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A Review of Literature on the Effect of Inflation Volatility on Equity Risk Premium

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Abstract
The relationship between various macroeconomic variables and stock returns has been documented since 1986 in developing African countries. However, with the increased phenomenon of international financial integration, the subject matter of compensation of international investors in developing countries; as captured by the equity risk premium has come to light. This literature review aims to review research studies that have investigated the relationship between inflation volatility and equity risk premium. Literature revealed that, while there is no general consensus on the direction or magnitude of the relationship between inflation volatility and equity risk premium, it still remains an important subject matter that should be studied further..
Keywords: Risk, Equity Risk Premium, Inflation Volatility,

1. INTRODUCTION

Background of the Study

Financial economists are primarily interested in understanding the risk and return relationship of assets and the underpinning economic sources of movements in asset prices. Macro-economic volatility is an important source of risk whose influence on asset returns has attracted the attention of researchers in finance and economics (Chen N. , 1991).

Risk-return models in finance share two main common views about risk. First, they define risk as the variance of actual returns from expected returns. This means that an asset can only be deemed as risk free when the actual returns are equal to the expected returns. Secondly, the risk return models break the risk of any investment into two components, these are; firm specific risk; also know unsystematic risk and market risk also known as systematic risk. Bailey, R. E (2005) states that the firm specific risk is often assumed to be mitigated as investors are assumed to hold well-diversified portfolios of assets. Market risk on the other hand stems from the macro-economic environment and affects all investments. It is usually not diversifiable and hence is the only risk that investors should be rewarded from their investment.

Since investors face risk in their investment decisions, the intuitive investment premise is that risk matters, and that riskier investments should have a higher expected return than safer investments, in order for them to be considered good investments. Cochrane (2000) states that for investors in the equity market this premise of excess returns is formally captured in the concept of the Equity Risk Premium[1].

While various papers have studied the macroeconomic factors influencing the stock market returns in developing countries over the last ten years, majority of them have only focused their analysis on stock returns and not considered the equity risk premium in developing countries. There is therefore, scarce evidence on the nature of interaction between macroeconomic fundamentals, specifically inflation and the equity risk premium in stock markets.

This paper shall on reviewing literature particularly focused on inflation volatility as a macro-economic variable and its impact on the equity risk premium. The research's main proposition is that inflation volatility has a direct impact on the equity risk premium as well as indirect impact through other macro-economic variables such as nominal interest rates and real growth rates. Majority of previous studies in equity risk premium have primarily focused on the estimation of the equity risk premium itself; popularly known as the Equity Premium Puzzle studies. There are however majorly two academic appealing estimation methods that have been popular in literature.

The first and standard approach is the use of historical data to estimate the equity risk premium as proposed by Ibbotson and Sinquefield (1976) and Dimson, Marsh, and Staunton (2002). However Annin and Falaschetti (1998) and Damodaran (2012) hold that historical risk premium has limitations in terms of selection of the time period under consideration and choice of risk free security. The authors therefore propose the use of implied premium which is forward looking and utilizes expected cash flows from stock returns and risk free securities to calculate the premium.

[1] The Equity risk premium (ERP) is generally defined as the excess return on shares provided above risk-free assets (Damodaran, 2012). This can also be explained as the additional return that investors in equity demand compared to investing in a risk free asset, such as a Treasury bond or Treasury bill.

Problem Statement

Since the early 1990s, developing countries have had an influx of foreign capital. These countries have made concerted efforts to attract foreign investors by deregulating their financial markets and removing the restrictions on cross-border capital flows. Many financial economists find that the degree of international financial integration has increased over the last two decades.

Extensive research has been carried out in studying the effect of capital market liberalization on economic growth (Kose et al., 2008; Misati and Nyamongo, 2011; Vithessonti and Tongurai, 2012). Another strand of research examines the effect of market integration on the cost of capital (Tandon, 1997; Smith and Sofianos, 1997; Miller, 1999; Errunza and Miller, 2000; Henry, 2000; Bekaert and Harvey, 2000; Lins et al., 2005; Lewis, 2006).

However, these studies have not considered the pricing of risk for foreign investors participating in the phenomena that is international financial integration. Equity risk premium is a key input into estimating the cost of capital. To model the cost of equity, researchers consider an additional risk related to emerging and developing economies (Godfrey and Espinosa, 1996; Erb et al., 1996; Damodaran, 1998; Estrada, 2000; Apoteker et al., 2006). This paper shall dissect the additional risk and seek to determine to what extent inflation volatility contributes to it.

If the Capital Asset Pricing Model is applied to emerging and developing economies, a country risk must be added. This country risk is associated with potential loss of funds invested in an emerging market.

