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ABSTRACT

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Abstract

Internationalization has struck the financial industry, and modern information and communication technology (ICT) has been a major factor contributing to this revolution. In spite of the development in international information systems and online stock broking, private investors are offered only a limited selection of international stock brokerage services, and the prices of international stock trading cause remarkably higher costs than in national trading.

This study aims at (1) identifying the reasons for investors to internationalize their portfolios, (2) evaluating the impact of ICT on financial markets and particularly the stock brokerage industry, (3) measuring the market potential of international online stock broking for a Finnish brokerage and (4) finding the customers' preferences and requirements for these services. In order to find answers to the first two points, a literature review was conducted on journals of both finance and information systems science. The latter two aspects were covered by an empirical research, realized through an online customer survey, which attracted 416 respondents. The gathered data was analyzed quantitatively.

Investors have only a few tools to enhance their risk-return ratio. International diversification has been shown to be an effective tool in obtaining better returns without adding risk. Investors in developed economies are also seeking new emerging markets to enter, and thus could be expected to have need for international online brokerage services. Other reasons for investing internationally are consumption basket hedging, limited home markets and capitalizing upon currency rate fluctuations.

Modern ICT has changed the financial industry and its services. New business models have arisen and industry structure has been changed, as cost efficiency has been gained through the use of computer networks and processing power. Stocks and other securities have been digitalized, and assets can thus be moved around the world instantly. Also information sharing and generation has changed, as the Internet has democratized information gathering. Information plays an important role in financial market, and its value for the investors is grand.

The results of the survey clearly show that investors are having little experience in international stock trading, but the interest is on a higher level. This suggests that a hidden demand exists and could be satisfied with right products and supporting services. According to the results, the major challenges in developing international online stock brokerage services are cost structure and information services.

Key words	Stock markets, internationalization, financial information systems
Further information	

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TIIVISTELMÄ

x	Pro gradu -tutkielma
	Lisensiaatintutkielma
	Väitöskirja

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Tiivistelmä

Rahoitusmarkkinat ovat viime vuosikymmeninä kansainvälistyneet nopeasti. Osansa kehityksessä on ollut informaatio- ja kommunikaatioteknologian (ICT) kehityksellä. Vaikka tietojärjestelmät ovat kansainvälistyneet, ja osakevälitys on siirtynyt internetiin, ei piensijoittajille ole tarjolla kovinkaan monipuolista palveluvalikoimaa kaupankäyntiin ulkomaisilla osakkeilla. Suppean valikoiman lisäksi hinnoittelu johtaa huomattavasti kotimaista osakekauppaa korkeampaan kustannusrakenteeseen.

Tämän tutkimuksen tarkoituksena on (1) määritellä ne tekijät, jotka houkuttelevat sijoittajia kaupankäyntiin kansainvälisillä osakemarkkinoilla, (2) määrittää ICT:n vaikutukset rahoitusalalla ja erityisesti osakevälittäjille, (3) mitata kansainvälisen osakevälityksen markkinapotentiaalia suomalaiselle osakevälitystä tarjoavalle yritykselle sekä (4) selvittää asiakkaiden mieltymyksiä ja vaatimuksia näiden palvelujen osalta. Ensimmäiseen kahteen kohtaan paneudutaan kirjallisuuskatsauksessa, jossa lähteinä näytetään sekä rahoituksen että tietojärjestelmätieteen tieteellisiä julkaisuja; jälkimmäiset kaksi aluetta kartoitetaan asiakastutkimuksella. Tutkimus suoritettiin toimeksiantajayrityksen verkkopalvelun asiakkaille, ja siihen saatiin 416 vastausta. Saatu aineisto analysoitiin kvantitatiivisesti.

Sijoittajien mahdollisuudet riski-tuotto -suhteen parantamiseksi ovat harvassa. Hajauttamisella saavutetaan kokonaisriskin alentumista ilman, että tuotto huononee. Kansainvälisen hajautuksen on todettu olevan tehokkain hajautustapa riskin pienentämiseen. Kehittyvien talouksien nopea kehitys on myös lisännyt mielenkiintoa ulkomaisia sijoituksia kohtaan, sillä niiden tuotto on ollut huomattavasti kehittyneitä markkinoita korkeampaa. Muita syitä sijoittajien haluun kansainvälistyä ovat valuuttakurssimuutoksista hyötyminen, kotimarkkinoiden rajallisuus sekä kulutuskorin suojaaminen valuutan arvonmuutoksilta.

ICT on muuttanut rahoitusmarkkinoiden toimijakenttää. Kustannustehokkuus on kasvanut ja uudet liiketoimintamallit ovat tuoneet markkinoille uusia nopeasti kasvaneita yrityksiä. Arvopaperien ja informaation digitalisointi on johtanut transaktioiden ja tiedonjakelun globaaliin reaaliaikaisuuteen. Informaation ja sen jakelun merkitys osakemarkkinoilla on merkittävä.

Tutkimuksen tuloksien mukaan sijoittajilla on melko vähän kokemusta kansainvälisestä osakesijoittamisesta, mutta kiinnostusta löytyy tätäkin enemmän. Markkinapotentiaalia siis on, kunhan asiakkaille saadaan tarjottua oikeita tuotteita ja tukipalveluita. Tulosten mukaan suurimmat haasteet koskevat palvelujen hinnoittelua ja informaatiopalvelujen kehittämistä.

Asiasanat	Arvopaperimarkkinat, kansainvälistyminen, rahoituksen tietojärjestelmät
Muita tietoja	

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DEVELOPMENT OF INTERNATIONAL ONLINE STOCK BROKING

Master's Thesis
in Information Systems Science

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1 INTRODUCTION

The globalization and the Internet have struck the financial market and all other aspects of economy. Stock markets have internationalized and hence the investors are looking further than their home stock exchange to find diversification, new business segments and better returns with lower risk. The development of information and communication technology (ICT) enables investors to monitor the markets globally without major time delays in the supply of information from the markets. In the stock brokerage services, online broking has become a standard (Claessens, Glaessner & Klingebiel 2001a).

In 21st century, the home market of Finnish investments should be the European Union. EU enables capital mobility and the Euro zone even has a common currency. Still, investing directly in European publicly listed companies can be difficult and expensive for Finnish small and medium-scale investors. The brokerages offer a diversified selection of ways to invest internationally, mostly through mutual funds. Some brokerages have a selection of foreign stock exchanges available for their customers, but no brokerage offers a true selection of all the main geographical areas, including developing markets like China, Southern America, Eastern Europe and India. Quite often even the main market places of the Euro zone are not offered (Hämäläinen 2007).

This restriction hinders the free movement of capital and thus adds the geographical risk and costs of the investors. In a pure economic model, the capital flows towards the investments, which offer the best value/risk ratio to neutralize any arbitrage possibilities (Ross 1977, Roll & Ross 1980, Solnik 1983). Also, in theoretical framework, markets are efficient, meaning that there are no transaction and information costs, all information is available to all investors and all investors agree on the implications of the information (Fama 1970). This ideal model is restricted in real life e.g. by legislative restrictions in capital mobility, lack of information availability, and transaction costs. However, since securities and information have been almost fully digitized, in the modern world of Internet era, transaction and information costs should have lost a great deal of their importance. But for a private investor, minimizing transaction costs in international portfolio investments requires the use of international stock broking services. At the moment, due to the limited service availability, investors have to rely on mutual funds and cannot build the preferred international portfolio of stocks.

At the same time the information about international markets is increasing. This is enabled by the Internet, a medium which should also enable international trade. The hypothesis built upon the theoretical literature review of this thesis is that investors are more and more eager to invest internationally and need a brokerage that offers international stock exchanges online.

ICT lowers the transaction costs by powering up the communicating globally, increasing competition and by offering a secure channel to conduct transactions (Dasgupta 1998). In spite of this, the globalization of information and financial services, state-of-the-art online banking systems and utilization of modern ICT, most of the stock brokers in Finland do not offer a great selection of foreign stock exchanges to their customers (Hämäläinen 2007).

The fastest growth in online stock broking seems to be over, as most of the investors have gone online and the amount of traditional telephone and bank office traders has declined (Salin 2005). This situation means that the growth in the business of the brokers has to be acquired by competitive advantage achieved through lower costs or better services. Listening to customer needs has become critical in the competition (Laukkanen 2006). As the stock market internationalizes, offering global market places online is a potential source of competitive advantage.

1.1 The Purpose of the Research

This research aims at identifying the key elements of investors' motivation to form an international investment portfolio, quantifying the market potential of international online stock broking and finding the customer preferences on this market. The empirical part tests the hypothesis of investors' eagerness to invest internationally in stocks. Market opportunities are measured among the current customer base of the target organization, a large Finnish stock brokerage. The questions this research is seeking answers to are:

- Which motivators drive investors towards international investments?
- What implications does modern ICT have on the business of online brokerages and in developing international services?
- How big is the market potential for international online stock broking for the target organization?
- Which preferences and requirements do investors have for the services?

In the theory part of the research, literature is reviewed to explain the logic behind international investments and the role of Internet in the contemporary stock broking. Also the role of the Internet as the facilitator of information flow and thus builder of interest towards international markets will be reviewed.

In the empirical part, a customer survey will be conducted. Customer needs will be analyzed and thus the market potential and motivators will be identified. The aim is to find an initial base for further development of the private investor services offered by the target organization. The research will create information about whether or not it would be advisable for the bank to enter new stock markets, and which markets should

be entered. Also the need for supplementary services, such as analysis tools and news services will be identified. The aim is that by answering to the demand, the target brokerage company can create more value to its customers, improve customer retention, achieve higher revenue and profit and also achieve competitive advantage on the market of online stock brokerages.

1.2 Limitations and Boundaries

This research is limited only to Finnish private investors and the market of Finnish online retail financial markets. No aspect of institutional investors will be covered in this thesis. The empirical part concentrates solely on Finnish investors; other brokerage market areas are left outside of the survey, even though the theoretical background applies globally to all market areas. The empirical part is conducted among the customers using online services of the target organization.

The only investment methods covered in this thesis are direct stock market investments. Mutual funds, index-linked bonds, exchange traded funds and other ways of international investment are left outside of this research. None of these products offer the benefits of detailed and individual portfolio building, which is enabled by direct stock market investing. However, these products are briefly used in the customer survey to analyze the demand of substitutes for stock broking services.

This thesis belongs to the realm of information system sciences and finance. The market research also touches the science of marketing. The purpose is not to go too deep into the financial theories, but to use the theories to explain the reasons behind the changes in the business environment.

1.3 Structure of the Thesis

Chapter 2 explains the basic reasons and motivators for investors to invest internationally and form a well diversified portfolio. Financial theories are reviewed and strong motivators for international investing are found.

In chapter 3, the effect of modern information and communication technology to the stock trading is discussed. The normal investment process of private investors is used as a structure to review the effect of ICT in enabling international diversification. Also the effects of the Internet and ICT for the brokerages' business are explained. Based on chapters 2 and 3, a hypothesis for the empirical part is formed.

Chapter 4 briefly explains the methodology used in the empirical part. Conducting good customer survey and market analysis is reviewed and the execution of the survey is explained.

Chapter 5 depicts the results of the customer survey. Charts are used to illustrate the most remarkable findings of the survey. In chapter 6, the results of the survey are analyzed and the conclusions are drawn. Also the potential suggestions to the target organization are given.

The assessment of the research and the potential risks of misinterpretations are discussed in chapter 7. Chapter 8 summarizes the whole research.

2 REASONS FOR INVESTING INTERNATIONALLY

In a pure model of open economy, the capital flows towards the most profitable investments (Feldstein & Horioka 1980). In real world capital movements are restricted by legislation regulating the mobility of capital, the taxation's effect on net returns, investors' lack of information and risk aversion (Feldstein & Horioka 1980; Bertram & Dufey 2001). For small and medium-scale investors with limited resources to invest internationally, the absolute lack of international financial services and international stock broking could also be regarded a limiting factor.

However, the legislation has in recent decades changed towards a more internationally open economy, taxation systems have been harmonized to allow free capital movement and the information availability has increased dramatically due to the Internet. (Bartram & Dufey 2001; Garretsen & Peeters 2007)

Investors can have several reasons for being interested in investing internationally (Grubel 1968; Bertram & Dufey 2001):

- lower risk through geographic diversification
- pursuing higher profits from more profitable markets
- investing in sectors and investment products not available in home markets
- benefiting from currency rate changes

There are also risks specific to international portfolio investing, such as political risk and currency risk. These risks along with the motivation factors mentioned above are discussed in the following sections.

2.1 Minimizing Risk through Diversification

2.1.1 Markowitz's Portfolio Theory

Risk-averse investors are seeking the best return on their investment with minimum risk. Different risk profiles determine the structure of different investors' portfolios. In 1952, Harry Markowitz introduced the concept of modern portfolio theory. Markowitz's thesis was that through diversification an investor can minimize risk without affecting the return of the investment (Markowitz 1952).

According to other financial theories the expected return of a single investment basically goes hand-in-hand with the expected risk of the investment (Roll & Ross 1980). No asset can have a different expected return (or price) than another asset with a similar risk profile (Bansal & Viswanathan 1993; Kabanov, Rásonyi & Stricker 2002).

Thus, the only way for an investor to maximize profits without adding risk (or to minimize risk without giving up returns) is diversification.

Markowitz's Portfolio Theory presumes, that investors are risk-averse, meaning that rational investor chooses the asset with less risk from a group of assets with equal expected returns. This also applies to portfolios i.e. a selection of individual assets. According to this, an investor is seeking to find the best possible, or efficient, portfolio. (Markowitz 1952; Frost & Savarino 1986)

Before going into the detail of portfolio selection, we need to understand some concepts; namely return, risk and the correlation between assets.

2.1.2 Return

A reason for investing is the will to postpone one's consumption. A person who possesses assets (money, tangible goods, a house, bonds, stocks etc.) has an alternative to consume all right now and enjoy the consumption immediately, or to postpone the consumption of all or part of the assets she has in her possession (Bartram & Dufey 2001). The part not spent now is thus invested, or saved for the future. (Elton & Gruber 1987)

The investor then wants a reward for postponing the consumption. Also the effect of inflation, or the loss of value of money, needs to be compensated. In order to maximize the future spending possibilities, an investor wants to gain some return on this postponed set of assets. The common presumption of financial theories is that an investor prefers more wealth from less wealth (Elton & Gruber 1987).

The expected return is measured as the weighted mean of the possible returns, the formula is depicted in equation (1) (Elton & Gruber 1987),

$$E(R) = \sum_{i=1}^{N} P_i R_i \qquad (1)$$

where P_i = probability of the scenario

R_i = return of the scenario

N = amount of scenarios

Consider two assets with following probabilities for expected returns (Table 1):

Table 1 Example of expected returns and their probabilities for two assets

		Asset 1	Asset 2
	Probability	Expected return (p.a.)	Expected return (p.a.)
Scenario 1	0,1	+ 2 %	- 100 %
Scenario 2	0,5	+ 6 %	0 %
Scenario 3	0,4	+ 12 %	+ 45 %
Mean expected return		***+ 8 %***	***+ 8 %***

For both assets, the mean expected return is 8 %, but they have completely different risk profiles. Asset 1 provides at least 2 % of return in the worst case, whereas investing in asset 2 might cause the total loss of the initial capital. On the other hand, asset 2 might yield 45 % and the odds for this are also pretty good. Asset 1 yields a maximum return of 12 % in the best scenario, considerably lower profit than with asset two. Note also, that the mean expected return for both is 8 %, but none of the scenarios would cause a return like that. The mean expected return is thus only a measurement for the expected return, which enables investors to compare different investments and calculate the net present value of the investment.

In financial theory, the risk-free return is the base amount of return that can be achieved without any risk. This rate is usually quoted as the interest rate of governmental bonds or treasury bills of well qualified and stable governments and central banks (Brealey & Meyers 2003). But even this investment doesn't lack the risk of inflation i.e. the investment's loss in its real value (Brealey & Meyers 2003).

As the base return of an investment should be the risk-free rate, even asset 1's yield of 2 % in the worst scenario might actually mean the investor is losing money. If the risk-free rate for the investor is 5 % p.a., the investor is actually losing the difference, three percent-points, or in per annum interest as calculated in equation (2):

$$R_{total} = \frac{1+r}{1+r_f} - 1 = \frac{1+0{,}02}{1+0{,}05} - 1 \approx -0{,}029 = -2{,}9\% \qquad (2)$$

A good measurement of the profitability is the net present value (Brealey & Meyers 2003). When calculating the net present value, all the future and present cash flows of the investments are discounted to the investment date and summed together according to equation (3) (Elton & Gruber 1987; Brealey & Meyers 2003),

$$NPV = \sum_{t=0}^{n} \frac{C_t}{(1+r)^t} \qquad (3)$$

where C = cash flow

r = discount rate (e.g. risk-free rate, or the expected return of other similar assets)

Note that the price of the investment is usually the first cash flow which is negative. Negative cash flows are also the possible future payments that the investment generates.

If the net present value is negative, the investor is losing money. If NPV=0 the investment is nor profitable nor waste of money, but the investment yields exactly the amount of the discount rate used in the equation and is thus indifferent. When NPV>0, the investment is creating revenue to the investor and is profitable provided the discount rate used is correct and the certainty of the cash flows is estimated correct. (Brealey & Meyers 2003)

When analyzing purely financial assets - such as listed stocks - on purely efficient markets, if the expected return of similar assets is used as the discount rate, the net present value should always be zero. This is because, according to the capital asset prizing model, in the perfect capital model with perfect information, capital should always flow to the most profitable investment, if the risk is equal. This flow would then cause an increase in the demand of the asset and the price of the financial asset would rise and even out the expected return to the same level with the other similar assets. Hence the NPV would then again equal zero.

2.1.3 Risk

Investments have an expected rate of return, which tells how much return is on average expected from this particular investment. As mentioned above, this is only a weighted average of all the expectations and the actual yield of the investment can be different from this expectation depending on the outcome of the investment during the investment period. This difference constitutes the concept of risk. A risky asset should always have better expected return, because one of the basic rules of finance states that "a safe euro is worth more than a risky one" (Brealey & Meyers 2003, 13). In other words, most investors want to avoid risk when it is possible without sacrificing the return.

The risk of the investment is perceived as the dispersion of the return (Fama & MacBeth 1973). A common measurement of this dispersion is the variance of return (V). Another common measure is the standard deviation of the return (σ), also called volatility, which is basically the square root of variance ($\sigma^2 = V$). This factor tells the investor about the possibility of not gaining the anticipated return. The actual return can be either higher or lower than the expected return. (Markowitz 1952)

Going back to our example of two assets (Table 1), we see clearly that asset 2 seems to be riskier than asset 1. The anticipated outcomes in the three scenarios for asset 2

vary vastly from the mean expected return of the asset. By taking more risk the investor might gain more profit or even lose most of the capital invested.

By definition, variance is the squared deviations around the average (Brealey, Meyers & Marcus 1999, 247). It can be calculated with equation (4) (Elton & Gruber 1987),

$$V = \sigma^2 = \sum_{i=1}^{N} P_i (R_i - \overline{R})^2 \quad (4)$$

where P_i = probability of the scenario
R_i = return of the scenario
$\overline{R}$ = mean return of the asset
N = amount of scenarios

Using equation (4) we can calculate variances and standard deviations for both assets in Table 1:

$$V_1 = \sigma_1^2 = 0{,}1 \cdot (2\% - 8\%)^2 + 0{,}5 \cdot (6\% - 8\%)^2 + 0{,}4 \cdot (12\% - 8\%)^2 = 0{,}0012 \quad (5)$$

$$V_2 = \sigma_2^2 = 0{,}1 \cdot (-100\% - 8\%)^2 + 0{,}5 \cdot (0\% - 8\%)^2 + 0{,}4 \cdot (45\% - 8\%)^2 = 0{,}1746 \quad (6)$$

$$\sigma_1 = \sqrt{0{,}0012} \approx 3{,}5\% \quad (7)$$

$$\sigma_2 = \sqrt{0{,}1746} \approx 41{,}8\% \quad (8)$$

From the figures we see clearly, that the risk of the asset 2 is much higher than the risk of the asset 1. A reasonable and risk-averse investor would thus select asset 1 as the investment target.

