Emerging stock markets in Europe, the Middle East, and Asia

Man Ching Ko

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EMERGING STOCK MARKETS IN EUROPE,  
THE MIDDLE EAST AND ASIA

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Business Administration

by
Man Ching Ko
September 2005
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THE MIDDLE EAST AND ASIA

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ABSTRACT

Due to the globalization of economies, increasing numbers of investors in developed countries have enhanced their returns and diversified their risks by investing in emerging markets. The purpose of this research is to evaluate the performance of the emerging stock markets in three regions - Europe, the Middle East, and Asia. Background information and current developments in each country will be discussed. The performance of these markets will be compared with the performance of the United States stock market by using recent data from the years 2002 to 2004.

Portfolios have been constructed and compared to determine which region provides the best diversification for United States investors. Five samples of emerging stock markets in each region have been chosen. The market conditions, the return and risk performances for each stock market, and international portfolio management have been analyzed. The selected stock exchanges indexes are compared to the S & P 500.

In this study, most of the emerging stock markets provided a higher return than the S & P 500, but the emerging stock markets have a higher volatility than the
US stock market. The Sharpe ratio is also computed to analyze the risk-adjusted return. All emerging stock markets, except for China, have a high Sharpe ratio, showing that the returns of the emerging stock market are sufficient to compensate for the risks that the investors are facing. In the comparison of the 5-composite and aggressive portfolios, the Middle East has the highest returns and Sharpe ratios, whereas Asia has the lowest returns and lowest Sharpe ratios.
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CHAPTER ONE
INTRODUCTION

According to the International Finance Corporation of the World Bank, an emerging market can be defined as an economy with low-to-middle per capita income. Such countries constitute approximately 84% of the global population, representing about 20% of the world's GNP. Under this definition, there are 120 nations with an emerging market, with a total GDP of $3.5 trillion and a population of about 4.3 billion.

Emerging market economies are characterized as transitional, which means that they are transiting themselves from a closed market to an open market economy, and in the meantime, they are also building the accountability of their system. An example of this includes China and some East Bloc countries. As an emerging market, a country launches an economic reform in order to become a stronger nation and improves its economic performance, as well as its transparency and efficiency in the capital market. An emerging market economy will also reform its exchange rate system because
a stable local currency builds foreign investors' confidence in the economy and reduces the capital outflow from local investors.

One of the key traits of an emerging market economy is an increase in both local and foreign investments. This growth often indicates that the country has begun to build confidence in the local economy and the world has begun to take notice of its market. The injection of foreign currency into the local economy increases the volume that enters the emerging stock market and in the long run, the capital flows into the infrastructure. For foreign investors, an emerging market offers an opportunity for business expansion or investment diversification. For the emerging economy, employment rates rise, labor and managerial skills are improved, and technology and knowledge are updated. Eventually, the overall production levels as well as the gross domestic product (GDP) will rise and the gap between the developed and emerging markets is narrowed.

Emerging Stock Markets

Basically, the term "emerging stock markets" usually implies stock markets based in "emerging" or "developing"
economies; they are in transition, and they are increasing in size, activity, or level of sophistication. However, emerging stock markets vary tremendously in size, liquidity, and sophistication. Many emerging markets have come into existence only in the last few years; some of them are growing rapidly and some of them are transiting from communism. Others have existed for decades and form the major parts of current emerging market portfolios. In short, this group of markets is so diverse that no generalities apply. The term is defined by a number of characteristics, and in general, the IFC classifies a stock market as "emerging" if it meets at least one of two general criteria: (i) it is located in a low or middle-income economy as defined by the World Bank and (ii) its investable market capitalization is low relative to its most recent GDP figures. Until 1995, the IFC's definition of an emerging stock market was based entirely on the World Bank's classification of low and middle-income economies. If a country's GNP per capita did not reach the World Bank's upper-income country threshold in at least one of the last three years, the stock market was defined as "emerging". An investable market capitalization means a market capitalization after removing inaccessible holdings
that are not truly "in the market" for foreign investors. For example, these non-investable holdings include large block holdings and parts of companies that possess foreign investment limits.

Another key characteristic of emerging stock markets is that they often retain or introduce investment restrictions such as foreign investment limits, control of capital inflow or outflow, government influence on listed companies, and legal constraints on market activity. There are also many qualitative features that are noticeable for emerging stock markets. Areas such as operational efficiency of stock markets, quality of market regulation, supervision and enforcement, corporate governance practices, minority shareholder rights, transparency, and level of accounting standards are important characteristics. Foreign investors should consider these qualitative factors and their risk tolerance when investing in any specific emerging market.

Purpose and Scope

Purpose

• The purpose of this research is to evaluate the
performance of the emerging stock markets in different regions.

- Three regions chosen as our testing targets are Europe, the Middle East, and Asia.
- Background information and current developments of each country will be discussed.
- The returns and risks of each market will be calculated to analyze their performance.
- The performance of these markets will be compared with the performance of the United States stock market by using recent data from the years 2002 to 2004.
- A series of portfolios with different weights will be created and compared to determine which region provides the best diversification for the United States investors.

Scope

In the project, five samples of emerging stock markets in each region are used. They are:

Europe - Prague Stock Exchange (Czech Republic)
Budapest Stock Exchange (Hungary)
Warsaw Stock Exchange (Poland)
Ljubljana Stock Exchange (Slovenia)  
Bratislave Stock Exchange (Slovakia)

The Middle-East - Bahrain Stock Exchange (Bahrain)

Cairo & Alexandria Stock Exchange (Egypt)

Teheran Stock Exchange (Iran)

Tel Aviv Stock Exchange (Israel)

Istanbul Stock Exchange (Turkey)

Asia - Shanghai Stock Exchange (China)

Bombay Stock Exchange (India)

Jakarta Stock Exchange (Indonesia)

Kuala Lumpur Stock Exchange (Malaysia)

Stock Exchange of Thailand (Thailand)

• The return and risk for each stock market and international portfolio management with the selected market will be analyzed.

• The market condition and performance of those stock exchanges will be analyzed.
Ways to Invest in Emerging Stock Markets

The globalization of markets and the economy has increased the opportunities for international trade and investment. Emerging stock markets provide means of diversification for the United States investors. There are several ways to invest in emerging markets, and each way has a different level of risks and costs.

Mutual funds offer a great way to diversify. There are plenty of mutual funds in the market that invest in foreign corporations and countries. In order to offset the risks involved in a foreign investment, a fund manager must know the various regions very well and have a proven track record in investing in those regions that are very volatile. Basically, there are four subcategories of mutual funds for investors who want to invest in emerging markets: global, international, country-specific and emerging-market funds.

- Global funds (including the United States) are the most diverse, and they have investments in
every region of the world, including North America and the US stocks. Global funds are less risky than other international funds. However, the percentage of investment in emerging markets is very limited.

- International funds are investments from all over the world, except the United States. Depending on the region the fund represents, these investments can range from safe to really risky, depending on the regions that they are invested in. Because of liquidity issues, the exposure to emerging markets equities in an international fund may be very different from that in a dedicated emerging markets fund.

- Country-specific funds invest in only one country or region of the world. This type of investment can yield greater rewards, but the risk is also higher.

- Emerging-market funds focus only on investments in undeveloped and emerging regions of the world. These funds offer huge growth potential. However, due to the instabilities in these countries,
and sophisticated investors.

For some professional investors, there is a more direct and much riskier approach: buying shares of companies that are listed on local stock markets. It is a risky place, but there are opportunities to invest early and in the long run in an emerging economy. However, it very hard to pick stocks in a foreign country with much less undeveloped regulatory and accounting practices.

Emerging Outperformance

Between 1994 and 2001, emerging markets equities performed poorly because of successive financial crises and proved to be the most challenging asset class. Large amounts of money outflow from these countries during a period included devaluations of the Mexican peso (1994), the Thai baht (1997), the Indonesia rupiah (1997), the Russian ruble (1998), and the Argentinean peso (2002), as well as the implementation of capital controls in Malaysia (1998). However, emerging markets equities have performed surprisingly well in the past four years, outperforming international, global, US, and European indices. There are several constructive characteristics about emerging stock markets that indicate that they may be worth to putting in
investors’ portfolios.

Firstly, there are fewer pegged exchange rates. The fact that there are far fewer pegged exchange rates than in 1997 should reduce the number of wholesale crises.

Secondly, emerging markets’ volatility has fallen significantly since the late 1990s. In fact, it is not much higher than that of the S & P 500 and considerably below that of the NASDAQ. Since the end of 2001, risk-adjusted returns, as measured by two-year moving average Sharpe ratios, have begun to rise above those of international equities for the first time since 1994.

Thirdly, the crises in the developing world had a useful effect in pressuring companies to improve disclosure and overall corporate governance. Although corporate governance is not as good as in the developed world, the extraordinary growth of American Depositary Receipts has resulted in improvements.

The fourth characteristic is particularly remarkable. Although the financial productivity (as measured by Return on equity) of emerging markets equities as compared to developed market equities has been higher over the past eight consecutive quarters, the valuation discount has widened over the past three years (and is currently at
about 40%). The higher financial productivity and large valuation discount of the asset class augur well for ongoing outperformance.

There are other characteristics that are also notable. While the world economy continues to decelerate, many emerging markets are experiencing their own economic recoveries. Although these may be somewhat offset by factors like SARS in Asia, it appears that many may enjoy this phenomenon for some while before world economic activity begins to recover. Emerging markets also boast a surprising number of sophisticated companies.

