



ASIAN SECURITIES ANALYSTS
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ELECTRONIC JOURNAL

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EDITORIAL

Welcome to our third issue.

Some of the articles in this issue were presented at the recent ASAF conference, which was hosted by the Hong Kong Securities Institute in December.

Despite the trauma of the post-September-11th world, the Hong Kong hosts decided to go ahead with the conference, and it turned out to be very successful.

If you wish to see some of the other presentations at the conference, you can click on http://beta.ppn.com.hk/hksi/ASAF_speech.html

Once again, we would like to thank our other contributors, notably the Securities Institute of Australia, and the New Zealand Society of Investment Analysts.

Enjoy!

Bob Bunker – HK Securities Institute

Deepak Gupta – NZ Society of Investment Analysts (joint Editors)

Want to visit the websites of member societies ?? Here are the links.....

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Update on the CIIA®

The ACIIA® was founded in spring 2000 in London comprising the Asian Securities Analysts Federation (ASAF), the European Federation of Financial Analysts Societies (EFFAS) and their members, and the Brazilian Association of Investment Analysts (ABAMEC – a representative of the South-American Federation of Financial Analysts to be formed in the future) to provide an advanced professional examination and a truly international qualification program (CIIA®).

The CIIA® scheme is a high-quality, universal examination scheme which respects the autonomy and independence of each national society. The CIIA® scheme has some unique features:

The knowledge base that an analyst should master is classified into a national specific portion (regulations, ethics/standards of professional conduct, accounting, market structure, etc.) and an international portion. The former is left to national societies and the latter is the subject of the international common examination.

Questions for the international common examination are chosen from those produced by groups of experts nominated by national societies in Europe, Asia, and Latin America. Following a rigorous filtering/selection process at the Centre for International Examinations (Switzerland), questions are approved by the IEC (International Examinations Committee) comprising university professors/expert practitioners from around the world. Dependence on a particular national society is thus avoided.

The international common examination consists of a Foundation Examination (nine hours duration) and a Final Examination (six hours duration). However, the existing examination programs of national societies are duly respected. Members of national societies whose examination system is accredited as being of a sufficient high level through a review process are exempted (provided they have passed the local exams) from the Foundation Examination and can directly sit for the Final Examination.

Foundation and Final Examinations are held every semester in March and September.

The international common examination will be held in major languages so that candidates will not suffer any handicap in terms of language.

Candidates who have successfully passed the Final Examination and meet other relevant requirements are awarded the CIIA® designation. Their status with respect to the national society they belong to will remain unchanged after obtaining the designation and they can use the designation as long as they remain members of their national society.

In March 2002, the Examinations will be held in Frankfurt, Interlaken, London, Madrid, Mumbai, New York, Osaka, Rome, and Tokyo. Participation in the exams continues to exceed targets.

Since its launch, a number of inquiries have been received from various educational organizations/individuals which are interested in the CIIA® project, and some ASAF/EFFAS member societies are now preparing to apply for ACIIA® membership.

ACIIA® members:

Federation Members:	ABAMEC, ASAF, EFFAS
Contracting Members:	SFAF (France), DVFA (Germany), CPMR (India), AIAF (Italy), SAAJ (Japan), GIFA (Russia), IEAF (Spain), ASAG-SVFV (Switzerland)
Funding Members:	SAAC (China), SFAF (France), DVFA (Germany), AIAF (Italy), SAAJ (Japan), IEAF (Spain), ASAG-SVFV (Switzerland)
Associate Member:	HKSI (Hong Kong)

Council Members representing federations/national associations

Mr. Fritz Rau (Chairman)	DVFA	(Germany)
Mr. Burin Kantabutra	ASAF	
Mr. Etienne Rutsaert	EFFAS	
Mr. Ronaldo Nogueira	ABAMEC	
Dr. Ma Qingquan	SAAC	(China)
Mr. Jacques Lereboullet	SFAF	(France)
Mr. N J Yaraswy	CPMR	(India)
Mr. Giampaolo Trasi	AIAF	(Italy)
Mr. Kiyoto Hagiwara	SAAJ	(Japan)
Mr. Aldo Olcese	IEAF	(Spain)
Dr. Jean-Claude Dufournet	ASAG-SVFV	(Switzerland)

September 2001 CIIA® Final Examination results (worldwide aggregate basis)

Pass rate for Exam 1: 51.9%

Pass rate for Exam 2: 67.1%

Overall pass rate: 68.8%

Overall pass rate = (Sum of successful papers for the two papers)/(Sum of candidates present for the two papers)

Aggregate number of successful candidates who successfully passed both papers (Exam 1 and Exam 2) of the Final Exam: 836

(The aggregate number of registered candidates as of September 2001 was 2,644 <registration is valid for five years from initial registration>.)

Investment Funds in China - Speech by Joseph Silva – Chairman, Hong Kong Investment Funds Association

Despite just a short history, the investment fund industry in China has seen remarkable growth. Since the launch of closed-end funds back in 1992, the industry has grown, in less than a decade, to over 40 funds with around 70 billion RMB of funds under management.

The industry reached a new milestone in September, with the approval of three open-ended funds. Whilst this is only a pilot test, we believe this is a significant step forward for the development of the industry. In the US, one in every two households are already making use of open-ended funds; and in Hong Kong, the figure is about one in ten. The pilot test in China has indicated that there is huge latent demand for this type of investment product, and the industry is gearing up to make it available on a greater scale.

At the institutional level, the insurance and pension fund industries have been exploring the possibility of increasing the use of investment funds to enhance the sustainability of the systems. In 1999, the CSRC allowed up to 5% of an insurance company's net assets to include investment funds, and this has now increased to 15%.

To ensure that a strong foundation is provided, upon which the industry may grow, a sound regulatory framework is essential. As Mr. Wang has pointed out, the Investment Fund Laws will be released shortly. And in addition, various rules and guidelines have been issued relating to the approval of fund management companies, and the authorisation of funds. With China's accession to the WTO, we expect the laws on 'Joint Venture Fund Management Companies' to soon to be introduced. The law will provide a framework for foreign investors setting up joint venture fund management companies, with domestic partners.

Looking ahead, we expect that investment funds will assume an increasingly important role in China's savings market, and pension system reform.

It is estimated that approximately 850 billion USD is presently deposited in resident savings accounts in China, with only 1% of this amount being invested in funds. With the increasing affluence of the Chinese population, coupled with the growth in capital markets and the low interest environment, it is expected that there will be strong demand for investment funds as a viable alternative to bank deposits.

China has a rapidly ageing population. To meet the long-term liabilities in the coming decades, China has already undertaken many initiatives to reform the pension system. This includes expanding the sources of funding, and improving the effectiveness of the collection mechanism.

A plausible alternative is to consider further fostering the development of supplementary pensions, by encouraging a greater use of investment funds. The 401(K) in the US, and the MPF in Hong Kong, show that investment funds can provide a cost-effective, secure and high-yielding supplementary pension structure. After all, investment funds have a number of characteristics, which make them suitable for long-term retirement savings purposes. These include professional management and diversification, transparency, and a large choice with different risk and return characteristics. Many other countries are examining these schemes, and some are already moving in this direction. We believe that this is an option that can help enhance the robustness and sustainability of China's pension system.

A natural consequence of the development of an institutional investor base, is the growing importance accorded to corporate governance of listed companies. Initiatives have already been undertaken in this area, including the introduction of a system of independent board of directors. We believe that this trend will continue over time and that increasing emphasis will be placed on corporate governance issues. These measures will help to increase transparency and accountability of the listed companies, and foster the growth of the capital markets in China.

China's recent accession to the WTO will mean that foreign owned companies will be able to take a minority interest in joint ventures. They will be able to engage in fund management activities on the same terms as Mainland fund management companies. Initially, foreign ownership of joint venture companies will be limited to a 33% shareholding. But this will rise to 49% within three years. The formation of joint ventures will facilitate rapid transfer of investment and marketing know-how, and therefore enable China's fund industry to achieve international standards of best practice within a very short space of time.

Where does Hong Kong stand in face of all these developments? Well, we believe that Hong Kong has an important role to play in this process. After all, Hong Kong is a regional hub for investment management. Over a hundred asset management groups have a presence in Hong Kong and as at the end of 2000, they managed in total, assets of around USD190 billion.

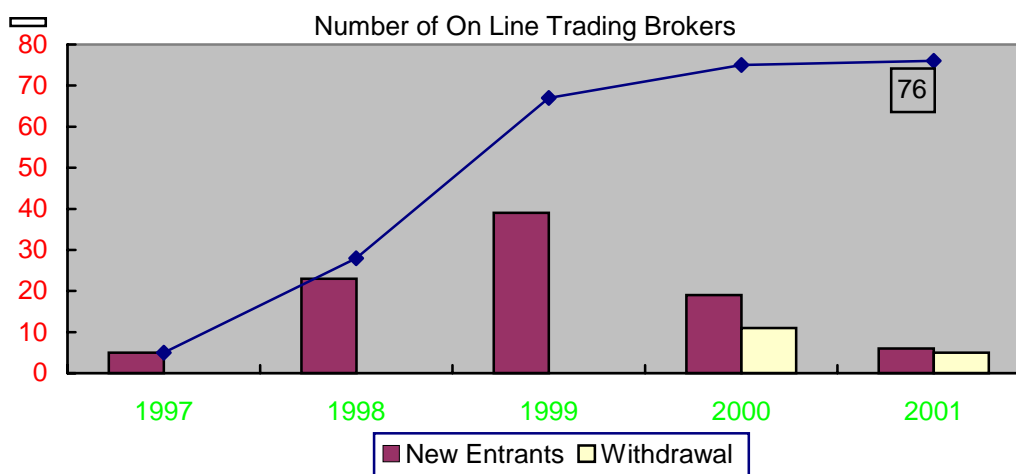
In the past few years, the Hong Kong Investment Funds Association has been very active in developing exchanges with Mainland authorities. We are delighted that our Mainland counterpart, the China Securities Investment Funds Association, was established earlier this year. We will continue to maintain close contact with the CSRC and other relevant authorities, to pass on the experience and best practice of our members, in order to help foster the development of the fund industry in China.

Overview of Online Securities Trading in Taiwan

1. Securities Firms

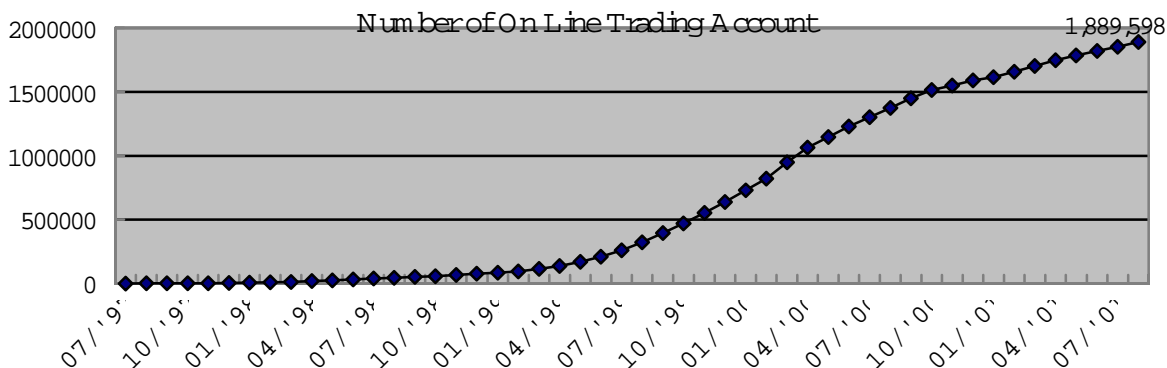
In 1997, with the continued rapid development of the Internet and the rise of e-commerce, the development of online trading began within Taiwan's securities industry. That year, five securities firms began conducting online trading operations. In 1998, 22 more securities firms began conducting online trading. The following year, another 39 securities firms had online operations underway and 19 more joined in 2000. This year, six domestic securities firms have started online trading operations. Mergers or halted operations by a number of firms in 2001 and 2001 have left the total number of securities firms conducting online trading at the current 76. The securities industry remains keen on online trading.