The variance of the return of an investment is usually measured either from the history or the anticipated rates of return of different scenarios, as in the example above. This can be difficult for new investments with no track record. With listed stocks the task is easier, because information about historical returns is easily available. If the set of returns is normally distributed, knowing the standard deviation and the mean value is enough for analyzing the risk of the asset.

2.1.4 Correlation

The benefit of diversification depends on the correlation of the returns of different assets (French & Poterba 1991). Different assets' returns are not independent of each other; rather tend to have some correlation with the other assets. When the future of corporation A looks bad, it might indicate that the future of the customers of corporation A looks bad as well. And it will usually mean that the outlook of the subcontractors B,

C and D will be at least unclear, especially if they are heavily dependent on corporation A. Some of the competitors of corporation A might have same kind of trouble and their stock price is also affected by the same factors as corporation A's stock price. At the same time, corporation E might be benefiting from these factors and its stock price soars.

A good example of such correlation realm would be the fall in the stock price of energy-thirsty steelworks as the oil price rises. At the same time oil companies holding massive oil reserves would gain a benefit, investors would see higher returns on their stock, and thus the correlation between these companies' stocks would be negative related to the factor of oil price.

Some other factor could cause positive correlation between these companies. If the world economy stalled, the demand for both oil and steel would decrease and both stocks would perform badly.

Because of correlation, we can lose some risk of our investment portfolio by diversifying. The overall return of our investment portfolio would be derived directly from the returns of the assets in the portfolio. But instead, the overall variance of the portfolio is lower than the variance of the independent assets in the portfolio alone. This is due to the covariance of the assets in the portfolio. Thus, we can lower the risk of the investment by investing in several different assets, which together add up an expected return similar to a single asset.

Correlation of two assets is measured with covariance as depicted in equation (9) (Markowitz 1952; Ball & Brown 1969),

$$COV_{XY} = \sum_{i=1}^{N} P_i \cdot (X_i - \overline{X}) \cdot (Y_i - \overline{Y}) \quad (9)$$

where P_i = probability of the scenario

X_i = expected return of the scenario for asset X for scenario i

$\overline{X}$ = mean expected return of asset X

Y_i = expected return of the scenario for asset Y for scenario i

$\overline{Y}$ = mean expected return of asset Y

N = amount of scenarios

Solving the equation with the data from Table 1 yields the covariance of assets 1 and 2, which equals 1,32 %. This figure, however, is not very easily interpreted. An easier measurement to understand the level of correlation is the correlation coefficient (Elton & Gruber 1987),

(10) $$\rho_{XY} = \frac{COV_{XY}}{\sigma_X \sigma_Y}$$

which standardizes the covariance with the standard deviations of the assets. Correlation coefficient thus always lies between negative one and positive one, stating clearly how much correlation there is between two variables. Correlation coefficient of one represents perfect correlation whereas a zero value means the assets are totally independent of each other. A perfectly negative correlation coefficient means that the returns of the assets move exactly in the opposite directions from each other. Calculating the correlation coefficient for assets 1 and 2 from Table 1 results,

(11) $$\rho_{12} = \frac{COV_{12}}{\sigma_1 \sigma_2} = \frac{1{,}32\%}{3{,}464\% \cdot 41{,}785\%} = 0{,}912$$

so these two assets are highly correlative.

2.1.5 Finding the Efficient Portfolio

When selecting the assets and their weights in the portfolio, an investor analyzes the three variables detailed in the previous sections. The expected return of the portfolio is simply the weighted average of all the assets in the portfolio calculated with formula (12) (Markowitz 1952)

(12) $$R_p = \sum w_i R_i$$

where w_i=the weight of the asset in the portfolio
R_i=the expected return of the asset
$\Sigma w_i = 1$

The variance of the portfolio of N assets is a more complex equation (Markowitz 1952):

(13) $$V_p = \sigma_p^2 = \sum_{i=1}^{N}\sum_{j=1}^{N} w_i w_j \sigma_{ij} = \sum_{i=1}^{N}\sum_{j=1}^{N} w_i w_j \rho_{ij} \sigma_i \sigma_j = \sum_{i=1}^{N}\sum_{j=1}^{N} w_i w_j COV_{ij}$$

The formula for solving the variance of portfolio is actually a sum equation of a correlation matrix. An example of a correlation matrix of a portfolio of three assets is shown in Table 2.

Table 2 Correlation matrix for a portfolio of three assets.

	Asset A	Asset B	Asset C	Σ assets = Portfolio
Asset A	$w_A^2 \cdot \sigma_A^2$	$w_A \cdot w_B \cdot COV_{AB}$	$w_A \cdot w_C \cdot COV_{AC}$	$\Sigma=COV_{A,p}$
Asset B	$w_B \cdot w_A \cdot COV_{AB}$	$w_B^2 \cdot \sigma_B^2$	$w_B \cdot w_C \cdot COV_{BC}$	$\Sigma=COV_{B,p}$
Asset C	$w_C \cdot w_A \cdot COV_{AC}$	$w_C \cdot w_B \cdot COV_{BC}$	$w_C^2 \cdot \sigma_C^2$	$\Sigma=COV_{C,p}$
				$\sum\sum COV_{i,j} = \sigma_p^2$

The last column on the right sums up the row for every asset and thus depicts the covariance between the asset and the whole portfolio. The cell in the right bottom corner sums the whole matrix up and thus represents the variance of the whole portfolio. One can clearly see that the variance increases as the covariance between assets increases. The conclusion is that combining assets with low correlation coefficients will result in diversification advantages, as the return is not affected by correlation but the variance is. In order to find the best possible – or efficient – portfolio, an investor will use these formulas to evaluate different alternatives of weights for the assets. Finding the efficient portfolio of multiple assets requires complex matrix math and will not be covered in this thesis.

The set of possible portfolios can be depicted in a risk-return-graph. Figure 1 depicts an example of such a graph with possible portfolios, efficient frontier and two investors' preference curves. Investor 1 is willing to take a lower risk than investor 2 and has to content himself with a lower expected return than investor 2. Both investors, however, have found the most efficient portfolios (the black dots) for themselves. No portfolio can be found above or left of the efficient frontier, and thus the efficient portfolios lie on the line. All the portfolios below and right from the frontier are inefficient, i.e. there is another portfolio with higher return for the same risk or lower risk for the same return.

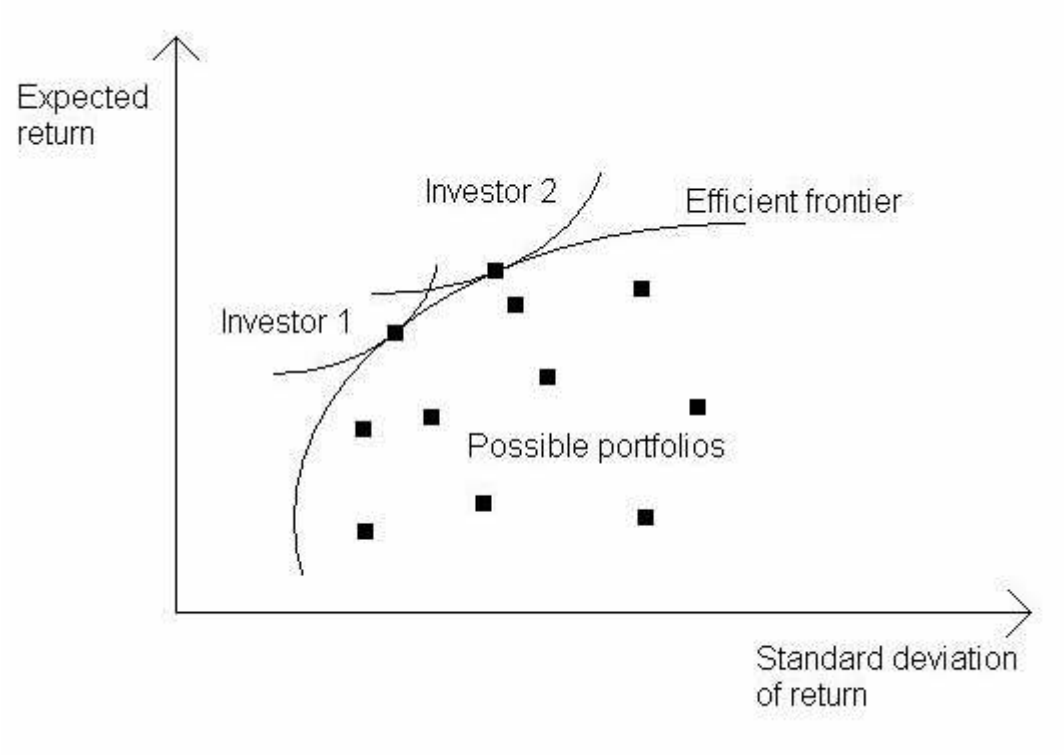

Figure 1 Risk-return-graph with efficient frontier and the preference curve of two investors

However good the efficient portfolio is, it usually cannot eliminate all the risk. It would be possible, if one could build a portfolio of a large amount of totally independent assets with correlation coefficient equal to zero (Elton & Gruber 1987, 30). Unfortunately the markets usually have a positive correlation coefficient. This means that the unique risk of the assets can be diversified away, but the overall market risk remains (Brealey & Myers 1999, 156).

As the amount of assets in the portfolio increases, the variance of the portfolio approaches the average covariance of the assets. This can be clarified by replacing the summations by averages in the formula of portfolio variance,

(14) $$V_p = \sigma_p^2 = \frac{1}{N}\overline{\sigma_i^2} + \frac{N-1}{N}\overline{COV_{ij}}$$

where N=the amount of assets in the portfolio (Elton & Gruber 1987, 30). From equation (14) one can see, that the contribution of the variances of individual assets approaches zero as N approaches infinity, and the contribution of the covariance terms remains and is approaching the average covariance. The level of the remaining risk, market risk, depends on the level of diversification, because as with individual assets, markets have unique risk that can be minimized through diversification between different markets, if their correlation is small (Solnik 1974).

2.1.6 Comparison of Diversification Approaches

As explained in the previous sections, the effectiveness of diversification in reducing risk is dependent on the level of correlation of the assets. The more similar the assets are, the higher the correlation and thus lower the benefits of diversification. An investor has different levels of diversification to choose from.

First level is naturally to diversify between more than one stock to reduce the unique risk of a single listed company. This, however, is not very efficient, unless diversification is done over a broad spectrum of industries to reduce unique risk of an industry or technology (Solnik 1974).

Hence diversifying in different industries on the home stock exchange is the next level. More effect can be gained by analyzing the market areas and the key factors of the target companies and considering diversifying among them, too. For example investing solely in different companies in different industries with all the companies being heavily dependent on the Chinese market or the low exchange rate between Euro and Dollar could be a trap and stay unnoted without a careful analysis of the stocks.

Diversifying on the home stock market still bears some unique risk, namely the unique risk of a unique market (Solnik 1974). Also, in small stock markets like in Finland, the selection of stocks is limited to some tens of alternatives and some industries are not present at all, limiting the ability for an investor to lower the risk by efficient diversification (Solnik 1974). Many companies listed in the stock exchange can be local players and thus have high geographic and political risk, as the development of the local economy affects the portfolio of these stocks tremendously. The solution to this problem is international diversification, which aims at reducing the unique risk of geographic areas and political and economic regions.

Studies have shown that local markets tend to have relatively high correlation between different industries, but different market regions have a lower level of correlation enabling further risk aversion (Levy & Sarnat 1970; Solnik 1974; Liljeblom, Löflund & Krokfors 1997; Söhnke & Dufey 2001). In spite of this, most investors have traditionally stayed local and kept their portfolio weights mostly on their home markets. This either indicates the belief, that an investor's home market yields higher returns than the other markets, or is a result of constraints in the investment process or investor knowledge (French & Poterba 1991).

Bruno Solnik (1974) compared nationally and internationally diversified portfolios. He found that local markets are different in their risk structure. Smaller markets tend to have more market risk, which cannot be diversified. Larger markets offer better opportunities to lower the risk by diversification. Figure 2 depicts the differences between German and US stock markets. In German markets, an investor could obtain a diversification benefit until approximately 44 % of the risk of an average single stock

was reached. Wall Street investor would have a well diversified portfolio with approximately 27 % risk compared to a single stock. But an investor investing in eight markets could diversify her risk until only about 12 % of the risk is left. The benefit of the international diversification is thus vast, especially for investors with smaller home markets. (Solnik 1974)

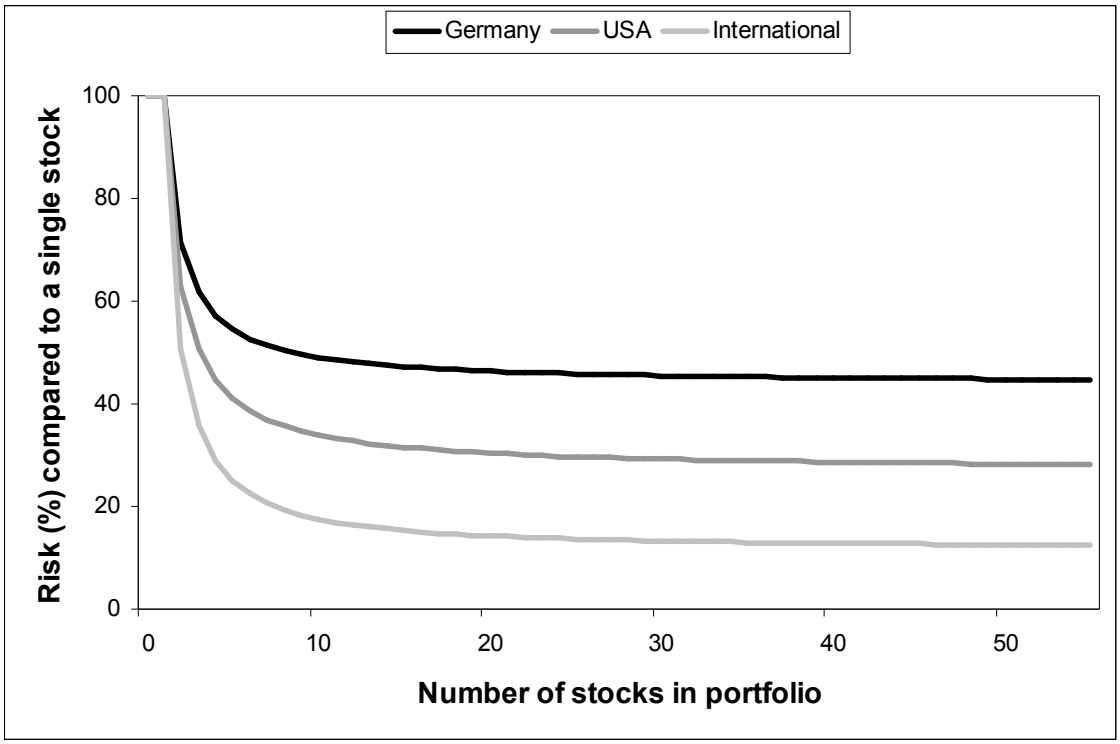

Figure 2 Risk structures of German and US stock markets compared to international portfolio (USA, Germany, Belgium, Italy, United Kingdom, the Netherlands, Switzerland and France) (Solnik 1974)

Solnik (1974) also compared choosing patterns for international portfolios. Two methods compared were country diversification focus and industry diversification focus. In the first method, a portfolio is created with focus primarily on choosing stocks from different markets. In the latter manner, focus is primarily on choosing representatives of different industries from a list of listed stocks from eight different markets. In this comparison, the country focus clearly offered a stronger benefit when choosing a smaller amount of stocks. As the amount of stocks rises, the portfolios of these two philosophies approach each other and the curves draw closer, as seen in Figure 3. (Solnik 1974)

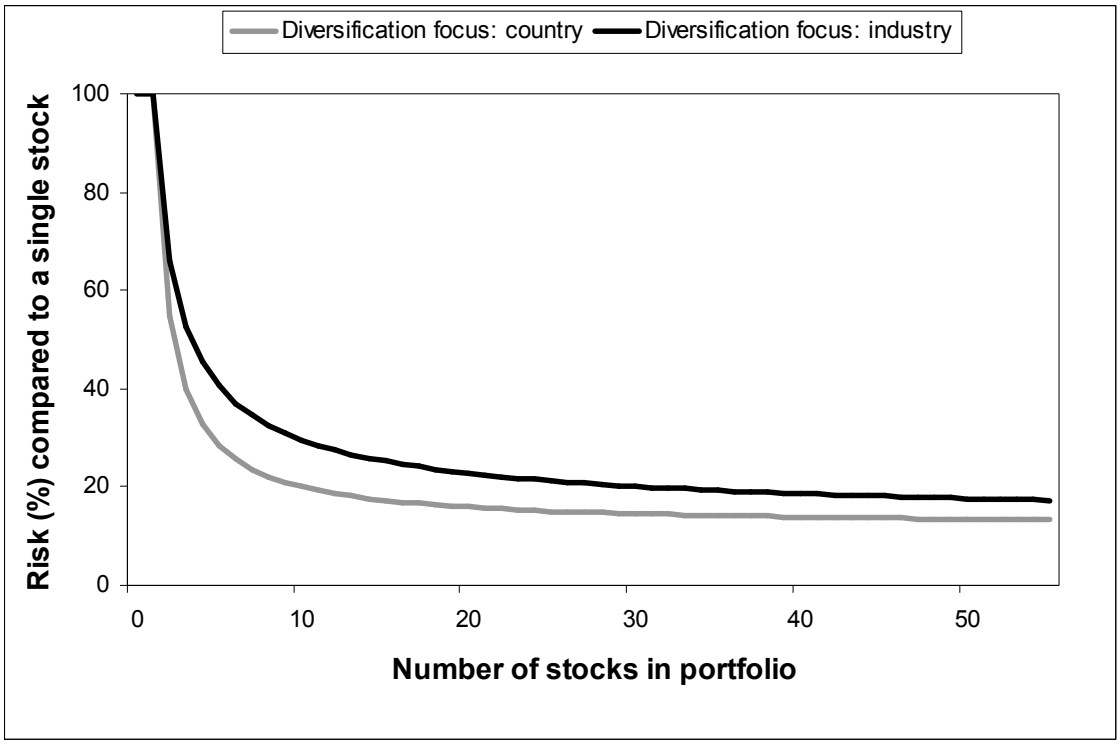

Figure 3 Risk profiles of diversified portfolios by their focus (Solnik 1974)

However, the findings of Solnik (1974) are more than 30 years old. In a global economy, inter-country correlation could be considerably higher than what it was in the 1970's. In spite of the age of these results, the conclusion of later researches on the benefits of international diversification state, that the absolute benefit has not disappeared (Odier & Solnik 1993; Liljeblom et al 1997). The level of advantages could be diminished, as the nations are more and more economically integrated and hence their development more correlated than previously.

