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Asset and systematic risk

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In financial accounting, assets are economic resources. Anything tangible or intangible that is capable of being owned or controlled to produce value and that is held to have positive economic value is considered an asset. Simply stated, assets represent ownership of value that can be converted into cash (although cash itself is also considered an asset). The study and understanding of risk is of paramount importance to any discussion of the value of a particular firm or enterprise. Most of the basic financial management addresses risk from the perspective of a portfolio or the financial and operating characteristics of the firm. Systematic risk and asset for 58 companies (2006 to 2009) from Tehran Stock Exchange is calculated within a 12-month financial period by using the statistic software programs of SPSS and Excel. In this study, asset is considered as an independent variable, and systematic risk ($\beta$) is considered as a dependent variable. According to the results, asset has effect on the systematic risk of listed companies in Tehran Stock Exchange.

Key words: Capital structure, firm size, systematic risk, asset, cost of capital, rate of return.

INTRODUCTION

The theory of the firm consists of a number of economic theories that describe the nature of the firm, company, or corporation, including its existence, behavior, structure, and relationship to the market. The theory of the firm aims to answer these questions:

i. Existence – why do firms emerge, why are not all transactions in the economy mediated over the market?
ii. Boundaries – why is the boundary between firms and the market located exactly there as to size and output variety? Which transactions are performed internally and which are negotiated on the market?
iii. Organization – why are firms structured in such a specific way, for example as to hierarchy or decentralization? What is the interplay of formal and informal relationships?
iv. Heterogeneity of firm actions/performances – what drives different actions and performances of firms?

Firms exist as an alternative system to the market-price mechanism when it is more efficient to produce in a non-market environment.

For example, in a labor market, it might be very difficult or costly for firms or organization to engage in production when they have to hire and fire their workers depending on demand/supply conditions. It might also be costly for employees to shift companies everyday looking for better alternatives.

Thus, firms engage in a long-term contract with their employees to minimize the cost. The First World War period saw a change of emphasis in economic theory away from industry-level analysis which mainly included analyzing markets to analysis at the level of the firm, as it became increasingly clear that perfect competition was no longer an adequate model of how firms behaved. Economic theory till then had focused on trying to understand markets alone and there had been little study on understanding why firms or organizations exist. Markets are mainly guided by prices as illustrated by vegetable markets where a buyer is free to switch sellers in an exchange.

The aim of this study is the effect of asset in the systematic risk of listed companies in Tehran Stock Exchange.
MATERIALS AND METHODS

Systematic risk per share by establishing linear relationship between the market portfolio returns as independent variables and share returns as the dependent variable is derived. Systematic risk and asset for 58 companies (2006 to 2009) from Tehran Stock Exchange is calculated within a 12-month financial period by using the statistic software programs of SPSS and Excel. In this study, asset is considered as independent variables, and systematic risk \( \beta \) is considered as a dependent variable. Research hypothesis is as follows:

\[ H_0: \text{Asset has no effect on the systematic risk of listed companies in Tehran stock exchange.} \]
\[ H_1: \text{Asset has effect on the systematic risk of listed companies in Tehran stock exchange.} \]

While SIG is ≤0.05, \( H_0 \) is rejected. Otherwise there is no adequate reason for rejecting \( H_0 \).

RESULTS AND DISCUSSION

In the financial accounting sense of the term, it is not necessary to be able to legally enforce the asset's benefit for qualifying a resource as being an asset, provided the entity can control its use by other means.

Asset characteristics

i. The probable present benefit involves a capacity, singly or in combination with other assets, in the case of profit-oriented enterprises, to contribute directly or indirectly to future net cash flows, and, in the case of not-for-profit organizations, to provide services;
ii. The entity can control access to the benefit;
iii. The transaction or event giving rise to the entity's right to, or control of, the benefit has already occurred.

It is important to understand that in an accounting sense, an asset is not the same as ownership. Assets are equal to "equity" plus "liabilities". The accounting equation relates assets, liabilities, and owner's equity:

\[ \text{Assets} = \text{Liabilities} + \text{Stockholder's Equity (owner's equity)} \]

