1.39	0.99	0.98	0.91	0.92	1.29	
Alpha	10	-2.13	3.45	1.92	4.41	2.08	-4.06	1.57	-0.51	2.59	1.85	
Co-efficient of determination	11	0.90	0.91	0.95	0.91	0.88						
Average market cap	12	2359.76	3507.91	4499.61	3409.28	2523.12						3259.93
% periods > Benchmark	13	45.10	50.98	50.00	53.92	46.08	50.00	57.84	44.12	50.00	55.88	
% periods > Bench up Mkt	14	58.93	64.29	58.93	50.00	51.79	57.14	64.29	39.29	41.07	53.57	
% periods > Bench Dn Mkt	15	28.26	34.78	39.13	58.70	39.13	41.30	50.00	50.00	60.87	58.70	
Max # of consecutive bmark outperformance	16	4	6	6	5	5	5	8	4	8	5	
Maximum positive excess return	17	17.46	14.58	13.88	35.59	56.13	12.97	9.99	10.68	8.09	46.90	
Maximum negative excess return	18	-10.69	-10.78	-5.59	-8.26	-14.60	-11.93	-17.59	-8.26	-7.78	-10.69	
% periods positive returns to negative	19	92.45	117.02	112.50	100.00	100.00	100.00	108.16	108.16	92.45	117.02	
% periods of negative returns	20	51.96	46.08	47.06	50.00	50.00	50.00	48.04	48.04	51.96	46.08	45.10
Max # of consecutive negative periods	21	8	8	8	6	11	7	8	6	5	8	8
Max # of consecutive positive periods	22	6	7	6	6	6	5	7	6	6	8	7
Cumulative annual returns -	23											
<i>In sample</i>	1990	83.68	87.33	86.99	98.78	96.01	72.72	81.77	86.20	109.33	86.95	88.80
	1991	122.19	130.48	106.35	103.16	104.99	133.04	138.83	102.68	98.10	110.09	112.08
	1992	119.99	135.92	120.05	108.49	120.09	122.73	138.20	125.24	112.74	137.42	127.94
	1993	257.45	263.03	218.52	188.27	242.84	181.96	228.68	217.64	183.01	219.49	202.86
	1994	76.41	74.00	94.73	92.26	83.77	75.55	81.95	81.80	80.38	84.05	78.50
	1995	90.79	97.50	97.89	110.40	102.76	97.93	105.22	103.71	107.77	103.43	103.56
<i>Out of sample</i>	1996	127.99	142.53	125.16	136.42	113.86	124.38	145.93	115.32	125.13	114.75	124.51
	1997	18.59	18.54	25.18	29.00	22.05	25.63	18.69	30.87	41.11	27.63	28.34
	1998	75.78	83.04	84.26	83.44	79.59	75.10	73.85	74.87	71.75	66.45	72.82
Relative Performance -	24											
	1990	1	3	2	5	4	1	2	3	5	4	
	1991	4	5	3	1	2	4	5	2	1	3	
	1992	2	5	3	1	4	2	5	3	1	4	
	1993	4	5	2	1	3	1	5	3	2	4	
	1994	2	1	5	4	3	1	4	3	2	5	
	1995	1	2	3	5	4	1	4	3	5	2	
	1996	3	5	2	4	1	3	5	2	4	1	
	1997	2	1	4	5	3	2	1	4	5	3	
	1998	1	3	5	4	2	5	3	4	2	1	
Average Relative Performance -		2.22	3.33	3.22	3.33	2.89	2.22	3.78	3.00	3.00	3.00	
Cumulative annual returns -	25											
Last two years		14.91	18.12	21.55	25.75	17.75	20.89	17.00	23.49	31.00	18.88	21.99
Last five years		23.22	28.03	43.36	55.22	35.10	29.68	29.29	40.63	52.18	35.35	36.15
Factor average	26	59.69	19.61	14.17	9.79	-2.50						19.85
Factor median	27	36.96	19.51	14.92	10.96	3.60						14.40
Factor standard deviation	28	106.55	4.53	3.54	4.87	28.96						33.90