2. Accounts



Aggressive advertising and promotional campaigns by securities firms have led to a surge in the number of investors trading online. According to annual statistics of new accounts, 5,169 online trading accounts opened in 1997. A total of 71,553 new accounts surged opened in 1998; 559,632 in 1999; and 954,337 in 2000. During the first seven months of this year, another 298,907 new accounts were opened for a current total of 1,889,598 online trading accounts.

According to new account data from securities firms, Polaris Securities Co. is the current



market leader in online trading, with 334,360 online trading accounts, or 19% of the market total. Yuanta Core Pacific Securities Co. is number two, with 208,068 online trading accounts, or 12% of the total. Rounding out the top five are Sinopac Securities Co., MasterLink Securities Co., and Capital Securities Co., with 140,613 accounts; 99,887 accounts, and 98,196 accounts, respectively, or 8%, 6%, and 6% of the market total, respectively. The top five are all major domestic securities firms and together account for 881,142 online accounts, or about half of the market total. There appears to be a trend toward concentration of the market in the hands of a few securities firms. And online trading is growing rapidly, now accounting for 13% of the total 12.8 million accounts and 6.9 million investors in Taiwan's securities market.

Top 5 Brokers in terms of Trading Accounts as of August, 2001

Ranks	Company	No. of Account	% of Market
1	Polaris	353,443	18.7%
2	Yuanta Core Pacific	216,150	11.4%
3	Sino-Pac	159,097	8.4%
4	Capital	106,745	5.6%
5	Master Link	103,882	5.5%
	Others	950,281	50.4%
Total		1,889,598	100.0%

3. Turnover value

After domestic online trading began in July 1997, turnover value was just over NT\$650 million for the remainder of the year. Turnover value skyrocketed thereafter, to NT\$114.7 billion in 1998, NT\$1.12 trillion in 1999 and NT\$3.49 trillion in 2000. From the perspective of overall market share, online trading has been experiencing rapid month-on-month and year-on-year growth. Online trading accounted for 0.02% of overall market turnover value in 1997, a figure that rose to 0.19% in 1998. In May of 1999, online trading accounted for more than 1% of overall market turnover value for the first time, eventually accounting for 1.9% of overall market turnover value for the year. Online trading accounted for 5.71% of the total market turnover last year, and 8.1% of the total in the first eight months of this year.

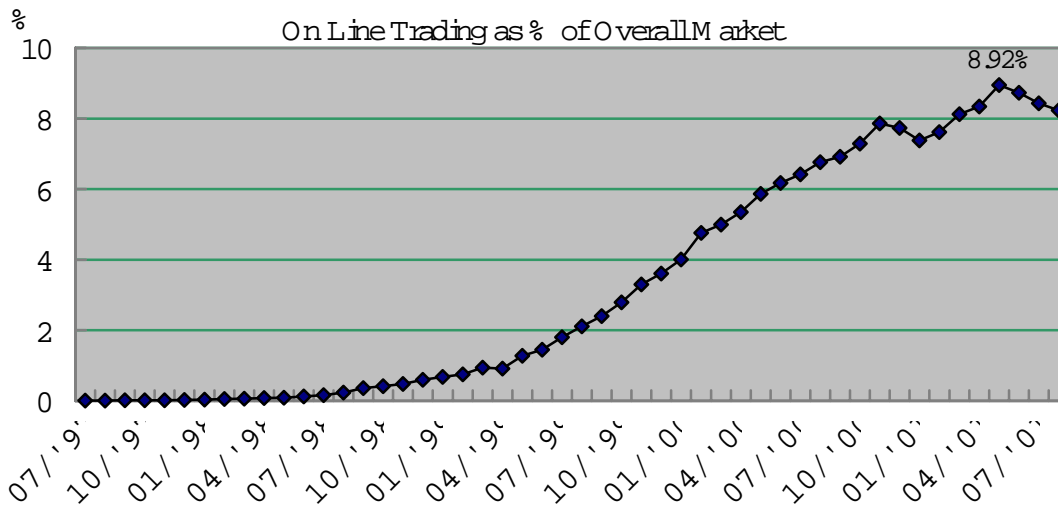
Turnover Value

Trading Value	'97	'98	'99	'00	'01 As of Aug.

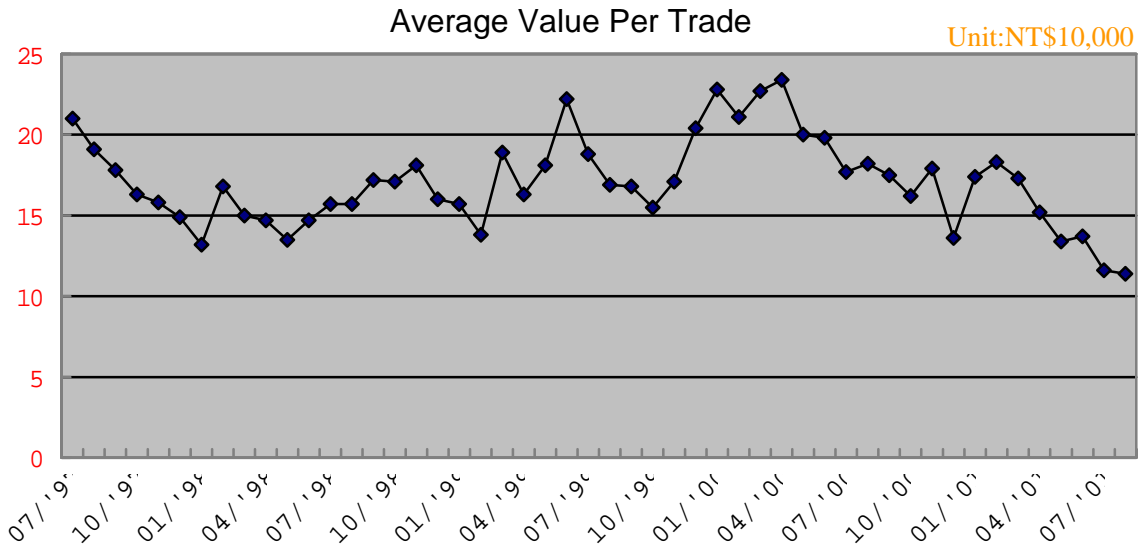
On Line Trading	6.5	114.7	1,117.2	3,489.1	1,916.7
Market overall	39,779	59,599	58,918	61,053	23,071
On Line Trading as % of Market	0.02%	0.19%	1.90%	5.71%	8.10%

(Unit:NT\$Billion)

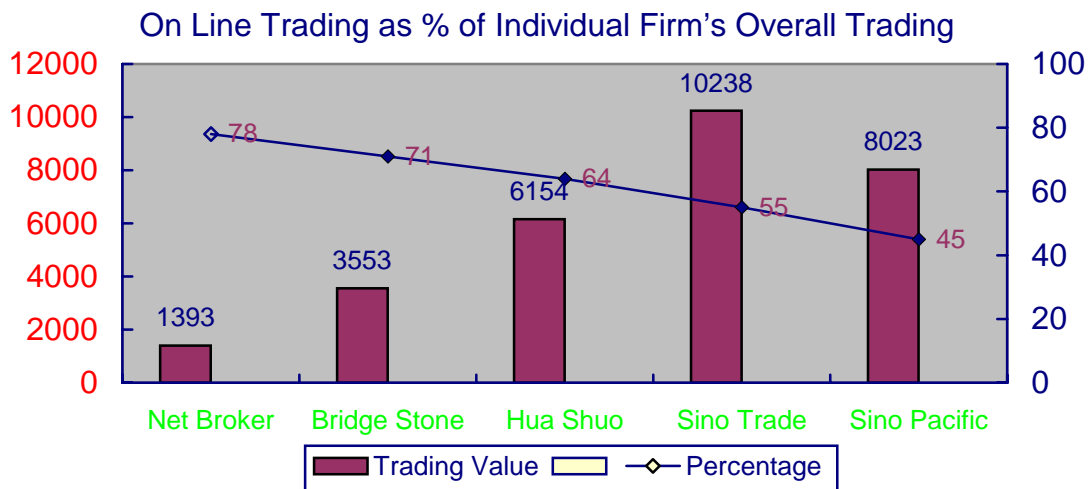
The sluggish overall performance of the stock market and continuing reports of incidents of interference by computer hackers have dampened the growth of online trading this year with turnover value in the first eight months just NT\$1.92 trillion. The ratio of online trading as a percentage of total market transaction volume, however, increased, and the overall trend remains toward growth.



Although online trading has been growing rapidly in Taiwan, the size of the average transaction in terms of dollar value remains small, standing at about NT\$163,000 in 1997 and 1998 and rising to about NT\$180,000 the following year. Last year the size of the average online transaction reached NT\$195,000 before falling to NT\$151,000 during the first seven months of this year. Average online transaction size for the great majority of securities firms is under NT\$500,000 due to general bearish sentiment on the stock market and the widespread use of daily limits on the dollar amount of online trading orders from individual clients based upon the risk considerations of securities firms. Of course, not all securities firms employ such limits and average online transaction values at the top five firms in those terms were NT\$5.36 million, NT\$4.16 million, NT\$2.63 million, NT\$2.48 million and NT\$1.44 million, far exceeding the overall average for online transactions.



In terms of online trading as a ratio of an individual securities firm's overall securities transaction value, Net Broker Securities is the market leader at 78%, statistics show. The ratios for the others in the top five are 71%, 64%, 55% and 45%, and for the remainder are uniformly below 40%. Over all, the cumulative online trading transaction value for all securities firms engaging in such trading accounts for a mere 5.4% of total transaction value. Clearly, with the exception of a few securities firms whose core operating revenues come from online trading, online trading remains but a small portion of most securities firms' overall operations.



4. Relevant Rules & Regulations

Since 1997, the Taiwan Stock Exchange Corporation has been amending relevant rules and regulations to make it easier for securities firms to develop online trading operations. For example, a securities firm that accepts securities trading orders solely by means of telephone or electronic transaction may be exempt from the requirement of establishing a business floor and counter for taking orders. Also, investors whose maximum trading amount for a given day is NT\$1 million or less may be exempt from opening an account in person at a securities firm's place of business. Also, the content of online trading orders may be validated automatically by computer provided the investor's IP address and the order file are recorded and saved. And, for security purposes, securities firms must install firewalls and certificate authentication systems while supervising the business practices of operations personnel relating to the use of e-mail, electronic bulletin boards, and web sites. Industry surveys conducted by this Corporation show that the vast majority of securities firms believe that the rules and regulations regarding order placement via the Internet are not an impediment to the development of their operations.