Asia

Stock indices in emerging Asian markets, such as India and Indonesia, have been skyrocketing lately, but the prices may be getting too high and may scare some of the price-conscious investors. According to EmergingPortfolio.com, global emerging-market funds drew net inflows of $1.3 billion, while Asia ex-Japan funds alone attracted $1 billion. EmergingPortfolio.com said that global and international funds have put even more money into emerging markets this year than into dedicated emerging-market funds, having raised their average emerging-markets weighting to 7.5% from 6% at the
beginning of the year. Emerging markets have benefited from strong economic growth and low international interest rates. Excluding Japan, the Asian economic output is expected to expand to just over 7% this year and China's economy is growing at 8% a year, while Latin America has been growing at 5% and Europe's transition economies have a growth rate of about 6%. Alongside the high growth, many emerging markets also boast current-account and fiscal surpluses, ensuring that their currencies are well supported against the dollar. Banking and political reforms made over the past five years will help keep other countries from squandering the profits.

Europe

Years of economic decline under Soviet rule have left a bitter aftertaste for emerging economies in Europe. It is essential to restructure the economies of these transition countries where years of inefficiency in the allocation of capital are reflected in average incomes running at less than a quarter of those in Western Europe. Although there remains much to be done, there is also great opportunity. The advantages on a corporate level are obvious. Western companies will continue to develop regions, such as the Baltic countries, as low-cost
production bases in the heart of Europe.

US investors have begun to show interest in this region. On May 1 2004, ten Eastern European countries, excluding Russia, has increased the European Union's population by 20%, but boosted its GDP by only around 5%. These countries are poor and that is why they were so eager to join the EU. This could be viewed as negative from a macroeconomic standpoint, but it is positive for investors, because the economies of these developing countries still have room to grow at a faster rate than developed nations. They are starting out from a much lower base and they are helped by EU subsidies. This can be demonstrated by the price-earnings ratios of some of these markets relative to their developed neighbor. For instance, the valuation of Czech market is comparable to the valuation of Ireland, which is a clear indication of the growth potential of the region.

The performance of the local currency is another important factor when investing directly in the emerging market. The EU candidate countries are not large commodity-exporting countries; therefore, their external and fiscal positions are usually in deficit and need capital. This is natural because of their developing
status, but imbalances should be controlled.

Another current subject in the region is political weakness. Weak coalition governments seem to be always arguing and slowing down the pace of structural reform. These directly threaten the investor's benefit. Foreign institutions play an active role in the local treasury-bond markets and auctions, and the lack of a clear commitment to budgetary discipline and reform can prompt the selling of bonds and bills. This affects the demand for local currency and therefore influences the exchange rate.

Fortunately, the anticipation of full EU membership and rising levels of foreign investment have more than offset this effect. Poland, for example, is the most significant accession country, which includes half of the population of the combined ten countries, and thus attracts the most attention from investors. The cyclical attractions are clear; interest rates have been cut deeply in recent years, boosting consumer demand and economic growth. The zloty (Poland currency) has risen by 20% against the US dollar over the past 12 months, which is attributable to strong Polish growth and negative sentiment toward the US dollar. This has boosted the US
dollar return on the benchmark Polish equity index to 38% over the past 12 months.

The banking sector provides an opportunity for investment in the region as well. Western banks have expanded intrepidly and own many of the top Eastern European banks. Investors can gain exposure to the region by indirect investment in Western companies that have operations or investments in Eastern Europe. Eastern European stock markets should meet their growth potential as the region absorbs the benefit of EU accession.

Greater progress should be seen in many areas, for example, in privatization and pension-fund reform. The true financial transition for the accession countries will take place when the Frankfurt-based European Central Bank is allowed to manage their monetary policy. This may take a long time. Now, for most Eastern European countries, the adjustment in operating and regulatory environment will be challenging.

The Middle East

More investors are now looking to put money in the Middle East, and some of the markets have delivered good results in recent years. Egypt has been in the ranks of the world's top five equity markets for two consecutive
years, and the United Arab Emirates' soaring alone is enough to draw a foreign crowd to Dubai. Moreover, smaller stock markets in the region should be noted. For example, Bahrain, with 57 listed companies, has a market capitalization of about $13 billion, about 1% the size of the New York Stock Exchange. Stock gains in Bahrain may seem modest by comparison. The Dow Jones Bahrain Index was up 18% in 2004, compared with 38% in 2003 and 33% in 2002. Bahrain has a strong comparative advantage on the structural side in terms of the size of the international banking community. Bahrain also has a niche in Islamic finance and all types of finance in the region. It is backed by the Bahrain Monetary Agency, which is very serious regarding prudential regulation. Not only has foreign investment helped the economies and stocks, but local investors are also helping. "There is lots of Arab money going into the Middle East post-9/11. Combined with the oil prices, it has helped the economies, which in turn has helped and increased incomes and wealth," said John Lomax, head of equity strategy for global emerging markets at HSBC in London.

Some analysts are starting to worry that the sky-high gains cannot continue and some foreign investors will go
back to the safe harbor on Wall Street. Rising interest rates in the US have made US government bonds more attractive relative to higher-risk investments in emerging markets. Merrill Lynch Israel manager Yoram Inbar explained that billions of dollars are leaving and returning home, but the effect on Israel has been minor because of the country's special conditions. In the eyes of the international investors, Israel is losing its allure compared with the benchmark 10-year treasury bonds. But Israeli companies have a special status, mainly because of their technological superiority and their ability to adapt quickly to morphing market conditions. When analysts covering the stock of a major Israeli exporter feel the share price reflects the geopolitical situation in the Middle East rather than the company's own situation, they point investors to it as a buy opportunity.

Emerging markets certainly will be hurt as interest rates and yields on American bonds rise in the US, because investors in emerging markets will reduce their exposure when they can get risk-free returns of five percent or six percent with linkage to a dominant currency like the US dollar.
CHAPTER THREE
REVIEW OF THE LITERATURE

Foreign investors and conditions in mature markets have a much larger impact on emerging markets than has been suggested by previous work. The condition in mature markets has driven the trading of emerging markets substantially. In addition, the trading of foreigners produces a large price pressure for emerging markets. The combination of these two factors raises the possibility that foreign trading can be destabilizing in emerging markets. The experience of the mid-1990s and the 1997 Asian crisis suggest that foreign flows can lead to both rising and falling prices in emerging markets. These crises may not be avoidable in emerging markets; therefore policy makers should put more efforts towards ensuring that their markets and institutions are strong enough to be robust with regard to foreign flows and price fluctuations (Anthony Richards, 2005).

Due to the globalization of the world economy, the benefits of global diversification, the return enhancement, and risk reduction have all diminished for both developed countries and emerging markets. However, the degree of
integration within regions is much less, compared to within broad industry categories. Therefore, the performance of emerging market index portfolios is primarily driven by region effects. Portfolio managers should pay more attention to the regional composition rather than to the industrial composition of their portfolios. Diversification across regions will be more efficient than diversification across industries. Region-driven effects are more significant in emerging markets. Geographical effects dominate industry effects in emerging markets. However, in developed markets, industrial effects are more important than geographical effects. This study also suggests that the world's major equity markets may be more integrated than was previously believed. Thus, global investors and portfolio managers should construct an integrated global equity market rather than a collection of separate country markets. A combined risk analysis for the global market, the region, the industry and country-specific effects is essential (Sener and Salavitabar, 2004).

Based on the theoretical assessment of emerging markets and an examination of these markets' limited statistical records, primary expectation for investing in
emerging markets is that these markets will generate superior long-term returns. Secondarily, investors expect to gain opportunities to reduce risk through diversification. Investors should consider the long-term and short-term results as well as practical portfolio construction factors to determine the right allocation for their unique situation. Investors should also be aware of the trade-off between minimizing short-term regret and maximizing a long-term risk-adjusted return. Meeting a portfolio long-term objective should override the goal of minimizing short-term regret of under-performing peers. There are rational reasons that, though difficult to quantify, may call for a lower allocation to international markets. The factors especially relevant for emerging markets are higher transaction costs, additional taxes, asymmetric information, and restricted access (Tokat and Wicas, 2004).

The volatility is higher in emerging stock markets compared to matured markets. The majority of both emerging and mature market returns have negatively skewed returns. Emerging market returns do not follow a random walk, and the market efficiency may be in the weak sense, because using past returns reduces the predictability of emerging
market returns. However, this is not the case for mature markets. Stock returns volatility shocks in emerging markets last for longer periods than in mature markets. Non-trading days have less of an impact on volatility in matured markets than on emerging stock exchanges. This may be because the highly efficient information networks in a matured market never allow information to accumulate to such an extent that would affect the market substantially (Michelfelder and Pandya, 2005).

Shocks in the US stock exchange are rapidly transmitted to the rest of world, although the innovations in other national markets do not have much effect on the US market (Eun and Shim, 1989).

Stock return volatility is positively related to the degree of investability of individual stocks even after controlling for country, industry, firm size, and turnover. The more investable the stock, the higher the volatility. Investable stocks are more volatile because they are exposed to larger world market risk. A highly investable portfolio is subject to a larger world market exposure than the non-investable portfolio. As a result, the percentage of variance attributed to world market risk is higher for investable stocks than for non-investable
stocks. This study also suggests that stock investability is a good measure of the degree of integration with the world market (Bae, Chan and Ng, 2002).
CHAPTER FOUR
OVERVIEW OF EACH COUNTRY

Europe

The Czech Republic

The Czech Republic has been recovering from recession since mid-1999, and its growth was attributed to the exports to the EU, especially to Germany. The foreign direct investment in the Czech Republic has nearly doubled. Domestic demand is another important factor for growth with the drop of interest rates and the increases in availability of credit cards and mortgages. However, the high current account deficits may be a continual problem, and the country's deficits have been around an average of 5% of GDP in the last few years. Inflation is under control. The Czech Republic has been put just behind Poland and Hungary in arrangement for accession to the EU, which will provide the country with a driving force and direction to structural reform. These reforms include complete banking, telecommunications, and energy privatization, and will attract additional foreign investment. Intensive restructuring among large enterprises and improvements in the financial sector
should strengthen the output growth. This is also not to mention that revitalization in the European economies is vital to maintain and further intensify growth.