The accounting equation is the mathematical structure of the balance sheet. Assets are listed on the balance sheet. Similarly, in economics, an asset is any form in which wealth can be held. Probably the most accepted accounting definition of asset is the one used by the International Accounting Standards Board. The following is a quotation from the IFRS Framework: "An asset is a resource controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise." Assets are formally controlled and managed within larger organizations via the use of asset tracking tools. These monitor the purchasing, upgrading, servicing, licensing, disposal, etc., of both physical and non-physical assets. In a company's balance sheet, certain divisions are required by generally accepted accounting principles (GAAP), which vary from country to country. Current assets are cash and other assets expected to be converted to cash, sold, or consumed either in a year or in the operating cycle (whichever is longer), without disturbing the normal operations of a business. These assets are continually turned over in the course of a business during normal business activity. There are 5 major items included into current assets:

i. Cash and cash equivalents - it is the most liquid asset, which includes currency, deposit accounts, and negotiable instruments (for example, money orders, bank drafts),
ii. Short-term investments – include securities bought and held for sale in the near future to generate income on short-term price differences (trading securities),
iii. Receivables – usually reported as net of allowance for uncollectible accounts,
iv. Inventory – trading these assets is a normal business of a company. The inventory value reported on the balance sheet is usually the historical cost or fair market value, whichever is lower. This is known as the "lower of cost or market" rule.
v. Prepaid expenses - these are expenses paid in cash and recorded as assets before they are used or consumed (a common example is insurance). See also adjusting entries.

The phrase net current assets (also called working capital), is often used and refers to the total of current assets less the total of current liabilities - often simply referred to as "investments". Long-term investments are to be held for many years and are not intended to be disposed of in the near future. This group usually consists of four types of investments:

i. Investments in securities such as bonds, common stock, or long-term notes.
ii. Investments in fixed assets not used in operations (for example, land held for sale),
iii. Investments in special funds (for example, sinking funds or pension funds).

Different forms of insurance may also be treated as long-term investments. Also referred to as property, plant, and equipment (PPE), these are purchased for continued and long-term use in earning profit in a business. This group includes as an asset, land, buildings, machinery, furniture, tools, and certain wasting resources for example, timberland and minerals. They are written off against profits over their anticipated life by charging depreciation expenses (with exception of land assets). Accumulated depreciation is shown in the face of the balance sheet or in the notes. These are also called capital assets in
management accounting. Intangible assets lack physical substance and usually are very hard to evaluate. They include patents, copyrights, franchises, goodwill, trademarks, trade names, etc. These assets are (according to US GAAP) amortized to expense over 5 to 40 years with the exception of goodwill. Tangible assets are those that have a physical substance and can be touched, such as currencies, buildings, real estate, vehicles, inventories, equipment, and precious metals.

In financial accounting, assets are economic resources. Anything tangible or intangible that is capable of being owned or controlled to produce value and that is held to have positive economic value is considered an asset. Simply stated, assets represent ownership of value that can be converted into cash (although, cash itself is also considered an asset). The balance sheet of a firm records the monetary value of the assets owned by the firm.

It is money and other valuables belonging to an individual or business. Two major asset classes are tangible assets and intangible assets. Tangible assets contain various subclasses, including current assets and fixed assets. Current assets include inventory, while fixed assets include such items as buildings and equipment. Intangible assets are nonphysical resources and rights that have a value to the firm because they give the firm some kind of advantage in the market place. Examples of intangible assets are goodwill, copyrights, trademarks, patents and computer programs, and financial assets, including such items as accounts receivable, bonds and stocks.

The study and understanding of risk is of paramount importance to any discussion of the value of a particular firm or enterprise. Most of basic financial management addresses risk from the perspective of a portfolio or the financial and operating characteristics of the firm. The two are often loosely connected and interrelationships ignored.

Systematic risk of a firm is accomplished by decomposition of the firm's beta. Financial theory is predicated on the notion that the goal of the firm is to maximize value and thus firms configure their balance sheets to achieve this goal. The selected configuration of assets and liabilities determines the total risk of the firm. Portfolio theory shows us that the relevant risk is the systematic risk as investors are able to diversify away the unsystematic portion of total risk. Several authors, in their study of systematic risk, have derived decompositions of beta providing insight into the financial and economic factors affecting beta. Hamada (1972), Rubenstein (1973) and Mandelker and Rhee (1984) have partitioned beta into operating risk and financial risk.