5. Taiwan's Favorable Environment for the Development of Internet Securities Trading

The dynamic global development of information technology in recent years has made Internet communications a daily necessity for many. In Internet commerce, the biggest developmental success story remains online securities trading. We feel that in addition to a relaxed and reasonable legal environment, Taiwan's securities market possesses a number of advantageous characteristics that we believe will be helpful for the vigorous development of online trading.

First among these is the high ratio of individual retail investors in the domestic market. As of the end of September of this year, there were a total of about 12.8 million securities investment accounts in Taiwan, among which, about 85% were individual retail investor accounts. The experience of the neighboring South Korean securities market would suggest that Taiwan's relatively high ratio of individual retail investors will be beneficial to the development of online trading. The ratio of individual investors in South Korean securities markets stood at 73.3% in April of this year, and online trading accounted for 66% of overall market trading, far exceeding the ratio of online trading in financial markets in the United States, London, Paris, Japan, and Singapore, according to data from the Korea Stock Exchange. The characteristic high ratio of individual investors in Taiwan's securities markets will be a beneficial factor for the continued growth of online trading on Taiwan's securities markets.

In addition, Taiwan's stock market has long been notable for its high turnover ratio. Over the past five years, the turnover ratio has ranged from a high of 368% in 1997 to a low of 195% last year. Although the turnover ratio has kept pace with sagging market sentiment, the five-year average remains at 260%, far exceeding other international stock markets around the world. This clearly indicates that the investment habits of Taiwan's stock investors tend toward the short term. Internet transmission of order placements and transaction confirmation reports is faster and more convenient than the traditional means

of conducting such transactions over the telephone or in person and is better suited to the frequent short-term trading requirements of Taiwan investors.

To our knowledge, South Korea's securities markets boast the world's highest ratio of online trading as a percentage of overall transaction value, reaching 60% in September of this year, from some four million online trading accounts. The principal reason for the dynamic development of online trading in the South Korean securities markets has been the high 73% ratio of individual retail investors and their penchant for short-term investing. The South Korean stock market's turnover ratio last year exceeded 300%. These characteristics all bear striking similarity to the Taiwan market. Additional advantageous factors include the high educational level of the general public, widespread PC ownership, and a high ratio of Internet usage. By all statistical measures of on-line trading, Taiwan currently ranks second only to South Korea among Asian markets in such trading, ahead of all other Asian markets. According to an IDC forecast, online securities trading in Taiwan will continue to grow at a compounded annual growth rate of 25% during the next five years, with an estimated 4.85 million online trading accounts by 2005.

6. Limits on the Development of Online Trading

Although Taiwan's securities markets do possess some advantages for the online trading environment and local securities firms are aggressively developing online trading, as a percentage of overall market trading, online trading remains flat. Market analysis indicates that the following limitations are affecting the development of online trading:

(1) Pervasiveness of Securities Firm Outlets

The government's policy of opening the securities markets to free market competition has resulted in a multitude of securities firms in Taiwan. As of September of this year, securities firms operated 169 main offices and 996 branch offices, for a total of 1,165 points of operation in cities and towns throughout Taiwan. Investors wishing to place an order can simply find the securities firm location nearest them and place their order conveniently in person or over the telephone. This convenience has diminished the need for online trading.

(2) Slow Progress in Construction of Broadband Networks

Although Taiwan's online population had reached nearly 7.55 million by August for a penetration rate of 34%, only 11% had broadband Internet connections – far lower than the 62% of South Korean Internet users with broadband connections and the 27% of Singaporeans with broadband connections. Most Taiwan investors still connect to the Internet via dial-up connections and can encounter problems with insufficient bandwidth, slowing the speed of the connection and affecting the ability of securities firms to offer professional services over the Internet. Our surveys have indicated that a majority of securities industry insiders believe that Taiwan's broadband infrastructure is insufficient

and the expenses for those that do connect to the Internet via broadband connections are still too high, hampering the further development of online trading.

(3) Low Ratio of Internet Users Among Investors

Additionally, although home PC ownership and Internet usage is considered widespread in Taiwan, students comprise the majority of those users. Taiwan's Internet population consists mainly of young people, while the majority of stock investors are housewives, middle-aged people and older people, thwarting any substantial increases in online trading.

(4) Insufficient Incentive of Processing Fee Savings

Low handling fees are another characteristic of Taiwan's securities markets. Competition has been intense since Taiwan's adoption of free market competition with respect to handling fees. Even without discounts, current handling fees for stock investors stand at NT\$14.25 for each NT\$10,000 transacted. With an average monthly transaction value among individual investors of less than NT\$500,000, even if handling fees were further discounted for online transactions, the monthly savings in handling fees for investors would be negligible. The amount that can be saved per transaction by trading online is far less in Taiwan than in other countries, and since handling fees in Taiwan have always been low, the competitive advantage for online trading in this respect is considerably weakened.

(5) Handling of Large Orders by Designated Service Persons

Securities firms routinely assign a designated service person to handle the accounts of large investors, offering a higher level of service. As a result, these investors do not use the Internet as a tool for placing investment orders. Additionally, securities firms commonly offer preferential treatment for orders placed by institutional investors and funds, with the vast majority of these also being handled by designated service personnel. Consequently, there continues to be no means by which the transaction value of online trading can increase substantially.

(6) Security Concerns

Continued reports of people being swindled through Internet trading, credit card fraud, and theft of credit card information, and the insecurity of online trading has resulted in an unwillingness among investors to engage in online trading, preferring still to place orders through more traditional means. Also, in the interest of security considerations, most securities firms wish to be able to link up with banks to perform a real time check on the assets and credit worthiness of investors placing large orders. Under current relevant banking rules and regulations, however, this is not permitted. According to our industry survey, nearly 30% of respondents believe this has been a major factor limiting securities firms operating online from greatly expanding their online trading operations.

Conclusion

Although online trading is still but a small part of overall market activity in Taiwan, the development of the Internet is a global trend. Online trading does offer a number of advantages, including access to relevant market and trading information, real-time news, research reports, and other information to which previously only a limited number of people had access. Investors may also make their own independent investment decisions without unnecessary influence from brokers or traders and need not feel self-conscious about placing overly small orders with their brokers.

Taiwan's markets do indeed possess a number of characteristics that are advantageous to the development of online trading. As future construction of the network infrastructure is completed and with the trend toward extension of trading hours, the continued development of online trading, and substantial growth in its share of overall market trading, can be expected.

Legislative Challenges Faced by the Investment Fund Industry in China after China's Accession to WTO and its Responses

1. The Opportunities and Challenges Faced by the Investment Fund Industry in China

After completing all the procedures for China's accession to the WTO at the Doha Meetings in November, China has become an official member of the organization. This represents a golden opportunity for the development of the China investment fund industry. Reasons are as follows: Firstly, foreign fund management companies, funds and fund investors will, according to the law and conditions prescribed, enter the China market steadily to participate in development of the China fund management industry. As a result, professionals from the fund management field will bring in investment expertise and sophisticated concepts to the China fund industry. This will further enhance the standards of the domestic investment fund market. Secondly, foreign capital can promote the continuing development of China's investment fund market through participating in the establishment of fund management companies, funds and especially venture capital funds in China. Thirdly, the entry of foreign funds, which enjoy the same treatment as domestic residents, will act as a catalyst to spur the development of the regulatory framework to enable it to be more in line with international standards and will further improve the regulatory environment for the China fund industry. However, whilst there are more opportunities, competitive pressure faced by the local investment fund industry also increases after China's accession to the WTO. Firstly, foreign fund management companies may attract outstanding talents from the local fund management companies with higher pay, which may affect or even weaken the operating and management capability of China's investment funds. Secondly, foreign fund management companies and their funds generally have a longer history and their systems are generally of higher standard and credibility. Investors who have hitherto invested in domestic funds may turn to the funds managed by foreign companies, which would have an adverse effect on the competitiveness of the domestic funds. Thirdly, with the increasing influence of certain foreign regulatory approaches and investment concepts, domestic fund companies need to go through a process of adaptation. In this process, domestic fund companies would inevitably face much pressure. To meet the challenges after the entry to the WTO and to fully capitalize on the potential opportunity for future development, it is necessary to correctly identify and assess the present situation of the China investment fund industry – what it has achieved, the problems it faces and possible solutions.

2. Review of the Current Situation of the China Investment Fund Industry

Investment fund has a history of over 100 years in the overseas financial system. In the past two decades, it has experienced rapid growth and has become an important feature in the current international financial market. Investment funds aim to legally pool the dispersed capital in the community and carry out professional management and

portfolio investments according to the principle of separation of the rights of title, operation and supervision. Through portfolio investments and diversification, funds enable retail investors to enjoy relatively more stable income. Based on these functions and features, investment fund has stood out amongst a wide array of investment instruments and enjoyed a rapid growth.

The global investment fund industry has experienced substantial growth. It is estimated that the total asset value of funds on a global basis is about US\$11 trillion, of which the U.S. accounts for US\$7 trillion. The China investment fund industry, despite its short history, has adapted to the innovative development of the international financial systems. After more than ten years of development and especially after the three years' pilot test, the fund industry in China has begun to take shape. Currently, there are 14 fund management companies, and 46 listed funds and 2 open-ended funds have been launched in China. In addition, China's venture capital funds have made impressive progress. There are currently over 200 venture capital funds with total assets of RMB\$30 billion. Investment fund has become an important player in the capital markets and has a positive role in improving the structure of the financial and economic system and in boosting the growth of the stock market.

3. Challenges Faced by the Investment Fund Industry

The China investment fund industry is facing many challenges due to various kinds of reasons. Firstly, the size of the industry is too small and therefore is unable to assume a leading force in the stock market. Funds asset stood at RMB\$70 billion, or accounting for about 4% of the RMB\$1.5 trillion stock market capitalization. In the U.S., the total asset size of mutual funds exceeds US\$7 trillion, accounting for 47% of the total market capitalization. There are over 8,000 funds of various types in the U.S. Compared to this, the size of the China fund market is just too small. There is much room for growth: if the China fund industry can account for 40% of the stock market capitalization, not to mention 47%, then it means that the industry can grow by RMB\$600 to \$700 billion. Secondly, the unregulated stock market and the great volatilities have caused the returns from fund investment to fluctuate substantially. Consequently, the advantages of professional fund management cannot be fully realized and public's acceptance of investment funds has been undermined. According to the data in 1998 and 1999, the annual returns from fund investment, to a large extent, exceeded the returns from bank deposits and treasury bills. During the same period, the Shanghai Stock Index rose by 19.36%, and most of the funds had not been able to outperform the market. In the first half of 2001, amongst the 33 funds managed by the 10 fund management companies, only 5 funds outperformed the market. If we discount the preferential treatment offered to funds for subscribing new shares, 4 out of the 5 funds registered a growth of less than 1% in their net asset value. 13 funds recorded loss, accounting for 40% of the 33 funds, while the stock market indices of Shanghai and Shenzhen rose by 5% and 3% respectively during the same period. It should not be overlooked that investment funds also enjoy income tax concession and stamp duty exemption. The transaction fees for closed-end securities investment funds only represent one-third of that for stock transactions; and funds' redemption fees are higher than stock transactions fees. Under these circumstances, the doubt on fund managers' ability is understandable. Thirdly, the functions of funds have not come into full play

due to the constraints imposed on the established system. Under the existing regulations, there are obstacles preventing pension funds and insurance funds from investing in funds (according to the Insurance Law, insurance funds can only buy bonds and save as bank deposits, but cannot invest in the stock market.) Fourthly, the mechanisms for hedging and short selling in the stock market have not been established. There are other sources, especially those from underground sources, and their irregular operations have hindered the operation of the strictly-regulated investment fund industry. Fifthly, there are deficiencies in the governance structure of the fund management companies. In certain circumstances, investors' interests are undermined. Sixthly, the ethical standard and operation and management quality of fund management personnel still need to be scrutinized and enhanced.