Solnik's early works have also been criticized for insufficient exchange rate risk consideration and that as an evaluation after a period of relatively fixed currency rates in the late 1960's, the results are giving a far too positive image of international portfolio investment (Eun & Resnick 1988).

2.2 Differences in Returns of Market Areas

The world is not developing equally. Western Europe, North America and Japan are, only to mention few, considered developed markets (Bartram & Dufey 2001). These economies are very well developed, politically and economically stable, information is reliable and easily available and financial markets are fairly efficient.

Emerging markets include countries which have low or medium income according to World Bank statistics, but have high rate of economic growth (Bartram & Dufey 2001).

These countries tend to attract foreign investments, which enable the high growth. Examples of emerging economies include China and the former communist countries of Eastern Europe. These economies are sometimes also changing in their restriction environment, as they are taking part in the economic integration by e.g. joining the European Union to help foreign direct investments reach their economy.

Emerging markets are extremely interesting for investors, as the return of the investments in these countries can be immense. This is due to the rapid expansion of the economies, which enables high growth during the first years of the expansion. One reason for rapid growth in investment values is the information asymmetry (Bartram & Dufey 2001). The price formation on a market is informationally efficient when the prices on the market reflect fully and correctly all the information relevant information of the asset (Brunnermeier 2000, 24). In emerging markets, information is not that widely available until the economy attracts the attention of information creators and analysts. Risk-averse investors can shirk these markets, as they perceive the risk higher than it actually is. However, these economies can also bear much higher risk than anticipated, since emerging economies are usually politically more unstable than developed economies (Bartram & Dufey 2001). Risks of international investments are further discussed in section 2.5.

Developing or emerging economies can also have restrictions which make investing more difficult for an investor. According to Bonser-Neal, Brauer, Neal and Wheatley (1990), these restrictions can often be circumvented, but with a high cost (Bartram & Dufey 2001). Restrictions, tax issues and imperfect information can cause the risk-return ratio of investments to vary between different countries, and thus the financial theories presuming efficient integrated capital markets are not relevant on asset pricing (Bonser-Neal et al. 1990).

Segmented stock markets are formed due to the regulations, restrictions and local tax laws regarding foreign investments (Bartram & Dufey 2001). Market segmentation can cause an asset not to lie on the Security Market Line (SML). Financial theories always assume that an asset lies on SML, and is thus priced right in relation to the risk of the asset. However, according to Bartram & Dufey (2001), an asset might be over or underpriced in the eyes of a foreign investor, because the regulations of financial markets cause foreign and domestic investors to use different figures in calculating the fair price of the asset. Finding underpriced assets on segmented markets represents another benefit of international portfolio investment (Bartram & Dufey 2001).

Lowering the restrictions of financial markets not only attracts more investors to the market thus increasing the market liquidity and stability, but also enables the corporations of the market perform more efficiently as the cost of capital decreases (Claessens, Klingebiel & Schmukler 2006). Opening the borders of capital flow makes it possible for the corporations to make direct foreign investments and to raise capital

with a lower interest rate and restrictions. This is why liberation of financial markets makes emerging markets even more attractive and enables higher returns for the investors.

2.3 Limitations of the Investor's Home Markets

When investing on small local markets, investors have but a limited set of choices. On January 14th 2008, Helsinki Stock Exchange had a total of 133 companies listed on its main list (Kauppalehti Online 2008). In comparison, New York stock Exchange, the largest stock exchange of the world, lists more than 2780 companies (NYSE, New York Stock Exchange 2008).

Moreover, the selection of stocks listed on a national market has been observed to be highly segmented, i.e. a local stock exchange tends to have certain industries overrepresented and certain industries could even be absent (Bartram & Dufey 2001). It is clear, after investigating the structure of the Helsinki Stock Exchange list, that information technology is very well represented on the list, whereas oil companies are limited to only one and banks to three. The proportion of the amount of these businesses is somewhat different in the local stock exchanges of Switzerland or Middle East.

The limitation of the selection of corporations has two effects. First, the diversification benefits can be lost due to the imperfectly diversified markets and the lack of industries to use in diversification. Diversified portfolio of stocks picked solely on this kind of markets could actually be very badly diversified due to the biased market structure. On the other hand, an investor might be keen to invest on a certain industry which is not present on the home market.

For Finnish investors, the Helsinki stock exchange is traditionally the central market place for investments. However, as the internationalization of stock trading has had its impact also in the Finnish markets, one might want to see the market from a different perspective, the perspective of large scale international investors. There has been talk in the media about the distance and the size of the stock exchange having an influence on the volatility of the market, as the large investors pull out their investments first from the "peripheral markets", as the volatility of the global stock trade increases and investors are lowering the share of stocks in their portfolio (Rosendahl 2008). For example during the first weeks of the year 2008, as the subprime credit crisis increased volatility globally on the stock markets, indices in Helsinki had higher daily volatility than American indices, which have more direct connection to the crisis. This excess volatility can be considered a surplus risk for a local investor. However this kind of reactions to global volatility and its implications have not yet been scientifically researched.

2.4 Currency Rate Fluctuations

Currency rate fluctuations are usually considered a negative thing in international portfolio investment. It raises the odds for variations in portfolio returns, thus it poses a risk to the investor. In order to calculate the real rate of return for an international investment, an investor must translate the nominal rate of return of the foreign investment by the exchange rate at the end of the period (Choi 1984).

But investors can also benefit from taking an appropriate amount of exchange risk (Black 1989). Investors can protect their positions by hedging their foreign assets. According to Bartram and Dufey (2001), hedging in international portfolio investment is defined as:

> *"...establishing short or long positions via the use of currency futures and forwards, which represent essentially long or short positions of fixed income instruments, typically with maturities of less than one year."*

Technically, diminishing returns of investments due to the exchange rate changes would result gains in the hedge instrument. According to Black (1989), hedging one's international portfolio is like international diversification: it is a way to reduce risk without affecting returns.

The thesis of Black (1989) can be explained as follows. Let there be two countries, A and B, with an exchange rate 1:1 between them. In the following period, the exchange rate has a 50/50 chance of developing either to 2:1 or 1:2. The other nation consists of consumers of apples, the other nation of consumers of bananas; thus they have different consumption baskets. The world market portfolio consists of equal amount of bananas and apples. Consumer from A could avoid all currency risk by possessing only apples and consumer from B should invest only on bananas. But if they trade a banana and an apple, their expected return would be higher: for the apple consumer, a banana has a chance of 50 % to be valued at two apples and a 50 % chance to be valued at half an apple. Same applies to the consumer of bananas holding apples. Thus the expected value of the foreign fruit for both consumer-investors is 1,25.

The trick behind all this is the Siegel's paradox, according which the gain for one currency exceeds the loss for the other currency. Hedging less than 100 % of their fruit portfolio would yield benefits for both consumer-investors of the example. Hedging 100 % would rather even out the benefits and result in a zero-sum-game. In order to find the optimal hedging ratio, Black (1989) created a universal hedging formula (15),

$$H = \frac{\mu_m - \sigma_m^2}{\mu_m - \frac{1}{2}\sigma_e^2} \cdot 100\% \qquad (15)$$

where H = the percentage of the foreign investments to be hedged

μ_m = the average across investors of the expected excess return (return above r_f for each investor) on the world market portfolio

σ_m= the average across investors of the volatility (variance) of the world market portfolio

σ_e= the average exchange rate volatility (variance) across all pairs of countries.

According to Bartram & Dufey (2001), the consumption basket of households includes a great deal of products from abroad, in other words foreign goods and services. This factor causes a currency rate risk to the households, as earnings are normally generated in domestic currency but the local prices of foreign services and goods fluctuate according to the exchange rate. Investing households, however can find a way to minimize the risk by hedging their consumption basket by investing in foreign currencies. This might even mean that the rate of return measured in local currency is not the only focus of the investment process (Bartram & Dufey 2001).

A consumer-investor, who is only consuming domestic products and has no international investments, is solely under a risk of domestic inflation. Changes in the currency exchange rate do not affect her purchasing power (Bartram & Dufey 2001). But as most of the consumers use at least some foreign goods and services, possessing a similar proportion of foreign assets would hedge the exchange rate risk of the consumption and thus minimize it.

As the value of the U.S. dollar has strongly depreciated during the past few years, eating up the real return of European investors investing in the United States, the Euro price of American products, holiday trips to the United States and service consumed there has decreased in a similar proportion. In other words, American consumers, who regularly visit Europe, drive European cars and enjoy French Champagne and Cognac, have suffered from great rises in their consumption basket prices. By investing in the Euro zone, they could have hedged this rise and thus avoided the currency risk of their consumption habits. Therefore, consumption basket with foreign goods and services should serve as a motivator for international investment (Bartram & Dufey 2001).

2.5 Risks of International Investments

2.5.1 Identifying Risks and Inefficiencies

However good and beneficial international diversification and investment is, it has its risks and inefficiencies. Local legislation and reporting standards are different and might confuse a foreign investor when analyzing a potential investment target (Bhushan

& Lessard 1992). One logical barrier for an investor to go international is the lack of language skills, usually needed for understanding and acquiring international information. So far local finance media has mostly concentrated on local investment products, and in order to get thorough, reliable, accurate and relevant information about corporations listed outside Helsinki Stock Exchange, one must search most of the information from foreign and international sources. The further from home market the investor wants to go, the more international the source has to be. And if the investment target is a local player in its domestic market, such as a Greek retailer, it might even be difficult to obtain good information about the stock in the most common international languages.

Bartram and Dufey (2001) divide the unique risk of international portfolio investment into two categories: exchange risk and political, or country, risk. As already mentioned in section 2.4, in order to calculate the real rate of return of an international investment, an investor must translate the nominal rate of return by the exchange rate in the end of the period (Choi 1984). The investment itself can thus do very well but other factors in the world economy might translate the real return to negative.

2.5.2 Currency Risk

The exchange risk of the portfolio depends on the portfolio currency structure, currency rate volatility, correlation between the currencies involved and the correlation between the return of securities and exchange rates. Of these four factors listed, the correlation between the return of securities and exchange rates is the most important one (Eun & Resnick 1988; Bartram & Dufey 2001). When dividing the risk of a foreign stock into the volatility in local currency and currency exchange risk, the exchange risk constitutes a major part of the risk (Odier & Solnik 1993).

In the research of Eun and Resnick (1988) about 50 % of the whole volatility of dollar returns from stock investments in Germany, Japan and United Kingdom was generated by currency rate volatility. Furthermore, the covariance of stock returns and exchange rate in developed industrial countries has been observed to be positive (Eun & Resnick 1988; Bartram & Dufey 2001), so exchange rate fluctuations rather reinforce than offset the development of the stock market for an international investor adding to the risk of an international portfolio. As the correlation coefficient of exchange rates has been observed to be higher than the correlation coefficient of stock market returns, the exchange risk is more difficult to minimize through (currency) diversification than diversifiable risk of stocks (Eun & Resnick 1988).

2.5.3 Political Risk

Robock (1971) defines political risk as a risk of significant changes in the returns of investment portfolio due to the effects to the business environment by political discontinuities, which are resulted by political change and which are difficult to anticipate. Bartram and Dufey (2001) divide country risk into three categories: restrictions on capital flows, constraints on management and corporate activity and ownership-control risks. In any case, country or political risk is defined as changes, which affect the status of the investor as the owner of a company and her capability to obtain returns from the investment.

Political discontinuities can be as severe as a coup or minor changes as the change in the government after an election. These changes affect the environment in which the corporation must function, the laws that have to be obeyed, taxes that have to be paid etc. Although not directly political in nature, an interesting and important factor influencing the investments' profitability are education system, which affects labor capability, natural resources, environmental issues and human rights. An example of an increased political risk could be the current developments in China. Investors are gaining vast returns from this emerging market, but the questions about the ability of the Communist Party to maintain its power are ever growing. The increasing economic growth adds pressure not only to environmental capacity but also the human rights and freedom of speech improvements.

Closed and restricted economies can have different rules, unknown for an international investor. Local owners can have substantially stronger power in the corporation. Major issues in political risk are the privatizations and nationalizations companies. In order to assess the country risk, an investor must analyze the political development, balance of payments trends and economic growth of the nation. (Bartram & Dufey 2001)

There are no pure mathematical solvers for country risk. But there are risk assessment services (Cosset & Suret 1995; Erb, Harvey & Viskanta 1996). There are credit rating systems similar to the corporation credit rating systems. For example, International Country Risk Guide analyzes the development and changes in nations monthly and calculates the rating using available information. However, rating political risk is usually a subjective assessment and information scarcity affects the results. (Erb, Harvey & Viskanta 1996)

According to Cosset and Suret (1995), investing in countries with high country risk can improve the portfolio's risk-return ratio. This is partly due to the low correlation between developed and emerging economies, partly due to the higher yield of risky countries. In their empirical research on different diversification strategies, the strategy which included countries from all risk levels had the best return. The most important

effect of including politically risky countries in the portfolio was due to the decreased risk of the portfolio. Cosset and Suret (1995) also noted that political risk, contrary to expectations, is not unique to developing countries, but also an issue in investments to developed markets. Thus, investors should not exclude politically risky markets from their portfolio decisions.

However complex the risks of the international portfolios are, the conclusion of the financial theories as well as documented empirical findings is clear. Investors should have a strong incentive to internationalize their portfolios. Theories state, that there is a strong market potential for financial service providers. This sets a challenge on the business of modern stock brokerages.

3 STOCK TRADING IN THE INFORMATION AGE

In the last decades the stock market has grown considerably and gone through a process of internationalization (Bartram & Dufey 2001; Claessens et al. 2006). Restrictions on capital flow have been substantially lowered. Europe has seen the rise of a single market area; the Euro zone. At the same time, ICT has changed the way financial markets can operate, as the cost of information availability and the effect of geographical distances have diminished. This change has resulted in a growth and changes in the financial service sector and also created a growing need for international financial services as well as an increased ability to offer them online. New business models have arisen and banks have encountered perhaps the most revolutionizing changes in the history of the industry.

3.1 The Role of Information on Stock Markets

In efficient stock markets, stock prices fully reflect the available information that has implications to the stock (Fama 1970). According to Fama (1970), there are three conditions that have to be fulfilled on a market in order for it to be called efficient:

1. There are no transaction costs.
2. All information is available to all market participants without costs.
3. All participants agree on this information's implications on stock's current price and the distribution for future prices.

It is clear, that the first condition is breached, as there are always transaction costs for private investors. But the modern ICT allows the diminishing of transaction costs (Bakos 1998; Schack 1999; Hong 2000; Domowitz 2002; Bortoli, Frino & Jarnecic 2005). Same applies to the second condition: Internet and the global digital delivery of information have drastically lowered information boundaries.

Market efficiency has long been a matter of dispute. Whether prices truly reflect all information and all information is available to all participants has been subject to controversy. Fama (1970) divided market efficiency into three categories:

1. Weak form of market efficiency. The prices only reflect the historical development of the asset's performance.
2. Semi-strong form of market efficiency. Stock prices reflect the information that is clearly publicly available, such as interim reports and financial statements.
3. Strong form of market efficiency. All the relevant information is available to all participants, thus no one has an advantage gained through inside information.

In his empirical research, Fama (1970) found stock markets to be almost entirely of the strong form. Minor notes about certain groups' abilities to acquire insider

information were made (see Niederhoffer & Osborne 1966; Scholes 1969). However, from the classifications of Fama (1970), we can conclude that information generating, distribution and analysis are crucial in sustaining market efficiency. Information is hence the major driver of stock prices and investment decision making. All innovations, technologies and methods developed to enhance these actions have an implication for an investor.

The results of Fama (1970) raise a question. If markets seem to have full access to information without a cost, why spend any money on gathering information? How can we have information generators, who make a profit by analyzing and publishing information? As almost anyone, who has invested in stocks knows, information gathering is an important part of investment process. It generates costs, which have to be beaten by the improved returns gained through the acquisition of information.

On the other hand, if no-one gathered and distributed information, markets would be inefficient and offer great possibilities to generate excess revenues by going the extra mile and acquiring more information than the others have at hand. This condition generates equilibrium on the information market, where the marginal price of new information has to be covered by the increase in returns, and further information gathering is after this point futile.

Online investing has brought about a vast increase in information quantity. However, the quality of this information varies greatly, and the investor must find the reliable and correct information from an enormous amount of information (Hong 2000). This generates information processing costs which – according to Hong (2000) – can trade off the cost benefits of online transactions. Information is available from corporate websites, financial service providers, financial portals, chat rooms, online forums and many other virtual places. Online investors are mostly do-it-yourself investors, who do their analysis on their own based on the information they have been able to gather; and most of this information is gathered from the World Wide Web, where basically anyone can post information and state that it is true. By refining their information services, online brokerages can increase their customer satisfaction rate and generate competitive advantage. (Hong 2000)

3.2 Information Technology in Contemporary Investment Process

3.2.1 Investment Process – the Definition

The classical financial theories covered in chapter 2 assume a world without transaction and information costs. In real life, transaction costs and information availability steer the decision process of the investor. Information technology has a major role in both of these factors. As both, the information and the assets, are nowadays mainly in electronic form, supplying investors with the relevant information and carrying out the transaction have become almost costless. However, the creation of information still causes costs, but the modern information technology has also made the tools for analyzing investment opportunities faster and inexpensive.

Economides (2001) categorizes the direct impacts of the Internet for financial markets in three categories. First, Internet facilitates information flows, which include information to evaluate actions (e.g. analysts' reports) and interfaces and markets for information exchange, dissemination and evaluation. Second, the Internet enables interaction between economic agents. This includes the exchange of assets and other financial instruments as well as physical goods, the creation and enhancement of markets, and a possibility to discuss live with multiple parties about financial markets. Third, the Internet facilitates a direct access to the market for the financial agents. Economides (2001) also points out that since the Internet is in fact a global network, all this can be done without borders. These factors influence the contemporary investment process.

Ackerman (1970) divides the corporate investment decision process into three stages:

- Definition, where an investment process in identified
- Impetus, in which motivation is found for the manager to commit to the investment
- Authorization, where the project financing is secured.

In a similar way, the investment process of a private investor investing in financial assets can be divided into three stages. In this case, the first stage includes identification and finding the appropriate investment possibility. As the industrial manager is concerned usually with the productivity issues in a particular industry and thus has limited list of possibilities, a private investor building a portfolio has a never ending list of assets in the world of financial markets. Hence finding suitable investment targets is essential and finding this information is crucial in beginning the investment decision process. In the first stage, the goal is to find interesting stocks which fit the portfolio of the investor in all perspectives of diversification.

The second stage, impetus, varies from the industrial manager point of view only slightly. In both cases the target is analyzed, its expected return and risks are evaluated. A private investor might use technical analysis or simply study the strategy of the company as well as the financial statement of the corporation in order to find the impetus to invest. The second stage is a continuing process even after the third stage, as the investor most probably doesn't "buy and forget" the investment, rather continues to evaluate the it in order to keep track on the success of the investment.

The third stage, authorization, represents the transaction in our model. An investor has not rejected the potential investment target in stage two, so she authorizes the broker to conduct the transaction for her. The faster and cheaper the transaction is taken care of, the better for the investor. In the next sections, we examine how modern information and communication technology helps the investor in these three stages of the investment process.

3.2.2 Identifying Investment Targets

In order to invest, one must know about the possibilities. Local investors usually face no problems with this; they can only look at the list of stocks traded in their local stock exchange. An investor seeking to efficiently and internationally diversify the stock portfolio faces a more complex task. In the days before the Internet, one had to rely on available business newspapers and information available by the brokerages. Nowadays, however, information is readily available after connecting to the World Wide Web.