1. LITERATURE REVIEW

Theoretical Literature Review

The generalized stochastic discount factor model provides a general and adequate theoretical framework needed to capture the relationship between the equity risk premium and macroeconomic volatilities, which includes inflation volatility. The basic theory behind asset pricing in finance is that the price of any asset, such equity, is the expected discounted payoff of sequential future returns. The expected future returns are discounted by a given factor which is dependent on market parameters. Invoking the fundamental valuation relationship in finance, would lead to the implication of the existence of a positive random variable which is referred to as the stochastic discount factor (SDF); and can be used to discount future payoff of a given asset.

By specifying the nature of the discount factor, the researcher is able to capture most asset pricing models which are by and larger variations of the SDF. Most existing asset pricing models such as CAPM of Sharpe (1964) and Lintner (1965), the Inter-temporal CAPM of Merton (1972), the Consumption CAPM of Lucas (1978) and even the Black Scholes Model (BSM) can be shown to be specific variations of the SDF model.

Cochrane (2000) brings to light two dissimilar schools of thought relating to asset pricing; relative asset pricing and absolute asset pricing, which can utilize the SDF Model. Relative asset pricing, as the name suggest is an inert approach to asset pricing which prices an asset with reference to the prices of other assets. Models that fall under this category are CAPM which uses the beta of a market portfolio to price an asset or the Black Scholes Model, which uses statistical features of return and volatility of the underlying asset to price derivative instruments. The more academically appealing approach to asset pricing, in which the SDF Model fits better is the absolute asset pricing. Within this premise, each asset is priced with reference to its exposure to fundamental sources of macroeconomic risk. This research paper shall make use of the SDF model with observable macroeconomic risk factor. The prime motivation of using this approach is that it shall allow for the identification of the sources of macro-economic risk and pave way for an assessment of their significance.

At this juncture it shall be important to note that the SDF model is not the only factor model available in asset pricing. Another factor model that is popularly used is the Arbitrage Pricing Theory (APT) of Ross and Lucas (1976), which models the returns of an asset a linear combination of k factors. However, the APT lacks a key feature possessed by the SDF model, which is essential in capturing risk premiums. The factors in the SDF model are linear functions of k conditional variance factors and the excess returns of the risky asset.

In light of the Efficient Market Hypothesis; which states that stock prices follow a random walk and are hence unpredictable given the available information, the existence of a statistical relationship between macroeconomic volatilities and stock returns necessitated further research into the predictive power of macro-economic volatilities.

The existence of such a statistically detectable predictability of stock returns from macro-economic changes can then be extended the equity risk premium; excess returns. The equity risk premium is a formal embodiment of investors' perception of risk expectations in the Equities market. A high equity risk premium indicates that investors are optimistic about the returns from the market, while the converse represents bearish expectations about equity returns.

A linkage in the form of a statistical relationship between changes in the macro-economic environment and the equity risk premium would help inform how investors perception of risk in the equity markets changes or is affected by changes in the economic environment. Chen, Roll and Ross (1986) found that since asset prices,

particularly equity prices are believed to respond to economic news, it follows that changes in the macro-economic variables systematically affects the stock market returns and consequently excess market returns.

Empirical Literature Review

Share valuation models had always assumed that prices follow a random walk model. This meant that stock prices fully reflected all available information and led to the conclusion that it was not theoretically possible to predict their movements. However, Cox, Ingersoll and Ross (1985) refuted this conclusion and came up with a new proposition that economic agents optimize their portfolio allocation simultaneously with inter-temporal consumption. This opened up a link between the real and financial sector of the economy, since the excess market returns depend on the covariance between marginal utility of consumption (real sector) and the asset prices (financial sector).

The link between the real and financial sector makes it possible to use macroeconomic variables to explain variations in equity returns and even forecast the excess returns; formally encompassed in the ERP. The forgoing arguments point to the question as to whether macro-economic volatilities should be priced.

Schmitz (1996) makes a strong argument by proposing that because stock prices are a claim on expected future dividends, discounted at an appropriate rate; which is influenced by changes in the macro-economic environment, then there is a need to price such volatilities. Additionally, since the equity risk premium is a reflection of what investors' perception regarding risk in a market/economy is, then this risk could be correlated to macro-economic variations.

Consistent with the ability of investors to fully diversify, different asset pricing models, among them the Capital Asset Pricing Model (Lintner, 1965), Arbitrage Pricing Model (Roll and Ross, 1980) and Inter-temporal Capital Asset Pricing Model (Merton, 1973), reside in the premise that investors are only compensated for undiversifiable/systematic risk factors. Chen, Roll and Ross (1986) carried out an empirical study on systematic risk factors, which they found to essentially stem from state macro-economic variables. These macro-economic variables that were indentified included the spread between long term and short term interest rates, expected and unexpected inflation, industrial production and the spread between high and low grade bonds. This paper concluded that increases in industrial production significantly increased excess returns.