4. Measures to Promote the Healthy Development of the China Investment Fund Industry and to Meet the Challenges after China's Accession to the WTO

Firstly, to further promote investor education to enhance investors' knowledge and understanding of the functions of investment funds and to broaden the investor base.

Secondly, to strengthen the regulatory framework for investment funds to tie in with the opening up of the fund market. At present, there is still a lot to be done on the regulatory framework for investment funds, such as the qualifications, conditions and procedures for foreign fund management companies and investment funds, the requirements and methods for fund monitoring and management, the restrictions on fund investment and operation, and the settlement for the liquidation of closed-end funds and the possible insolvency of fund companies. Also, when foreign funds enter the domestic market, there is a need for us to prepare the necessary regulatory framework. In addition, the restrictions on the financial industry should gradually be relaxed. Restrictions should be relaxed to allow more institutions to act as fund sponsors and to establish fund management companies. Investment vehicles should be used by pension funds and insurance funds according to the law. Financial derivatives like index futures and options should also be introduced at an opportune time to minimize risk and to support a stable and healthy development of the fund industry.

Thirdly, to improve the governance structure of fund management companies by specifying the functions of fund management companies, so that their functions of providing professional fund management services for investors can be fulfilled and a good reputation can be established. Investment funds will have a solid base only by establishing good reputation and track record under keen competitive environment.

Fourthly, to ensure and enhance the quality of listed companies, which is a vital market condition for the development of funds. It is said that one cannot make a silk purse out of a cow's ear. Investment funds cannot provide good returns if what they invest in do not produce good returns. If there are more "ST" and "PT" stocks, their history of unreasonably high prices resulting from speculation should come to an end. Stock prices should move more or less in line with their actual value. Bubbles, though inevitable, should not go too far. Otherwise, they will certainly burst.

Fifthly, to cultivate and attract talents from various fields. The wisdom of the masses exceeds that of the wisest individual. The saying is only applicable to general situations. For scientific inventions and innovations, the wisdom of an individual

usually surpasses the masses. The Chinese, the descendants of Hua Xia, are smart and intelligent. In Tang Dynasty, China's GNP once accounted for 40% of the total in the world.

5. Introduction to the Legislative Framework of China's Investment Fund Law on Drafting

The Financial and Economic Committee of National People's Congress of PRC is drafting the "Investment Fund Law" with the objective of regulating the development of the domestic fund industry and protecting the legal rights of fund investors. Though the drafting is almost completed, the Drafting Committee needs to arrive at a consensus on certain issues:

1. The objective of the legislation: protect the legal rights of fund holders is the prime concern;
2. The scope of laws: publicly-offered funds and privately-offered funds;
3. The law will cover both unit trusts and mutual funds, as well as both closed-end and open-ended funds, so as to provide more alternatives to investors;
4. To establish independent directorship to improve the governance structure of fund management companies and to prevent conflicts of interest;
5. To improve the system of civil liability and compensation to protect the legal rights of investors.

You want me to do WHAT?

Ethical dilemmas in financial planning

In a world where doing the right thing can be a subjective exercise, the establishment and policing of an ethics code for an industry such as financial planning is never an easy exercise. When questions of ethics arise it is wise to seek advice.

All of us believe we are 'ethical'. But different value systems mean that one person's ethical actions are not necessarily another's. As advisers we can sometimes come into conflict with the views of our clients and encounter potential ethical dilemmas in our daily role in the securities industry. To deal with these situations effectively, one needs to be aware not only of one's own beliefs and values but also have an understanding of the beliefs and values of others.

The Securities Institute's Code of Ethics sets out the standards adopted by the securities 'community'. If you compare it to other Codes or to the licensee obligations under the Financial Services Reform Act you will see a considerable alignment.

Take the following examples: Often a client will tell us something that we didn't want, or need, to know. This creates a dilemma. Does our duty of client confidentiality override our duty to report wrongdoing? How can we overcome this dilemma? There are obvious legal sanctions if you are implicated in the wrongdoing. Is your first thought for your own protection? Or perhaps it is your client's spouse, employees or creditors who should be informed? What will your client think of you if they discover that you have disclosed their confidential information?

Some financial planners have a customer charter, setting out what they will do for their client. You should make it clear at the outset that you will not have anything to do with unethical conduct with a statement such as: 'We will be open and honest with you at all times. In return, we expect openness and honesty from our clients. If we become aware of illegal conduct we will report it to the appropriate authorities.' A statement such as this puts you in a position to deal with your client's unethical actions. You may lose a client but did you really want them?

Another dilemma that often arises in financial services is the unintended or often unrecognised conflict of interest. We must always put the client's interest before our own in providing advice. Full disclosure is the best way to avoid such a conflict arising. If a customer knows exactly what you will receive for providing them with advice, the interest no longer becomes a conflict. We have been disclosing commissions on investment products for some time now but what about the fringe benefits provided by product issuers? Do they affect a recommendation?

Once again, the actions of a few have led to prescriptive legislation. The Financial Services Reform Act requires disclosure of ‘anything that may influence a recommendation’ in the Statement of Advice, which is a far more wide-ranging requirement than at present. How will it be possible to compare different reward destinations that may influence an adviser’s choice of product to recommend? More and more laws are framed in a way that puts the responsibility on the individual to determine their own conduct. The Financial Services Reform Act requires a licensee to provide financial services ‘efficiently, honestly and fairly’. The meaning of these expressions will move with community standards. For example, it is quite possible that 18th century slave traders had a code of conduct for dealing with each other! They treated each other ‘efficiently, honestly and fairly’.

There has been a lot of resistance to framing codes with disciplinary measures attached. If a code is treated as a law, with grudging compliance, then it is not working effectively. Codes should be adopted because they are in accordance with the values and beliefs of their participants, rather than imposed by applied enforcement.

Participants in a code should be moulding the requirements to meet the expectations of the various stakeholders, including their clients, the community, industry colleagues and those of the persons relying on them. If you have doubts as to how you should deal with an ethical dilemma, there are many organisations that will discuss the matter with you in confidence, including the Institute’s own Ethics Advisory Service, run in conjunction with the St James Ethics Centre, which can be reached on 1800 672 303.

The Institute, other professional bodies, industry organisations and regulators are all committed to raising the standards of conduct in the financial services industry and will be offering further guidance in line with the changes in community standards and expectations.

*Contributed by John Jordan, Group Compliance Manager, ING Australia at the Institute’s invitation.
The views expressed are those of the author, not those of ING Australia nor the Institute.*

Estimating market risk premium

Understanding the risks involved when investing your own or other people's money is fundamental. But how are these risks assessed and what weight is given to these risks? PROFESSOR ROBERT G. BOWMAN, of the Department of Accounting and Finance, The University of Auckland, believes that the use of historical data to arrive at an Australian market risk premium (MRP) is flawed and that investment managers should be using the American MRP as a benchmark.

The market risk premium (MRP) is the single most problematic estimate in implementing the Capital Asset Pricing Model. It is an expectation, not directly observable and unavoidably judgmental. The difficulties of estimating the MRP are considerable and have been discussed in many forums. Yet there has been surprisingly little research into its estimation. The most common approach is to assume that historical measurements of MRP are relevant to a forward-looking rate.

The historical evidence in Australia that is most commonly referred to is Officer (1989), which covers the period 1882 to 1987. Updating that data through 2000 gives an ex post MRP slightly below 7.0%. But is the historical evidence in Australia of any use in estimating a forward-looking MRP? I believe not. “(Historical estimates of the market risk premium are not necessarily appropriate as the risk premium to be incorporated in the CAPM is a forward looking concept, based on expectations of the future.” (ACCC, 1999, p18).

The MRP for Australia today and going forward is set in an international market. However, the Australian debt and equity markets, until fairly recently, were subject to controls and intervention with little direct influence from international markets. The markets were domestic; foreign investment was not able to flow freely into and out of Australia. This is a very fundamental difference and the basis for challenging the relevance of the historical evidence.

While it is possible to identify a recent period where markets were open to international investment, the period would be too short to provide a reliable ex ante estimate of MRP. Cornell, Hirshleifer and James (1997, p16) state that, “The unfortunate fact is that stock prices are so variable that the risk premium cannot be estimated precisely even with 20 years of data.”

An alternative approach

Australia today is an open economy. Investment funds flow freely into and out of the country and the currency. It is appropriate to assume that Australian debt and equity securities are priced in international markets, and that the Australian MRP is set in an international market.

If Australia's markets are now part of an international market place, what does that imply for the Australian MRP? We can think of Australia's MRP as being equal to an international MRP benchmark plus a premium for incremental risks associated with the equity market in Australia. For this purpose it is easiest and most informative to use the

United States as the benchmark. Contrary to the situation in Australia, the US has been an open economy for virtually all of its existence. The quantum of evidence and analysis of the US equities markets (and its MRP) would probably exceed that of all other countries in the world combined. The historical evidence is as good as is available for any country in the world, and the US would be widely regarded as the appropriate benchmark against which to measure risk premiums.

MRP in the United States

The most common reference for MRP in the US is from Ibbotson Associates, and the most common period is from 1926. For the 75 years 1926 through 2000, the MRP was 9.2%. There is controversy over whether the ex post MRP in the US is reasonable to use as an ex ante estimate. Merton (1980) estimates historical MRPs under a variety of plausible assumptions about investor behaviour. He finds that MRP can range from 8% to 12% depending on the assumptions made. Mehra and Prescott (1985) examined the ex post MRP and asked whether its magnitude was reasonable. They used standard general equilibrium models and estimated the level of risk aversion needed to explain the historical MRP. They found that the level calculated as necessary to explain the MRP was not a reasonable level of risk aversion; hence an “equity premium puzzle.”

However, Mehra and Prescott’s results can be attacked for unreasonable assumptions as to models and utility functions. Benartzi and Thaler (1995) show that if investors are particularly averse to losses and have a time horizon of about one year, there is no puzzle. The observed MRPs are consistent with rational investor behaviour, and a one-year time horizon is consistent with a number of important cycles faced by investors including annual reports of firms and tax reporting. Swan (2001) shows that a premium for illiquidity is sufficient to explain the puzzle in the Australia and the USA. It is particularly interesting that Mehra and Prescott state (pp145-146), “Our conclusion is that most likely some equilibrium model with a friction will be the one that successfully accounts for the large average equity premium.”