*All definitions in Exhibit 2

EXHIBIT 5 K

Market:	Malaysia
Screen Name:	Consensus forecast earnings estimate revision ratio
Sample period:	12/89 - 5 /98
Number of observations:	102 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted			Portfolios - value weighted			Market portfolio	
		-1-	-2-	-3-	-1-	-2-	-3-		
Annualized average return (USD)	1	-1.13	-6.49	-10.97	0.95	-6.73	-11.36	-7.00	
Cumulative return (indexed at 100 - start)	2	90.81	56.54	37.25	108.36	55.29	35.87	53.96	
STD Deviation of returns	3	43.49	45.78	48.26	32.86	38.58	36.64	35.45	
Average annual excess return	Rm	4	5.87	0.51	-3.97	7.95	0.27	-4.36	
	Rf	5	-5.80	-10.93	-15.21	-3.81	-11.16	-15.59	
STD Deviation of excess rtsns	Rm	6	12.31	14.88	18.30	10.45	9.34	8.88	
	Rf	7	43.53	45.81	48.30	32.91	38.62	36.68	
		8							
Systematic risk (Beta)	9	1.19	1.25	1.29	0.89	1.06	1.00		
Alpha	10	7.49	2.32	-2.20	7.36	0.70	-4.74		
Co-efficient of determination	11	0.94	0.93	0.90					
Average market cap	12	3311.46	2595.27	3132.33				3013.02	
% periods > Benchmark	13	58.82	45.10	40.20	62.75	50.98	44.12		
% periods > Bench up Mkt	14	73.21	53.57	50.00	58.93	50.00	35.71		
% periods > Bench Dn Mkt	15	41.30	34.78	28.26	67.39	52.17	54.35		
Max # of consecutive bmark outperformance	16	6	3	5	6	6	5		
Maximum positive excess return	17	24.05	32.46	43.09	7.42	14.37	8.36		
Maximum negative excess return	18	-13.69	-7.15	-7.76	-17.99	-6.64	-6.47		
% periods positive returns to negative	19	126.67	104.00	85.45	131.82	100.00	92.45		
% periods of negative returns	20	44.12	49.02	53.92	43.14	50.00	51.96	45.10	
Max # of consecutive negative periods	21	8	8	11	8	8	9	8	
Max # of consecutive positive periods	22	7	6	6	11	6	7	7	
Cumulative annual returns -	23								
	In sample	1990	100.83	100.70	83.50	101.55	89.12	82.61	88.80
		1991	116.59	111.76	104.34	114.03	114.70	106.86	112.08
		1992	126.11	116.47	121.17	142.61	119.66	114.43	127.94
		1993	248.14	230.33	196.08	235.46	192.74	179.30	202.86
		1994	91.04	81.10	84.26	88.86	79.63	76.02	78.50
		1995	107.34	98.51	93.48	112.15	107.00	99.75	103.56
	Out of sample	1996	134.33	126.49	126.22	123.91	128.58	121.95	124.51
		1997	21.70	22.20	23.41	28.14	26.08	33.01	28.34
		1998	86.64	83.50	77.30	80.21	82.06	64.88	72.82
Relative Performance -	24								
		1990	3	2	1	3	2	1	
		1991	3	2	1	2	3	1	
		1992	3	1	2	3	2	1	
		1993	3	2	1	3	2	1	
		1994	3	1	2	3	2	1	
		1995	3	2	1	3	2	1	
		1996	3	2	1	2	3	1	
		1997	1	2	3	2	1	3	
		1998	3	2	1	2	3	1	
Average Relative Performance -			2.78	1.78	1.44	2.56	2.22	1.22	
Cumulative annual returns -	25								
Last two years		21.13	19.23	18.88	24.61	22.99	22.55	21.99	
Last five years		47.00	33.84	29.26	52.25	36.83	33.17	36.15	
Factor average	26	0.12	-0.01	-0.14				-0.01	
Factor median	27	0.10	0.00	-0.11				0.00	
Factor standard deviation	28	0.08	0.04	0.10				0.00	

*All definitions in Exhibit 2

EXHIBIT 5 M

Market:	Malaysia
Screen Name:	Cash Earnings to price yield
Sample period:	1/93 - 5/98
Number of observations:	65 Monthly

Performance Measure/ Summary Statistic	Note*	Portfolios - equal weighted					Portfolios - value weighted					Market portfolio	
		-1-	-2-	-3-	-4-	-5-	-1-	-2-	-3-	-4-	-5-		
Annualized average return (USD)	1	-14.46	-11.94	-12.58	-13.65	-29.51	-15.40	-16.53	-8.26	-13.64	-27.89	-14.14	
Cumulative return (indexed at 100 - start)	2	42.90	50.21	48.26	45.15	15.04	40.42	37.59	62.68	45.19	17.02	43.78	
STD Deviation of returns	3	60.18	60.16	56.14	51.89	60.38	57.43	55.05	46.67	39.90	46.34	40.94	
Average annual excess return	Rm	-0.32	2.20	1.56	0.49	-15.37	-1.26	-2.38	5.88	0.50	-13.74		
	Rf	-18.30	-15.88	-16.50	-17.52	-32.72	-19.19	-20.28	-12.35	-17.51	-31.16		
STD Deviation of excess rtsns	Rm	25.64	24.48	19.84	15.69	27.87	23.94	21.19	13.52	11.33	20.67		
	Rf	60.21	60.20	56.18	51.94	60.43	57.46	55.09	46.69	39.96	46.40		
	8												
Systematic risk (Beta)	9	1.38	1.40	1.32	1.23	1.36	1.31	1.27	1.10	0.94	1.01		
Alpha	10	5.46	8.58	6.67	4.05	-13.93	3.29	1.31	8.00	-0.38	-16.90		
Co-efficient of determination	11	0.89	0.91	0.93	0.94	0.85							
Average market cap	12	2274.81	3547.42	3850.14	2908.15	1429.08						2801.92	
% periods > Benchmark	13	52.31	52.31	49.23	44.62	44.62	56.92	47.69	47.69	50.77	33.85		
% periods > Bench up Mkt	14	57.14	60.00	65.71	65.71	65.71	48.57	40.00	45.71	68.57	48.57		
% periods > Bench Dn Mkt	15	46.67	43.33	30.00	20.00	20.00	66.67	56.67	50.00	30.00	16.67		
Max # of consecutive bmark outperformance	16	4	3	4	5	4	9	3	4	3	3		
Maximum positive excess return	17	50.51	49.32	37.41	20.35	21.87	48.26	40.63	22.44	9.45	15.54		
Maximum negative excess return	18	-16.22	-17.12	-8.96	-8.27	-24.26	-12.06	-9.87	-7.42	-14.26	-22.65		
% periods positive returns to negative	19	103.13	116.67	91.18	85.71	103.13	116.67	103.13	96.97	109.68	85.71		
% periods of negative returns	20	49.23	46.15	52.31	53.85	49.23	46.15	49.23	50.77	47.69	53.85	46.15	
Max # of consecutive negative periods	21	8	11	11	8	10	8	8	9	8	11	8	
Max # of consecutive positive periods	22	6	6	7	6	6	6	6	7	6	6	7	
Cumulative annual returns -	23												
	In sample	1993	194.24	242.68	226.80	235.20	265.38	178.72	225.81	172.08	227.67	247.47	209.59
		1994	98.83	85.56	86.04	82.12	71.03	94.12	75.06	90.16	79.49	65.46	78.50
		1995	109.16	105.74	97.36	91.81	79.70	104.49	111.92	104.87	98.61	82.27	103.56
	Out of sample	1996	122.73	143.23	133.73	131.13	117.78	125.40	124.45	127.66	127.47	111.76	124.51
		1997	20.86	19.01	24.00	23.96	12.49	24.89	21.08	35.67	30.92	16.46	28.34
		1998	79.95	84.01	79.15	81.03	68.06	73.68	75.51	84.61	64.24	69.42	72.82
Relative Performance -	24												
		1993	1	4	2	3	5	2	3	1	4	5	
		1994	5	3	4	2	1	5	2	4	3	1	
		1995	5	4	3	2	1	3	5	4	2	1	
		1996	2	5	4	3	1	3	2	5	4	1	
		1997	3	2	5	4	1	3	2	5	4	1	
		1998	3	5	2	4	1	3	4	5	1	2	
Average Relative Performance -		3.17	3.83	3.33	3.00	1.67	3.17	3.00	4.00	3.00	1.83		
Cumulative annual returns -	25												
	Last two years	17.34	17.49	20.85	20.73	8.27	20.17	16.44	33.23	21.66	11.77	21.99	
	Last five years	34.66	36.95	38.21	35.44	11.25	35.10	29.45	57.79	35.51	13.03	36.15	
Factor average	26	15.39	8.50	5.93	3.75	-1.28						6.52	
Factor median	27	9.10	5.78	4.44	3.09	0.91						4.74	
Factor standard deviation	28	17.38	6.66	3.96	2.12	13.02						5.93	