The Prague Stock Exchange is the main securities market in the Czech Republic. The Exchange is based on a membership principle, which means that only licensed securities traders are Exchange members and only they are allowed to access the Exchange trading system. The Exchange organizes the supply and demand of listed securities, investment instruments, and other capital market instruments of the capital market with permission by the Securities Commission. After World War II, the Czech Exchange continued its business when the Preparatory Committee for the Foundation of the Prague Stock Exchange was set up in May 1991. Upon adoption of the Stock Exchange Act, the eight-banking-house association was later transformed into the Prague Stock Exchange, which was officially formed on 24 November 1992. Five months later, after all the preparatory work was done, the first trading session took place on its trading floor on 6 April 1993. The Exchange market was divided into the Main and Secondary markets (originally the listed market) and the Free market (originally the unlisted market) in September.
1995. All activities of the Exchange and its members are under regulation and surveillance of the Securities Commission to ensure the security and reliability of Exchange trading. Trading activities follow an internal legislative framework (the Exchange rules), which are fully adapted to EU standards. On 1 May 2004 it became a full member of the Federation of the European Securities Exchanges (FESE) in connection with accession of the Czech Republic into the European Union.

Hungary

Hungary joined the European Union in May 2004. It transited from a government-controlled economy to a market economy and continues to demonstrate strong economic growth. Its per capita income is one-half that of the Big Four European nations. Over 80% of GDP comes from the private sector. Foreign ownership of and investment in Hungary are becoming more prevalent, and foreign direct investment has totaled more than $23 billion since 1989. In 2000, the Hungarian sovereign debt's rating was upgraded and is now the second-highest rating among all the Central European emerging economies. Inflation has declined gradually from 14% in 1998 to 4.7% in 2003 while the unemployment rate remains at around the 6% level.
However, there are some short-term issues, such as the public sector deficit and the flexibility of the labor markets.

The Budapest Stock Exchange is the official trading platform for publicly emitted securities for the Hungarian stock market. The scope of investment opportunities opens to both domestic and foreign investors, and for both private and institutional investors as well. The range of products at the Budapest Stock Exchange can be divided into three categories: (1) the equities section, which includes investment fund units and compensation notes; (2) the debt securities section, which includes the dominated government bonds, mortgage bonds, and corporate bonds; and (3) the derivatives section, which includes the BUX index and futures and options for equity, currency, and interest rates. The Budapest Stock Exchange cooperates closely with stock exchange international organizations. The BSE became a Full Member of FESE on 1 June 2004 and in the meantime, the BSE is actively cooperating with the exchanges of the EU. Its strong relationship with other stock exchanges provides an opportunity to exchanges views, learn from other stock markets and gain more international experience, which will help the BSE to proceed in conformity with EU
norms. In October 2001, the BSE was promoted to full membership in the World Federation of Exchanges (WFE) from the status of associate member.

Poland

After the economic liberalization throughout the 1990s, Poland has become a success among transition economies in Europe. The privatization of small and medium state-owned companies and a new liberal law has promoted the development of the private business sector, but the bureaucracy and corruption are obstacles to further development. Due to structural problems, surplus labor, inefficient small farms, and lack of investments, the agricultural sector remains handicapped. Restructuring and privatization of "sensitive sectors", such as steel and energy, have been delayed and further progress in public finance depends mainly on the privatization of Poland's remaining state sector, the reduction of state employment, and an overhaul of the tax code to incorporate the growing gray economy and farmers, most of whom pay no tax. Since the government is determined to enter the EU, it has shaped most of its economic policy and new legislation accordingly. Poland's EU accession was scheduled for May 2004. Now, stimulating the country's exports and improving
the internal budget deficit are Poland government’s top priorities. Because of political uncertainty, the zloty has recently depreciated while currencies of the other euro-zone countries have been appreciating. The GDP per capita equals that of the three Baltic states.

The Warsaw Stock Exchange operates based on the Law on Public Trading in Securities of 21 August 1997, under the supervision of the Polish Securities and Exchange Commission. The capital market of Poland has existed since 1817, when the Warsaw Mercantile Exchange was established. The Warsaw Stock Exchange opened and began its trading activity on 16 April 1991, and it started using electronic paperless trading from the very beginning. The Warsaw Stock Exchange is a joint-stock company created by the State Treasury, which has capital that amounts to PLN 41,979,000 and 59,970 registered shares. Currently, the Warsaw Stock Exchange has 38 shareholders, including brokerage houses, banks, a listed company, and the State Treasury.

Slovakia

Slovakia has overcome lot of difficulties from the time of its transition from a centrally planned economy to a modern market economy. During the period between 2001
During 2001 to 2003, Slovakia's economy has exceeded expectations, regardless of the general European slowdown. However, one major problem is the high unemployment rate, which was at an unacceptable 15% in 2003. The government has also encountered other strong challenges in 2004, including cutting the budget deficit, containing inflation, and strengthening the health care system.

In 1918, the Slovaks joined the closely related Czechs to form Czechoslovakia. After the disorder of World War II, Czechoslovakia became a communist nation under the Soviet influence. After the Soviet Union collapsed in 1989, the Slovaks and the Czechs agreed to separate peacefully on 1 January 1993. Historical, political, and geographic factors have caused Slovakia to experience more difficulty in developing a modern market economy than some of its Central European neighbors.

The Bratislava Stock Exchange is a joint-stock company operating on the basis of a license granted by the
Ministry of Finance of the Slovak Republic. The license entitles the Stock Exchange to organize trading on both the spot market and financial market of derivatives. Since 1992, the Bratislava Stock Exchange has been a member of the World Federation of Exchanges, with the ambition to achieve affiliated membership in the future. On 1 June 2004, the Bratislava Stock Exchange became a Full Member of the Federation of European Securities Exchanges in connection with the Slovak Republic's accession to the European Union.

Slovenia

As Slovenia has a historical tie to Western Europe, it has a GDP per capita relatively higher than that of the other transitioning economies in the region. In March 2004, Slovenia became the first transition country to graduate from borrower status at the World Bank. Privatization of the economy speeded up in 2002-2003, and the budget deficit dropped from 3.0% to 1.6% of the GDP during that period. Despite the economic slowdown in Europe, Slovenia has maintained a 3% growth. Structural reforms have improved the business environment and attracted more foreign investment in Slovenia's economy. These factors help to raise employment. However, the Slovenian
government needs to curb inflation and reduce corruption. Corruption and the high degree of coordination between government, business, and central bank policy are issues of concern for Slovenia's accession to the European Union.

The Ljubljana Stock Exchange was the first stock exchange in a socialist country in the world. The first trading floor auction of the Ljubljana Stock Exchange started in March 1990; electronic trading via the BIS system began on 8 December 1993; the first share entered the stock exchange market on January 8 1996. The Ljubljana Stock Exchange currently offers trading in the following financial instruments: corporate bonds, ordinary shares, government bonds, preferred shares, municipal bonds, and treasury bills. These instruments may be traded on the official market segments, or on the free market segment. The Ljubljana Stock Exchange also organizes trading in short-term financial instruments issued by the Bank of Slovenia and the Slovenian Government.

The Middle East

Bahrain

Petroleum production and refining is the major industry in Bahrain; they account for about 60% of export
receipts, 60% of government revenues, and 30% of the country's GDP. With its well-developed communication and transport system, numerous multinational firms have chosen to establish an office in Bahrain for operating business in the Gulf. Bahrain is dependent on Saudi Arabia for oil granted as aid. A large share of exports consists of petroleum products made from refining imported crude. Construction proceeds on several major industrial projects. Unemployment, especially among the young, and the depletion of oil and underground water resources are major long-term economic problems.

A commercial bank, the Standard Chartered Bank, opened its first branch in Bahrain in 1920 to facilitate the business community. By 1957, Bahrain had its first public shareholding company, the National Bank of Bahrain. However, until the late 1970s and early 1980s, Bahrain did not have an organized stock market. The Bahrain Stock Exchange officially began its operations on 17 June 1989 with 29 companies listed on the Exchange. In 1999, the government lifted its restrictions on foreign ownership, allowing GCC nationals (GCC stands for Cooperation Council for the Arab States of the Gulf) to be able to own up to 100% of the shares of listed companies, giving them full
access to the Bahrain market. Moreover, non-GCC nationals are allowed to own up to 49% of a listed company's capital. There are also seven companies that are 100% open to foreign investors. Over the years, the Bahrain Stock Exchange has grown from 29 listed companies in 1989 to 41 in 2000 and included the first non-GCC company to list in the region. The equity market capitalization has risen from US$2.7 billion in 1989 to US$6.6 billion in 2000.

Egypt

Egypt has made little progress on economic reform since the mid 1990s, and this issue limited foreign direct investment and slowed down the annual GDP growth (2-3%) in 2001-03. In early 2004, the Egyptian government proposed new privatization and customs reform measures, but the government is likely to pursue these reforms cautiously and gradually to avoid a public backlash over potential inflation or layoffs. The overvalued Egyptian pound started floating in January and led to a sharp drop in its value and also inflationary pressure. The black market for hard currency in Egypt showed that the government continues to influence the official exchange rate offered in banks. In 2003, Egypt’s budget deficit widened. Egypt's balance-of-payments position was not damaged by the war in
Iraq, because revenue from tourism and the Suez Canal helps the country to get on well.