“In a recent ranking by Business Week (July 10, 2000) of the 1000 largest companies in the world (by market value), Australia had 15 companies, which represented less than 1% of the market value of the 1000.”

They do not suggest that the magnitude of MRP observed is irrational. Mehra also noted in a letter to The Economist (8 August 1998, p6) that, “Our paper has the additional implication that the equity premium will remain high as the population ages and the proportion of 45-65-year-olds increases.”

There is a significant group of finance practitioners and academics who believe the strong bull market in the US over the past two decades is attributable, at least in part, to a decline in the MRP. This group argues that the current ex ante MRP is lower than the ex post evidence indicates and perhaps substantially. Presumably the recent decline in the US market has moderated this perspective. In a broad based online poll of financial economists, Welch (2000) found that the average MRP was 7-8% depending on the horizon assumed for the risk-free rate. This poll would have included those who believe

there has been a recent drop. In assessing the available literature and evidence, the bounds of a reasonable range for MRP seem to be 6% to 9% with a point estimate of 7.5%. The upper bound acknowledges the historical evidence, while the lower limit imputes a downward adjustment in recognition of the Mehra and Prescott result and perceived implications on MRP of recent market movements. This range and point estimate should serve as the benchmark from which to estimate the MRP for Australia.

Applying the United States MRP to Australia

Before accepting this US estimate for the benchmark MRP, there are some challenges that must be considered. For instance:

- differences in taxation
- differences in equity markets and indices
- country risk
- time horizon.

Differences in taxation

There are many differences between the system of personal taxation in Australia and in the US. The differences that are important are the Australian dividend imputation system, the tax rates, the treatment of capital gains and the opportunities to shelter tax. The tax regime that is important is mainly the forward-looking tax system in Australia, although historical tax structures may be important to interpreting the US historical MRP data.

Probably the most important difference is dividend imputation. A superficial comparison would indicate that dividends incur no new tax in Australia but incur full tax in the US. If prices are set on an after-investor- tax basis, the required rate in Australia would be lower by the tax on dividends in the US. There are a number of reasons why this analysis is inadequate. For both countries, there is clear evidence of dividend clientele. Investors assess the tax consequences of dividends in making their investment decisions. High tax rate taxpayers migrate to companies with dividend policies that are more favourable to their tax circumstances (generally low dividend paying companies).

Importantly, the investors that matter are the price setters. This almost certainly does not include all investors, but rather a relatively small number of highly sophisticated investors. It is reasonable to assume these investors are skilled at managing their tax affairs to minimise taxation. Since Australia has open markets, the price setting investors may not be Australian taxpayers. Lonergan (2001) makes this point and concludes that dividend imputation has not appreciably reduced the cost of equity. Although many, perhaps most, US investors pay tax on dividends, it may be that the price setting investors do not. This is made even more likely in that there are more opportunities to shelter and defer tax in the US than there are in Australia.

The progressive personal tax rates in the two countries are roughly similar. Both countries have capital gains tax, but Australia's is based upon a form of real gains while the US has preferential rates for qualifying gains. There are obvious differences in the taxation

systems between the two countries. At first glance, the differences seem to favour a lower MRP in Australia. But a closer analysis shows that arguments can be made for adjustment in either direction. I do not see a clear basis for predicting the direction.

Differences in equity markets and indices

The equity markets in the US differ in many ways from the Australian equity market. The Australian market has a larger representation of resource-based companies, while the US market has more high-tech and leading edge companies. Resource companies are important in forming an optimal portfolio in Australia and also to have high levels of systematic risk. There would be a higher representation of “new economy” companies on the US markets, and these companies will tend to be high growth and high risk. However, the empirical evidence most commonly used to estimate the US MRP is based upon the Standard & Poor’s 500 Index. This index comprises a highly diverse set of companies that is not overly represented by high-risk companies.

The compositions of the two countries’ markets are consistent with the MRP in Australia being higher than the US MRP. The average size of listed companies in Australia is less than in the US. In a recent ranking by Business Week (July 10, 2000) of the 1000 largest companies in the world (by market value), Australia had 15 companies, which represented less than 1% of the market value of the 1000. The US had 484 companies, representing 55% of the total market value. The largest Australian company (Telstra) would have ranked 64th in the US. We know that size is negatively related to both total risk and systematic risk. A measure of this can be gleaned from the Ibbotson data. Over the period 1926 through 1996, a portfolio of small stocks, defined as the smallest 20% of all firms listed on the NYSE, showed a return that was 6.52% higher than the return on the S&P500. Note that although the portfolio is labelled small stocks, they are all listed on the NYSE. They are not small stocks relative to the Australian stockmarket.

“There is a significant group of finance practitioners and academics who believe the strong bull market in the US over the past two decades is attributable, at least in part, to a decline in the MRP.”

As a measure of total risk, the standard deviation of the small stocks was nearly double the standard deviation of the S&P500. An estimate of the systematic risk (beta) of the small stocks portfolio can be made by dividing the excess return (over the risk-free rate of return) of the small stocks by the excess returns of the market portfolio (ie, the S&P500). This calculation gives a portfolio beta for small stocks of 1.75. The Australia market is higher risk than the US market and should have a higher MRP. The question is whether there is a reasonable way to estimate the magnitude of the higher risk in terms of return. An intuitive way to quantify the difference is to think of it in terms of systematic risk. If the firms in the Australian market were listed on an exchange with the S&P 500 firms, what would be the average beta of the Australian firms? In my opinion, the average beta would be in the range of 1.2-1.5. To convert this to a rate of return, assume an MRP of 7.5% and apply the beta estimate in excess of one to get an addition to the benchmark MRP of 1.5 to 3.75%.

Country risk

The incremental riskiness of a country is often covered by the umbrella term “country risk”. This risk is related to the risk that a government will abruptly alter its policies with respect to investments in the country (including expropriations), shifts in monetary or fiscal policy, regulatory changes, defaults and tax changes. A broad look at country risk can be found in Euromoney, which publishes one of the most prominent evaluations of country risk. The objective of the ratings is to capture the risk related to investment in a country. In its latest ranking (September 2000) Australia was ranked 18th of the 185 countries ranked. Another study by Damodaran (2000) based on credit ratings ascribes a premium of 0.65% for Australia over the US.

The literature and empirical evidence support the conclusion that political risk is priced domestically. However, perhaps the country risk premium is all priced in the risk-free return such that there is no additional premium necessary in the MRP. The challenge is to estimate the premium, if any, that will be impounded in Australia’s MRP as a result of its country risk. To some extent, the discussion of differences between the Australian and US markets captures a dimension of a country risk premium. Although it seems likely that there is an incremental premium attributable to MRP, the magnitude of it is a matter of informed judgment. My preference is to not add to the benchmark MRP.

Time horizon

In estimating MRP a time horizon needs to be specified for choosing the risk-free asset. The US evidence on MRP cited above is based upon the difference between equity returns and the returns on Treasury bills (i.e., a very short horizon). The MRP estimation most commonly used for Australia is based upon a ten-year, risk-free rate. For an MRP that reflects a long time horizon, which would generally be appropriate for corporate finance applications, the Ibbotson Associates data also includes information on intermediate-term (at least seven years) government bonds as well as Treasury bills. Over the period from 1926, there was an average annual return premium of 1.4% for intermediate-term government bonds over Treasury bills. For a long horizon MRP estimate, this premium should be added to the benchmark MRP. For a short horizon MRP, no adjustment is necessary.

SUMMARY

Assuming we want to estimate a long horizon MRP, the information above is summarised as follows:

- Taxation – no clear adjustment although perhaps a deduction
- Market differences – addition to benchmark of 1.5 to 3.75%
- Country risk – no adjustment although likely an increase
- Time horizon – deduction from benchmark of 1.4%

There is uncertainty in these estimates, and the net effects can be debated. Based on the above analysis, I believe an additional premium of at least 0.3% should be added to the benchmark US MRP when applying it to Australia. The MRP is a very important parameter to financial economists, yet it is frustratingly difficult to estimate. It is

interesting to note how much attention is paid to issues such as finely calibrating the appropriate beta, which is then applied to a MRP that is figuratively pulled out of thin air. Is beta 0.9 or 1.0? Is MRP 5% or 9%? The main thesis of this paper is that the common practice of basing an estimate of MRP in Australia on historical MRP outcomes is fundamentally flawed. We need a new and better approach. It is suggested Australia use an approach based upon using the US MRP as a benchmark. The forward-looking US MRP is estimated to be 6% to 9% with a point estimate of 7.5%.

There are a number of issues that can be considered to adjust the US benchmark. I believe that on balance they support an adjustment of at least +0.3% (+1.7% for a short horizon MRP). In my opinion the appropriate MRP to use for Australia is 7.8% (9.2% for a short horizon MRP).

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Portfolio performance is not the only criteria

A timely new study shows that investors need to look beyond portfolio performance and pay equal attention to investment managers and the strategies they adopt.

David Gallagher's article detailing the results of a survey of 808 investment managers from 28 active investment management organisations provides some interesting insights as to the type of person who invests other people's money.

Cliché stereotypes as depicted in Hollywood movies suggests investment managers are young, reckless screen jockeys who are ruthless in their pursuit of obtaining their numbers.

The reality is far more mundane. According to the survey, investment managers are indeed young but they are also highly educated with either an Honours or Masters degree. More than 20% of all managers have a graduate diploma from the Securities Institute and this is the most widely held industry qualification.

What is worrying is the brief length of time particular managers stay with any one organisation. The survey shows that there is considerable turnover of managers and this is because of either poor performance (and they are asked to leave) or excellent performance (in which case they are head-hunted).

Either way, the effect on the organization is that investors may view the coming and going of managers negatively.

The survey doesn't hold many surprises in terms of what motivates investment managers. The investment strategies adopted are well-recognised and accepted in terms of portfolio management of equities and bonds.

The survey, however, does raise a number of important points in the current investment climate. In a boom market such as we have had for much of the 1990s investors are far more accepting of investment management companies if the end result is better profits.

The sales pitch to prospective investors in a boom market is simple. Charts and graphs are trotted out showing how successful the firm's investment strategies have been in producing profits.

Investor relations are relegated to an after-thought activity that may involve an occasional newsletter trumpeting the success of particular strategies in specific sectors. The message is don't worry we will make you profits.

But what happens when the economy goes into recession, the stock market starts heading south and making profits from equities or bonds becomes far more difficult? How long can an investment management firm rely on its past performance to attract new investors?

What the survey doesn't address but is implicit in the findings is that investment managers themselves are a valuable asset but it also shows that this asset can't exist without an organisation and a team.

Yet how many firms actively promote themselves as quiet achievers with experienced managers operating with a dedicated and loyal staff? It is called brand building.

It becomes very difficult to build an investment company brand if the industry and the investing public are constantly reminded that one of the main criteria of success is the particular company's position on the quarterly 'pop' charts.