*All definitions in Exhibit 2

EXHIBIT 6
Factor performance summary - Malaysia

Sample Period	Number of observations	Average Annualised Return	Return Spread	Annualised Excess Returns		Annualised Returns		Std Deviation of Annualised Returns		% Periods Benchmark Outperformance	
				Top	Bottom	Top/Bottom	Top	Bottom	Top	Bottom	Top
Market Capitalization											
Change in Return on equity	114	-4.68	-1.40	-3.28	-2.06	1.22	58.81	30.22	39.18	48.25	55.26
Debt to Common equity	114	1.95	-1.30	3.25	4.57	1.32	41.02	33.15	19.93	51.75	46.49
Dividend Yield	114	-14.44	7.27	-21.71	-11.83	9.89	45.61	26.54	27.75	40.35	54.39
One year historical earnings momentum	105	12.85	-12.31	25.15	18.66	-6.50	35.27	37.58	21.93	67.62	44.76
Three year historical earnings growth rate	114	-1.84	-4.54	2.70	0.78	-1.92	45.85	36.70	20.44	50.00	47.37
Earnings yield	114	-3.16	-2.73	-0.43	-0.54	-0.11	40.45	35.98	18.99	49.12	50.88
Change in Consensus FY1 estimate - Last 3 months	102	1.16	-10.18	11.34	8.16	-3.18	32.95	43.61	23.04	59.80	42.16
Change in Consensus FY1 estimate - Last 6 months	102	3.01	-12.29	15.30	10.01	-5.29	33.76	42.38	21.10	62.75	42.16
Consensus FY2 to FY1 estimate change	102	-10.68	-7.22	-3.46	-3.68	-0.22	37.88	48.71	27.85	50.00	55.88
Consensus forecast earnings estimate revision ratio	102	0.95	-11.36	12.31	7.95	-4.36	32.86	36.64	17.39	62.75	44.12
Book to price yield	114	2.99	-1.24	4.24	5.61	1.37	59.81	29.63	43.39	51.75	53.51
Cash Earnings to price yield	65	-15.40	-27.89	12.49	-1.26	-13.74	57.43	46.34	37.27	56.92	33.85
One month price momentum	114	-2.11	0.61	-2.72	0.51	3.23	38.54	45.84	26.65	45.61	50.88
One year price momentum	114	3.56	-6.99	10.55	6.17	-4.37	33.42	60.13	45.18	55.26	45.61
12 months prospective earnings growth rate	102	-9.01	-7.15	-1.86	-2.01	-0.15	41.54	43.44	25.81	42.16	51.96
Three year prospective earnings growth rate	102	-4.92	-8.90	3.98	2.09	-1.90	42.93	40.76	20.80	47.06	47.06
12 month prospective earnings yield	102	-9.77	-13.47	3.70	-2.77	-6.47	54.71	34.05	35.54	48.04	45.10
24 month prospective earnings yield	102	-8.94	-12.44	3.50	-1.94	-5.44	54.60	33.65	36.38	50.00	42.16
Revenue Growth	114	-3.12	-2.94	-0.18	-0.50	-0.32	49.20	35.89	26.05	52.63	44.74
Rate of re-investment	114	-3.13	8.03	-11.16	-0.51	10.65	41.51	33.01	24.24	46.49	57.02
Return on equity	114	0.71	-5.70	6.40	3.33	-3.08	31.41	51.39	29.50	52.63	41.23