In stock exchanges, information about the systematic risk of common stock is the most important subject. In investment, risk and return have key roles. Rate risk is related to the type of investment. Saving in bank are with low risk and participation bonds and common stock are with moderate and high risks. Systematic risk is due to risk factors that affect the entire market such as investment policy changes, foreign investment policy, change in taxation clauses, shift in socio-economic parameters, global security threats and measures, etc. Unsystematic risk is due to factors specific to an industry or a company like labor unions, product category, research and development, pricing, marketing strategy, etc. If one wants to determine the common stocks value according to its systematic risk, beta coefficient should be used. Barth et al. (2007) show that firms with higher financial statement transparency, as measured by the covariance between earnings and returns, have lower expected returns and systematic risk. Accounting measures of firm-level risk have predictive power for firms' betas with market-wide cash flows, and this predictive power arises from the behavior of firm's cash flows. The systematic risks of stocks with similar accounting characteristics are primarily driven by the systematic risks of their fundamentals.

In financial accounting, assets are economic resources. Anything tangible or intangible that is capable of being owned or controlled to produce value and that is held to have positive economic value is considered an asset. Simply stated, assets represent ownership of value that can be converted into cash (although, cash itself is also considered an asset). The balance sheet of a firm records the monetary value of the assets owned by the firm. It is money and other valuables belonging to an individual or business. Two major asset classes are tangible assets and intangible assets. Tangible assets contain various subclasses, including current assets and fixed assets. Current assets include inventory, while fixed assets include such items as buildings and equipment. Intangible assets are nonphysical resources and rights that have a value to the firm because they give the firm some kind of advantage in the market place. Examples of intangible assets are goodwill, copyrights, trademarks, patents and computer programs, and financial assets, including such items as accounts receivable, bonds and stocks.

Financial accountancy is used to monitor agents' performance and reporting the results to interested users. Financial accountancy is used to prepare accounting information for people outside the organization or not involved in the day-to-day running of the company. Management accounting provides accounting information to help managers make decisions to manage the business. In short, financial accounting is the process of summarizing financial data taken from an organization's accounting records and publishing in the form of annual (or more frequent) reports for the benefit of people outside the organization.
Goodwill is an accounting concept meaning the value of an entity over and above the value of its assets. The term was originally used in accounting to express the intangible but quantifiable "prudent value" of an ongoing business beyond its assets, resulting perhaps from the reputation the firm enjoyed with its clients. Goodwill in financial statements arises when a company is purchased for more than the fair value of the identifiable net assets of the company. The difference between the purchase price and the sum of the fair value of the net assets is by definition, the value of the "goodwill" of the purchased company. The acquiring company must recognize goodwill as an asset in its financial statements and present it as a separate line item on the balance sheet, according to the current purchase accounting method. In this sense, goodwill serves as the balancing sum that allows one firm to provide accounting information regarding its purchase of another firm for a price substantially different from its book value. Goodwill can be negative, arising where the net assets at the date of acquisition, fairly valued, exceed the cost of acquisition. Negative goodwill is recognized as a gain to the extent that it exceeds allocations to certain assets. Under current accounting standards, it is no longer recognized as an extraordinary item. For example, a software company may have net assets (consisting primarily of miscellaneous equipment, and assuming no debt) valued at $1 million, but the company's overall value (including brand, customers, intellectual capital) is valued at $10 million. Anybody buying that company would book $10 million in total assets acquired, comprising $1 million physical assets, and $9 million in goodwill. In a private company, goodwill has no predetermined value prior to the acquisition; its magnitude depends on the two other variables by definition. A publicly traded company, by contrast, is subject to a constant process of market valuation, so goodwill will always be apparent. While a business can invest to increase its reputation, by advertising or assuring that its products are of high quality, such expenses cannot be booked as contributing to goodwill. There is hence a disconnect; goodwill from acquisitions can be booked, since it is derived from a market or purchase valuation, but similar internal spending cannot be booked, although, it will be recognized by investors who compare a company's market value with its book value. There is a distinction between two types of goodwill depending upon the type of business enterprise: institutional goodwill and professional practice goodwill. Furthermore, goodwill in a professional practice entity may be attributed to the practice itself and to the professional practitioner.

A trademark, trade mark, or trade-mark is a distinctive sign or indicator used by an individual, business organization, or other legal entity to identify that the products or services to consumers with which the trademark appears originate from a unique source, and to distinguish its products or services from those of other entities. A trademark is typically a name, word, phrase, logo, symbol, design, image, or a combination of these elements. There is also a range of non-conventional trademarks comprising marks which do not fall into these standard categories, such as those based on color, smell, or sound. The owner of a registered trademark may commence legal proceedings for trademark infringement to prevent unauthorized use of that trademark. However, registration is not required. The owner of a common law trademark may also file suit, but an unregistered mark may be protectable only within the geographical area within which it has been used or in geographical areas into which it may be reasonably expected to expand.