Making money in a boom market is relatively easy but it doesn't build a company's brand. Investors, especially in bull markets or a recession, want the security and knowledge that they are investing their money with a company that is steady and stable in both good and bad times, and not necessarily a slave to investment fashion.

The competition for the investment dollar is fierce and will get tougher. The survey as outlined in David Gallagher's article is a valuable first step in looking beyond portfolio performance and to the managers, their characteristics and strategies.

It may also be a first step in creating investment company brands that have inherent long-term value rather than relying on short-term performance criteria. While there are certainly investment management firms that attempt to achieve this, the investment industry as a whole is all too often slated for its short-term objectives.

John Arbouw
Editor

Price as a clue: Are cheap stocks better?

Richard B. Boebel
Roger Nicholl
October 2001

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Price as a clue: Are cheap stocks better?

Abstract

Our study tests whether low-priced stocks earn greater returns than high-priced stocks in the Australian and New Zealand stock markets. Quarterly returns from 1991 to 2000 are compared using price-based portfolios formed in various ways. As the prices of stocks in low and high-price portfolios were moved further apart, the low-priced stocks returned increasingly more than the high-priced stocks. However, due to the inherent noise in stock returns, only the portfolio that included stocks with the most extreme price differences (approximately the top and bottom 1% of stock prices) recorded a statistically significant difference between low and high-price stock returns.

Introduction

One of the central ideas in finance is the efficient market hypothesis, which implies that a stock's price reflects all relevant public information. Theoretically, price equals the present value of expected cash flows and changes when new information changes either the expected cash flows or the discount rate. Numbers such as the stock price level or volume traded, which are easily changed by a divisor should not be relevant. A stock's price reflects both the firm value and the number of outstanding shares; the number of pieces (shares) the firm is made up of should not affect the firm's total value just the value of each piece. However, academics have documented a number of anomalies where the manner in which cash flows are split up affects returns.

One anomaly is the small firm effect, where firms that have small market capitalisations earn greater returns than those with large market capitalisations. There is a high positive correlation between low (high) firm value and low (high) stock price. Thus, one possible explanation for the small firm effect is that stock price is a factor driving the difference in returns, i.e., low-priced stocks earn greater returns than high-priced stocks. A second anomaly is mean reversion, when shares that performed well (poorly) recently perform poorly (better) now. Firms that have performed poorly (well) recently tend to have lower (higher) share prices due to this poor performance, i.e. poor performance occurs whenever share price declines. Thus, when one looks at firms that have performed poorly, the majority of these will have low-priced stock shares. Therefore, low-priced stocks may engender higher future returns.

Our study tests if low-priced stocks earn greater returns than high-priced stocks using stocks from New Zealand and Australian markets from 1991 to 2000. The study uses trading filters to eliminate problems associated with thin trading in the Australian and New Zealand markets. We use portfolios of high and low priced stocks formed quarterly to test if low priced stocks out perform high priced stocks.

Literature Review

Researchers have examined the role that price plays in returns since as far back as 1936. The earlier research on the subject was primarily concerned with ways to make money trading on share price, by looking at the levels of price fluctuation of stocks in different price groups. Later papers on the subject looked at the topic in an efficient markets framework. These studies included examinations of the relationship between beta and price level and whether low-priced stocks earned returns greater than would be predicted by their beta estimate.

Among the earliest research was the work of Fritzeimer (1936). He examined yearly stock returns from 1926 to 1935 for New York Stock Exchange (NYSE) stocks in the industrial sector with lower Moody's ratings (from Ba to Ca) that indicated speculative investments were used. He concluded that low-priced stocks fluctuated more than high-priced stocks. He also found that low-priced stocks earned greater returns in a bull market (1927 and 1928), and in the 1929 crash, as their prices did not fall in proportion to their previous gains. Thus, low-priced stocks appeared to outperform high-priced stocks.

Latané (1954) looked at the relationship between price changes and past price, earnings and dividends, and future earnings and dividends, using yearly returns on NYSE stocks from 1948 to 1951. The 25 biggest gainers and 25 biggest losers were found for each of the four years, making 100 yearly returns for each group. These stocks were placed into four price groups. Over the four years, 39 of the biggest gainers and 36 of the biggest losers were in the lowest price group (below \$10), versus an expected 25. Latané concluded that low-priced stocks are more likely than high-priced stocks to exhibit major price movements.

Papers published after the formulation of the Capital Asset Pricing Model (CAPM) took beta risk into account when comparing returns between low and high-priced stocks. Under the CAPM, a stock's returns should be a function of the stock's risk (beta), as measured by the variability of the stock in relation to the variability of the market. Price should have no informational characteristics that would help to predict stock returns.

Blume and Husic (1973) looked at the relationship between share price, beta and returns, and examined whether price could predict beta and returns. They used monthly stock return data from the Centre for Research into Security Prices (CRSP) from 1932 to 1971. Monthly portfolios were formed based on quintiles of beta and price, which yielded 25 portfolios based on every combination.

Blume and Husic found some evidence that returns decreased as stock price increased. However, the relationship seemed to be true only in part of their sample, from January 1932 to August 1943. They also found that beta appears to change over time as a function of price. According to their findings, the reason low-priced stocks appear to earn greater beta-adjusted returns than high-priced stocks is because, historically, estimated beta underestimates the true beta of low-priced stocks. They found that beta changes as a function of price and that a low price points to a stock's beta rising in the future.

Bachrach and Galai (1979) examined the return and risk, measured by beta, of low and high-priced stocks for all NYSE stocks from January 1926 to June 1968. They found that stocks priced below US\$10 had significantly higher betas than those priced above US\$10. In general, the price group below \$10 earned a higher rate of return over five year periods. However, the excess was small and subject to significant variance.

Kross (1985) examined the results of previous research that found stock returns are related to a firm's market capitalization (the small firm effect) and earnings yield. His study examined the role of share price (which is a factor in both measures) in explaining these returns, using the CRSP daily returns from June 1962 to December 1978. Kross found that low-priced stocks earned positive excess returns while high-priced stocks earned negative excess returns even when high-priced stocks had higher betas than low-priced stocks. Low market value stocks earned positive excess returns while high market value firms earned negative excess returns. Low earnings yield firms earned negative excess returns while high earning yield firms earned positive excess returns.

When he attempted to isolate the individual effects, Kross found that share price explained 76% of the excess returns attributed to market capitalisation and 79% of the

excess returns attributed to earnings yield. He felt this showed that share price drives the relationship between market capitalisation and returns, and earnings yield and returns.

Bhardwaj and Brooks (1992) looked at the January anomaly, where small firm stocks earn excess returns in the month of January. They found that the stock price explained these returns better than market capitalization. Bhardwaj and Brooks examined CRSP daily returns from 1967 to 1986. Stocks were formed into 25 cross-classified portfolios by dividing market capitalisation into quintiles and dividing each market capitalisation group into five pre-determined price groups. Lower priced stocks earned significantly higher returns than higher priced stocks within each quintile. This indicated that a stock's price was related to its returns, while a firm's size made no difference.

Previous studies into the relationship between price and returns have uncovered several important points of relevance to our own study. They have documented that low-priced US stocks tend to earn greater returns than high-priced US stocks and also that the prices of low-priced shares are more variable than the prices of high-priced shares. We could not find any studies that examined this from an Australasian perspective.

Data and Methodology

Our study examines New Zealand and Australian stocks from the period January 1991 to June 2000. Investors often consider the two countries as one investment area, and combining the stock data increases the number of available observations. The Australian data are from the Securities Industry Research Centre of Asia-Pacific (SIRCA), and contain over 2.1 million daily observations. The New Zealand data are from the New Zealand Stock Exchange (NZSE), and contain over 370,000 daily observations.

This study uses the last trading price in all calculations. This is the last price on a day that a share of stock is traded at on an exchange. The last price gives a more realistic price for an investor's trades, otherwise one must assume an investor trades at either the highest or lowest price with the implications given by each. By using the day's last trading price, the investor is assumed to trade somewhere in between.

Table 3.1 contains summary statistics for Australian and New Zealand stocks over the study's nine and a half years. The column labelled 'N' contains the number of recorded last prices on each exchange. This column shows that the Australian exchange is much larger than the New Zealand exchange. The disparity in sizes has risen from 8.7 times in 1991 to 9.4 times in the first six months of 2000.

Every year prior to 1996, the New Zealand mean price is greater than the corresponding Australian mean price. This changes in 1996. The switch coincides with increased Australian maximum prices, which are also the cause of the large increase in standard deviation. This can be clearly seen from 1995 to 1996 when the maximum Australian price increases from \$58.05 to \$899. The mean increases by nearly \$1.00 along with an eight-fold increase in the standard deviation.

Table 3.1: Australian and New Zealand stock price summary statistics

Year	Country	N	Mean	Median	Std. Dev.	Min.	Max.
1991	Australia	103873	\$1.59	\$0.61	\$3.06	\$0.005	\$53.00
	New Zealand	11977	\$1.72	\$1.02	\$2.00	\$0.005	\$14.35
1992	Australia	114946	\$1.67	\$0.69	\$3.05	\$0.005	\$115.00
	New Zealand	17461	\$2.30	\$1.50	\$2.99	\$0.005	\$26.00
1993	Australia	155180	\$1.70	\$0.70	\$3.06	\$0.005	\$111.70
	New Zealand	22050	\$2.75	\$1.55	\$4.02	\$0.015	\$45.00
1994	Australia	178769	\$1.77	\$0.85	\$3.00	\$0.005	\$63.00
	New Zealand	25027	\$2.58	\$1.50	\$3.72	\$0.005	\$42.50
1995	Australia	172366	\$1.64	\$0.75	\$2.95	\$0.005	\$58.05
	New Zealand	24638	\$2.25	\$1.32	\$3.08	\$0.003	\$30.00
1996	Australia	200282	\$2.56	\$0.75	\$23.53	\$0.005	\$899.00
	New Zealand	24720	\$2.46	\$1.52	\$3.06	\$0.004	\$29.50
1997	Australia	206423	\$3.19	\$0.80	\$33.81	\$0.004	\$1115.00
	New Zealand	25840	\$2.54	\$1.58	\$3.17	\$0.029	\$31.25
1998	Australia	190697	\$3.75	\$0.76	\$49.77	\$0.002	\$1650.00
	New Zealand	24345	\$2.09	\$1.28	\$2.40	\$0.004	\$20.90
1999	Australia	210290	\$4.18	\$0.70	\$61.88	\$0.002	\$2100.00
	New Zealand	26039	\$2.26	\$1.36	\$2.49	\$0.006	\$19.00
2000 ¹	Australia	122594	\$2.38	\$0.63	\$11.22	\$0.006	\$375.80
	New Zealand	13097	\$2.12	\$1.33	\$2.27	\$0.035	\$14.01

Median prices are not affected by high maximum prices and thus offer a better comparison between the two price levels. All of Australia's median prices are under \$1, while this is only the case in New Zealand in 1991. All of New Zealand's median prices are under \$1.60.

The differences in mean and median show that Australia has a much wider range of stock prices than New Zealand. The majority of Australian stocks trade under \$1, but there are also a few very high-priced stocks. New Zealand stocks do not have such extreme differences in prices. Their medians are higher, but the maximum prices are much lower.