EXHIBIT 7

Average Factor Returns - Top and Bottom Fractiles

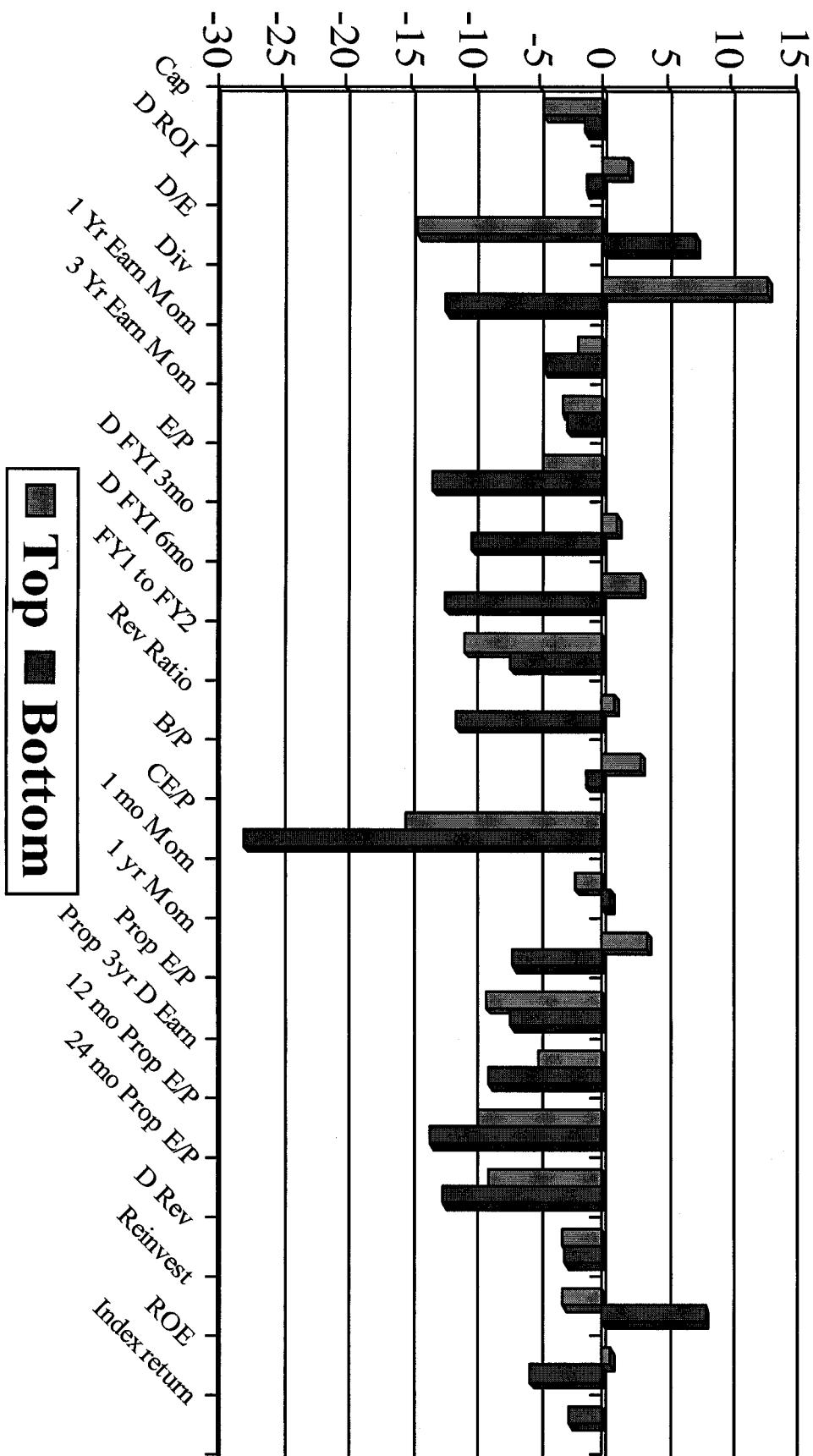


EXHIBIT 8
Percent of Periods Benchmark Outperformance

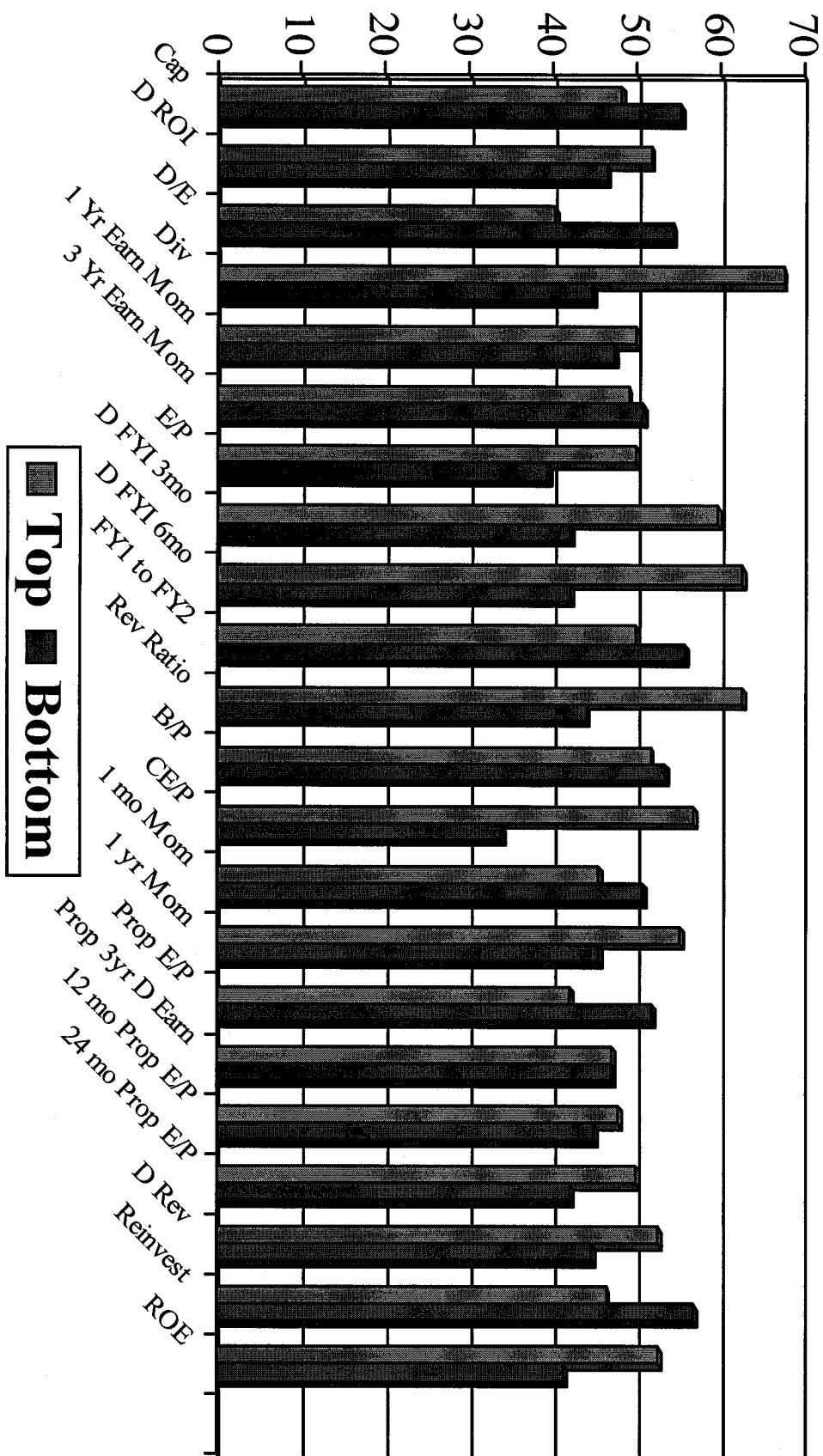


EXHIBIT 9