The Cairo & Alexandria Stock Exchanges are the engine of Egypt’s capital market growth. The Alexandria Stock Exchange was officially established in 1888, followed by Cairo in 1903. The exchanges were very active in the 1940s and the Egyptian Stock Exchange was ranked fifth in the world. However, the central planning and socialist policies adopted in the mid-1950 stopped the activity on the Stock Exchange for three decades. In 1991, the Egyptian government started an economic reform and restructuring program that moved the country towards a free-market economy. The process of deregulation and privatization has stimulated stock market activity. Between 1992 and 1996, the Capital Market Authority initiated and led the revival of the Egyptian stock market. Capital Market Law 95/1992 laid the regulatory framework within which financial intermediaries such as brokers, venture-capital firms, underwriters, and fund managers can operate.

Iran

Iran's inefficient state sector, its over-reliance on the oil sector, and its statist policies are its major
problems. Most of the economic activities are controlled by the state, and the private sector is basically comprised of small-scale workshops, farming, and services. President Khatami has continued to follow the market reform plans of former President Rafsanjani, but the progress has been limited. Relatively high oil prices in recent years have allowed Iran to accumulate around $22 billion in foreign exchange reserves. Nevertheless, the high foreign exchange reserve has not eased economic difficulties such as high unemployment and inflation.

The Tehran Stock Exchange (TSE) opened in April 1968. Initially only government bonds and certain state-backed certificates were traded in the market. During the 1970s the demand for capital boosted the demand for stocks. At the same time, institutional changes led to the rapid expansion of stock market activity. Nevertheless, the Islamic Revolution expanded public sector control over the economy and reduced the need for private capital, and the abolition of interest-bearing bonds stopped the activity of the Tehran Stock Exchange. In 1989, the privatization of state-owned enterprises and the promotion of private sector economic activities led to the revitalization of the private sector and stock market activity. Since then,
the Stock Exchange has continued to expand. By the end of 2002, a total of 324 companies with a market capitalization of 114,397 billion Rls were listed in the Tehran Stock Exchange. Trading in the TSE is based on orders sent by the brokers. Presently, the TSE trades mainly in securities offered by listed companies. Moreover, the TSE is a full member of Euro-Asian Stock Exchanges.

Israel

Israel has a technologically advanced market economy with substantial government participation. It depends on imports of crude oil, grains, raw materials, and military equipment. Cut diamonds, high-technology equipment, and agricultural products are the country's principal exports. Israel usually posts large current account deficits. These sizable current account deficits are covered by foreign loans, and nearly half of the government's external debt is owed to the US, which is its major source of economic and military aid. The hostile Israeli-Palestinian conflict; difficulties in the high-technology, construction, and tourist sectors; and the potential of growing inflation led to small declines in GDP in 2001 and 2002. In 2004, rising business and consumer confidence and higher demand for Israeli exports boosted the GDP by 2.7%. 
The Tel Aviv Stock Exchange (TASE) was incorporated and began operations in 1953. In 1968, Securities Law was enacted, which created a solid regulatory framework for the TASE operations. The TASE derivatives market opened in 1993, improving the investment community's ability to manage risk. In 1997, the fully automated Tel Aviv Continuous Trading system was introduced. By the end of 1999, all listed securities, as well as derivative products, were traded on the new integrated trading platform. The TASE has a fully automated and integrated trading system, which helps boost the trading volume and reduces volatility, thus pushing down the costs and the risks of trading. The TASE's high regulatory and technological standards have been recognized by the US Securities and Exchange Commission, which named the TASE a designated offshore securities market. This recognition was granted after the SEC had reviewed the supervisory, reporting, clearing, and settlement systems. The TASE is an active member of both the International Federation of Stock Exchanges (FIBV) and the International Options Markets Association (IOMA).

Equities trading are the main business of the Tel Aviv Stock Exchange. This market offers around 1,000
securities, including shares, warrants, and convertible bonds. The Fixed Income Market offers government bonds, which account for most of the trading and corporate bonds. Options and futures were traded through the open outcry method until October 1999.

Turkey

Turkey's economy is a combination of modern commerce and a traditional agriculture sector that accounted for 40% of employment in 2001. It has a strong and rapidly growing private sector, but the state still plays a major role in basic industry, banking, transport, and communication. The largest industrial sector is textiles and clothing, which accounts for one-third of industrial employment; it faces keen competition in the international markets with the end of the global quota system. However, other sectors, such as the automotive and electronics industries, are becoming more important in Turkey's export mix. In recent years, Turkey's economy has had unstable economic growth and severe imbalances. Real GNP growth has exceeded 6% in many years, but this strong expansion has been interrupted by sharp declines in output in 1994, 1999, and 2001. Meanwhile, the public sector fiscal deficit has regularly exceeded 10% of the country's GDP, which
accounted for more than 40% of central government spending in 2003. Inflation is very high, and remained in double-digit range until it fell to 11.3% in 2004. Foreign direct investment in Turkey remains low, at less than $1 billion annually, but it has improved in 2002-2004 because of strong financial support from the IMF and a tighter fiscal policy.

The Istanbul Stock Exchange (ISE) was established in early 1986. The ISE is the only securities exchange in Turkey. It is a growing emerging market with an increasing number of publicly traded companies, state-of-the-art technology, and strong foreign participation. The ISE provides trading in equities, bonds and bills, revenue-sharing certificates, private sector bonds, foreign securities, and real estate certificates as well as international securities.

Asia

China

In late 1978, the Chinese government began to move the economy from an inefficient and centrally planned economy to a more open and market-oriented system. Although the system still operates within a strictly
controlled political framework, the economic influence of private organizations and individual citizens has been steadily increasing. China has increased the authority of local officials and plant managers in industry, permitted a wide variety of small-scale enterprises in services and light manufacturing, and opened the economy to increased foreign trade and investment. The result has quadrupled its GDP since 1978. Agriculture and industry have made a significant improvement, especially in coastal areas near Hong Kong, opposite Taiwan, and in Shanghai. Foreign investment in these areas has helped stimulate output of both domestic and export goods. However, this mix of socialism and capitalism resulted in serious bureaucracy and lassitude, as well as growing income disparities and rising unemployment. Thus China had to periodically retighten central controls at intervals. The government has been struggling to sustain adequate employment growth; reduce corruption and other economic crimes; and maintain the large state-owned enterprises. Accession to the World Trade Organization helped strengthen its ability to maintain strong growth rates, but at the same time this puts additional pressure on the hybrid system of strong political controls and growing market influences. Foreign
investments in China remain strong, and contribute to China’s remarkable economic growth. In addition, increasing shortages of electric power and raw materials will hold back the expansion of industrial output in 2004.

The Shanghai Stock Exchange (SSE) was founded on 26 Nov 1990 and was in operation by 19 Dec of the same year. It is directly governed by the China Securities Regulatory Commission (CSRC). The SSE realizes a variety of functions: providing a marketplace and facilities for securities trading; formulating business rules; accepting and arranging listings; organizing and monitoring securities trading; regulating members and listed companies; and managing and disseminating market information.

After an eleven-year operation, the SSE has become the most preeminent stock market in Mainland China in terms of the number of listed companies, the number of shares listed, its total market value, its tradable market value, the securities turnover in value, the stock turnover in value, and the T-bond turnover in value. In December 2002, SSE had over 35.6 million investors and 715 listed companies.

There are three categories securities listed in SSE: stock, bonds, and funds. Stocks are divided into two
shares: A shares and B shares. B shares represent the Shanghai- and Shenzhen-listed companies that foreigners are allowed to buy. These shares are priced in Hong Kong and US dollars but are not subject to the same degree of regulatory scrutiny. A shares represent the largest lot of domestic Chinese companies, but are available only to local Chinese investors. Yet the Chinese government is slowly changing that.

India

India's economy consists of traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of support services. Government controls have been reduced on foreign trade and investment. Privatization of domestic output has progressed gradually. The economy has posted an excellent average growth rate of 6% since 1990, reducing poverty by about 10%. India’s large numbers of well-educated people skilled in the English language helped India to become a major exporter of software services and software workers. Despite strong growth, there is some concern about the public-sector budget deficit, which is running at approximately 60% of India's GDP and is continuing to rise.
The Stock Exchange, Mumbai, popularly known as the Bombay Stock Exchange (BSE), was established in 1875. It has developed over the years to become the main Stock Exchange in India. The Exchange aims to provide an efficient and transparent market for trading securities, debts, and derivatives. It also endeavors to educate investors by conducting investor education programs.

Many factors have adversely impacted the liquidity of the stock market. These factors included the ban on all deferral products, which includes the Borrowing & Lending of the Securities Scheme, and the Automated Lending & Borrowing Mechanism in the Indian capital markets by 2 July 2001, abolition of account period settlements, etc. As a result, there has been a considerable decline in the average daily turnover at the Exchange.

Indonesia

Indonesia has been facing many economic problems that have hindered its development. These problems include recent acts of terrorism, unequal resource distribution among regions, corruption, unreliable legal recourse in contract disputes, and weaknesses in the banking system. All these issues generally provide a poor climate for foreign investment. At the end of 2003, Indonesia withdrew
from IMF program, but has committed to maintaining fundamentally sound macroeconomic policies previously established under IMF guidelines. Nonetheless, investors have continued to face a series of microeconomic problems and an unsatisfactory judicial system. Internal reform is the key for Indonesia to sustain future growth and build up the confidence of international and domestic investors.