Internet has provided investors with new means of information acquiring. Information sources such as chat rooms and whisper numbers have been born (Madhavan 2000)[1]. Corporations and stock exchanges have broadened their information sharing to Internet. Listed companies can be found for almost any stock exchange in the world, and their categorization to small, medium or large capital companies as well as industry category is clearly stated. There are also several international portals for investment, such as Yahoo! Finance or cnnmoney.com. These portals include all major stock exchanges of the world and information is basically available 24 hours a day. These portals also include message boards for individual stocks, helping an investor in finding initial information about investment possibilities (Das & Chen 2007).

Most of the publicly listed companies have the basic investor information published on their website (Geerings, Bollen & Hassnik 2003). Basic investor information includes interim reports, annual reports, press releases, balance sheet, cash flow

[1] Whisper number is a general slang term for an unofficial earnings-per-share estimation by investors, circulating in chat rooms and in stock exchanges.

statements etc. This information serves both for identification and analysis stages of investment decision process. The availability of these data is a good example on how Internet has changed the information gathering of a private investor in the past 15 years.

Internet has democratized information. Gathering information about investment choices is no more expensive, even when searching targets internationally. The main problem today is that investors lack the skills and resources for making right investment choices (Saatcioglu, Stallaert & Whinson 2001). The choices for a global portfolio are enormous, and it is fairly ineffective for an investor to go through all the stock exchanges to identify interesting targets.

The broker of the investor can have an important role in investment target identification. Brokers can recommend products (markets, stocks), as they usually have more information and experience about different investment possibilities. As service providers for investors, brokers could incorporate an information broker service for identifying investment opportunities. Information broker is an expert, who gathers, structures and evaluates information for further use (Waern, Tierney, Rudström & Laaksolahti 1998). The online broker could also automate the portfolio analysis of the online investor, gather a data base of international stocks and their properties and use the combination of portfolio analysis and the database to recommend the best possible investment target for an investor. This approach would be similar in its philosophy to the recommendation system of Internet stores, where buying patterns of a consumer are used to recommend interesting books and other products individually (Ansari, Essegaier & Kohli 2000).

The development of Internet has also had its downsides. As information is easily available for a lot of people, it is also easy to spread false information by a single individual. One major form of spam emails is stock touting. According to Frieder and Zittrain (2006), 65 % of the emails delivered in the world are unsolicited and 15 % of these spam emails is stock touting. In stock touting emails, the receiver is recommended to buy a stock, usually a stock with a relatively low liquidity and nominal price, because the “projected closing price” or equivalent for a near future period is several times higher than the price today. The idea behind this is to increase the demand for a single stock and thus hike up the price of the stock in order to gain returns on the existing position of the spam sender (Hanke & Hauser 2008). One must not seize all the opportunities, especially when it seems to be too good to be true. As the Internet provides good for the international investor, it also requires prudence.

3.2.3 Target analysis

After the investor has identified an interesting stock that fits her portfolio, it is time for a deeper analysis of the asset. There are two main approaches to analyzing stocks: technical and fundamental analysis. Technical analysis concentrates on the historical data on the performance of the stock, and has been a subject for debate about whether it is an appropriate analysis method at all. It is considered an analysis method for a shorter period than what fundamental analysis is, and these periods have ever more shortened due to the technological revolution in the past two decades (Pring 2002, 2).

Technical analysis originated in the 19th century, but academics are still not unanimous about its effectiveness. Technical analysis assumes that markets are inefficient rather than efficient, resulting in prices that do not correctly represent the risk and return of the asset. It also assumes that trade patterns exist and market sentiments drive the prices of investments. Thus one can predict the development of an asset from the history of its performance; only by studying the chart of the past stock quotations. (Roberts 1959; Brock, Lakonishok & LeBaron 1992; Neely, Weller & Dittmar 1997; Wong, Manzur & Chew 2003)

An example of technical analysis is the moving average oscillator, which is one of the most used analysis methods. In this method a short period average, such as one day, of the stock price is compared to the long period average, such as 60 days. When the short period average crosses the long period average, a trend is shifted. The analysis thus reflects the recommendation to sell, when the short period average falls below the long average and buy when short average rises above the long average. A band area can be introduced close to the long average to prevent constant buying and selling when averages are near each other. (Brock et al. 1992)

How can modern ICT help in conducting technical analysis? Consider a world 20 years ago. There was no Internet, and microcomputers with statistical or even simplest mathematical tools were scarce. In order for a private investor to do technical analysis, she had to first get information about the history performance of the stock and then calculate the averages with a calculator. Analyzing one stock could take weeks, if information had to be waited from abroad and the data for sure did not come for free.

Enter the ICT capabilities of the 21st century, and the task becomes easier. Financial portals offer vast amounts of data on stock performance and indexes. Historical stock prices can be found easily and for free. Data can go back decades, for example, Yahoo! Finance quotes the daily closing prices for General Electric Corporation back to 1969. This data can easily be copied to such standard spreadsheet applications as Microsoft Excel or the open source equivalent OpenOffice Calc. These applications perform analysis and draw charts in seconds and do not require the skills of advanced mathematics from the user.

Modern ICT has taken most of the mechanical work off the shoulders of the investor. No more complex mathematical skills are needed, and the information acquired by technical analysis can be combined to fundamental economic data. New methods for analysis have emerged, combining financial analysis to concepts like chaos theory, fuzzy logic, artificial neural network and genetic algorithms (Neely et al. 1997; Wong et al. 2003). One of the largest advantages of computer technology has been saving time through increased computing power. In the research of Neely et al. (1997) it was estimated that duplicating their results on a 120 MHz Pentium (back then a state-of-the-art technology) would take 81 days. It is clear, that it would be ridiculous to perform this task manually.

For online brokerages, offering ready-made technical analysis tools is a basic service today. Broadening the recommendation system mentioned in the previous section, an online brokerage could add automated technical analysis to the system enhancing the service even further. Combining several automated analysis methods could result in an easy task in identifying and analyzing the stock. The risk for the brokerage is nevertheless remarkable, since erroneous automated recommendations can cause the trust of the investor to collapse. One must remember, that stock brokerages are not recommending twenty euro books as Amazon.com, rather investment opportunities with capital flows of at least thousands of euros. However, a system like this could ease the work of an investor in finding and analyzing stocks.

Fundamental analysis concentrates on the available fundamental information about the investment target. This information includes financial statements, annual reports, brokers' recommendations and economic data from the business environment of the corporation (Brealey et al. 1999, 326). The supposition behind using only fundamental analysis is that markets are efficient, and the movements on the market follow what is called "random walk". Random walk means that previous performance has no influence on future events, so there are no trends to follow and technical analysis is thus waste of time. If trends do not exist, technical analysis will not result in excess gains, i.e. gains surpassing the general development of the stock market. Any gains like this would thus be caused merely by good luck. The idea of random walk was first scientifically proven by statistician Maurice Kendall and A. Bradford Hill in 1953.

Nevertheless, the pure existence of random walk on the market has been disputed and is still a matter of dispute. Several researches have also yielded results contrary to the findings of Kendall and Hill (1953) (see e.g. Lo & MacKinlay 1988; Neely et al. 1997; Wong et al. 2003). Also, if all stocks followed perfect random walk, could one pick the assets simply by throwing a dart?

Probably due to this constant dispute, a lot of traders use both analysis methods (Neely et al 1997). When doing fundamental analysis, investors are calculating the future earnings of the corporation, or future returns of the stock. The underlying fact is

that the price of a stock should be based upon two variables: future expected dividends and the discount rate used to calculate the present value of these dividends. The formula for calculating the right stock price is thus (Elton & Gruber 1987):

$$P_t = \frac{D_{t+1}}{(1+r)} + \frac{D_{t+2}}{(1+r)^2} + \frac{D_{t+2}}{(1+r)^2} + \ldots + \frac{D_{t+n+1}}{(1+r)^{n+1}} \quad (16)$$

where P_t = price of the asset

D = expected dividend

r = discount rate

n = amount of dividend periods

This idea is based upon the assumption, that all the money earned from investing in the stock will be collected as dividends. The fact that most investors sell the asset at some point is also noted in the equation, since the value (or selling price) of the stock will be the present value of the future dividends also when sold.

In fundamental analysis, gathered information has a major role. Predicting the future dividends of the stock requires deep analysis of the corporate strategy, markets, technological developments and the financial data of the company. The most important information for analysts is the financial data available from the corporation such as inventory, capital expenditures, net margin, sales and price per earnings ratio (Abarbanell & Bushee 1997; Thomsett 1998).

Most information for fundamental analysis is nowadays available globally in the Internet. The analysis itself includes mathematical calculations, which require computing power. Again, information is available for an investor immediately after it has been published, and acquiring information even from the other side of the world is basically costless. The simple use of Internet as an information source has taken much of the burden of gathering information away from the investors. (Thomsett 1998)

Modern ICT has probably had a more revolutionizing impact on the corporation side of investor relations. Internet is the enabler of global information sharing, and has thus made it possible for stock exchanges and national legislation to demand online and on-time investor information disclosure. Internet has enabled companies to disclose timely and precise information to all investors, both potential (in the identification stage) and current ones. Also, retail investors have the same information available for own analyses than what previously was easily available only for institutional investors and analysts (Ettredge, Richardson & Scholz 2001).

3.2.4 Transaction

Markets are places of exchange. This exchange could involve goods, services, information and payments (Bakos 1998). The events of exchange on the market are called transactions. According to Bakos (1998), there are three purposes for markets:

1. To match buyers and sellers.
2. Facilitate the exchange of information, goods, services and payments.
3. Provide an institutional infrastructure to enable efficient markets.

All these factors influence the transaction efficiency and costs, which are important to all participants of the market. When the exchanged products are digitalized assets, points one and two can be regarded as information flow mechanisms. Market should develop a framework, which allows buyers and sellers find each other easily and transport the digitized product against a payment securely. For financial markets, the primary function is price discovery, i.e. sellers find the best bid and buyers the lowest offer (Bakos 1998).

Approximately ten years ago, several additional marketplaces for listed stocks started on the Internet (Schack 1999; Fan, Stallaert & Winston 2000). These market places heavily leaned on the assumption that Internet will make intermediaries useless, thus killing the national stock exchanges. They expected Internet market places to become so efficient, that the radically lowered marginal cost of transaction would lead to disintermediation (Bakos 1998). As we see now almost ten years later, this has not happened, as the stock exchanges have modernized their transaction mechanisms, and have been able to compete with obtained level of trust, which is heavily needed in stock markets.

However, recent years have brought about new similar projects. This time it is the large incumbents, who are exploiting the ICT and planning to build up own market places in order to make sure that a proper level of competition exists and the stock exchanges cannot overprice their services. Project Turquoise is planning to launch a new virtual stock exchange in Europe late in 2008. This massive electronic market place is backed by such grand financial houses as Deutsche Bank, Merril Lynch and Goldman Sachs (Weber 2007; Jeffs 2008). These banks possess about 50 % of the European stock trading volume, so the Project Turquoise could be a grand challenger for the traditional stock exchanges (Mustonen 2008).

For stock brokerages, ICT enables vast advantages in the efficiency. In the end of the 20th century online broking was not widely used by large US brokerages and small agile Internet companies were pushing into the market. Back then, Merril Lynch, a traditional broker, was employing 20.200 financial consultants and other investment professionals, who were handling approximately 124.000 transactions. At the same time a 1992 founded Internet broker E-Trade employed 2.800 people who handled 283.000

transactions (Barber & Odean 2001). It is clear, though, that all of the Merril Lynch professionals are not solely handling transactions at a pace of six deals a year, but the numbers clearly state the possibilities to raise a reasonable commission from the transaction.

The efficiency advantage of online broking has a clear path. As stocks have been fully digitized, meaning that no actual papers are being transported in the transaction, the trouble of transaction has become only a press of a button. Assets are also stored virtually on central computers, not in the vault as previously. Personnel are not needed to commit these actions, and time has become a trivial term in conducting transactions. Modern information technology has enabled better trading efficiency, order flow capacity and has radically lowered the costs of financial service industry (Claessens, Glaessner & Klingebiel 2001b).

When a market segment, such as stock broking, has a strong competitive atmosphere, lowered costs have a tendency to end up in prices. Stock broking commissions have come down due to the better efficiency of online transactions (Schack 1999; Domowitz 2002; Bortoli, Frino & Jarnecic 2005). Lowered transaction costs have made smaller transactions attractive, thus bringing more small scale investors to the market. Online traders have also been observed to have smaller portfolios and to trade with smaller individual transactions (Choi, Laibson & Metrick 2002; Glaser 2003). By bringing down the transaction costs, Internet has democratized the stock market and brought the small investors back to the well respected group of corporation owners (Economides 2001; Vogelheim, Schoebachler, Gordon & Gordon 2001).

One must not ignore the value of the transaction cost reduction. According to Domowitz (2002), trading costs can account for 23 % of the returns on investment. Furthermore, lowered transaction costs (as well as lowered information costs) bring the real world of stock trading closer to the theoretical pure economic model described in section 3.1. This draws the assumptions of financial theories closer to the real investor, thus reinforcing the results of the theories depicted in chapter 2.

Even if the stock markets have been digitalized, the transaction models have not changed much from the traditional models (Subramanian & Singhal 2000). In traditional stock markets, there are two types of transaction orders:

1. Market order, in which an investor is placing an order to buy/sell at the current market price
2. Limit order, in which an investor is placing an order with a limit price. The transaction will be conducted only if the price of the asset exceeds (sell order) or goes under (buy order) the limit set.

Market order has a problem when pricing information is delayed and the changes in prices are fast, like in market crashes. An investor might not be willing to sell, if the price drops below, say 20 euros. This is when a limit order would be used, and limit

would be set to 20 euros. But what if the price is actually rising to 21 euros, resulting in the selling of the asset one euro below its possible higher selling price? According to Subramanian and Singhal (2000), modern ICT and electronic markets enable a third transaction order type: a threshold order. In threshold order, the transaction would be conducted at the market price unless the price is above (or below) the set limit. Subramanian and Singhal (2000) propose a stock market protocol, which enables this type of transactions and is enabled by modern ICT.

3.3 E-banking and Electronic Brokerage Markets

3.3.1 Changes in Industrial Structure

As in any industry, the business model of the existing companies faces a challenge as a new technology is developed and implemented by smaller players. This was the case of stock brokers approximately ten years ago, as the online brokerages started to obtain more and more customers. The most radical technology driven changes could be over, but the business is still evolving. According to Claessens et al. (2001b), the financial business is facing three forms of change in the business environment: globalization of capital flows, deregulation of financial products and activities and new technologies in information technology.

Claessens et al. (2001b) divide the new technology driven changes further into four categories: the change in industrial structure, cost reduction and efficiency gains, improved access and benefits for consumers, and finally internationalization and the diminishing role of location. The next sections describe the role of these changes.

In the days before home computers and Internet, there were traditional banks, which took care of savings, stock broking and other financial services. Establishing a new bank was somewhat difficult. Modern ICT has brought about several innovations, which have enabled small players to enter the financial services market, attain considerable growth numbers and force old actors change their ways of operating. These new companies have developed new business models, benefited from lower overhead costs of legacy systems and old operating methods and have been agile in serving the customer right in the changing environment (Bakos, Lucas, Oh, Simon, Viswanathan & Weber 2005).

The development of the business environment has led to segmentation. A larger number of smaller actors are being active in the markets of the financial services. This is true not only for stock brokerages, but also traditional banking, mortgage, credit card

and loan providing services have encountered changes. Insurance companies and retail corporations have founded their own banking services and are even offering stock brokerage services. In Finland an example is S-Pankki, founded by the largest cooperative retailer S-Ryhmä in 2007. An example of an insurance company founding a bank is Tapiola, with stock broking services outsourced to eQ Bank[1]. All these changes are made possible by the use of information systems; Tapiola or S-Ryhmä have not founded new offices to provide a whole new branch of services to their customers. Media and telecommunication companies, such as Yahoo.com, are providing detailed trading information and investment consultation online, an area far from their core business. The idea here is to bundle up new services around a known brand name and infrastructure (Claessens et al. 2001b).

But new players are not necessarily a bad thing for the incumbents. Financial service industry has also networked, and an increase in a network could be beneficial to all the agents involved (Economides 2001). An expanding network can also expand the market, and this has also been the case with online brokerages. As noted earlier, online broking has democratized the stock market and brought in investors who had no possibility or incentive to trade previously, due to the lack of information or high transaction costs. This networking effect is thus a beneficial development for the actors as long as the actors truly adopt the best practices and are able to follow the network. This is why keeping in pace or staying ahead of the competitors and the technical development of the business sector is highly important.

An important factor in the foundation of new actors on financial market is the availability of capital. Countries with more developed financial systems have a better access to capital and thus enable new companies to be born and change the market structure. Modern ICT helps in capital raising as information is widely available, access to global capital markets is easier and even national borders lose part of their significance (Claessens 2001b). And as capital acquisition has become more international, needs for domestic regulation are diminishing and being replaced by increasing need for global regulation (Jaakkola 2008). This has an impact on the business environment of all the actors in the financial sector.

3.3.2 Cost Reduction and Efficiency Gains

Cost reduction was already briefly explained in section 3.2.4. ICT's effects on trading costs have been immense, as even before the explosion of online trading, electronic

[1] EQ Bank itself was one of the small agile online stock traders of the early 21st century.

trading systems had caused a decline of 30 % on trading costs in the Nasdaq Stock Exchange (Barclay, Christie, Harris, Kandel & Schultz 1999).

However, it has been showed, that merely cost savings due to ICT cannot generate permanent strategic advantage for an individual company (Clemons & Row 1991; Ross, Beath & Goodhue 1996; Powell & Dent-Micallef 1997). This is because as one actor gains substantial benefits from ICT alone, other actors acquire the same resources and reduce the gap, eventually obtaining the same advantage (Clemons & Kimbrough 1986). This has been the case with online brokerages, as in the 1990's small companies gained a considerable competitive advantage over large old fashioned brokerages and gained market share. As the market has adopted the new technology and new business models, large incumbents have also changed their way of operation and gained similar advantages. Hence, solely ICT is no longer a base for sustainable competitive advantage.

If the cost effectiveness of ICT cannot bring long lasting advantages, how can a company stay ahead of the competitors and differentiate in electronic financial markets? According to Oetzel (2004), a company has to approach the business with a resource based view. In this way, a company can differentiate by acquiring resources that are rare, valuable or costly to imitate. Internet itself is not a resource like that, since it is widely available for other companies and hence does not offer anything special compared to the other actors on the market.

Instead, the Internet enables the creation of new processes and interactions, not possible before (Economides 2001). Exploiting the vast possibilities of Internet can develop sustainable competitive advantage, as unique Internet processes can be protected by copyright and patents (Oetzel 2004). Thus the focus should not be on the Internet and ICT itself, but rather how a company can develop new ways of operating via the use of modern ICT. One of these new operations is internationalization of financial services. The cost reduction based on the use of ICT enables this kind of development, and one can say that ICT itself is not the revolutionizing innovation in brokerage industry, rather all the developments based on it. The race for efficiency gains and cost reduction in brokerage markets is not technology driven, but driven by innovations which are founded on the capabilities of the new technology.

This development can also be seen in empirical evidence of brokerage differentiation. As transaction costs are a major factor in the competition between brokers and also a major issue for investors, one could assume that the brokerages with lowest commissions and other fees have the largest market share. According to Oetzel (2004), however, lowest prices do not assure high market share, as investors are also looking for complementary services. According to the study, the most important complementary services to create differentiation advantages are direct access to the trading floor, free real-time stock quotes and unlimited and 24 hour live customer

service (Oetzel 2004). At least the first two are purely ICT related services. One factor researched in the study of Oetzel (2004) was international trading options. Internationalization did not result in notable differentiation advantages in the study. However, one must remember that in four years the stock market has changed and the study was conducted on American markets, which are very different in size and nature compared to the small and peripheral stock market of Scandinavia.