Dividend Yield Screen: Index=100 each year

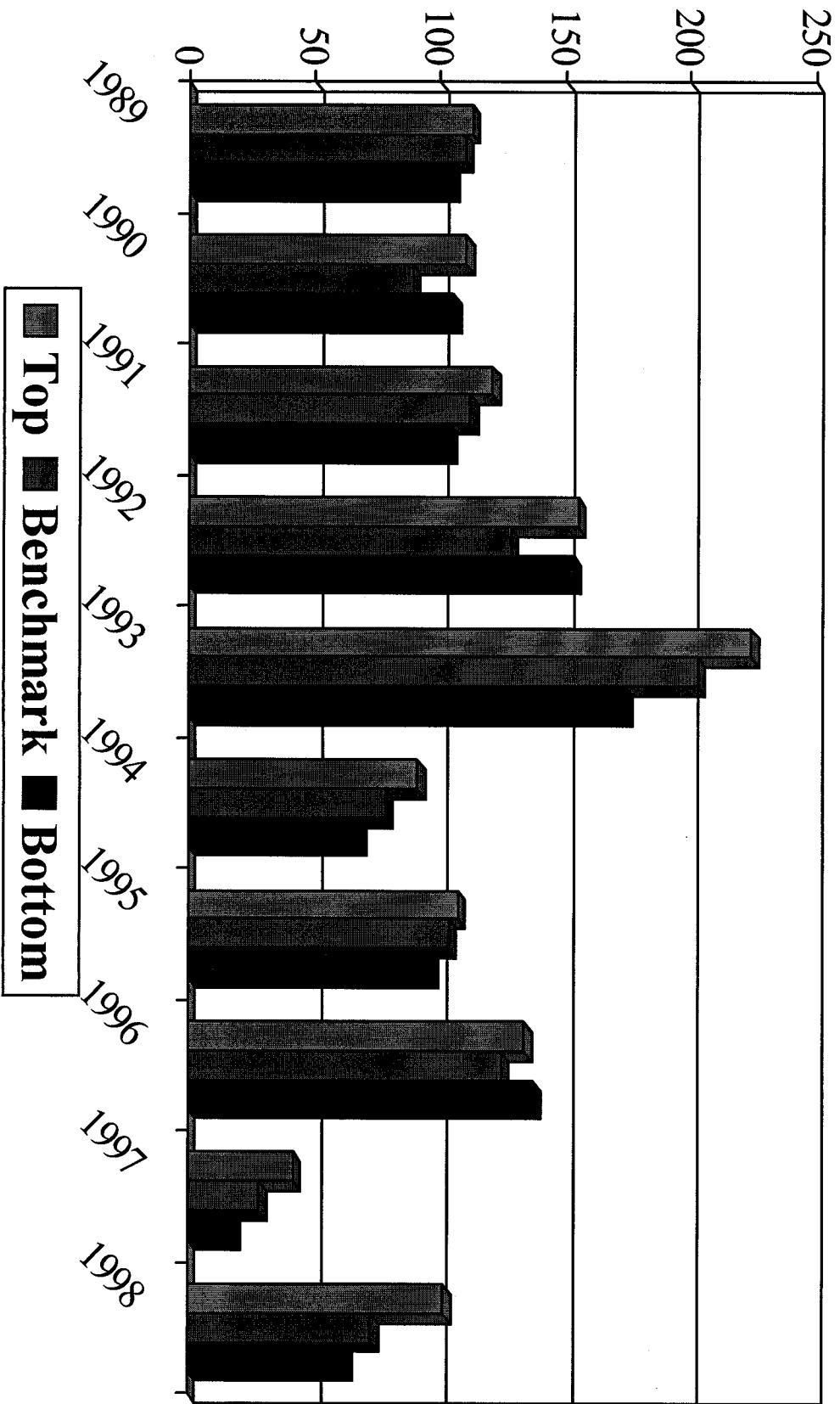


EXHIBIT 10D

Market:	Malaysia
Screen Name:	Scoring Model - with Knockout
Sample period:	12/88 - 12/98
Number of observations:	19 Semi-annual