The Jakarta Stock Exchange (JSX) reopened in 1977 after Indonesia declared its independence. The exchange is under the management of the newly created Capital Market Executive Agency. Along with the development of Indonesia’s financial market and the private sector, the volume of trading activities and market capitalization of the JSX has grown as well. In July 1992, the exchange became privatized under the ownership of the Jakarta Stock Exchange Inc. On 22 May 1995, the JSX launched the Jakarta Automated Trading System. The new system has improved the efficiency of trading activities and ensures the transparency and fairness of the market.

Malaysia

From 1971 through the late 1990s, Malaysia transformed itself from a producer of raw materials into an emerging multi-sector economy. Malaysia’s growth was
almost entirely driven by exports, particularly electronics products. Therefore, the global economic downturn and the depression in the information technology sector struck Malaysia in 2001 and 2002. Exports have shrunk by approximately 11% and the GDP only grew by 0.5% in 2001. A US$1.9-billion fiscal stimulus package relieved the seriousness of the recession, and consequently the economy rebounded in 2002 with a 4.1% growth. The economy grew 4.9% in 2003 in spite of the external pressures from SARS and the Iraq War. Healthy foreign exchange reserves and a relatively small external debt reduced the possibility that Malaysia will experience another crisis. However, the economy remains vulnerable due to the recession in Japan and the US, which are Malaysia’s top export destinations and key sources of foreign investment.

The Stock Exchange of Malaysia formed in 1964. With the secession of Singapore from Malaysia, the Stock Exchange of Malaysia and Singapore separated into The Kuala Lumpur Stock Exchange Bhd (KLSEB) and The Stock Exchange of Singapore (SES) in 1973. Malaysian companies continued to be listed on the SES and vice-versa. In 1994, a new company was formed and took over operations of the KLSEB, and it was re-named as Kuala Lumpur Stock Exchange
In 2004, the Kuala Lumpur Stock Exchange became a demutualized exchange and was re-named Bursa Malaysia.

Thailand

Thailand has a free-enterprise economy and provides a welcome environment for foreign investment. Major exports include textiles and footwear, fishery products, rice, rubber, jewelry, automobiles, computers, and electrical appliances. Thailand has recovered rapidly from the 1997-98 Asian Financial Crisis and was one of East Asia's best performers in 2002. Notwithstanding a slow-moving global economy, the country's increased consumption, investment spending, and strong export growth drove Thailand’s GDP growth up to 6.3% in 2003. The government has pushed an expansionist policy, including major support of village economic development.

The Securities Exchange of Thailand was found under the Securities Exchange of Thailand Act, enacted on 20 May 1974. As a result, the Securities Exchange of Thailand operated with official support and under proper supervision. In 1992, the replacement of the new Securities Exchange of Thailand Act (SEA) became the next step towards the development of the modern Thai capital market, with regard to the creation of a concrete legal
framework, progressive secondary markets, and the improvement of securities business regulations. The new 1992 Securities and Exchange Act stipulates the Securities and Exchange Commission (SEC), a single unified supervisory agency, as the regulator of the Thai Capital Market. While the SEC oversees the development of the kingdom's capital market, the new SEA provides a clear separation between the primary and the secondary markets to facilitate their successful development. Both primary and secondary markets are regulated by the SEC. The secondary market is comprised of the Stock Exchange of Thailand (SET) and the Thai Bond Dealing Center (TBDC).
<table>
<thead>
<tr>
<th>Country</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>51,433.87</td>
<td>57,185.92</td>
<td>69,513.96</td>
<td>85,438.09</td>
</tr>
<tr>
<td>GDP growth %</td>
<td>3.25</td>
<td>3.09</td>
<td>1.96</td>
<td>2.92</td>
</tr>
<tr>
<td>GNI</td>
<td>5,250.00</td>
<td>5,260.00</td>
<td>5,490.00</td>
<td>6,740.00</td>
</tr>
<tr>
<td>Hungary</td>
<td>46,680.63</td>
<td>51,833.60</td>
<td>64,913.87</td>
<td>82,804.85</td>
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<td>3.82</td>
<td>3.50</td>
<td>2.90</td>
</tr>
<tr>
<td>GNI</td>
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<td>4,780.00</td>
<td>5,240.00</td>
<td>6,330.00</td>
</tr>
<tr>
<td>Poland</td>
<td>166,548.50</td>
<td>185,787.50</td>
<td>191,310.10</td>
<td>209,562.90</td>
</tr>
<tr>
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<td>4.10</td>
<td>3.95</td>
<td>1.02</td>
<td>3.75</td>
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<tr>
<td>GNI</td>
<td>4,440.00</td>
<td>4,570.00</td>
<td>4,670.00</td>
<td>5,270.00</td>
</tr>
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<td>Slovakia</td>
<td>20,218.16</td>
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<td>24,184.05</td>
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<tr>
<td>GDP growth %</td>
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<td>3.79</td>
<td>4.40</td>
<td>4.21</td>
</tr>
<tr>
<td>GNI</td>
<td>3,860.00</td>
<td>3,830.00</td>
<td>4,050.00</td>
<td>4,920.00</td>
</tr>
<tr>
<td>Slovenia</td>
<td>18,961.55</td>
<td>19,526.86</td>
<td>21,960.22</td>
<td>26,284.18</td>
</tr>
<tr>
<td>GDP growth %</td>
<td>4.54</td>
<td>2.86</td>
<td>2.95</td>
<td>2.26</td>
</tr>
<tr>
<td>GNI</td>
<td>10,260.00</td>
<td>10,110.00</td>
<td>10,200.00</td>
<td>11,830.00</td>
</tr>
</tbody>
</table>


Source: World Development Indicators (WDI) database by the World Bank.
<table>
<thead>
<tr>
<th>Country</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>7,970.69</td>
<td>7,935.05</td>
<td>7,682.92</td>
<td>-</td>
</tr>
<tr>
<td>GDP</td>
<td>5.30</td>
<td>-</td>
<td>5.10</td>
<td>-</td>
</tr>
<tr>
<td>GDP growth %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI</td>
<td>10,770.00</td>
<td>11,130.00</td>
<td>11,260.00</td>
<td>-</td>
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<tr>
<td>Egypt</td>
<td>99,427.57</td>
<td>98,475.78</td>
<td>89,853.93</td>
<td>82,427.13</td>
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<tr>
<td>GDP</td>
<td>5.11</td>
<td>3.50</td>
<td>3.20</td>
<td>3.20</td>
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<tr>
<td>GDP growth %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI</td>
<td>1,490.00</td>
<td>1,530.00</td>
<td>1,470.00</td>
<td>1,390.00</td>
</tr>
<tr>
<td>Iran</td>
<td>101,561.70</td>
<td>117,055.80</td>
<td>113,636.50</td>
<td>136,833.00</td>
</tr>
<tr>
<td>GDP</td>
<td>5.93</td>
<td>5.35</td>
<td>7.22</td>
<td>5.90</td>
</tr>
<tr>
<td>GDP growth %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI</td>
<td>1,650.00</td>
<td>1,780.00</td>
<td>1,790.00</td>
<td>2,000.00</td>
</tr>
<tr>
<td>Israel</td>
<td>114,816.90</td>
<td>112,714.40</td>
<td>103,688.80</td>
<td>-</td>
</tr>
<tr>
<td>GDP</td>
<td>7.53</td>
<td>(0.91)</td>
<td>(0.79)</td>
<td>1.03</td>
</tr>
<tr>
<td>GDP growth %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI</td>
<td>17,020.00</td>
<td>16,760.00</td>
<td>16,020.00</td>
<td>-</td>
</tr>
<tr>
<td>Turkey</td>
<td>199,267.30</td>
<td>145,243.60</td>
<td>183,888.30</td>
<td>23,797.21</td>
</tr>
<tr>
<td>GDP</td>
<td>7.36</td>
<td>(7.49)</td>
<td>7.94</td>
<td>5.79</td>
</tr>
<tr>
<td>GDP growth %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNI</td>
<td>2,980.00</td>
<td>2,420.00</td>
<td>2,510.00</td>
<td>2,790.00</td>
</tr>
</tbody>
</table>


Source: World Development Indicators (WDI) database by the World Bank.
Table 3. Key Economic Data in Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,080,741.00</td>
<td>1,175,716.00</td>
<td>1,266,052.00</td>
<td>1,409,852.00</td>
</tr>
<tr>
<td>GDP</td>
<td>8.00</td>
<td>7.50</td>
<td>8.00</td>
<td>9.10</td>
</tr>
<tr>
<td>GDP growth</td>
<td>840.00</td>
<td>900.00</td>
<td>960.00</td>
<td>1,100.00</td>
</tr>
<tr>
<td>GNI</td>
<td>457,376.90</td>
<td>478,524.20</td>
<td>510,177.20</td>
<td>598,966.20</td>
</tr>
<tr>
<td>GDP</td>
<td>3.94</td>
<td>5.15</td>
<td>4.59</td>
<td>8.00</td>
</tr>
<tr>
<td>GDP growth</td>
<td>450.00</td>
<td>460.00</td>
<td>470.00</td>
<td>530.00</td>
</tr>
<tr>
<td>GNI</td>
<td>150,195.80</td>
<td>141,254.50</td>
<td>172,974.50</td>
<td>208,310.50</td>
</tr>
<tr>
<td>GDP</td>
<td>4.92</td>
<td>3.44</td>
<td>3.69</td>
<td>4.12</td>
</tr>
<tr>
<td>GDP growth</td>
<td>570.00</td>
<td>680.00</td>
<td>710.00</td>
<td>810.00</td>
</tr>
<tr>
<td>GNI</td>
<td>90,161.05</td>
<td>87,976.05</td>
<td>94,910.00</td>
<td>103,161.10</td>
</tr>
<tr>
<td>GDP</td>
<td>8.50</td>
<td>0.30</td>
<td>4.19</td>
<td>5.20</td>
</tr>
<tr>
<td>GDP growth</td>
<td>3,390.00</td>
<td>3,410.00</td>
<td>3,550.00</td>
<td>3,780.00</td>
</tr>
<tr>
<td>GNI</td>
<td>122,738.50</td>
<td>115,543.90</td>
<td>126,905.10</td>
<td>143,163.00</td>
</tr>
<tr>
<td>GDP</td>
<td>4.76</td>
<td>2.14</td>
<td>5.41</td>
<td>6.74</td>
</tr>
<tr>
<td>GDP growth</td>
<td>2,010.00</td>
<td>1,980.00</td>
<td>2,000.00</td>
<td>2,190.00</td>
</tr>
<tr>
<td>GNI</td>
<td>570.00</td>
<td>680.00</td>
<td>710.00</td>
<td>810.00</td>
</tr>
</tbody>
</table>