Transurban Group, the Australian stock with the maximum price from 1996 to 2000, was removed and summary statistics recalculated. The recalculated Australian mean over the entire period fell from \$2.44 to \$1.84. The standard deviation was still higher than in New Zealand, but fell to \$5.06 in 2000 from \$11.22. There are other stocks in Australia that trade over \$100, but the removal of the highest significantly decreased both the mean and standard deviation.

We encounter two problems that require filtering our data. The first is thin trading (the infrequent trading of some stocks), and the second is stocks that stop trading.

Many stocks on the New Zealand and Australian exchanges trade infrequently. Thus, it may not be possible to replicate the returns of a simulated portfolio where these stocks are present. The portfolio may call for a stock to be sold at the end of a month that does not actually trade on that day. There is no rule in financial theory to find the percentage of days a stock must trade to be included in a study. For our study, there must be enough stocks to form portfolios by price with stocks that trade frequently enough to

¹ To the 30th June 2000.

consistently obtain returns.

Table 3.2 presents statistics for the frequency of trading on the Australian and New Zealand exchanges. These statistics are by calendar quarter, so the Australian mean of 62.8% indicates that an average Australian stock traded on 62.8% of the days it was listed in a quarter. On both exchanges about 10% of stocks trade every day, while 25% of stocks trade nearly every day. Below this level the trading percentages of both exchanges fall, with the percentages falling faster in Australia.

Table 3.2: Quarterly trading statistics

	Australia	New Zealand
Quarterly Obs.	43357	4965
Mean	62.8%	70.8%
Median	72.6%	85.5%
Mode	100.0%	100.0%
Standard Deviation	34.9%	32.6%
Interquartile Range	65.8%	50.9%
90%	100.0%	100.0%
75% Q3	96.9%	98.4%
50% Median	72.6%	85.5%
25% Q1	31.1%	47.5%
10%	8.3%	14.5%

Table 3.2 shows that, with a trading percentage of 90%, over 25% of listed stocks will be available for the study. This is thought to be a good compromise between a trading frequency that allows portfolio replication and the retention of a large number of stocks.

Even with a filter like this, a number of stocks cease to trade. This causes problems for estimating portfolio returns, as these stocks appear to earn investors a -100% returns, as those stocks value decreases to zero in the data set. However, this is not necessarily an accurate estimate of the true return. Some firms' ownership may have changed due to a takeover, in which case investors generally earn positive returns.

Of the 16,670 stock quarters (37 quarters with an average of 451 stocks) selected, 78 stocks (0.47%) are dropped due to trading stoppages: 27 (1.17%) from New Zealand, and 51 (0.36%) from Australia. Information is not available to determine the reasons for the trading stoppages and announcement data covers only the Australian stock market from 1992 to 2000. However, as the number of trading stoppages is small this should not have a large effect on the study results.

To test if low-priced stocks earn greater returns than high-priced stocks, stocks are selected for portfolios based on their trading percentage in a previous quarter. At the end of the quarter, stocks are ranked by price or on a predetermined price level and then portfolio returns over the subsequent quarter are computed.

These portfolios are formed using information that would only be available to an investor at the time of the investment. Stocks that had a reasonable level of trading (90%

of days listed) in the previous quarter will be placed into their respective price groups at the beginning of each quarter, based on the last price from the last day of the previous quarter. With this methodology, the first quarter of 1991 (the first quarter in the data set) is only used to select portfolios for the second quarter of 1991.

The one exception to the investors' lack of foresight relates to stocks that stop trading. To ensure that stocks removed from the study for this reason really have stopped trading, and not just failed to trade on the last day of a quarter, a stock is retained if it trades within a trading week (five trading days) of the end of the quarter. As the stocks selected for the portfolios traded on 90% of days in the previous quarter, it is unlikely that any of these stocks would not trade for a week if they remained active. This helps minimise the number of stocks dropped from the study; less than 1.2% of New Zealand stocks and 0.36% of Australian stocks.

At the beginning of each quarter stocks are ranked from highest to lowest by price and formed into 10 equally sized portfolios. Over the quarter, the return of each portfolio is calculated as the average return of its constituent stocks. Three different tables recording the return statistics for these 10 portfolios over various time intervals are constructed. The time intervals are all 37 quarters in the data set, one year and one quarter.

An example of the implementation of this strategy is as follows: at the beginning of each quarter, an investor finds which stocks traded on 90% of the trading days in the previous quarter. If the investor wants to choose portfolios, for example, consisting of roughly 1% of all stocks, they would look at stocks that meet the 90% trading filter and have a price under \$0.025 cents or over \$20. The investor would sell the high-priced stock portfolio short and invest the proceeds in the low-priced portfolio. Thus an investor's profit from this strategy would be the differences in the returns of the two portfolios. This difference in returns is tested in two ways. Firstly with a t-statistic, which assumes that the returns are normally distributed and secondly, with a non-parametric Wilcoxin signed-rank test.

The first method for forming portfolios is with an equal percentage of all stocks in each portfolio. Thus stocks are ranked by price, and formed into five, 10 or 20 portfolios, which include 20%, 10% and 5% of all stocks respectively. With this method, relative prices rather than arbitrary price bounds determine which stocks are low or high-priced. Therefore, a portfolio's price level can vary from quarter to quarter. A second method forms portfolios based on pre-specified prices. Portfolios are formed composing approximately 1%, 2.5%, 5% and 10% of all stocks. The 10% low-priced portfolio consists of stocks priced below \$0.40, while the high-priced portfolio consists of stocks priced over \$3. The 1% portfolio consists entirely of stocks priced either below \$0.025 or above \$20.

In summary, this study examines the differences in returns between the lowest and highest-priced stocks in Australia and New Zealand. Stocks are filtered to remove thinly traded stocks and stocks that cease trading in a quarter. The returns on the remaining stocks are calculated taking into account adjustments that give returns to investors, such

as dividends and stocks splits. The relationship between price and return is examined in various ways. These include comparing returns of price-based portfolios, statistically testing the difference between portfolio returns, and examining the occurrence of big gains and losses by stocks at different price levels.

Results

This section examines returns in three ways. Firstly, by looking at the quarterly returns of decile price portfolios over various periods. Secondly, by examining the differences between the return of the lowest-price and highest-price portfolios. Thirdly, by examining both the occurrence of extreme returns in different price groups and the effect of removing stocks with extreme prices.

Table 4.1 compares the prices, returns, standard deviations and maximum and minimum returns of 37 quarters of decile portfolios formed on price from the second quarter 1991 to the second quarter 2000.

Table 4.1: Decile portfolios from 2nd quarter 1991 to 2nd quarter 2000

Portfolio	Avg. Num. Stocks	Avg. Med. Price	Avg. Return	Avg. Std. Dev.	Max. Return	Min. Return
1	43.4	\$0.12	5.3%	41.1%	682.6%	-83.0%
2	44.1	\$0.29	4.8%	38.3%	1002.9%	-95.0%
3	44.2	\$0.54	1.7%	28.1%	441.2%	-83.2%
4	43.9	\$0.80	1.4%	24.1%	383.3%	-81.1%
5	43.9	\$1.13	2.4%	21.1%	295.8%	-97.1%
6	44.5	\$1.57	4.4%	20.5%	303.9%	-79.5%
7	44.1	\$2.16	4.0%	20.6%	344.5%	-77.0%
8	44.2	\$2.93	3.0%	15.3%	125.0%	-93.1%
9	43.9	\$4.32	3.8%	16.6%	233.3%	-86.9%
10	43.6	\$8.11	3.6%	14.1%	107.0%	-82.9%

At the start of each quarter, stocks are ranked by price and then split into 10 portfolios with portfolio 1 containing the lowest priced stocks and 10 the highest. The averages refer to the average of 37 different quarters. However, maximum and minimum returns measure the highest and lowest individual stock return recorded in any quarter.

The average median price for portfolio 1 (\$0.12) is \$8 lower than the highest price portfolio, portfolio 10 (\$8.11). With these differences in price came differences in return. Portfolio 1 had the highest average quarterly return of 5.3%, 1.7% greater than portfolio 10. However, the lowest average return was portfolio 3 (1.7%) not 10. The lowest-priced portfolio earned a greater return than the highest-priced portfolio, but there is not a smooth trend of returns decreasing as portfolio price increases.

Portfolio 1 also has a higher average standard deviation than any other portfolio while portfolio 10 has the lowest. As opposed to returns, standard deviation decreases as portfolio price increases. This higher average standard deviation indicates that the lower-priced portfolios have more risk than the higher-priced portfolios.

What can be seen from Table 4.1 is that, on average over 37 quarters, lower-priced stocks earn greater returns than higher-priced stocks. However, these returns

were accompanied by much higher return standard deviations, particularly when comparing the lowest and highest price portfolios.

Table 4.2 gives the same statistics as Table 4.1 except limited to 1996's four quarters. Comparing Tables 4.1 and 4.2 will give an indication of the stability of the relationship between price and return, and price and risk, in a single year as opposed to all 37 quarters.

Table 4.2: Decile portfolios in 1996

Portfolio	Avg. Num. Stocks	Avg. Med. Price	Avg. Return	Avg. Std. Dev.	Max. Return	Min. Return
1	48.5	\$0.11	10.3%	38.5%	216.1%	-53.3%
2	49.75	\$0.26	16.0%	58.8%	1003%	-43.6%
3	49.25	\$0.48	5.0%	28.9%	164.1%	-73.1%
4	49.25	\$0.73	6.1%	22.1%	94.6%	-76.0%
5	49.0	\$1.04	3.2%	18.7%	153.5%	-52.4%
6	50.0	\$1.47	8.0%	24.1%	184.5%	-65.6%
7	49.25	\$2.11	8.3%	20.6%	177.8%	-48.1%
8	49.5	\$2.84	4.2%	14.2%	66.7%	-25.0%
9	49.0	\$4.10	6.4%	15.0%	114.3%	-33.3%
10	49.0	\$7.51	4.3%	10.9%	49.6%	-23.8%

In 1996, portfolio 2, closely followed by 1 had the highest average returns. However, portfolio 1's average return was 6% greater than portfolio 10's in 1996, compared to 1.7% in all 37 quarters. In 1996 the portfolios had higher average standard deviations. The large standard deviation for portfolio 2 is largely due to one stock's 1003% return, the highest return in the entire data set. While the relationship between standard deviation and price is not as smooth in 1996, there is still clearly a higher standard deviation in lower priced-portfolios. The two tables appear to show that there is a stronger link between price and risk than price and returns.

Table 4.3 gives the statistics for 10 portfolios in just one quarter, the first quarter of 1996. In this table the number of stocks, return and standard deviation are no longer averages. Portfolio 1 does not record the highest return in the first quarter of 1996; it is only the fifth best performer while portfolio 2 is the best performer. While there is clearly not a smooth decrease in returns with an increase in price, the lowest-priced portfolios still generally return more than the highest-priced portfolios.