Performance Measure/ Summary Statistic	Note	Portfolios - equal weighted			Portfolios - value weighted			Market portfolio
		-1-	-2-	-3-	-1-	-2-	-3-	
Annualized average return (USD)	1	9.78	-2.00	-7.32	7.28	-0.12	-11.13	-2.62
Cumulative return (indexed at 100 - start)	2	242.66	82.54	48.57	194.97	98.85	32.58	77.72
STD Deviation of returns	3	45.43	42.66	36.43	42.02	38.09	32.72	37.76
Average annual excess return	Rm	12.40	0.62	-4.70	9.90	2.50	-8.52	
	Rf	4.32	-7.16	-12.33	1.88	-5.33	-16.04	
STD Deviation of excess rtns	Rm	10.80	9.84	14.29	8.29	10.40	13.76	
	Rf	45.48	42.83	36.30	42.11	38.35	32.59	
T-stat: Average XS return Rm = 0	8	4.33	0.71	-0.74	4.10	0.38	-2.24	
Systematic risk (Beta)	9	1.18	1.10	0.89	1.10	0.97	0.81	
Alpha	10	12.67	0.90	-5.10	10.04	2.44	-9.33	
Co-efficient of determination	11	0.97	0.96	0.86				
Average market cap	12	3199.47	3187.29	3547.82				3311.53
% periods > Benchmark	13	84.21	47.37	36.84	89.47	57.89	26.32	
% periods > Bench up Mkt	14	90.91	36.36	45.45	90.91	45.45	27.27	
% periods > Bench Dn Mkt	15	75.00	62.50	25.00	87.50	75.00	25.00	
Max # of consecutive bmark outperformance	16	9	3	2	16	4	2	
Maximum positive excess return	17	26.53	22.80	19.86	19.89	12.78	11.67	
Maximum negative excess return	18	-3.31	-9.51	-30.13	-5.72	-14.72	-33.04	
% periods positive returns to negative	19	171.43	137.50	171.43	137.50	171.43	111.11	
% periods of negative returns	20	36.84	42.11	36.84	42.11	36.84	47.37	42.11
Max # of consecutive negative periods	21	3	3	3	3	3	3	3
Max # of consecutive positive periods	22	4	4	4	4	6	4	4
Cumulative annual returns - (index=100 each year)	23							
	1989	169.88	146.15	159.97	142.93	122.62	147.90	144.04
	1990	115.79	78.91	102.62	113.28	85.08	98.63	88.80
	1991	121.70	111.31	111.32	123.94	104.18	91.47	112.08
	1992	128.89	115.33	124.46	136.16	130.30	113.42	127.94
	1993	275.22	225.61	161.42	248.95	215.80	149.24	202.86
	1994	88.12	94.36	77.82	82.17	91.65	69.60	78.50
	1995	110.93	100.96	88.86	112.83	103.64	100.82	103.56
	1996	135.83	130.74	127.71	129.94	128.00	121.64	124.51
	1997	27.18	25.65	21.07	28.99	34.41	25.32	28.34
	1998	79.19	77.34	71.11	82.07	77.31	66.76	72.82
Relative Performance -	24							
	1989	3	1	2	2	1	3	
	1990	3	1	2	3	1	2	
	1991	3	1	2	3	2	1	
	1992	3	1	2	3	2	1	
	1993	3	2	1	3	2	1	
	1994	2	3	1	2	3	1	
	1995	3	2	1	3	2	1	
	1996	3	2	1	3	2	1	
	1997	3	2	1	2	3	1	
	1998	3	2	1	3	2	1	
Average Relative Performance -		2.90	1.70	1.40	2.70	2.00	1.30	
Cumulative annual returns -	25							
Last two years		24.31	21.23	16.07	26.39	28.68	18.08	21.99
Last five years		57.03	48.40	18.91	55.31	60.10	20.20	36.15
Factor average	26	3.21	0.88	-1.15				1.00
Factor median	27	3.00	1.00	-1.00				1.00
Factor standard deviation	28	1.00	0.64	1.00				2.01

EXHIBIT 11
Factor performance summary

Scoring Model - Monthly observations
 Scoring Model - Quarterly observations
 Scoring Model - Semi annual observations
 Scoring Model - with Knockout, Semi annual observations

Sample Period	Number of observations	Average Annualised Return	Return Spread	Annualized Excess Returns		Std Deviation of Top/Bottom spread returns	% Periods Outperformance				
				Top	Bottom						
12/88 - 5/98	114	10.59	-19.60	30.19	13.21	-16.98	32.71	36.73	16.33	64.91	33.33
12/88 - 3/98	38	6.68	-16.67	23.35	9.29	-14.05	36.25	34.58	14.00	81.58	18.42
12/88 - 12/98	19	4.26	-18.14	22.40	6.88	-15.53	40.11	32.68	18.04	84.21	5.26
12/88 - 12/98	19	7.28	-11.13	18.41	9.90	-8.52	42.02	32.72	20.39	89.47	26.32