Source: World Development Indicators (WDI) database by the World Bank.
CHAPTER FIVE
DATA COLLECTION AND METHODOLOGY

Data Collection

In order to analyze the performance and risk of the stock markets and to compare the performance of the S&P 500, the exchange rates, the short-term government bond rates (risk-free rate), and market capitalization are collected to create a weighted Composite Index in each region. To compare the performance with the S&P 500, a main index of each country was chosen for the periods between 2002 and 2004 on a monthly basis. The market capitalization and the monthly price movement were collected from the various sources:

• The Federation of European Securities Exchange is an association of all regulated securities and derivatives markets in Europe and has incorporated the European Association of Clearing Houses. Their web site provides market capitalization and price movement of stock exchanges in Europe.

• The World Federation of Exchanges is the trade organization for the regulated securities and
derivative markets, settlement institutions, and related clearing houses, and their diverse services to capital markets.

- Yahoo! Finance
- The office web sites of each of the stock exchanges
- The Factiva Electronic Database

Table 4. Market Capitalization of Each Stock Exchange

<table>
<thead>
<tr>
<th>Index</th>
<th>Market Capitalization (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLSE</td>
<td>181,623.79</td>
</tr>
<tr>
<td>SENSEX</td>
<td>387,851.16</td>
</tr>
<tr>
<td>SSE</td>
<td>314,315.71</td>
</tr>
<tr>
<td>JSX</td>
<td>73,250.64</td>
</tr>
<tr>
<td>SET</td>
<td>115,390.38</td>
</tr>
<tr>
<td>CMA</td>
<td>381,419.09</td>
</tr>
<tr>
<td>TA-100</td>
<td>91,856.25</td>
</tr>
<tr>
<td>ISE National-100</td>
<td>98,298.50</td>
</tr>
<tr>
<td>BHSE</td>
<td>13,513.18</td>
</tr>
<tr>
<td>TEPIX</td>
<td>45,037.63</td>
</tr>
<tr>
<td>PX50</td>
<td>29,627.66</td>
</tr>
<tr>
<td>WIG 20</td>
<td>70,779.24</td>
</tr>
<tr>
<td>BUX</td>
<td>28,699.32</td>
</tr>
<tr>
<td>SAX</td>
<td>4,418.73</td>
</tr>
<tr>
<td>SBI 20</td>
<td>9,705.69</td>
</tr>
</tbody>
</table>
The exchange rates in table 3, quoted indirectly to the US dollar, are collected from http://www.oanda.com/convert/fxhistory.

<table>
<thead>
<tr>
<th></th>
<th>Average 2002</th>
<th>Average 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASIA:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysian Ringgit, MYR</td>
<td>3.80271</td>
<td>3.80131</td>
</tr>
<tr>
<td>Indian Rupee, INR</td>
<td>48.67917</td>
<td>45.33954</td>
</tr>
<tr>
<td>Chinese Yuen Renminbi, CNY</td>
<td>8.28691</td>
<td>8.28723</td>
</tr>
<tr>
<td><strong>CNY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesian Rupiah, IDR</td>
<td>9350.13699</td>
<td>8945.81749</td>
</tr>
<tr>
<td>Thai Baht, THB</td>
<td>43.06689</td>
<td>40.30894</td>
</tr>
<tr>
<td><strong>THE MIDDLE EAST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egyptian Pound, EGP</td>
<td>4.65773</td>
<td>6.24364</td>
</tr>
<tr>
<td>Turkish New Lira, TRY</td>
<td>1.54202</td>
<td>1.4489</td>
</tr>
<tr>
<td>Israeli New Shekel, ILS</td>
<td>4.73822</td>
<td>4.49137</td>
</tr>
<tr>
<td>Bahraini Dinar, BHD</td>
<td>0.37762</td>
<td>0.37749</td>
</tr>
<tr>
<td>Iranian Rial, IRR</td>
<td>6889.86301</td>
<td>7900.00000</td>
</tr>
<tr>
<td><strong>EUROPE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czech Koruna, CZK</td>
<td>32.80616</td>
<td>25.72511</td>
</tr>
<tr>
<td>Hungarian Forint, HUF</td>
<td>258.08312</td>
<td>202.92596</td>
</tr>
<tr>
<td>Polish Zloty, PLN</td>
<td>4.07183</td>
<td>3.65228</td>
</tr>
<tr>
<td>Slovak Koruna, SKK</td>
<td>45.31083</td>
<td>32.29307</td>
</tr>
<tr>
<td>Slovenian Tolar, SIT</td>
<td>243.59315</td>
<td>195.50377</td>
</tr>
</tbody>
</table>
Methodology

To compare the risk and return performance of the selected countries and the S & P 500, the following procedures were chosen:

• To measure the performance of each index, the average monthly return and annualized return of each index were calculated from January 2002 to December 2004.

• The average monthly standard deviations were calculated to measure the risks of each country. To compare the risk on an annual cross-section basis, the annualized standard deviation of each index was determined.

• Next, the Correlation Coefficient between each country and the S&P 500 were calculated to measure the relationship between prices movements.

• The exchange rate adjusted annualized return concept was used to eliminate the exchange rate risk for potential US investors in foreign markets.

• To compare the risk adjusted return performances
of the chosen countries, Sharp Indices were calculated.

- As a measurement of the performance of the three regions, the weighted 5 Composite Index was determined.

- To measure the risk and return and the ability of diversification with the S & P 500 for US investors, the aggressive portfolios and the 6 Composite Index portfolios were created.

To measure the return and risk of each index, the average monthly return, and the average monthly standard deviation, the following formulas were used:

Return at time \( t \) of \( i \) market

\[
R_{it} = \frac{(P_{it} - P_{it-1})}{P_{it-1}}
\]

where \( P_{it} = \) Price Index of \( t \) month of \( i \) market.

Average monthly return of \( i \) market

\[
R_{mit} = \frac{(R_{it})}{n}
\]

Average monthly standard deviation of \( i \) market

\[
i = \left[ \frac{(R_{it} - R_{mit})^2}{n} \right]^{1/2}
\]

where \( n = \) amount of months considered (36).

For the correlation coefficients between each market, 5 composite portfolios in each region and the S&P 500 were
considered, and the formulas are as follow:
Correlation coefficient between i and j markets
\[ ij = \frac{(Rt-R_{mit})(Rjt-R_{mjt})}{i \cdot j} \]

The risk and return variables were converted into annualized terms, and the following are the formulas used:
Annualized Return of i market = \( AR_i = R_{id} \times 12 \)
Annualized Standard Deviation of i market = \( A_i = i^2 \times (12)^{1/2} \)

The exchange rate adjusted annualized return was also determined for US investors to eliminate the foreign exchange rate. The exchange rate adjusted factor was calculated by using the average exchange rates of 2002 and 2004 of each country.
Exchange Rate Adjusted Factor
\[ ERAF_i = \frac{(Ex_{i01} - Ex_{i02})}{Ex_{i01}}, \]
Exchange Rate Adjusted Annualized Return of i market
\[ ARE_i = AR_i \times (1 + (ERAF_i)) \]

The Sharp ratio, which is a measure of the Risk Adjusted Return of each portfolio, was calculated. It is a useful tool to determine the reward per unit of risk.
Sharp ratio of i market = \( \frac{(AR_i - RF)}{A_i} \)
RF = Risk Free Rate
The risk-free rate is the annualized return currently available on "risk-free" investments. The average 90-days T-bill Yield (1.36) for the period between 2002 and 2004 was used for US investors.

The analysis is followed by addressing the possibility of using the chosen emerging stock markets as a diversification tool for international portfolio management. For this purpose, four types of portfolio were created according to their weights in market capitalization. The weights of the 5 Composite, Aggressive and 6 Composite portfolios are provided in Table 6 below:

- The S & P 500 portfolio - this portfolio consists of 100% of the S & P 500 Index.
- 5 Composite Index portfolios in each region - these portfolios comprised 100% of 5 Composite Index in the emerging stock markets.
- Aggressive portfolios in each region - these portfolios comprised of 50% of the S&P 500 Index and 50% of the weighted average of 5 Composite Index in the emerging stock market of each region.
- 6 Composite Index portfolios in each region -
these portfolios comprised of the S&P 500 Index and 5 Composite Index in the emerging stock markets of each region, and weighted according to their market capitalization.