3.3.3 Improved Access and Other Benefits for Customers

One of the major advantages ICT has brought to the modern world is improved access. At the dawn of the Internet, many believed in the death of the middlemen, that Internet will provide access directly to everywhere and thus the transparency would increase. Middlemen have not died, but their business has changed radically, as brokerages have become houses of computer networks, and the traditional personal broking has lost a great deal of its past glory.

As the Internet has become a costless source of information, brokerages have difficulties in using the traditional business model, where the investor is basically paying for the information and advice (Barber & Odean 2001; Peng & Xiong 2006). This is a radical change and brokerages have to adjust to the new situation.

Online investors do the analysis and gather the information without the help of a personal, experienced broker (Hong 2000). Due to this, a lot of online investors are novices with little experience on investing. According to Hong (2000), many online investors can be called *naïve investors*, who have little or no experience on investing and repeat simple mistakes on the market. Also, some online investors have been called 'stockaholics' meaning people who are addicted to online stock trading the same way some people get addicted to gambling (Hong 2000). The international context might worsen the problem, as more and more alternatives are available for the stockaholics, and as information amount has increased, which has been found to cause overconfidence among inexperienced investors (Barber & Odean 2001). Improved access is thus not only a benefit for the customers; it can be a curse for some, who have problems in controlling their behavior.

As already mentioned, direct access to the trading floor and real-time stock quotes have been found as one of the factors generating competitive advantage among stock brokerages (Oetzel 2004). These are basic examples of improved access, where investors have an access to information that was formerly unavailable. The technology itself does not limit the access to real-time trading floor information, but a lot of brokerages offer only delayed quotes as a free package. Investors must pay an extra fee

to gain direct access to real-time quotes. This is part of the modern business model of online brokerages.

The increased competition in brokerage services has benefited the customer. Prices have come down; transparency, price comparison possibilities, and customer service have improved. Information aggregators service small scale investors with up to date and relevant comparison of investment targets and financial service providers (Claessens, Glaessner & Klingebiel 2002). Also the speed of transaction has improved significantly, as online transactions are immediately relayed to the trading floor and an investor with access to real-time quotes can basically trade as if she was on the trading floor. This builds up an infrastructure allowing for more internationalization, as transactions triggered from the other side of the world can be carried out immediately with limited marginal costs despite the location. (Claessens et al. 2001b)

Certain investors do not want to spend time identifying and analyzing investment targets; they rather want to get brief information and recommendation by their broker and jump to the transaction phase. In the beginning of the Internet brokerage era, they were the ones sticking to the traditional services with investment advice. However, also these investors might want to enjoy the benefits of Internet, such as the insignificance of time and place. Online brokerages thus might need a business model to service these customers. These investors need detailed analysis and investment recommendations delivered electronically.

3.3.4 The Irrelevance of Location

Mobile phones, laptop computers, Internet, wireless networks and handheld devices bring media, information and access to services everywhere. Banking and finance sector has been one of the leading industries in developing mobile and electronic services, and thus the improved access has been widely in use also in stock broking. One key issue in the (often vague) business models of ICT services is the value proposition, or how an innovation generates value for the customer and thus offers the incentive for the customers to pay for the service (Gordijn & Akkermans 2001; Chesbrough & Rosenbloom 2002). For financial sector, this point of the business model is not so vague. Investors have a strong incentive to have up-to-date information and ability to make decisions and conduct transactions at locations outside their offices and homes.

Also for the brokerages and stock markets, the irrelevance of location matters. The computer driven marketplace Nasdaq hosts its computers in Trumbull, Connecticut, USA, but the trade is conducted globally (Claessens et al. 2002). The OMX Group formed a larger marketplace by acquiring most of the stock exchanges in the Nordic countries. Brokerages do not have to be physically present in a location where they want

to trade. This constitutes significant cost savings and expanding possibilities, as brokerages can – with the help of modern ICT – expand their business to other market areas without founding an expensive local office.

The development leading to the irrelevance of location is a major factor in stock market internationalization. It makes the world "smaller", as brokerages, investors and even market places are not bound to the location any more. In the most extreme future scenario, world is just a single stock market with brokerages and stock exchanges totally online without a direct link to a geographic location. This development can already be seen in the large acquisitions of stock exchanges, such as the merger of OMX and Nasdaq combined with the cooperation deal with Borse Dubai. Large stock brokerages are following and forming their own market places such as Project Turquoise. As stock exchanges are already consolidating on a global level, brokerages should try to find bigger markets, new customers and better services through expanding their services online.

4 METHODOLOGY

From the literature review in the previous two chapters, one can easily conclude the current trends of investing. Financial theory suggests, that international diversification offers crucial benefits for a portfolio investor. According to this, brokerages ought to have big potential for international online broking services. The development of modern ICT, on the other hand, has made it possible to trade assets internationally with reduced transaction and information costs. Economic integration and falling barriers of capital flow make it even easier to invest internationally.

The theory thus suggests that both the market potential and the technology for international brokerage services already exist, although information system integration between actors in different countries can be a challenge, as systems have developed to be rather complex. The actual market potential also depends on the level of investor knowledge of international possibilities and benefits as well as their willingness to adopt new unknown market areas into their portfolio. Investor who perceives the risk of internationalization too high may merely be uninformed about the benefits of international portfolio investment and have the traditional view of markets being riskier outside the own front yard. Communicating and marketing the benefits of internationalization is a topic for another thesis, so we will content ourselves with researching the views and mood of the investors and thus existing market potential without researching possible needs for marketing.

To test these findings, a customer survey was conducted. The purpose of the survey was to measure the attractiveness of internationalization and direct stock investments for the customers. The survey also tried to find the most attractive markets and to estimate the customer perceived fair transaction fee structure.

4.1 Reasoning Behind the Survey Questions and Analysis

In scientific research, both deductive and inductive reasoning are usually used. Deductive reasoning requires that the conclusion is an inevitable result from the premise. Mathematics is based on deductive reasoning; most of it is based on a small amount of basic rules. Deductive reasoning has also been called reasoning from the general truth to the private life (as from society rules to the life of individuals). Such reasoning is often used in building up hypotheses, which can then be tested using inductive reasoning. In inductive reasoning, the conclusion is not an inevitable result of the reasoning, but is a generalized result, such as statistical result. Inductive reasoning, one could say, is then reasoning from the private life to generality; from human

behavior to society rules, and it always includes uncertainty (Helenius 1989; Turunen 1990; Uusitalo 1991, 19-22)

In this research, a hypothesis is built upon theory: investors are profit maximisers, risk-averse and thus prefer internationalization due to the clear theoretical benefits of it. This hypothesis is tested in the empirical part by statistically generalizing the results and drawing conclusions based on a sample.

The final purpose of science is to build up a synthesis; a picture of a broader reality. In this case the reality is the internationalization of online stock broking. But in order to find this synthesis, one must be able to break the reality into pieces, which can be analyzed and upon these analyses a synthesis is built (Uusitalo 1991, 23; Hirsjärvi, Remes & Sajavaara 2001, 113-117). In this case a breakup has been made to the four research questions listed in section 1.1. These are however only research questions, and cannot be posed to the investors or brokerage companies. In order for a researcher to analyze the data acquired, the problems have to be broken down to even smaller pieces. In this research the first two research questions were broken down to several topics covered in the theory part of the thesis. The latter two research questions were broken into survey questions, and analyzing the results of these questions should bring in the questions for the research questions. A final synthesis is made based on the answers this thesis is generating for the research questions and will be presented in chapter 6.

This research uses quantitative methods and statistical tools in order to generalize the results of the survey. Quantitative study relies on positivism and depends on more simplified analyses than qualitative studies. Quantitative research process is also more clearly divided into different stages, because the base for calculations is a strictly defined set (Mäkelä 1990, 45). Positivism assumes that the surrounding world is seen equally by all people and thus simple assumptions can be made and information has to be based on them. It ignores the role of interpretation and the different approaches and conclusions we draw because of it. One could say that positivism simplifies too much. (Turunen 1995)

4.2 Sample Size and Statistical Analysis

In a study like this the empirical research has to be conducted on a sample, not the whole population in focus (Uusitalo 1991, 71). This is due to the fact that there are hundreds of thousands of investors out there, and the researcher cannot ask for an opinion from all of them. The sample must represent the whole population as strictly as possible; otherwise it might lead to misguidance of the research. The sample size needed depends on the goals of the research and the statistical tools used (Uusitalo 1991, 72-73). Often one must compromise between the schedule, costs and precision

when determining the sample size (Heikkilä 1998, 41). This is also true with this research, as the schedule of the research limited the time for the survey to be online.

In this research no complex cross-tabulation is used, so the sample size achieved is sufficient for the analysis of this thesis. If estimated with the confidence level of 95 % (critical value for normal distribution 1,96), we can calculate the statistical error (in percentage points) with formula (17) (Heikkilä 1998)

$$error = 1{,}96 \cdot \sqrt{\frac{p(1-p)}{n}} \quad (17)$$

In the Formula, n represents the amount of respondents and p the percentage one choice achieves in the survey. One can thus see that the error level increases as the percentage approaches 50 %. The highest error in this survey (n≈410) is thus 4,8 percentage points.

For assessing averages, such found in the grading of this research, formula (18) must be used (Heikkilä 1998).

$$error = 1{,}96 \cdot \sqrt{\frac{\sigma^2}{n}}, \quad (18)$$

where σ is the standard deviation of the results.

Due to the limited sample size, one cannot make scrupulous conclusions about the results and the small differences between different factors. However, this was not the purpose of the research, and the sample and the results are sufficient for the purposes of this thesis.

4.3 The Target Organization

As the target organization of this research is to be held anonymous, little information about it can be told. The organization is one of the largest stock brokerages in Finland and has an international organization, enabling development of international services.

The brokerage has a long tradition in stock broking, so it has not grown merely online, rather has had a legacy of traditional brokerage services. The organization has different service levels for different customers and private banking is offered to the wealthiest private investors. At the moment the organization already offers a variety of international market places on its online brokerage service, but the pressure from smaller, more agile international players is constant.

4.4 The Online Survey

The research was conducted with a market research among the current customers of the target organization's online brokerage services. The customer survey was realized online on the brokerage service portal. Investors' participation was voluntary. A link to the survey was placed on the "news" box of the brokerage page of the online banking service. No pop-up windows or further marketing of the survey was used. This way the survey reached only customers with online brokerage service in use (in other words nobody with only normal banking services in use was asked to participate). Also since many people have the brokerage service activated but they do not necessarily trade even annually, placing the link on the investment front page diminishes the risk of non active investors yielding a major part of the survey results. In any case, this method of reaching the customers creates a random sample, which is aimed at finding the most representative sample possible (Uusitalo 1991, 72).

The survey was online for thirteen days. In total the survey tempted 416 responses. The survey time was limited by the schedule of the research. Also more users could have been reached e.g. by using a pop-up window which opens automatically when the user opens the investment page of the online banking service. This was, however, in breach of the policies of the internet services of the target organization and was therefore not used. The amount of the participants represents a small fraction of the brokerage service users, but the amount is well sufficient for the analysis of this research, and confidence of the results can be achieved with the collected data.

The survey consisted of 21 questions divided into four categories:

1. *Background questions* – eight questions about the background of the responder, such as age, sex, amount of money invested in stocks and investment characters
2. *Current level of internationalization* – four questions about experience on international investment
3. *Interest toward international investment* – four questions about potential interest markets and
4. *Brokerage services and fees* – five questions about international brokerage services, supplementary services (such as analyzes) and fee structure of online stock broking

On top of these 21 structured questions there was an open question in the end of the survey, asking for a general opinion and development suggestions for the international stock brokerage services of the target organization. The answers to this question were mostly used internally in the target organization and are not analyzed thoroughly in this thesis.

Since the survey was wanted to be completely structured, and to protect the respondents' private data, no exact numbers were asked, rather age, size of the resident

area and the amount of money invested in stocks were grouped into suitable ranges such as age: less than 25 years – 26-35 years – 36-45 years – 46-55 years – 56-65 years – more than 65 years. This prevents the use of averages, but this was not considered necessary at any rate.

Respondents were not forced to answer to any of the 21 structured questions, so some participants could skip some of the questions. The decision not to make answering mandatory was made after an online survey consultant recommended this due to the experiences of people often aborting the whole survey if they are not allowed to move forward with blank fields. The survey questions and answer choices can be found in appendix 1 in the original Finnish language (the name of the target organization is removed from the questions).

5 RESULTS OF THE CUSTOMER SURVEY: MARKET POTENTIAL FOR STOCK BROKERS

5.1 Background Questions: Structure of the Respondent Base

5.1.1 Age and Gender

The structure of the set of respondents was tested with eight background questions. The purpose of these questions was to obtain background information in order to keep the results of the survey comparable to possible future researches. Also questions about investment behavior and portfolio value are of interest for the stock brokerages, as these factors influence on finding the optimal revenue model and pricing system.

71 % of the respondents were male and the rest 29 % female. The sex distribution suggests that investing is more popular among men or that household finance is strongly managed by the men of the family.

The age distribution of the respondents was somewhat homogenous. Under 25 year old investors were scarce as well as over 65 year old. But the four age ranges between the young and the pensioners were rather equally represented in the survey, with shares between 19 and 24 percent. Female participants were moderately older than male, an average female respondent fits the age range of 46-55 whereas an average male respondent to the age range of 36-45 years. It is also notable, that age ranges 26-45 represent more than half of the male respondents, but within female participants age ranges 46-65 represent the largest share of respondents, with 63 % of women fitting to these ranges. The age structure of all respondents and divided by sex is given in Table 3.

Table 3 Age distribution of the survey respondents

	All		***Female***		***Male***	
	n	***%***	***N***	***%***	***N***	***%***
under 25	17	4 %	2	2 %	15	5 %
26-35	77	19 %	9	8 %	67	23 %
36-45	101	24 %	18	15 %	83	28 %
46-55	97	23 %	38	32 %	59	20 %
56-65	93	22 %	37	31 %	55	29 %
over 65	29	7 %	15	13 %	14	5 %
no answer	2	0 %	-	0 %	-	0 %
TOTAL[1]	416		119		295	

5.1.2 Place of Residence

Respondents were asked about the size of the community in which they live. This was to measure the level of urbanization of the respondents. About half of the respondents stated, that they live in a city which has more than 100 000 inhabitants. Presuming that all the respondents live in Finland, the metropolitan areas of such respondents is limited to four: Helsinki area (Helsinki, Espoo, Vantaa), Tampere, Turku and Oulu (Väestörekisterikeskus 2008). As less than 30 % of the population of Finland lives in these cities, it can be stated, that the respondent base is relatively urban. More detailed figures can be found in Table 4.

[1] Two respondents did not state their sex but did state their age range

Table 4 The size of the place of residence

Number of inhabitants	***n***	***%***
Under 1000	3	1 %
1001-5000	16	4 %
5001-15 000	39	9 %
15 001-30 000	56	14 %
30 001-50 000	40	10 %
50 001-100 000	56	14 %
Over 100 000	204	49 %
TOTAL	414	

5.1.3 Investment Experience and Behavior

Last background questions monitored the structure of the respondent base from the viewpoint of the stock brokerage. These questions were related to the behavior of the investor and her experience measured by the portfolio value and the number of years of investment activity and online investment. For the purposes of the target organization, respondents were also asked whether they also use another brokerage and if the brokerage service of the target organization is the primary brokerage service used.

The diversity of portfolio sizes can be seen in Table 5. From the results one can clearly see that the respondents are mostly small scale investors. One must remember, that the question asked specifically for the value of the stock portfolio. All other investments are excluded. The total value of all the investments was not relevant for this research and there might have been difficulties for some to decide, which assets should be calculated to the investment portfolio (e.g. is a summer cottage an investment?).

Table 5 Stock portfolio values of the respondents

Stock portfolio value	***n***	***%***
0-50 000 €	288	70 %
50 001-100 000 €	49	12 %
100 001-150 000 €	32	8 %
150 001-200 000 €	21	5 %
200 001-300 000 €	6	1 %
300 000-400 000 €	6	1 %
400 001-500 000 €	3	1 %
500 001-1 000 000 €	6	1 %
1 000 000-2 000 000 €	3	1 %
Over 2 Million €	-	0 %
TOTAL	414	

The investment experience of the respondents was measured by asking, for how long the investor has invested in securities (thus not necessarily in stocks) and for how long has she used brokerage services online. The results are given in Table 6 and Table 7.

Table 6 The level of experience in investing in securities

	n	***%***
Less than a year	35	8 %
1-2 years	35	8 %
2-5 years	64	15 %
5-10 years	119	29 %
10-15 years	56	14 %
15-25	60	14 %
More than 25 years	45	11 %
TOTAL	414	

Table 7 The level of experience in online stock trading

	n	***%***
Less than a year	71	17 %
1-2 years	41	10 %
2-5 years	117	28 %
5-8 years	101	24 %
8-12 years	56	14 %
More than 12 years	26	6 %
TOTAL	414	

78 % of the respondents stated that they use only one stock brokerage, 16 % has another broker but primarily use the target organizations brokerage services. About 6 % primarily use another stock broker.

The investors were asked to evaluate their own behavior as an investor. They were given four different profiles:

1. Buy-and-hold (few transactions per year)
2. Relatively active (tens of transactions per year)
3. Very active (more than a hundred transactions per year)
4. Day trader (several transactions per day)

On top of these choices, a normal “I do not know” choice was provided. The results of this question can be seen in Figure 4.

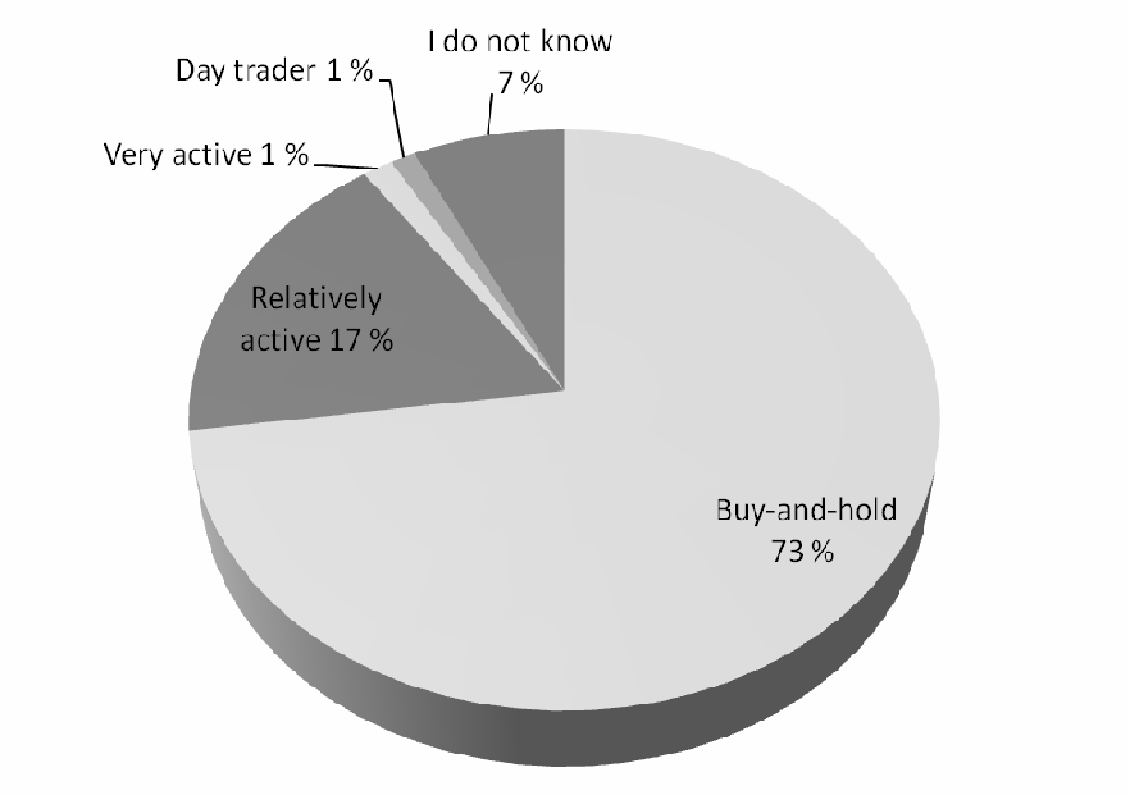

Figure 4 Investors' own evaluation on their behavior pattern (n=416)

Three quarters of the participants perceive themselves as buy-and-keep investors. Only two percent day trade or make more than one hundred transactions per year. For buy-and-hold investors deposit fees are a more important factor than transaction fees. This also challenges the revenue models used by brokerages, as a major deal of their revenue is created by transaction fees. The small value of the portfolio of the respondents (Table 5) further increases the challenge.