A patent is a form of intellectual property. It consists of a set of exclusive rights granted by a sovereign state to an inventor or their assignee for a limited period of time in exchange for the public disclosure of an invention. The procedure for granting patents, the requirements placed on the patentee, and the extent of the exclusive rights vary widely between countries according to national laws and international agreements. Typically, however, a patent application must include one or more claims defining the invention which must meet the relevant patentability requirements such as novelty and non-obviousness. The exclusive right granted to a patentee in most countries is the right to prevent others from making, using, selling, or distributing the patented invention without permission.

A computer program (also software, or just a program) is a sequence of instructions written to perform a specified task with a computer. A computer requires programs to function, typically executing the program's instructions in a central processing unit. The program has an executable form that the computer can use directly to execute the instructions. The same program in its human-readable source code form, from which executable programs are derived, enables a programmer to study and develop its algorithms. Computer source code is often written by computer programmers. Source code is written in a programming language that usually follows one of two main paradigms: imperative or declarative programming. Source code may be converted into an executable file (sometimes called an executable program or a binary) by a compiler and later executed by a central processing unit. Alternatively, computer programs may be executed with the aid of an interpreter, or may be embedded directly into hardware. Computer programs may be categorized along functional lines: system software and application software. Two or more computer programs may run simultaneously on one computer, a process known as multitasking. Accounts receivable also known as debtors, is money owed to a business by its clients (customers) and shown on its balance sheet as an asset. It is one of a series of accounting transactions dealing with the billing of a customer for goods and services that the customer has ordered. In finance, a bond is a debt security, in which the authorized issuer
owes the holders a debt and, depending on the terms of the bond, is obliged to pay interest (the coupon) to use and/or to repay the principal at a later date, termed maturity. A bond is a formal contract to repay borrowed money with interest at fixed intervals. Thus a bond or fixed income is like a loan: the holder of the bond is the lender (creditor), the issuer of the bond is the borrower (debtor), and the coupon is the interest. Bonds provide the borrower with external funds to finance long-term investments, or, in the case of government bonds, to finance current expenditure. Certificates of deposit (CDs) or commercial paper are considered to be money market instruments and not bonds. Bonds and stocks are both securities, but the major difference between the two is that (capital) stockholders have an equity stake in the company (that is, they are owners), whereas bondholders have a creditor stake in the company (that is, they are lenders). Another difference is that bonds usually have a defined term, or maturity, after which the bond is redeemed, whereas stocks may be outstanding indefinitely. An exception is a consol bond, which is a perpetual bond with no maturity. The capital stock (or just stock) of a business entity represents the original capital paid into or invested in the business by its founders. It serves as a security for the creditors of a business since it cannot be withdrawn to the detriment of the creditors. Stock is different from the property and the assets of a business which may fluctuate in quantity and value.

The cash flows of growth stocks are particularly sensitive to temporary movements in aggregate stock prices (driven by movements in the equity risk premium), while the cash flows of value stocks are particularly sensitive to permanent movements in aggregate stock prices (driven by market-wide shocks to cash flows). Thus, the high betas of growth stocks with the market's discount-rate shocks, and of value stocks with the market's cash-flow shocks, are determined by the cash-flow fundamentals of growth and value companies. Growth stocks are not merely "glamour stocks" whose systematic risks are purely driven by investor sentiment. More generally, accounting measures of firm-level risk have predictive power for firms' betas with market-wide cash flows, and this predictive power arises from the behavior of firms' cash flows. The systematic risks of stocks with similar accounting characteristics are primarily driven by the systematic risks of their fundamentals.

They explain the size and value anomalies in stock returns using an economically motivated two-beta model. We break the CAPM beta of a stock with the market portfolio into two components, one, reflecting news about the market's future cash flows and two, reflecting news about the market's discount rates. Asset pricing theory suggests that the former should have a higher price of risk; thus beta, like cholesterol, comes in bad' and good' varieties. Empirically, we find that value stocks and small stocks have considerably higher cash-flow betas than growth stocks and large stocks, and this can explain their higher average returns. The poor performance of the CAPM since 1963 is explained by the fact that growth stocks and high-past-beta stocks have predominantly good betas with low risk prices.

We study the risk of value and growth stocks. We find that time-varying risk goes in the right direction in explaining the value premium. Our inference differs from that of previous studies because we sort conditional betas on the expected market risk premium, instead of on the realized market excess return. However, we also find that this beta-premium covariance is too small to explain the observed magnitude of the value premium within the conditional CAPM.