Table 4.3: Decile portfolios for 1st Quarter 1996

Portfolio	Num. Stocks	Med. Price	Return	Std. Dev.	Max. Return	Min. Return
1	38	\$0.16	7.7%	37.5%	140.0%	-53.3%
2	39	\$0.37	20.4%	32.6%	124.0%	-32.7%
3	39	\$0.64	7.0%	29.4%	100.0%	-64.5%
4	39	\$0.90	11.7%	25.5%	94.6%	-23.9%
5	39	\$1.29	2.7%	17.1%	37.4%	-47.8%
6	39	\$1.75	12.4%	22.5%	96.7%	-14.7%
7	39	\$2.32	9.4%	15.9%	53.5%	-15.4%
8	39	\$3.08	2.7%	15.7%	66.7%	-14.3%
9	39	\$4.04	7.2%	10.1%	39.1%	-5.9%
10	39	\$7.49	3.2%	7.6%	20.9%	-12.4%

However, the relationship between standard deviation and price remains this quarter. Portfolio 1 (37.5%) has the highest standard deviation, while 10 (7.6%) has the lowest.

Table 4.4 reports the average quarterly return difference between the lowest and highest price portfolios when different numbers of price ranked portfolios are formed (5, 10, 20). This represents the return from a strategy of shorting the high-priced portfolio and using the proceeds to purchase the low-priced portfolio. L and H represent the low and high-priced portfolios respectively. Notice that all the numbers on the 10 price ranked portfolio match those in Table 4.1 until the standard deviation, which is the standard deviation of the 37 quarterly return differences, not the average quarterly deviation of all stocks in the portfolios in the earlier tables. The maximum and minimum returns are from the 37 quarterly portfolio returns of the investment strategy, not individual stocks.

Table 4.4: Quarterly return differences by relative price

Num. Ports.	Avg. Num. Stks L	Avg. Num. Stks H	Avg. Med. L Price	Avg. Med. H Price	Avg. Ret. Diff.	Std. Dev.	T-stat.	Signed Rnked	Max. Diff.	Min. Diff.
5	87.5	87.6	\$0.20	\$5.57	1.3%	19.2%	0.41	-9.5	79.4%	-38.0%
10	43.4	43.6	\$0.12	\$8.11	1.6%	26.2%	0.38	-33.5	130.4%	-44.6%
20	21.5	21.6	\$0.07	\$11.51	4.0%	34.7%	0.71	-9.5	178.3%	-52.7%

The average return difference shows that, as a greater number of portfolios are formed and the difference between the prices of the low-priced and high-priced portfolios grows, the return difference increases. The return of 4.0% with 20 portfolios is three times greater than the 1.3% return of only five portfolios, and more than double the 1.6% return of 10 portfolios. However, as the price difference increases together with price portfolios, the investment strategy grows more volatile with a standard deviation of 19.2% with five portfolios, as opposed to 34.7% with 20. But the return is increasing at a rate greater than the standard deviation as demonstrated by the increasing t-statistic.

None of the investment strategies earned returns significantly different from zero. The largest t-statistic is 0.71, implying that the returns are not significantly different from zero. The signed rank statistics also give little cause to favour this as a portfolio strategy. However, all of the investment strategies in Table 4.4 recorded positive returns, with

these returns increasing as price differences increase, giving some hope for further investigation.

Table 4.5 shows the difference in returns for high and low-priced portfolios when portfolios are formed based on predetermined prices and not a relative ranking as in Table 4.4. The first portfolio contains high-priced stocks over \$3, and low-priced ones under \$0.40. The last portfolio contains stocks priced over \$20 and under \$0.025 (about 1% of all stocks). The investment strategy is the same, short selling the high-priced portfolio and buying the low-priced portfolio with the proceeds.

Table 4.5: Quarterly return differences by price level

Price	Avg. Num. Stks L	Avg. Num. Stks H	Avg. Median L Price	Avg. Median H Price	Avg. Ret. Diff.	Avg. Std. Dev.	T-stat.	Signed Ranked	Max. Diff.	Min. Diff.
\$0.40< >\$3	98.7	103.7	\$0.19	\$4.99	0.1%	17.5%	0.05	-31.5	67.9%	-36.0%
\$0.15< >\$5	38.1	52.2	\$0.09	\$7.42	2.6%	26.8%	0.60	4.5	130.5%	-41.4%
\$0.10< >\$7.50	22.8	26.4	\$0.06	\$10.47	5.1%	32.7%	0.94	-3.5	146.0%	-51.9%
\$0.025< >\$20	3.6	5.1	\$0.02	\$40.17	23.2%	77.3%	1.34	19	269.4%	-60.8%

As the difference in price between the low and high-priced portfolios widens, the return difference increases dramatically. Investing in the least extreme portfolio earns only an average 0.1% per quarter compared to 23.2% for the most extreme portfolio (under \$0.025 and over \$20). However, the most extreme portfolio had only 20 quarters of recorded returns due to only having 20 quarters where there were both low and high-priced stocks that satisfied the price and thin trading criteria and that traded throughout the quarter.

As seen earlier, the larger the difference in price, the larger the standard deviation. The least extreme portfolio quarterly return deviation is 17.5% compared with the most extreme portfolio's 77.3%. However, once again, the return is increasing at a faster rate than the standard deviation. The extreme portfolio has a statistically significant return, 23.3% (t=1.34) at the 5% confidence level, one-tailed. The Wilcoxin signed-rank statistic shows that the ranks of the positive returns in this portfolio are much greater than the expectation. There is also a clear distinction between the least extreme portfolio's signed rank (-31.5) and the extreme portfolio's signed rank (19).

Earlier tables show that there is a general trend for low-priced stocks to earn greater returns than high-priced stocks. Table 4.5 shows that, if one looks at the extremes of price differences, then low-priced stocks earn a statistically significant premium over high-priced stocks.

Table 4.6 reports the top 10 quarterly gains and losses classified by price group using 10 price-group portfolios. If returns are distributed irrespective of price, then one stock from each portfolio would be expected among the top 10 in both gains and losses. Indeed that seems to be the case with losses; portfolio 5 had three stocks in the 10 biggest

quarterly losses, with no other group recording more than one.

Table 4.6: Ten largest quarterly losses and gains

Company	Quarter	Decile	Open Price	Closing Price	Return
Fortex Group (NZ)	1 st Q 1994	5	\$1.03	\$0.03	-97.1%
DJL Limited (A)	4 th Q 1995	2	\$0.30	\$0.015	-95%
EISA Limited (A)	2 nd Q 2000	8	\$2.91	\$0.20	-93.1%
BMCmedia.com (A)	2 nd Q 2000	9	\$5.206	\$0.68	-86.9%
Ezenet Limited (A)	2 nd Q 2000	5	\$0.64	\$0.105	-83.6%
Hillcrest Resources (A)	2 nd Q 2000	3	\$0.34	\$0.057	-83.2%
Australian United Gold (A)	2 nd Q 2000	1	\$0.135	\$0.023	-83.0%
Pilbara Mines (A)	2 nd Q 2000	10	\$7.07	\$1.209	-82.9%
Gippsland Resources Australia (A)	2 nd Q 2000	5	\$0.80	\$0.14	-82.5%
Jumbomall.com (A)	2 nd Q 2000	4	\$0.38	\$0.072	-81.1%
Kalrez Energy (A)	1 st Q 2000	1	\$0.016	\$0.08	400.0%
Federation Resources (A)	4 th Q 1993	1	\$0.07	\$0.36	414.3%
Davnet Limited (A)	4 th Q 1999	3	\$0.425	\$2.30	441.2%
Probe Resources (A)	1 st Q 2000	1	\$0.007	\$0.039	457.1%
Cluff Resources Pacific (A)	4 th Q 1999	1	\$0.012	\$0.067	458.3%
Jubilee Gold Mines (A)	3 rd Q 1997	2	\$0.165	\$1.08	554.5%
AMX Resources (A)	1 st Q 2000	1	\$0.14	\$0.95	578.6%
NEX (A)	1 st Q 2000	1	\$0.042	\$0.325	673.8%
International Mineral Resources (A)	2 nd Q 1999	1	\$0.023	\$0.18	682.6%
Helix Resources (A)	4 th Q 1996	2	\$0.34	\$3.75	1002.9%

However, of the top 10 biggest gains, seven were in the lowest-priced portfolio, two were in portfolio 2 and one was in portfolio 3. Clearly, the lowest-priced portfolios earned a more than expected share of the top 10 gains, while not earning a more than expected number of the top 10 losses.

Table 4.7 extends this examination of large gains and losses by reporting the number of stocks in the top 100 gains and losses in each of 10 price groups together with the percentage of stocks that returned above 50% or below -50% in each portfolio. The difference in the number and percentage of gains and losses is also reported. In the top 100 gainers and losers, 10 stocks from each portfolio is the expectation and, of the total returns over 50% or under -50%, 10% of all stocks in each portfolio is the expectation.

The lowest-priced portfolio has a higher number of stocks in both the top 100 gainers and losers than is expected if stock price returns are randomly distributed irrespective of price. Of the top 100 biggest gainers, 41 are low-priced stocks against an expectation of 10, whereas none are in the highest-priced portfolio. The top 100 losses also show a pattern: 20 are in portfolio 1, while four are in portfolio 10. Both the number of big gains and losses decreases as the price level increases. This indicates that low-priced stocks are more prone than high-priced stocks to large swings in price levels. The difference column shows the difference between the numbers of stocks in a portfolio that record gains versus losses. The lowest price portfolio has a large positive difference, 21, recording more big gains than losses, while portfolio 10 has a negative difference.

Table 4.7: Largest gains and losses by decile portfolio

Portfolio	Top 100 Gains	Top 100 Loses	Diff.	Rets. Over 50%	Rets. Under -50%	Diff.
1	41	20	21	26.2%	24.4%	1.8%
2	24	13	11	21.3%	17.5%	3.8%
3	9	14	-5	13.1%	12.2%	0.9%
4	9	17	-8	8.8%	15.0%	-6.2%
5	4	15	-11	6.4%	9.6%	-3.2%
6	6	8	-2	7.4%	7.6%	-0.2%
7	3	3	0	6.4%	5.1%	1.3%
8	0	3	-3	3.5%	3.6%	-0.1%
9	4	3	1	4.5%	3.0%	1.5%
10	0	4	-4	2.4%	2.0%	0.4%
Total	100	100	0	100%	100%	0.0%

Looking at the percentage of stocks either gaining more than 50% or losing more than -50% things appear more even. In portfolio 1 about the same percentage of each occur, around 2.5 times more than expected (10%). Clearly the lower-priced stocks have the most extreme price movements. The highest-price group has a smaller proportion of stocks with such large price movements, making up only 2.4% of the gains and 2% of the losses, about a quarter of the expected percentage.

Conclusion

Overall, our results show that low-priced Australian and New Zealand stocks tend to earn more than high-priced stocks from April 1991 through June 2000. However, the relationship between price and return was not constant in every quarter. What was constant was a relationship between portfolio price formation and return: as portfolio price differences became more extreme return differences increased. However, a statistically significant result was found in only the most extreme portfolio. Taken as a whole, our results indicate that there is a relationship between price and returns. However, returns are extremely noisy and, given trading costs, the relationship may not be a profit opportunity.

Low-priced stock portfolios also appear to have much higher standard deviations than high-priced stock portfolios, indicating that much of the return difference may be due to increased risk. This is an area of possible future research. Additional research should also examine the effect of transaction costs on these returns.

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