5.2 Customer Experience and Interest in International Stock Investments

5.2.1 Experience of International Investments

The survey included questions about international investing experience and interest towards international portfolio investment. The participants were asked to rank a list of 30 stock markets according to their level of interest. The markets were mostly individual national markets but some smaller or similar markets were batched to a single market for simplification.

According to the results, 16 % (67 investors) of the participants have invested in stocks not listed in the Helsinki Stock Exchange. 84 % (349 investors) of the participants had thus no experience in direct foreign stock investment. This question was divided into two stages: those who had invested internationally were asked to indicate the markets they had invested in, and how large a share of their stock portfolio had at the most been invested internationally. The respondents without international stock investment experience were asked to maintain at most three reasons for not investing internationally.

The market experiences of the international investors are listed in Table 8.

Table 8 Experiences on different markets. (n=67)

	n	***%***
Stockholm	40	62 %
Copenhagen	5	8 %
Tallinn	5	8 %
Riga	1	2 %
Oslo	7	11 %
Frankfurt	11	17 %
Paris	5	8 %
London	9	14 %
Amsterdam	5	8 %
NYSE	13	20 %
NASDAQ	8	12
Other Stock Exchanges	9	14 %

61 of the 67 respondents with international experience answered to the second follow-up question about the percentage of the international stocks in the stock portfolio at its highest level. The answers ranged from zero to 100 % with an average of 25 % and standard deviation of 26 percentage points. The median value was 10 % as well as the mode.

The perception of no benefit from international stock trading is the major reason for not investing internationally. In total 161 respondents stated this as one of the reasons for inactivity on international markets. This represents 39 % of all the participants of the survey. The distribution of the reasons is depicted in Figure 5.

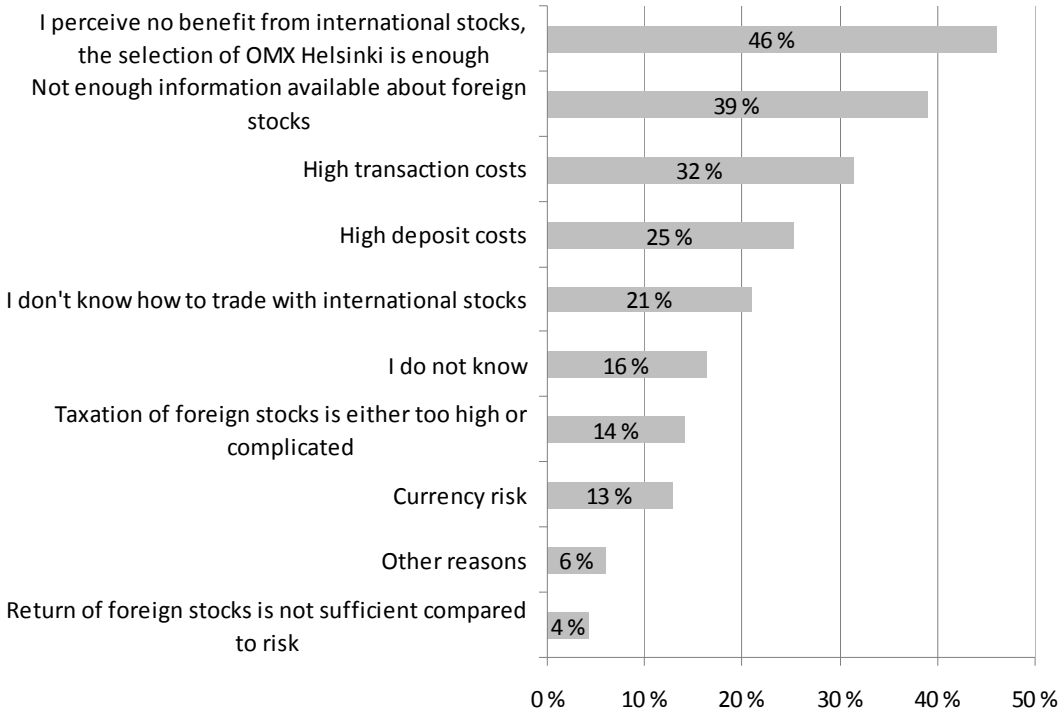

Figure 5 Reasons for not investing in foreign stock. Up to three different choices could be chosen by a single investor. (n=349)

Other reasons mentioned by the respondents included the lack of capital, lack of experience, willingness to support local markets, language problems, difficulties in following the markets and transactions and the lack of technical analysis for foreign stocks in the broker's services. Several references of investing internationally through investment funds were also made.

According to the next question, 63 % of the respondents have invested internationally through investment funds. Also 22 % had invested in a bond with the return bound to a foreign stock index. Only three percent had invested in exchange traded funds (ETFs) which follow a foreign stock index. In this light it seems that people have diversified their portfolios decently even if they have not traded with foreign stocks.

However, 27 % of the respondents state that they have never invested in any international investment product. This is the result from a question relating to the timing of the first international investment. The results can be seen in Figure 6. Also, the results tell about the fast growth of the international products and internationalization in the past years, since only 7 % of the internationally invested respondents have an international experience of more than 10 years. Even though almost 40 % of the respondents state they have invested in securities for more than 10 years.

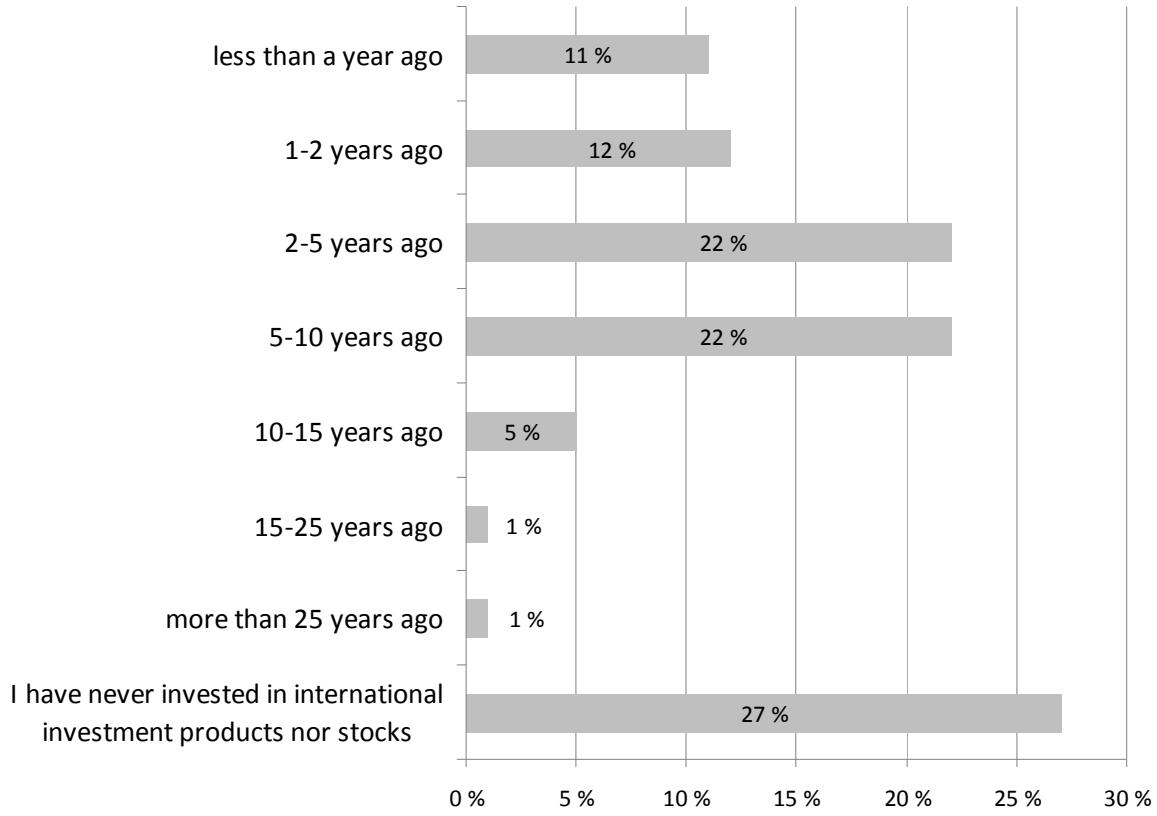

Figure 6 The answers to the question "When have you invested internationally for the first time?" (n=414)

In this part of the survey, participants were also asked to grade the current international brokerage services of the target organization. As in all grading questions in this survey, grading was done in the scale of 1-5 where one represents the lowest grade and 5 the highest. 410 respondents graded the services and the average grade was 2,97 with a standard deviation of 0,89.

5.2.2 Interest towards International Investments

Investors were asked to give a general grade for their interest towards international stock investing. Again, this is not a grade for international investment rather solely represents the interest for direct stock investments abroad. Grade 1 represents total negligence towards the subject and grade 5 depicts a strong interest. All 416 participants rated their interest and the average grade was 3,2 with a standard deviation of 1,08. The distribution of the grading is depicted in Figure 7.

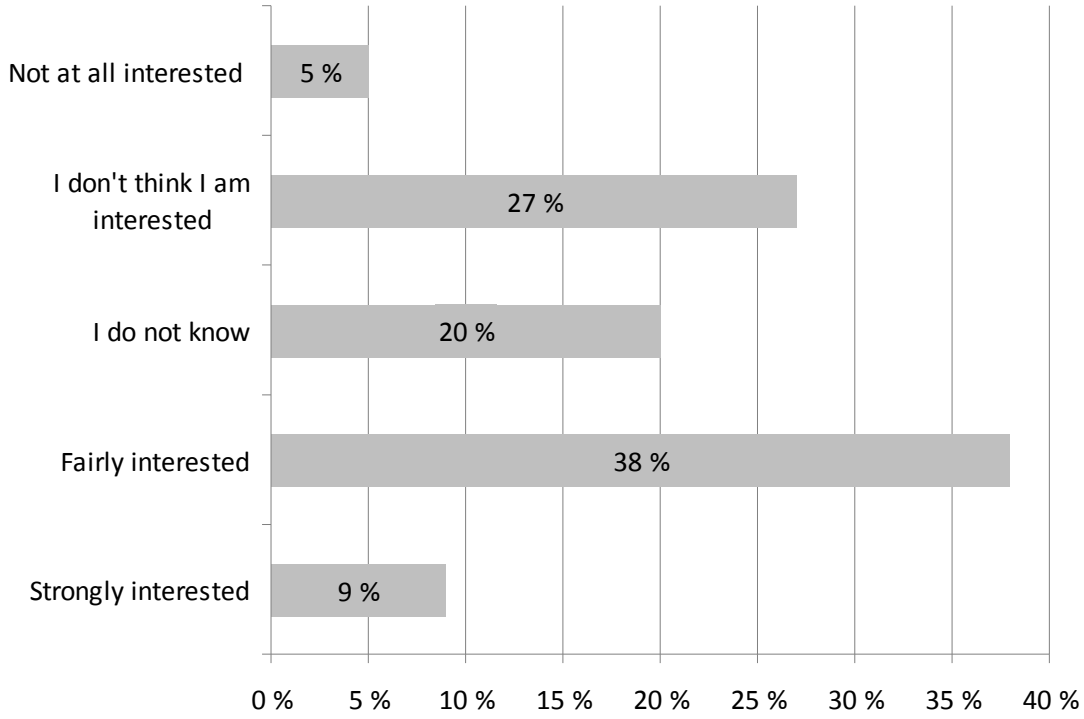

Figure 7 The interest level for direct international stock investment. (n=416)

5.2.3 Pursued Benefits of Internationalization

The next question concerned the reasons behind possible internationalization of the portfolio. The respondents were offered eight different motivators for internationalization, including the choices of "no perceived benefit" and "I do not know. The respondents were asked to state at most three strongest drivers for investing internationally. The result is depicted in Figure 8.

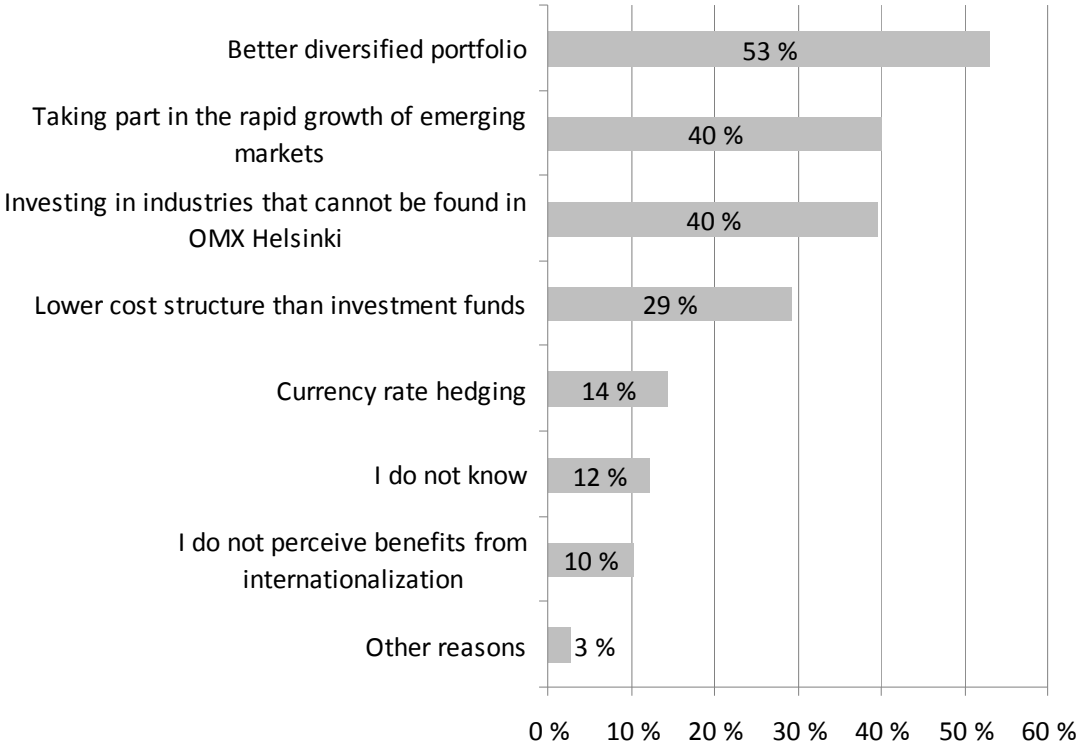

Figure 8 Drivers for international stock investment in general. At most three motivators could be chosen. (n=415)

The other reasons listed included several notions related to the limitations of the OMX Helsinki list and willingness to invest in a particular – often global – company not listed in Helsinki.

5.2.4 Interest Level of Markets

To assess the attractiveness of different stock markets of the World, a list of 30 market areas were presented in the survey, and respondents were asked to grade the market according to its perceived attractiveness. In the follow-up question respondents were asked to indicate the three most attractive markets of the list and then to state why they see these markets as one of the most attractive ones. The average grades with their standard deviations as well as the number of respondents indicating the market as one of the most interesting ones are depicted in Table 9.

Table 9 Attractiveness of stock market areas on a scale from one to five. Error level is calculated with 95 % confidence level. The column "N" includes the amount of respondents, who see the respective market as one of the three most interesting markets of the list. (n=414)

	Market area	***Mean***	***Std.dev.***	***Err.***	***N***
1	Northern Countries (excl. Finland)	3,74	1,07	0,10	204
2	Russia	3,33	1,24	0,12	156
3	China and Hong Kong	3,31	1,13	0,11	129
4	India	3,21	1,24	0,12	132
5	The Baltic Countries	3,04	1,18	0,11	19
6	USA	2,93	1,32	0,13	108
7	EU2004 Countries (e.g. Poland, Czech Rep, Hungary)	2,90	1,22	0,12	55
8	Japan	2,85	1,16	0,11	24
9	Germany and Austria	2,82	1,09	0,10	46
10	Southern America (e.g. Argentina, Brazil, Chile)	2,77	1,28	0,12	63
11	Ukraine and Belarus	2,77	1,31	0,13	26
12	Taiwan and South Korea	2,77	1,19	0,11	19
13	Canada	2,67	1,16	0,11	9
14	United Kingdom	2,64	1,12	0,11	24
15	Other Southeast Asia (e.g. Thailand, the Philippines, Indonesia)	2,63	1,22	0,12	19
16	Switzerland	2,63	1,08	0,10	21
17	EU2007 Countries (Romania and Bulgaria)	2,58	1,27	0,12	31
18	Mexico and Central America	2,47	1,14	0,11	13
19	Benelux Countries	2,44	1,04	0,10	9
20	South-Africa	2,44	1,22	0,12	20
21	Australia and New Zealand	2,43	1,08	0,10	12
22	Middle-East (e.g. UAE, Saudi Arabia, Qatar, Kuwait)	2,42	1,22	0,12	33
23	France	2,36	1,00	0,10	8
24	Middle-Asian Republics (e.g. Kazakstan)	2,20	1,23	0,12	17
25	Other Africa (excl. RSA)	2,18	1,21	0,12	17
26	Spain	2,10	0,94	0,09	2
27	Turkey	2,01	1,08	0,10	6
28	Italy	1,97	0,92	0,09	1
29	Greece and Cyprus	1,87	0,90	0,09	1
30	Israel	1,79	0,97	0,09	1

One cannot find clear boundaries to use for categorization from the grading. Also the standard deviations seem to be somewhat close to one for all markets, indicating that investors are relatively unanimous about their ranking. But from the "N" column an analysis can be drawn, that a well-defined group of most interesting markets consists of the Northern Countries, Russia, China and Hong Kong, India and the United States of America. These markets all receive more than hundred votes for being in the top three markets. Other markets do not make it over 63.

5.2.5 Reasons for the Attractiveness of the Most Interesting Markets

As noted before, respondents were also asked to state, why they see the most interesting markets so attractive. The respondents were offered nine choices to choose from. This question generated so much data that all of the responses cannot be covered here. Also, due to the low amount of respondents, the results would not be statistically sound. However, the share of the reasons for the six most attractive markets is depicted in Table 10.