In finance, the beta (β) of a stock or portfolio is a number describing the relation of its returns with that of the financial market as a whole. The beta coefficient is a key parameter in the capital asset pricing model (CAPM). It measures the part of the asset's statistical variance that cannot be mitigated by the diversification provided by the portfolio of many risky assets, because it is correlated with the return of the other assets that are in the portfolio. Beta can be estimated for individual companies using regression analysis against a stock market index. The formula for the beta of an asset within a portfolio is:

$$\beta_a = \frac{Cov \left( r_a, r_p \right)}{Var \left( r_p \right)}$$

where $r_a$ measures the rate of return of the asset, $r_p$ measures the rate of return of the portfolio, and $Cov(r_a, r_p)$ is the covariance between the rates of return. The portfolio of interest in the CAPM formulation is the market portfolio that contains all risky assets, and so the $r_p$ terms in the formula are replaced by $r_m$, the rate of return of the market. The beta coefficient was born out of linear regression analysis. It is linked to a regression analysis of the returns of a portfolio (such as a stock index) (x-axis) in a specific period versus the returns of an individual asset (y-axis) in a specific year. The regression line is then called the security characteristic line (SCL):

$$SCL : r_{a,t} = a_a + \beta_a r_{m,t} + \varepsilon_{a,t}$$

$a_a$ is called the asset's alpha and $\beta_a$ is called the asset’s beta coefficient. Both coefficients have an important role in modern portfolio theory.

The SML graphs the results from the capital asset pricing model (CAPM) formula. The x-axis represents the risk (beta), and the y-axis represents the expected return. The market risk premium is determined from the slope of the SML. The relationship between $\beta$ and required return is plotted on the security market line (SML) which shows expected return as a function of $\beta$. The intercept is the
nominal risk-free rate available for the market, while the slope is \( E(R_m - R_f) \). The security market line can be regarded as representing a single-factor model of the asset price, where Beta is exposure to changes in value of the Market. The equation of the SML is thus:

\[
SML : E(R_i) - R_f = \beta_i (E(R_M) - R_f)
\]

It is a useful tool in determining if an asset being considered for a portfolio offers a reasonable expected return for risk. Individual securities are plotted on the SML graph. If the security's risk versus expected return is plotted above the SML, it is undervalued since the investor can expect a greater return for the inherent risk. And a security plotted below the SML is overvalued since the investor would be accepting less return for the amount of risk assumed.

This expected return on equity, or equivalently, a firm's cost of equity, can be estimated using the capital asset pricing model (CAPM). According to the model, the expected return on equity is a function of a firm's equity beta (\( \beta_E \)) which, in turn, is a function of both leverage and asset risk (\( \beta_A \)):

\[
K_E = R_f + \beta_E (R_M - R_f)
\]

where \( K_E \) = firm's cost of equity; \( R_f \) = risk-free rate (the rate of return on a "risk free investment", for example, U.S. Treasury Bonds); \( R_M \) = return on the market portfolio.

To estimate beta, one needs a list of returns for the asset and returns for the index; these returns can be daily, weekly or any period. Then one uses standard formulas from linear regression. The slope of the fitted line from the linear least-squares calculation is the estimated Beta. The y-intercept is the alpha. Scholes and Williams (1977) provided a model for estimating betas from no synchronous data. There is an inconsistency between how beta is interpreted and how it is calculated. The usual explanation is that it gives the asset volatility relative to the market volatility. If that were the case it should simply be the ratio of these volatilities. In fact, the standard estimation uses the slope of the least squares regression line - this gives a slope which is less than the volatility ratio.

Risks can be reduced in four main ways: avoidance, diversification, hedging and insurance by transferring risk. Systematic risk also called market risk or un-diversifiable risk is a risk of security that cannot be reduced through diversification. Participants in the market, like hedge funds, can be the source of an increase in systemic risk and transfer of risk to them may, paradoxically, increase the exposure to systemic risk - risk which is common to an entire class of assets or liabilities. The value of investments may decline over a given time period simply because of economic changes or other events that impact large portions of the market. Asset allocation and diversification can protect against systematic risk because different portions of the market tend to under perform at different times. This is also called market risk.

For testing the hypothesis of this study, linear regression technique has been used and the results of regression are as shown in Table 1. According to the results in Table 1, \( H_0 \) is not confirmed because SIG = 0.037<0.05. Thus, asset has effect on the systematic risk of listed companies in Tehran Stock Exchange.

### References