Table 6. The Weights of the 5 Composite, Aggressive and 6 Composite Portfolios

<table>
<thead>
<tr>
<th>Region</th>
<th>5 Composite</th>
<th>Aggressive</th>
<th>6 Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EUROPE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Czech Republic</td>
<td>20.69%</td>
<td>10.34%</td>
<td>0.26%</td>
</tr>
<tr>
<td>Poland</td>
<td>49.42%</td>
<td>24.71%</td>
<td>0.62%</td>
</tr>
<tr>
<td>Hungary</td>
<td>20.04%</td>
<td>10.02%</td>
<td>0.25%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>3.09%</td>
<td>1.54%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>6.78%</td>
<td>3.39%</td>
<td>0.08%</td>
</tr>
<tr>
<td>The S &amp; P 500</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td><strong>THE MIDDLE-EAST</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>60.53%</td>
<td>30.27%</td>
<td>3.20%</td>
</tr>
<tr>
<td>Israel</td>
<td>14.58%</td>
<td>7.29%</td>
<td>0.77%</td>
</tr>
<tr>
<td>Turkey</td>
<td>15.60%</td>
<td>7.80%</td>
<td>0.82%</td>
</tr>
<tr>
<td>Bahrain</td>
<td>2.14%</td>
<td>1.07%</td>
<td>0.11%</td>
</tr>
<tr>
<td>Tehran</td>
<td>7.15%</td>
<td>3.57%</td>
<td>0.38%</td>
</tr>
<tr>
<td>The S &amp; P 500</td>
<td>100.00%</td>
<td>50.00%</td>
<td>94.71%</td>
</tr>
<tr>
<td><strong>ASIA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>16.94%</td>
<td>8.47%</td>
<td>1.47%</td>
</tr>
<tr>
<td>India</td>
<td>36.17%</td>
<td>18.08%</td>
<td>3.14%</td>
</tr>
<tr>
<td>China</td>
<td>29.31%</td>
<td>14.65%</td>
<td>2.54%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6.83%</td>
<td>3.42%</td>
<td>0.59%</td>
</tr>
<tr>
<td>Thailand</td>
<td>10.76%</td>
<td>5.38%</td>
<td>0.93%</td>
</tr>
<tr>
<td>The S &amp; P 500</td>
<td>100.00%</td>
<td>50.00%</td>
<td>91.32%</td>
</tr>
</tbody>
</table>

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Finally, the weighted average annualized return, the weighted average annualized standard, the exchange rate adjusted annualized return of each portfolios, and the Sharp ratio were calculated to analyze the risk and return performance of the above portfolios. They were calculated by the following formulas:

The weighted average annualized return of each portfolio = \( R_p = \sum w_i R_i \)

where \( w_i = \) Weight of i market in the portfolio and \( w_i = 1 \)

The weighted average annualized standard deviation of each portfolio = \( \sigma_p^2 = \sum w_i^2 \sigma_i^2 + 2 \sum w_i w_j \sigma_i \sigma_j \)

The exchange rate adjusted annualized return of each portfolio = \( ARE_p = \sum w_i ARE_i \)

The Sharp ratio of each portfolio = \( \frac{(R_p - RF)}{\sigma_p} \)
CHAPTER SIX
ANALYSIS OF THE FINDINGS

From January 2002 to December 2004, the results are summarized in the following table:

Table 7. Average Monthly Return and Average Monthly Standard Deviation

<table>
<thead>
<tr>
<th></th>
<th>Average Monthly Return</th>
<th>Average Monthly Standard Deviation</th>
<th>Correlation Coefficient with the S &amp; P 500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASIA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.77%</td>
<td>2.22%</td>
<td>0.3891</td>
</tr>
<tr>
<td>India</td>
<td>4.51%</td>
<td>6.84%</td>
<td>0.3036</td>
</tr>
<tr>
<td>China</td>
<td>-0.32%</td>
<td>5.58%</td>
<td>-0.0468</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.51%</td>
<td>6.69%</td>
<td>0.2891</td>
</tr>
<tr>
<td>Thailand</td>
<td>2.14%</td>
<td>6.49%</td>
<td>0.4900</td>
</tr>
<tr>
<td>Asia-5 composite</td>
<td>1.24%</td>
<td>4.01%</td>
<td>0.3602</td>
</tr>
<tr>
<td><strong>THE MIDDLE-EAST</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>3.12%</td>
<td>1.25%</td>
<td>0.1974</td>
</tr>
<tr>
<td>Israel</td>
<td>6.57%</td>
<td>5.98%</td>
<td>0.6256</td>
</tr>
<tr>
<td>Turkey</td>
<td>2.54%</td>
<td>12.24%</td>
<td>0.5259</td>
</tr>
<tr>
<td>Bahrain</td>
<td>1.54%</td>
<td>3.13%</td>
<td>0.3784</td>
</tr>
<tr>
<td>Iran</td>
<td>4.03%</td>
<td>7.52%</td>
<td>0.1533</td>
</tr>
<tr>
<td>ME-5 composite</td>
<td>2.79%</td>
<td>4.90%</td>
<td>0.4977</td>
</tr>
<tr>
<td><strong>EUROPE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Czech Republic</td>
<td>2.67%</td>
<td>1.09%</td>
<td>0.3358</td>
</tr>
<tr>
<td>Poland</td>
<td>4.69%</td>
<td>6.75%</td>
<td>0.6644</td>
</tr>
<tr>
<td>Hungary</td>
<td>1.86%</td>
<td>5.30%</td>
<td>0.5904</td>
</tr>
<tr>
<td>Slovakia</td>
<td>3.13%</td>
<td>7.36%</td>
<td>0.2375</td>
</tr>
<tr>
<td>Slovenia</td>
<td>2.42%</td>
<td>4.73%</td>
<td>0.0279</td>
</tr>
<tr>
<td>Euro-5 composite</td>
<td>1.73%</td>
<td>4.76%</td>
<td>0.6792</td>
</tr>
<tr>
<td>The S &amp; P 500</td>
<td>0.29%</td>
<td>4.39%</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
The correlation coefficient is a standardization of covariance, which is a measure of the degree to which the two assets covary. If there is a positive correlation, it means both assets move in the same direction on average. On the other hand, if the correlation is negative, the two assets move in opposite directions.

From 2002 to 2004, China was the only country that had an average negative return and a negative correlation with the United States. While the S & P 500 had only a 0.29% average monthly return, all other emerging stock markets, except China, had a higher return than the US stock market. Because of this exception, the average monthly return of the 5 composite portfolio in Asia (1.24%) was relatively lower than the returns of the other regions. Although the performance in China was poor during this period, the negative correlation coefficient indicates that it is a good diversification tool for US investors.

Eleven out of the fifteen countries had a less than 0.5 correlation coefficient with the S & P 500, therefore, these emerging stock markets have little influence on the movement in the US stock market. With a high return (6.57%) and a high correlation coefficient (0.63) in Israel, the Middle East portfolio had the highest average
return among all three regions, whereas the Asia portfolio had the lowest average return during that period.

As indicated in Table 7, the correlation coefficient of the Europe 5 composite portfolio is the highest (0.68), which means the up and down movements of Europe is strongly related to the movement of the S & P 500, and the ability to diversify risk with the S & P 500 is not substantial. Moreover, the Asia 5 composite portfolio has the lowest correlation coefficient (0.36) with the S & P 500; therefore, its diversification ability for US investors is greater than the other regions. In other words, US investors can diversify their risk by adding stock in Asia’s emerging stock market to their portfolios.
Table 8. Annualized Return, Exchange Rate Adjusted

Annualized Return, Annualized Standard Deviation, and Sharpe Index of Each Market Index

<table>
<thead>
<tr>
<th>Market Index</th>
<th>Exchange-Rate Annualized Return</th>
<th>Exchange-Rate Adjusted Annualized Return</th>
<th>Annualized Standard Deviation</th>
<th>Sharpe Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASIA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>9.20%</td>
<td>9.20%</td>
<td>15.61%</td>
<td>0.5021</td>
</tr>
<tr>
<td>India</td>
<td>26.62%</td>
<td>28.58%</td>
<td>23.70%</td>
<td>1.0655</td>
</tr>
<tr>
<td>China</td>
<td>-3.80%</td>
<td>-3.80%</td>
<td>19.33%</td>
<td>-0.2671</td>
</tr>
<tr>
<td>Indonesia</td>
<td>30.14%</td>
<td>31.50%</td>
<td>23.16%</td>
<td>1.2427</td>
</tr>
<tr>
<td>Thailand</td>
<td>25.67%</td>
<td>27.43%</td>
<td>22.48%</td>
<td>1.0813</td>
</tr>
<tr>
<td><strong>THE MIDDLE EAST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>37.41%</td>
<td>27.91%</td>
<td>22.77%</td>
<td>1.5834</td>
</tr>
<tr>
<td>Israel</td>
<td>15.02%</td>
<td>15.98%</td>
<td>20.70%</td>
<td>0.6597</td>
</tr>
<tr>
<td>Turkey</td>
<td>30.43%</td>
<td>32.10%</td>
<td>42.41%</td>
<td>0.6855</td>
</tr>
<tr>
<td>Bahrain</td>
<td>18.51%</td>
<td>18.52%</td>
<td>10.85%</td>
<td>1.5806</td>
</tr>
<tr>
<td>Iran</td>
<td>48.39%</td>
<td>42.20%</td>
<td>26.05%</td>
<td>1.8055</td>
</tr>
<tr>
<td><strong>EUROPE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Czech Republic</td>
<td>32.05%</td>
<td>40.88%</td>
<td>16.25%</td>
<td>1.8894</td>
</tr>
<tr>
<td>Poland</td>
<td>13.13%</td>
<td>16.70%</td>
<td>23.38%</td>
<td>0.5035</td>
</tr>
<tr>
<td>Hungary</td>
<td>22.31%</td>
<td>24.88%</td>
<td>18.37%</td>
<td>1.1404</td>
</tr>
<tr>
<td>Slovakia</td>
<td>37.56%</td>
<td>52.69%</td>
<td>25.51%</td>
<td>1.4190</td>
</tr>
<tr>
<td>Slovenia</td>
<td>29.00%</td>
<td>36.14%</td>
<td>16.38%</td>
<td>1.6875</td>
</tr>
<tr>
<td>The S &amp; P 500</td>
<td>3.54%</td>
<td>3.54%</td>
<td>15.21%</td>
<td>0.1430</td>
</tr>
</tbody>
</table>

The annualized return and standard deviation showed a big difference between the chosen emerging stock markets and the S & P 500. The S & P 500 only had 3.54% in return,
but most of the emerging stock markets had double-digit annualized returns. However, the table also indicates that the emerging stock market is more volatile than the US stock markets. Thirteen out of the fifteen countries have a higher annualized standard deviation than the S & P 500.