Table 10 Reasoning behind perceiving the market as one of the three most interesting markets.

	Northern Countries (n=204)	***Russia (n=156)***	***China and Hong Kong (n=129)***	***India (n=132)***	***Baltic Countries (n=19)***	***USA (n=108)***
Interesting companies on the stock exchange list	8 %	5 %	9 %	2 %	0 %	35 %
Rapid development of the market enables high returns	4 %	84 %	73 %	84 %	68 %	6 %
Low correlation of the market to my portfolio	2 %	4 %	2 %	4 %	3 %	12 %
There is plenty of information available from the market	21 %	1 %	3 %	1 %	6 %	22 %
Political and economic stability of the market makes it a safe investment	43 %	0 %	1 %	1 %	3 %	11 %
The market is part of the Euro zone, thus no currency risk	4 %	0 %	1 %	0 %	0 %	0 %
I know the area well personally	9 %	1 %	1 %	0 %	6 %	1 %
Personal fondness for the market	7 %	3 %	3 %	4 %	9 %	10 %
I do not know	2 %	3 %	7 %	4 %	6 %	3 %

Outside Table 10 it should be noted that of those 40 respondents who chose Germany and Austria as one of their favorites, 43 percent did it because of the non-existent currency risk. Otherwise it seems that currency risk is of minimal concern, as all other economies of the Euro zone only gathered insignificant amount of points.

5.3 Information Gathering and Additional Services

5.3.1 Sources of Information

The last five questions of the survey assessed the use of different media and analysis methods for investment decision purposes. Also the perception of fair pricing of international brokerage services was inspected.

The respondents were asked to grade several different media according to their level of importance in their decision process and information gathering. The list included twelve choices and a possibility to state one's own information source. The grading was again done in the scale from one to five, where one represented "not important" and five "primary media or source". The results are given in Table 11.

Table 11 The grading of media and information sources in investment decision process. Error levels are calculated with 95 % confidence level. (n=411)

Media	***Average***	***Std.Dev.***	***Error***
Domestic financial web portals (e.g. Kauppalehti.fi, Taloussanomat.fi)	4,05	1,07	0,10
Domestic newspapers	3,43	1,07	0,10
Domestic financial news on TV	3,31	1,10	0,11
News and analysis services of my online brokerage service	3,15	1,14	0,11
Web sites of the listed companies	2,78	1,17	0,11
Printed investor relation material and reports	2,48	1,08	0,10
International financial web portals	2,27	1,17	0,11
Internet chat rooms and forums	2,09	1,12	0,11
International TV channels	2,05	1,12	0,11
My broker or asset manager	2,03	1,14	0,11
Foreign news papers	1,89	1,08	0,10
Outsourced analysis services provided by the online brokerage service or the target organization[1]	1,85	1,10	0,11

5.3.2 The Use of Technical and Portfolio Analysis

Two basic questions were made to the respondents: "Do you use technical analysis in your investment decision?" and "Do you use portfolio analysis in your investment

[1] The phrasing of this choice has been changed to assure the anonymity of the target organization

decision?" The use of technical analysis is depicted in Figure 9 and the use of portfolio analysis in Figure 10.

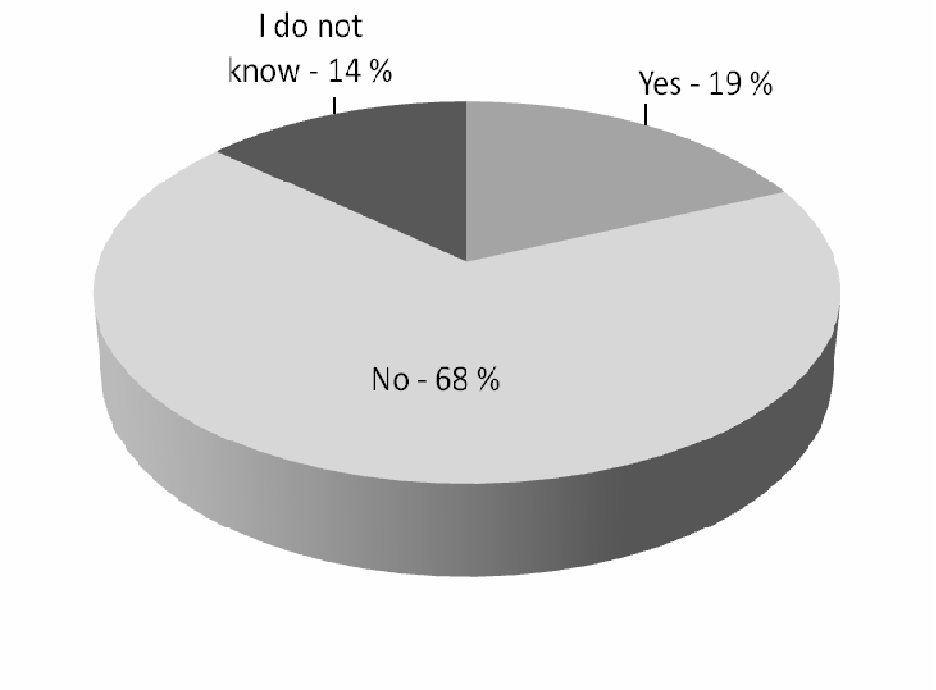

Figure 9 The use of technical analysis among the respondents. (n= 405)

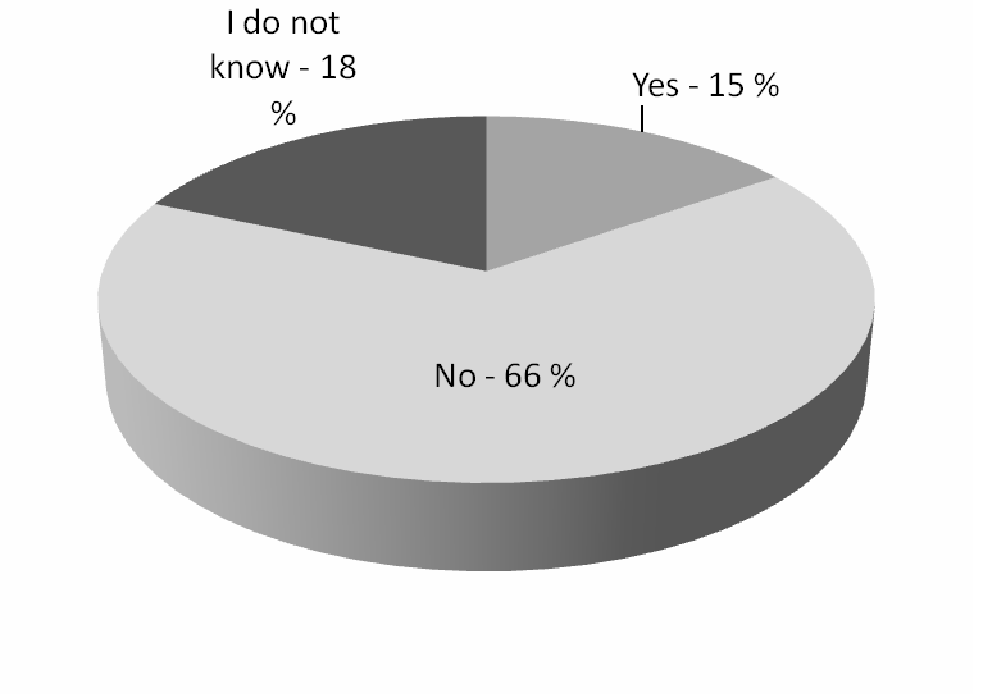

Figure 10 The use of portfolio analysis among the respondents. (n=412)

5.3.3 Customer Opinion on Fair Pricing

Perceived fair pricing of international brokerage services was divided into two questions: transaction fees and deposit fees. Respondents were asked to state whether

fair fees for international broking would be lower, equal, 50 % higher or more than 50 % higher than for domestic investments, or if the fees do not matter for the investor. The purpose of these questions was to assess the significance of the fees and the perceived level of fair pricing compared to the domestic investment. The results of the question are given in Table 12.

Table 12 Customer perception of fair pricing of international brokerage services compared to domestic stock investment.

Fair fees would be…	***trading fee (n=409)***	***deposit fees (n=411)***
…lower than for domestic stocks	14 %	14 %
…Same as for domestic stocks	69 %	69 %
…50 % higher than for domestic stocks	5 %	4 %
… more than 50 % higher than for domestic stocks	0 %	0 %
Trading/deposit fees are insignificant for me	0 %	1 %
I do not know	11 %	11 %

6 CONCLUSIONS

In this chapter, conclusions are drawn based upon the findings of the literature review and the empirical part.

6.1 Respondent Background and Experience

Table 6 shows that the respondents are quite experienced in investing; more than one third of the respondents have invested more than ten years. About one sixth of the respondents are so called "newbies", who have invested for less than two years. However, the years of experience do not guarantee a true experience on investment analysis and the knowledge of investment theories. Many people could have owned stocks for several years without paying attention to the markets. As Table 7 shows, more than half of the respondents have used online stock broking for less than five years. This is a better estimate for investor activity, since people who have owned some stocks for years since the middle of the 90's have had no need for online brokerage services before they start trading actively. On the other hand nowadays all the new stock buyers are most often offered an online broking package from the start, no matter how active they intend to be. About 20 % of the respondents have traded stocks online before the year 2000 IT bubble.

According to the results of the survey, the internationalization of Finnish small and medium scale investors is still not on a very high level. For small scale investors, high transaction costs can create a major hinder to internationalize their portfolios, as the batches of individual stocks remain low in value and thus absolute returns might not be enough to cover the transaction and deposit fees.

84 % of the participants of the survey stated that they have no experience of international stock trading, but on the other hand, 63 % of the respondents had invested in an international investment fund. 27 % of the respondents had absolutely no international experience; this includes all investment products linked to foreign economies (excluding stocks listed in Helsinki Stock Exchange). In the light of the known benefits of internationalization and the international nature of today's investment market, the number of purely domestic investors is high. Furthermore, 46 % of the non-international respondents (39 % of all the respondents) stated that they perceive no benefit from international stock investments (Figure 5).

Of the foreign stock exchanges, Stockholm, Frankfurt and New York Stock Exchange (NYSE) had so far tempted most investments from the participants, Stockholm being the clearest number one with 62 % of the internationally invested investors having had traded there. The result is logical, as Helsinki and Stockholm

Stock Exchanges have been in the same company since the OMX merger in 2003. Also the geographical and cultural connection is clear. Frankfurt, on the other hand is the largest stock market of the Euro zone. And NYSE is still today the world leader and offers a truly versatile variety of stocks.

However, Sweden is not in the Euro zone and thus imposes a currency risk on the investors. Also Sweden cannot be characterized as an emerging economy in comparison to Estonia or Latvia, where investors had not had too much experience, even though they are also culturally and geographically near and belong to the same OMX Corporation with Helsinki and Stockholm Stock Exchanges. One must bear in mind, though, that the amount of participants to this part of the survey was only 67 and therefore the results cannot be generalized. Other stock exchanges mentioned by the respondents were e.g. Johannesburg Stock Exchange, AMEX, Russian Trading System, Tokyo, Bangkok and Sarajevo.

6.2 Interest Level of International Portfolio Investment

It can be noted that about one third of the respondents know or think that they are not interested in international brokerage services (Figure 7). Rest of the respondents could thus be regarded already as potential customers for international brokerage services, and almost half of the participants already know they have at least a modest interest towards trading internationally. Spreading information about the benefits of international investment could create more interest and change these figures considerably.

However, the level of interest towards international stock investing (Figure 7) is much higher than the level of experience. 47 % of the respondents are interested in international brokerage services, when only 16 % has used them. This is an indicator of existing market potential, which is yet to be exploited. The results show that investors are indeed interested in international portfolio investment, but for some reason they have not taken action to trade internationally. This means listening to the customer needs and creating services to satisfy this existing customer need is the next step required from the brokerages. These customer needs are clearly stated in Figure 5: cost structure changes, better investor information and better advisory for international services.

6.3 Attracting New Investors

6.3.1 Challenges According to the Results

Those who had not invested on foreign stocks stated that their main reason for not going international is the lack of need (Figure 5). 46 % of the non-international respondents (39 % of all the participants) perceive the variety of Helsinki Stock Exchange sufficient and see no reason for investing internationally. Other notable reasons are the high costs of international stock investment and the lack of information. Currency risk and the notion of the bad risk-return ratio are of lower significance.

The results indicate a need for marketing, price adjustment and information sharing for the brokerages to open new market opportunities. Major problems in the current service portfolio seem to be the customer perceived cost structure and information services.

6.3.2 Fixing the Problem: Costs

The difficult part is the revenue creation as more information creation and sharing constitutes higher costs and at the same time the brokerage should be able to lower the most important revenue sources; the fees. However, the results depicted in Figure 5 are one of the most crucial for the development of the brokerage services, as the respondents of this question represent 84 % of the respondent base and the results simply state what should be fixed to attract these investors to trade.

Even when ICT has lowered the costs of investing in general, foreign investment is still too expensive for investors to see it as an appealing option. This poses a true challenge for the whole financial industry and particularly brokerages, which act in the middle of the exchanges and investors and need to plan their revenue models carefully in a highly competitive business environment.

It is no surprise that the respondents are not willing to pay more than 50 % higher fees for international services (Table 12). The 14 % who think that fair pricing would be even lower than domestic fees would probably want to lower the fees to nil. If they were asked if it is fair that domestic trading were more expensive than international, they could as well reply “not”. Anyhow, it is clear from the results that transaction and deposit fees are significant for the investors, and equal fees for international trading would be perceived fairest. It is understandable, since the end user cannot see the

difference in the domestic and international services, as he simply clicks the "buy" button on a stock in the online service.

63 % of the respondents had invested in an international investment fund, and they seem to be the most popular international investment products. This is logical, since investment fund market is nowadays vast and they also offer diversification benefits in the same package. However, as it is difficult for an investor to "beat the index", the sole source for enhancing the return without adding risk is diminishing the costs of the investment. Investment funds do not always offer the best cost structure for the investor and this is the opinion of 29 % of the respondents, too, as can be seen in Figure 8.

6.3.3 Fixing the Problem: Information Distribution

Also lack of information about international stocks was a major reason for staying in the home market. This indicates either the lack of language skills or knowledge about global finance portals such as cnnmoney.com or Yahoo! Finance. More information in the native language of the investors could thus generate more demand for international services. This indicates the need for stock brokerages to enter further into the field of information services, which on the other hand generate more costs and further increase the challenge of generating revenue.

According to Figure 8, the most important reason for international portfolio is better diversification. This would mean that in the later stage in the survey the respondents would choose low correlation markets as the most appealing ones. Only ten percent of the respondents perceive no benefits from internationalization, albeit a much larger group chose this alternative in an earlier question (Figure 5). Almost one third would be looking for lower cost structure. At the moment most of the international stock brokerage services are priced in such a way, that this benefit could easily be lost if the investor is not investing sums well in excess of the average portfolio size of the respondents of the survey.

The most important factor of the perception of no benefit from internationalization can also be critically evaluated and could maybe be turned into a positive attitude with enhanced communication about the benefits of international portfolio investment. After all as has been showed in the theory part of this thesis, the benefits of internationalization are clear.

Better information distribution would thus mean both investment information sharing and information about different investment strategies and their benefits. Many brokerages have already included some kind of an "investment school" to their websites in order to teach the private investor about the products and investment strategies. These pages are too often only electronic brochures of investment products and not many

investors ever find to these sites. The site structure of the brokerage service should be designed so that investors can easily find information about investing in general and data about their investment targets. In a couple of the open answers of the survey there were notions of "trying to find international stocks but stopped searching after ten minutes".

6.4 The Most Interesting Markets

The limits of the Helsinki Stock Exchange can easily be seen, as 40 % of the respondents would internationalize in order to find other industries from abroad (Figure 8). Still, at the same level as a reason to go international is benefiting from the emerging markets. Emerging markets have been a very popular topic in the past years, as markets of Eastern Europe and South East Asia have yielded remarkable returns. Thus one could say it has been the hip theme of the investment media and successful investments have generated more popularity for the emerging markets.

From Table 9 one can see that the most attractive markets are either close to the home market culturally and geographically, or famous for their rapid development in the recent years. The top four markets all receive high ranks in grading and in the number of highly interested investors. Baltic Countries seem to receive a good grade, but very few investors consider these markets as one of the most attractive.

The trend of favoring developing countries can be seen from the grades of the developed European markets. Germany, Italy, Benelux countries and France are all part of the expanded home market for a Finnish investor (namely the Euro zone), but markets with currency risk are of much higher interest. Even the newer EU member states (EU2004) outpace the European leading economies. From top five grades only Northern Countries can be regarded as developed markets. This indicates that the major motivator behind investors' willingness to invest internationally would not be diversification as noted in section 5.2.3 and Figure 8, rather benefiting from the high growth potential of developing economies. Also currency risk seems not to harry the respondents as they choose their favorite markets.

The results depicted in Table 10 confirm this conclusion. For the developing markets of the top six, the rapid development is clearly the dominant driver for internationalization with shares ranging from 68 % for Baltic countries to 84 % for India and Russia. The free lunch of lowering risk through diversification, which – according to the theory and also the previous answers of the respondents (Figure 8) – should be one of the most important drivers for internationalization, is not very popular at this stage any more. Higher returns from riskier markets seem to be of higher fascination. Also a foolish four percent of the respondents name the Euro zone as an

important factor in favoring the Northern Countries when in fact none of the Northern Countries excluding Finland are members of the Euro zone. These results might indicate low knowledge of the theory and inexperience of the respondents.

6.5 ICT in Investment Decision

The results stated in Table 11 reveal that internet has revolutionized the information gathering of the investors. This is well in accordance with the theoretical findings in chapter 3. Web portals receive clearly the highest grade among the financial media. The analysis services of the online broker are also one of the most important information sources. Domestic newspapers are the only traditional, non-electronic media, which receive a grade higher than three. Websites of the listed companies also receive a higher grade than the printed material they publish. Instead, chat rooms and forums seem not to attract that many investors as an information source.

In any case one can state that the information gathering of the investors has moved to the web. Middlemen have not died, since large portals are used, although local domestic portals rather than global international ones. The findings of the empirical part confirm the digital evolution of the financial industry.

Both technical and portfolio analyses are also enabled by modern ICT and it could be assumed that increasing processing power and the fact that microcomputers have become standard home appliances would have assisted in the spreading of these analysis methods. However, it can be seen from Figure 9 and Figure 10 that the use of these analyses is somewhat scarce in spite of the wide possibilities to exploit them. Technical analysis is a simple analysis and the tools are widely available on almost any financial web portal. But its effect and reliability has been disputed as noted earlier in section 3.2.3. A part of the investors might know the possibilities of technical analysis but simply do not believe in it.

Portfolio analysis instead is the basis for effective diversification and has been proven to yield substantial benefits. The problem with portfolio analysis is that the tools needed for it are not openly available, but require either advanced programming skills or a purchase of special software. This could be the reason behind such a low percentage of portfolio analysts among the investors. But there is nothing restraining brokerages to offer this analysis method as part of their toolbox for investors, except the ever growing challenges of revenue models of such services.

7 ASSESSMENT OF THE RESEARCH

This research aimed at finding the reasons that would drive investors to internationalize their portfolios, the characteristics and the influence of online stock investment to the financial industry and also at measuring the market potential and qualifying the additional services investors desire in order to invest internationally. The theoretical part of the research depends on classical writings on financial theories as well as more recent studies of online stock broking and the development of financial industry in the internet era. The empirical part was based on an online survey targeted on users of online stock brokerage services.