EXHIBIT 12
Scoring Screen for Various Holding Periods

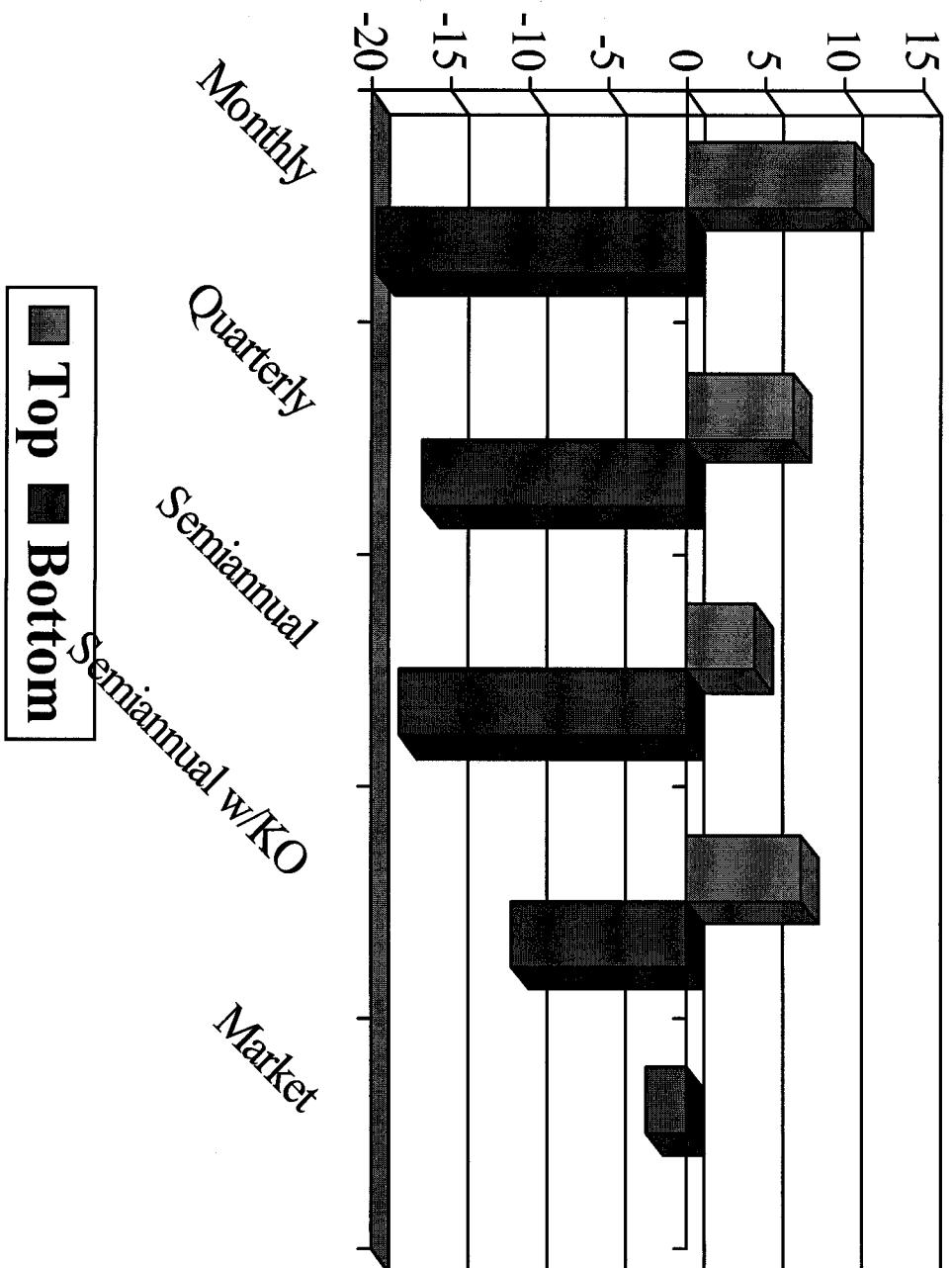


EXHIBIT 13
Scoring Screen - Percentage of Periods Benchmark Outperformance

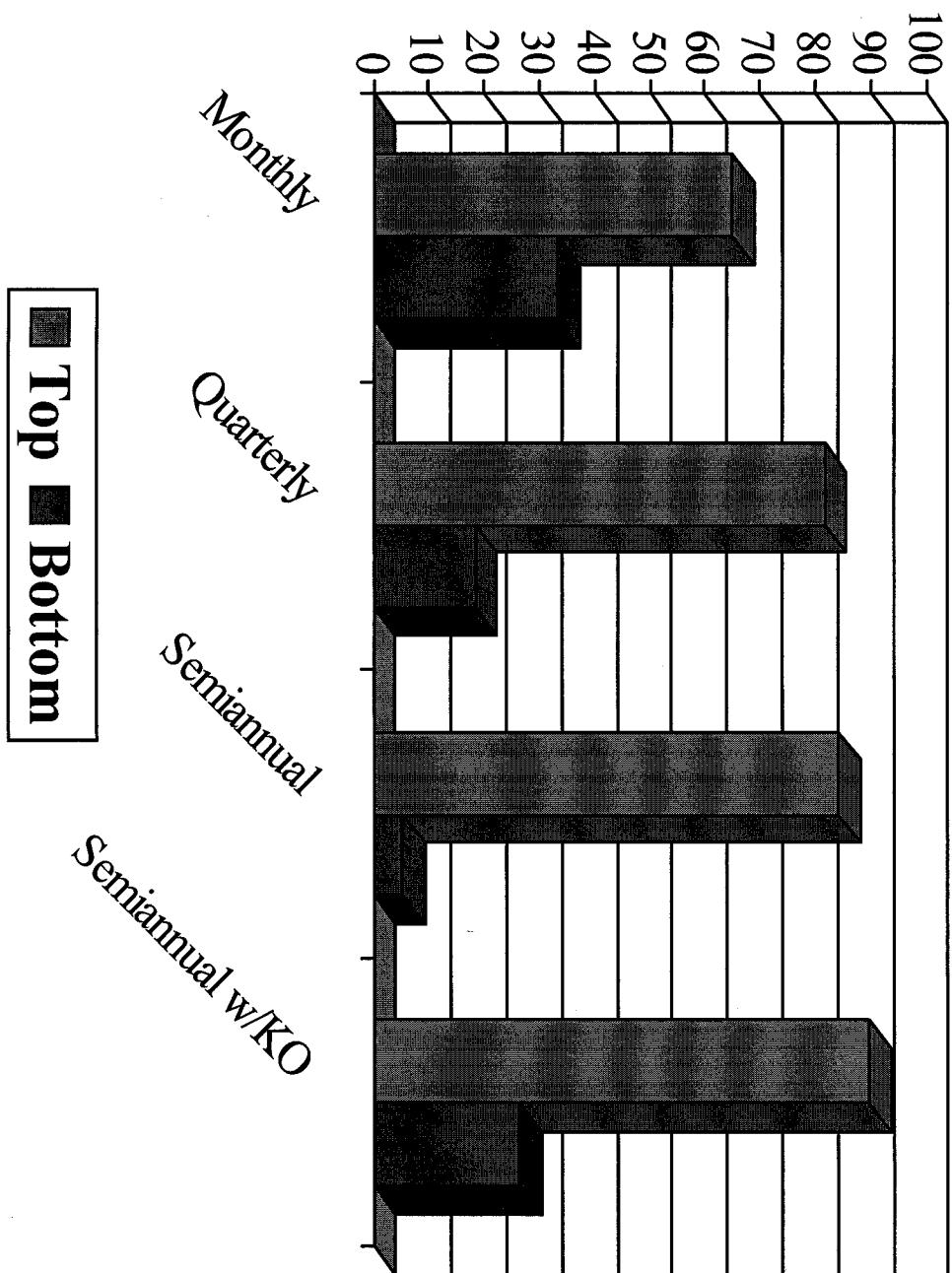


EXHIBIT 14

Scoring Screen: Index=100 each year

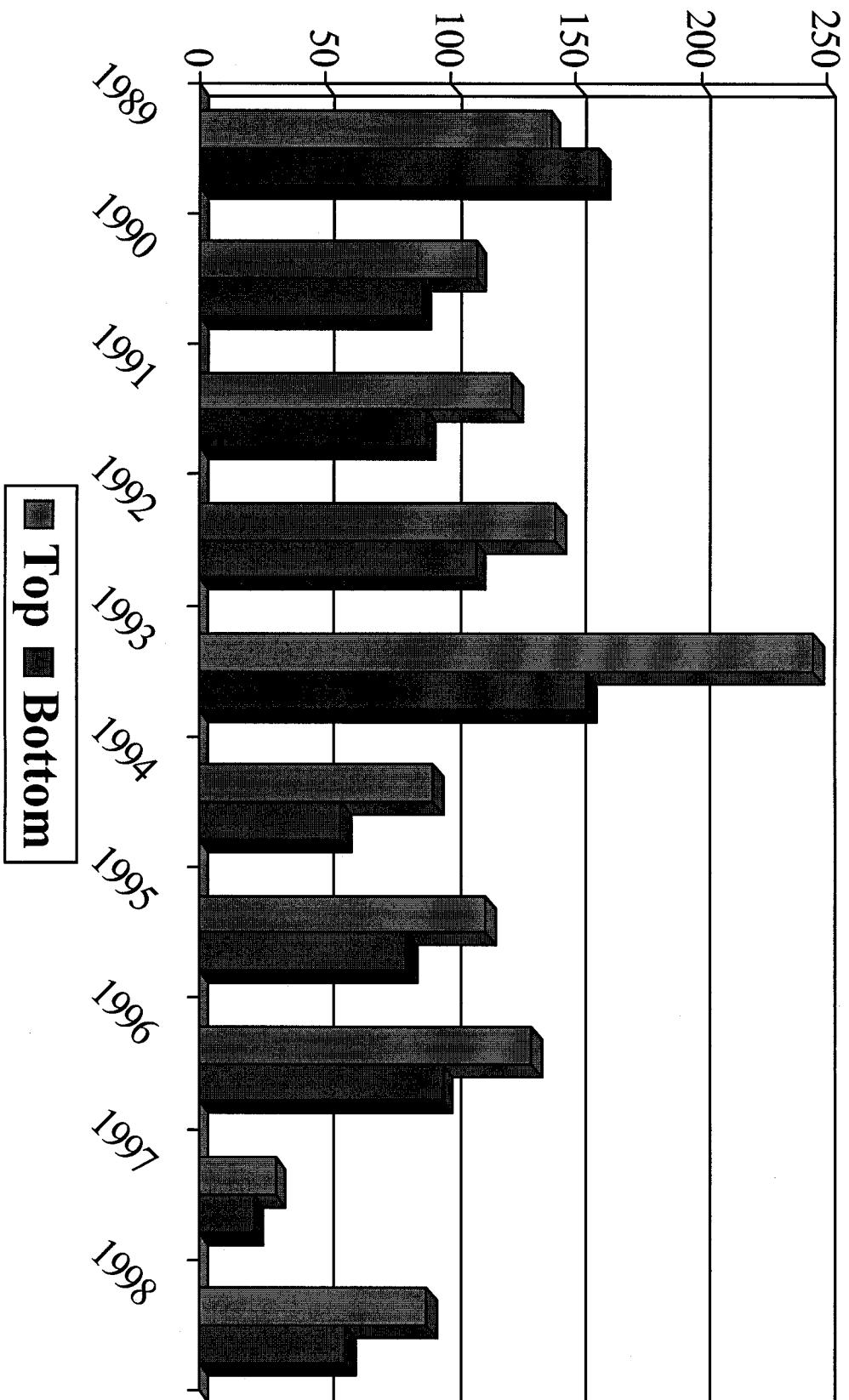


EXHIBIT 15

	Average Success Rate			STD Deviation of Average Success Rate			Average Success Rate Consistency			Most Successful			Success Rate		
	Universe	Top	Bottom	Universe	Top	Bottom	Universe	Top	Bottom	Universe	Top	Bottom	Universe	Top	Bottom
Scoring model - Monthly observations	45.0	50.9	61.1	12.3	12.9	17.8	39.5	55.3	72.8	73.3	76.9	100.0	21.7	21.4	14.3
Scoring model - Quarterly observations	45.4	53.4	64.0	12.9	13.4	19.6	39.5	65.8	71.1	68.3	78.1	95.0	18.6	21.4	23.8
Scoring model - Semi-Annual observations	47.6	55.4	67.5	12.5	14.5	19.6	47.4	68.4	84.2	67.3	76.9	91.7	20.0	16.7	8.3
Scoring model - Semi-Annual observations with knockout	50.1	59.2	58.3	10.9	15.1	18.7	63.2	79.0	68.4	70.8	84.6	90.9	25.7	26.5	8.3

EXHIBIT 16

Scoring Screen In and Out of Sample