One of the investment concepts is that high risk is compensated by a high return, but this is not always true for every market. As seen in Table 8, the S & P 500 had an annualized return of 3.54% and an annualized standard deviation of 15.21%, but in some of the emerging countries, the returns are much higher with the same or a lower level of standard deviations. This can be proven by the risk and return results in Bahrain (return-18.51%, risk-10.85%), the Czech Republic (risk-32.05%, risk-16.25%) and Slovenia (return-29%, risk-16.38%).

The Sharpe ratio, also known as the risk-adjusted return, is a measure of excess returns to standard deviation. It tells how the investment rewards the investors for the volatility they are bearing. The higher the ratio, the better it is. All the emerging stock markets in Table 8 provided a high and positive figure, except for China (-0.27). Ten out of the fifteen countries had a Sharpe ratio larger than 1, which means that the
returns given to investors exceed the high risk they are facing. On the other hand, the S & P 500 had a relatively low number (0.14), which demonstrates that most of the emerging stock market performed better than the S & P 500 from 2002 to 2004.

Exchange rate risk is significantly higher in Egypt and Iran, where the annualized return dropped from 37.41% to 27.91% and 48.39% to 42.20% respectively after eliminating the exchange rate risk. Due to the instability of the emerging markets, the exchange rate risk is a very important issue for international investors. The exchange rate risk can be reduced by hedging with futures or options, but the hedging strategy usually requires a high cost.
### Table 9. Weighted Average Return, Exchange Rate Adjusted Annualized Return, Weighted Average Standard Deviation, and Sharpe Index of Each Portfolio

<table>
<thead>
<tr>
<th>Region</th>
<th>5-Composite</th>
<th>Aggressive</th>
<th>6-Composite</th>
<th>The S &amp; P 500</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weighted</td>
<td>Exchange-</td>
<td>Weighted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average Return</td>
<td>Rate</td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adjusted</td>
<td>Annualized</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Return</td>
<td>Return</td>
<td></td>
</tr>
<tr>
<td>ASIA</td>
<td>14.89%</td>
<td>15.88%</td>
<td>13.90%</td>
<td>0.9730</td>
</tr>
<tr>
<td></td>
<td>9.21%</td>
<td>9.71%</td>
<td>12.01%</td>
<td>0.6537</td>
</tr>
<tr>
<td></td>
<td>4.52%</td>
<td>4.61%</td>
<td>14.37%</td>
<td>0.2199</td>
</tr>
<tr>
<td>THE MIDDLE EAST</td>
<td>33.44%</td>
<td>27.65%</td>
<td>17.00%</td>
<td>1.8870</td>
</tr>
<tr>
<td></td>
<td>18.49%</td>
<td>15.59%</td>
<td>13.95%</td>
<td>1.2281</td>
</tr>
<tr>
<td></td>
<td>5.12%</td>
<td>4.81%</td>
<td>14.88%</td>
<td>0.2525</td>
</tr>
<tr>
<td>EUROPE</td>
<td>20.71%</td>
<td>25.77%</td>
<td>16.48%</td>
<td>1.1742</td>
</tr>
<tr>
<td></td>
<td>12.12%</td>
<td>14.65%</td>
<td>14.52%</td>
<td>0.7411</td>
</tr>
<tr>
<td></td>
<td>3.75%</td>
<td>3.81%</td>
<td>15.17%</td>
<td>0.1576</td>
</tr>
<tr>
<td></td>
<td>3.54%</td>
<td>3.54%</td>
<td>15.21%</td>
<td>0.1430</td>
</tr>
</tbody>
</table>

Among all of the portfolios, the S & P 500 portfolio has the lowest returns (3.54%) and the lowest Sharpe ratio (0.143). By comparing the returns of the 5-composite and aggressive portfolios in Table 9, among the three regions, the Middle East has the highest returns and Sharpe ratios,
whereas Asia has the lowest return and the lowest Sharpe ratio. The returns of the Middle East are more than 100% larger than that of Asia, and around 50% larger than that of Europe.

However, this is not the case in the 6-composite portfolios. The Europe-6 composite has the lowest return and the lowest Sharpe ratio. This is because the market capitalization of the selected European emerging market is less than that of Asia, so more weight is put on the S & P 500 in the Europe 6-composite. Due to the low return in the S & P 500, the more weight is put on it, the lower the return of the portfolios. Since the market capitalization of the emerging stock market is relatively small as compared to the US stock market, the diversification ability of the 6-composite portfolios is very limited. For investors to achieve a significant diversification effect, aggressive portfolios should be chosen.

As seen in Table 9, the standard deviation of all portfolios, except the S & P 500, range from 12.01% to 17%, while the S & P 500 has a standard deviation of 15.21%. This result suggested that the risk of the emerging stock market is at a similar level as the US stock market. In addition, all the aggressive portfolios and the 6-
composite portfolios have a lower standard deviation, which indicates that the emerging markets offer a positive diversification effect for US investors.

However, the study is focused mainly on the quantitative side, so other qualitative issues should also be considered because emerging stock markets are still in transition and instable. There is the possibility that some economies will fall back into a not-completely-resolved civil war or a revolution sparking a change in government, and these events may result in a return to nationalization, expropriation, and the collapse of the capital market. Exchange rate fluctuations could transform into an all-out devaluation, resulting merely from investors speculating in the possibility of political disorder or from losing faith in the banking system. Because the risks of an emerging market investment are higher than that of a developed market, panic and speculation reactions are also possible. The 1997 Asian crisis, during which international portfolio flows into these countries actually began to reverse themselves, is a good example of why an emerging stock market can be a high-risk investment opportunity.
Thanks to globalization, investors are now able to diversify their risk through investments in foreign countries. A developing or emerging stock market is one of the choices. While the developed economy continues to slow down, many emerging markets are having their economic recoveries and experiencing high growth rate. A number of sophisticated companies have begun to in emerging markets. The foreign investment and the crises in the emerging markets had pressured companies to improve disclosure and overall corporate governance.

The governments of the emerging market have put a lot of effort in restructuring their financial and legal system to attract more foreign investment. Developing countries in Europe have been reforming themselves and following the EU standards in order to achieve accession to the EU. Countries in Asia have been pursuing a different type of monetary policy and economic reform to recover their economy and prevent crises in the future.

After constructing various types of portfolios, the results of the study were basically as predicted. Most of
the emerging stock markets provided higher returns than the S & P 500, but in the meantime, the emerging stock markets have higher volatility than the US stock market. Thirteen out of the fifteen countries have a higher annualized standard deviation than the S & P 500. However, due to the effect of diversification, when the 6-composite and aggressive portfolios are composed, the risk is reduced to a similar level as the US stock market, but with a higher return. The reason for that is the difference in correlation coefficient. As most countries are not highly correlated with the US market (11 out of the 15 have a correlation coefficient below 0.5), the risk is shared.

In order to measure the risk-adjusted return, the Sharpe ratio is used. Most of the emerging stock markets have a positive and high Sharpe ratio, except for China (-0.27). Ten out of the fifteen countries have a Sharpe ratio larger than 1, showing that the returns of emerging stock markets are good enough to compensate for the risk investors face. On the contrary, the S & P 500 has a relatively low number (0.14), which means that the S & P 500 from 2002 to 2004 did not provide as much risk-adjusted returns as the emerging markets did.
During the period between 2002 and 2004, by comparing the returns of the 5-composite and aggressive portfolios, it is apparent that among the three regions, the Middle East has the highest returns and the highest Sharpe ratios, whereas Asia has the lowest returns and the lowest Sharpe ratios.

However, there are limitations in this study. It only reflects the performance of the examined period and the selected countries. As developing countries and emerging stock markets vary in size and level of sophistication, the results of the analysis may be different if another country had been chosen. Moreover, because of the instability of the emerging market, even though the performance was soaring in 2002-2004 and provided excellent results for US investors, it does not mean that the results will be the same in the future.

Other than the quantitative factors, qualitative issues are also very important. Problems such as political risk, investment restrictions, the operational efficiency of stock markets, the quality of market regulation, supervision and enforcement, corporate governance practices, minority shareholder rights, transparency, and level of accounting standards also should be considered.
APPENDIX A

COMPARISON OF RISK AND RETURN

OF EACH PORTFOLIO
Comparison of risk and return of each portfolio

Exchange Rate Adjusted Annualized Return

Comparison of risk and return of each portfolio

- Asia-5 Composite
- Asia-Aggressive
- Asia-6 Composite
- Middle East-5 Composite
- Middle East-Aggressive
- Middle East-6 Composite
- Europe-5 Composite
- Europe-Aggressive
- Europe-6 Composite
- S & P 500
APPENDIX B

INDIVIDUAL STOCK INDEX PERFORMANCE
REFERENCES


Oanfa Corporation. FXHistory: historical currency exchange rates http://www.oanda.com/convert/fxhistory