The field of science is evolving. In finance, scientific findings are often revolutionizing, adding information to the investors and thus possibly changing their behavior. Empirical results from the past decades might not apply today, as added information affects the actions of investors. According to the theories, there shall not be arbitrage on the market, since any possible arbitrage is eliminated after it has been found. New findings can thus affect the returns and risks of markets.

However, the most important fact the theoretical part relies on is the benefit of international diversification. Diversification advantages rely more on mathematical models than behavioral decisions. The results of Markowitz's (1952) portfolio theory apply even today. But the somewhat ancient findings on the low levels of international correlation by Solnik (1974) can be disputed in the modern open global economy. This is to say that international correlation might have developed in a non-optimal way for a portfolio investor since the publication of Fama's research papers. Even the newer diversification researches used in this thesis are about ten years old. Changes might have taken place during those years. At any rate, this only questions the level of benefit acquired from international portfolio investment, not the scientifically proven fact that diversification brings about clear benefits.

In the latter half of the theoretical part, the importance of information for investment markets was evaluated. The effect of internet and ICT was briefly explained, but the sources mainly discuss the effects in the historical context. As this research aims at finding potential and development scenarios for the future, only little can be learned from these research papers. History is the best teacher for future anticipation, but telling the future remains a difficult task for the human. More detailed studies of potential future revenue and business models could have yielded more concrete base for the conclusions and suggestions. It is clear, however, judged from the reviewed literature, that constant change has characterized financial industry since the dawn of the computer era and this change has not come to a halt yet.

The execution of the empirical part suffered slightly from the challenges of the schedule. The survey gathered a sufficient amount of participants for basic quantitative

analysis, but the amount of data is not enough for a deeper analysis on the behavior of different investor categories. This was also not the target of this thesis, but it hinders the use of the data for further research. However, the results of the survey meet the requirements of confidence.

One question could be, if the survey should have been online for a longer time in order to reach a wider user base. It has to be noted that this research did not try to reach an average household with investments, rather a more active group of investors. This is due to the fact that the revenue of the brokerage companies relies more on active traders than pure buy-and-hold investors.

In the survey, some questions were overlapping with other questions slightly. For example questions 9b (Figure 5) and 14 (Figure 8) both included an option "I do not perceive benefits from international investing". In the first case, only internationally inexperienced respondents were asked to answer, in the latter all respondents. In the first case 161 respondents stated that they do not perceive benefits from internationalization, but in the latter question only 43 investors were of the same opinion.

Question 9 was the survey's first question related to internationalization, whereas at the time respondents reached question 14, several questions about international investment had been posed. Thus the consistency of the answers can be disputed. Perhaps the survey itself initiated the thought of international investment and at the end of the survey respondents already had slightly different opinions than in the beginning of the survey. Also, the structure of the questions could have been thought more thoroughly to avoid such overlapping questions and hence confusing results. But the question remains: which is better, finding inconsistency in the answers (to improve the assessment of the research) or not getting confusing results due to overlapping questions?

The five stage rating scale used in the research can also lead misinterpretation. Level three is labeled "I do not know", and averages close to three with low standard deviation might indicate either intermediate satisfaction level or ignorant, misinformed or uncertain respondents. Furthermore, determining the breadth of the scale is a challenging task for the researcher, as one tries to achieve as accurate results as possible, without making the survey too complicated or confusing for the respondent. A too broad scale might lead to frustration and the respondent might not assess the question thoroughly. This is why in this research a simple scale of five stages was used and the number of questions was limited.

Based on the theoretical part, a hypothesis was formed. According to the hypothesis investors should desire international brokerage services, which are enabled by modern ICT. This hypothesis was tested in the empirical part. The results of the survey, however, are somewhat inconclusive for this hypothesis. The interest level is moderate,

and one cannot directly either disprove or confirm the hypothesis. This is often the case on the interface of real life and scientific research. One cannot say that all investors either absolutely are or are not seeking for international services. The theory part, however, provides strong evidence which is pro internationalization. The fact that investors are only moderately interested can thus mean that more information about international portfolio investment and its benefits has to be distributed. An informed investor is a better customer than an uninformed.

8 SUMMARY

The World economy has gone through an enormous evolution in the past decades. Globalization and the development of information and communication technology have revolutionized the business environment of the financial industry. Digitization of financial assets and lowering the boundaries restricting capital flows have changed the investment business at the same time when new developing economies have emerged in Asia and Eastern Europe.

The research questions of this thesis were:

- Which motivators drive investors towards international investments?
- What implications does modern ICT have on the business of online brokerages and in developing international services?
- How big is the market potential for international online stock broking for the target organization?
- Which preferences and requirements do investors have for the services?

To find answers to these questions, a literature review was conducted in the fields of finance and information system sciences. A hypothesis was built upon theoretical findings: investors are interested in international brokerage services. In order to test the hypothesis and to evaluate the services required, an empirical research was realized for investors using online stock brokerage services of a Finnish service provider.

The financial theories suggest that international stock investment is a true winner when different diversification methods are compared. Other benefits of internationalization include benefiting from emerging economies, hedging one's consumption basket against currency risk, and getting a broader selection of investment opportunities compared to the limited home market. According to the results of the survey, benefiting from emerging markets seem to be a major driver for internationalization, although better diversification was ranked as the most important reason when asked directly. Also the limitations of the Finnish stock market were acknowledged, but currency hedging gained no popularity among the reasons to invest internationally.

According to the previous research, ICT has totally changed the environment in which financial markets are operating. Market places have turned into digital junctions, where information is flowing from all around the world and investors can follow the markets anywhere in the world in real time without several middlemen. Online broking has become the standard for stock trading and increased computing power has enabled lower costs, faster service, efficiency gains and changed the structure of the industry considerably. Small innovative companies have brought about new products and services and massive incumbents have to follow of this competition in order to survive.

Increased computing power enables more detailed analysis even for the small scale investors, even though their use is according to the survey still modest.

Due to the importance of information and massive earning possibilities, financial industry has always been on the edge of information technology development. In the 21st century, investor information is mediated through internet and modern electronic media rather than in printed form or by previous ICT innovations such as telephone or telex. This, however, has not killed the printed press, as newspaper still stands as the second most important source for information for investors. Internet portals offer real time information and have become most important information sources. Also brokerages have included reporting, analysis and news services to their online brokerage services, and the empirical results suggest that more information is needed by the investors in order to increase the international brokerage markets. Brokerages could exploit the possibilities of information mediation by either creating information by themselves or perhaps by allying with an already experienced information generator.

The investors' interest towards international brokerage services is stronger than their experience in it. 47 % of the investors are moderately or strongly interested in international stock trading, but only 16 % have tried it. The result is somewhat inconclusive for testing the hypothesis. The higher level of interest compared to the experience indicates an unmet need for fairly priced and well supported services. Most sought-after markets are the emerging markets. Still, investors with international experience usually have traded on geographically close stock exchanges. Diversification benefits are mentioned as the most important reason for investing internationally, but low correlation with the portfolio is not highly important in choosing the in dividual most interesting market areas. Also currency risk plays only a minor role in the decisions and the stock exchanges of the Euro zone are not among the most attractive markets.

According to the results, cost structure and the lack of information and advisory are the biggest hindrances for international portfolio investment. In order to gain new market base from internationalization, these are the challenges brokerages need to face. The use of technical and portfolio analyses is not very common. The requirements investors are having for the brokerage services are lower costs and better information availability. New information services, either in-house or generated by partnering with information generators, and developing the ease-of-use of the brokerage portals could offer an answer to this demand.

Globally merging stock exchanges and further ICT development are perhaps enabling lower cost structures in the future and this development should be directed to the investor in order to make international portfolio investment attractive. Brokerages should also market the information channels more efficiently to the investors. New

revenue models could be developed instead of sticking to the old transaction and deposit fee model.

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APPENDIX 1 QUESTIONNAIRE IN THE ORIGINAL FINNISH LANGUAGE

KYSELYLOMAKE ONLINE-OSAKEVÄLITYKSEN KEHITTÄMISTARPEISTA

A. TAUSTAKYSYMYKSET

1. Vastaajan sukupuoli
    a. Mies
    b. Nainen

2. Vastaajan ikäluokka
    a. alle 25 v.
    b. 26-35 v.
    c. 36-45 v.
    d. 46-55 v.
    e. 56-65v.
    f. yli 65 v.

3. Asuinpaikkakunnan koko
    a. alle 1000 asukasta
    b. 1001-5000 asukasta
    c. 5001-15000 asukasta
    d. 15001-30000 asukasta
    e. 30001-50000 asukasta
    f. 50001-100000 asukasta
    g. yli 100000 asukasta

4. Vastaajan hallinnassa olevan osakesalkun markkina-arvo
    a. 0-50.000 €
    b. 50.001-100.000 €
    c. 100.001-150.000 €
    d. 150.001-200.000 €
    e. 250.001-300.000 €
    f. 300.001-400.000 €
    g. 400.001-500.000 €
    h. 500.001-1.000.000 €
    i. 1.000.001-2.000.000 €
    j. yli 2 miljoonaa euroa

5. Miten kauan olette harjoittaneet arvopaperisijoittamista?
    a. alle vuoden
    b. 1-2 vuotta
    c. 2-5 vuotta
    d. 5-10 vuotta
    e. 10-15 vuotta
    f. 15-25 vuotta

g. Yli 25 vuotta

6. Miten kauan olette käyttänyt internetiä osakekauppaan?
   a. alle vuoden
   b. 1-2 vuotta
   c. 2-5 vuotta
   d. 5-8 vuotta
   e. 8-12 vuotta
   f. yli 12 vuotta

7. Käytättekö toimeksiantajan lisäksi muita osakevälittäjiä?
   a. en
   b. kyllä, mutta toimeksiantaja on ensisijainen välittäjäni
   c. kyllä, käytän ensisijaisesti toista välittäjää

8. Osakekaupan suhteen olen…
   a. …osta-ja-pidä-sijoittaja (teen muutamia kauppoja vuodessa)
   b. …suhteellisen aktiivinen (teen kymmeniä kauppoja vuodessa)
   c. …erittäin aktiivinen (teen yli sata kauppaa vuodessa)
   d. teen päiväkauppaa tai teen muuten useita pörssitoimeksiantoja päivässä
   e. en osaa sanoa

B. NYKYISEN PORTFOLION KANSAINVÄLISYYS

9. Oletteko joskus sijoittaneet suoraan osakkeisiin, jotka on listattu vain ulkomaisessa pörssissä?
   a. kyllä
      i. Valitkaa seuraavasta ne pörssit, joihin olette sijoittaneet
         1. Tukholma
         2. Kööpenhamina
         3. Tallinna
         4. Riika
         5. Oslo
         6. Frankfurt
         7. Pariisi
         8. Lontoo
         9. Amsterdam
         10. New York Stock Exchange (NYSE)
         11. New York NASDAQ
         12. Muut pörssit, mitkä?:
      ii. suunnilleen kuinka suuri osa (%) osakesalkustanne on ollut suurimmillaan sijoitettuna ulkomaisiin pörsseihin listattuihin osakkeisiin?
   b. en
      i. miksi ette (valitkaa enintään kolme tärkeintä syytä)?
         1. kansainvälisten osakesijoitusten korkeat kaupankäyntipalkkiot
         2. ulkomaalaisten osakkeiden kalliit säilytyspalkkiot
         3. ulkomaalaisiin sijoituksiin liittyvä valuuttakurssiriski

4. ulkomaisten osakkeiden tuotto ei ole riittävä suhteessa niiden riskiin
5. ulkomaalaisista osakkeista on saatavilla liian vähän tietoa ja analyysejä
6. en tiedä miten voisin hankkia ulkomaalaisia osakkeita
7. en koe saavuttavani hyötyä ulkomaille sijoittamisesta, minulle riittää Helsingin pörssin valikoima
8. koen ulkomaalaisten sijoitusten verotuksen liian korkeaksi tai monimutkaiseksi
9. muut syyt, mitkä?
10. en osaa sanoa

10. Oletteko joskus sijoittaneet seuraaviin kansainvälisiin sijoitusinstrumentteihin:
    a. indeksilaina, jonka tuotto on sidottu ulkomaiseen tai kansainväliseen osakeindeksiin
    b. sijoitusrahastoon, joka sijoittaa ulkomaisiin osakkeisiin
    c. ulkomaisen indeksin indeksiosuuksiin (ETF)
    d. en ole sijoittanut yllä oleviin tuotteisiin

11. Koska olette sijoittaneet kansainväliseen sijoitustuotteeseen tai ulkomaisiin osakkeisiin ensimmäisen kerran?
    a. alle vuosi sitten
    b. 1-2 vuotta sitten
    c. 2-5 vuotta sitten
    d. 5-10 vuotta sitten
    e. 10-15 vuotta sitten
    f. 15-25 vuotta sitten
    g. Yli 25 vuotta sitten
    h. en ole sijoittanut kansainvälisiin tuotteisiin tai osakkeisiin

12. Kuinka tyytyväinen olette toimeksiantajan kansainvälisen osakekaupan palvelutarjontaan tällä hetkellä?
    1. erittäin tyytymätön
    2. hieman tyytymätön
    3. en osaa sanoa
    4. melko tyytyväinen
    5. erittäin tyytyväinen

C. KIINNOSTUS KANSAINVÄLISIIN OSAKESIJOITUKSIIN

13. Arvioikaa yleisesti kiinnostustanne sijoittaa suoraan ulkomailla noteerattuihin osakkeisiin
    1. en ole lainkaan kiinnostunut
    2. en usko olevani kiinnostunut
    3. en osaa sanoa
    4. olen melko kiinnostunut
    5. olen erittäin kiinnostunut

14. Mitä hyötyjä hakisitte sijoittamalla ulkomailla noteerattuihin osakkeisiin (valitkaa enintään kolme tärkeintä hyötyä)?
    a. paremmin hajautetun osakesalkun
    b. rahastoja edullisemman kulurakenteen
    c. pääsisin sijoittamaan aloille, joita ei Helsingissä ole tarjolla
    d. pääsisin osalliseksi kehittyvien markkinoiden nopeasta kasvusta
    e. pystyisin käyttämään valuuttakurssien vipuvaikutusta sijoituksissa
    f. muut hyödyt, mitkä?
    g. en usko saavuttavani hyötyjä
    h. en osaa sanoa

15. Arvioikaa seuraavia osakemarkkinoita mielenkiintonne mukaan koskien suoria osakesijoituksia kyseisille markkinoille asteikolla 1-5 (1=ei lainkaan kiinnostava markkina – 5=erittäin kiinnostava markkina):
    a. Pohjoismaat
    b. Iso-Britannia
    c. Saksa ja Itävalta
    d. Ranska
    e. Sveitsi
    f. Benelux-maat
    g. Espanja
    h. Italia
    i. Kreikka ja Kypros
    j. Venäjä
    k. Baltian maat
    l. Ukraina ja Valkovenäjä
    m. EU:iin vuonna 2004 liittyneet maat (mm. Puola, Tsekki, Unkari)
    n. EU:iin vuonna 2007 liittyneet maat (Romania ja Bulgaria)
    o. Turkki
    p. Israel
    q. Lähi-itä (mm. Arabiemiraatit, Saudi-Arabia, Qatar, Kuwait)
    r. Keski-Aasian entiset neuvostotasavallat (mm. Kazakstan)
    s. Intia
    t. Kiina ja Hongkong
    u. Japani
    v. Taiwan ja Etelä-Korea
    w. Muu Itä-Aasia (mm. Thaimaa, Indonesia, Filippiinit)
    x. Australia ja Uusi-Seelanti
    y. Yhdysvallat
    z. Kanada
    å. Meksiko ja Väli-Amerikka
    ä. Etelä-Amerikka (mm. Argentina, Brasilia, Chile)
    ö. Etelä-Afrikka
    aa. muu Afrikka
    bb. muut markkinat, mitkä?

16. Valitkaa kysymyksen 15 listasta kolme kiinnostavinta markkina-aluetta ja nimetkää ne. Miksi koette kyseiset markkinat mielenkiintoisina?
    a. pörssilistoilla on mielenkiintoisia yhtiöitä ja aloja, joita ei muualla ole
    b. alueiden nopea taloudellinen kehitys mahdollistaa hyvät tuotot

c. alueiden markkinat eivät korreloi vahvasti oman salkkuni kanssa, joten tarjolla on hajautushyötyjä
d. alueen osakemarkkinoista on saatavilla hyvin tietoa
e. alue on poliittisesti ja taloudellisesti vakaa ja siten turvallinen sijoituskohde
f. alue kuuluu euroalueeseen, joten valuuttariskiä ei ole
g. tunnen alueen henkilökohtaisesti hyvin
h. henkilökohtaiset mieltymykset alueeseen
i. muut syyt, mitkä?
j. en osaa sanoa
k. listalla ei ollut mielenkiintoisia markkinoita

D. KANSAINVÄLISEN SIJOITTAMISEN OHEISPALVELUT JA PALVELUMAKSUT

17. Arvioikaa seuraavia medioita tietolähteinä sijoituspäätöksiä tehdessänne asteikolla 1-5 (1=en seuraa, 2=käytän vähän, 3=käytän toisinaan, 4=tärkeä media, 5=ensisijainen media)
    a. internetin kotimaiset taloussivustot (esim. Kauppalehti.fi tai Taloussanomat.fi)
    b. Tutkimuksen toimeksiantajan verkkopalvelun tarjoamat ulkoiset analyysipalvelut[1]
    c. muut internetin ulkomaiset taloussivustot
    d. käyttämieni osakevälittäjien tarjoamat markkina-analyysi- ja uutispalvelut (esim toimeksiantajan verkkopalvelussa)
    e. kotimaiset sanomalehdet
    f. ulkomaiset sanomalehdet
    g. pörssiyritysten internetsivustot
    h. pörssiyritysten painetut sijoittajatiedotteet, -lehdet ja vuosikertomukset
    i. television kotimaiset talousuutiset
    j. kansainväliset TV-kanavat
    k. internetin keskustelupalstat
    l. oma sijoitusneuvojani tai varainhoitajani
    m. muu, mikä?

18. Käytättekö teknistä analyysiä sijoituspäätöksiä tehdessänne?
    a. Kyllä
    b. En
    c. En osaa sanoa

19. Käytättekö portfolioanalyysiä sijoituspäätöksiä tehdessänne?
    a. Kyllä
    b. En
    c. En osaa sanoa

[1] Tämän vastausvaihtoehdon sanamuotoa on muutettu alkuperäisestä toimeksiantajan anonymiteetin varmistamiseksi

20. Mielestäni sopiva hintataso ulkomaisten osakkeiden säilyttämiselle olisi…
    a. …alempi kuin suomalaisille osakkeille
    b. …sama kuin suomalaisille osakkeille
    c. …50 % korkeampi kuin suomalaisille osakkeille
    d. … yli 50 % korkeampi kuin suomalaisille osakkeille
    e. Osakkeiden säilytyspalkkioilla ei ole minulle väliä
    f. En osaa sanoa

21. Mielestäni sopiva hintataso ulkomaisten osakkeiden kaupankäynnille olisi…
    a. …alempi kuin suomalaisille osakkeille
    b. …sama kuin suomalaisille osakkeille
    c. …50 % korkeampi kuin suomalaisille osakkeille
    d. … yli 50 % korkeampi kuin suomalaisille osakkeille
    e. Osakkeiden kaupankäyntipalkkioilla ei ole minulle väliä
    f. En osaa sanoa

22. Kertokaa omin sanoin, miten toimeksiantaja voisi parantaa kansainvälisiä osakevälityspalveluitaan