Fama (1991) noted that one of the most crucial areas of research not addressed then was the relationships between external business conditions and expected returns. Taking these external business conditions under the umbrella of macro-economic uncertainty, it is apparent that they vary from the monetary policy stance of the Central Bank to external economic shocks such as a sudden increase in oil prices, which influences investors' expectations about future cash-flows. This change in expectations has a domino effect on stock prices, then stock returns and eventually risk premium. The identification of the specific macro-economic variables that affect equity risk premium has been a muddle that various empirical studies have tried make clearer.

Chen (1991) gives a solid underpinning for the methodology in this paper, since he examined the relationships between equity risk premiums, US output growth and five macro-economic variables. The resulting relationship was that excess returns showed a negative correlation to economic growth, but a positive correlation to future economic growth. This study further showed that information variables that are used to determine expected stock returns are related to US output growth in a way that is consistent with inter-temporal asset pricing models.

Glosten, Jagannathan and Runkle (1993) found that the equity risk premium in the England was significantly affected by long term yield on bonds, compared to short term interest rates. These findings were important in explaining the increase and subsequent decrease in the equity risk premium in the stock markets, with the view that high levels of inflation were the underlying driver. The conclusion of this paper is consistent with the argument of this study; that high levels of inflation tend to distort the workings of the price mechanism to allocate resources efficiently and the price of risk in the economy hence leading to changes in the equity risk premium within an economy.

Giovanni & Philippe (1987) emphasized the role of interest rates in the US stock markets. They found that excess returns were negatively correlated to the nominal interest rates. In the same study, they also found that volatility of stock returns are positively correlated with nominal interest rates. It is worthwhile to note that excess market returns and stock returns could have different relationships with the same macroeconomic variable. Since the primary motivation of changes in interest rates is a shift in the monetary sector towards equilibrium, this study failed to conclude on how the equity risk premium is affected by changes in equilibrium in the monetary sector. Nonetheless, Fama (1981) used money demand theory (which encompasses equilibrium in the monetary sector) and conjured the proxy hypothesis to demonstrate that there is a strong negative correlation between expected inflation and real activity in the economy, which consequently leads to a negative correlation between stock returns and expected inflation. .

Darrat and Brocato, (1994) studied the relationship between the US budget deficit and stock returns and found that they are negatively correlated. This led to the implication that large interest rate spreads in the short term significantly affect stock returns. Their results further showed that there is no direct causal relationship between inflation, industrial production economic growth and stock returns, which contradicts with the conclusion of

Chen (1991). The conclusion by Darrat and Brocato (1994) cannot be supported by this study since it lacked any theoretical underpinning to warrant the relationship between stock returns and budget deficit. Moreover, the empirical data used in this study was more short term oriented; and since studies of budget deficits, are theoretically based on fiscal policies which tend to have a greater effect in the long term rather than the short term, the study should have used taken a more long term orientation.

Comparative cross country empirical studies have also been carried out by Bodrutha, Cho, and Sennbet (1989) who studied excess returns and macroeconomic volatilities in 7 industrialized countries and confirmed the results of Chen, Roll and Ross (1986). The study emphasized the importance domestic and international economic variables in influencing excess returns in a country; hence the study used the following macro-economic indicators, inflation, money growth rates, real exchange rates, trade balances and oil prices.

However few studies have found that macro-economic variables have no significant impact on stock returns. Fitzpatrick (1994) made such a conclusion using a regression analysis of selected macroeconomic variables (growth rates of consumer prices, GNP, long term interest rates and money supply) and the S&P 500. Other such conclusions were made by Fung and Lie (1990) in Taiwan and Leigh (1997) after studying the Singapore Stock Exchange.

Nonetheless, such conclusions are by far inaccurate as was proved by Fama (1995), who offered evidence that the source of risk captured by most market based measures of risk such as beta, size and book to market ratios can be traced to economic fundamentals. Most empirical studies that have tried to link macroeconomic variables to market premiums have had very little theoretical foundation, despite the existence of several asset pricing models that link economic variables to market premiums.

1.1.1 Macroeconomic Variables and Equity Risk Premium

In view of the variety economic variables identified from the previous studies, we can use the classification of Dropsy (1998) and categorize all the macro-economic variables that affect the equity risk premium into three groups. The first are policy variables that encompass changes in the fiscal and monetary policy. These can be captured by government spending/GDP ratio as a proxy for fiscal policy and the growth of money supply for monetary policy. The second are performance variables which include interest rate spreads, trade imbalances, inflation rates measured by Consumer Price Indices and foreign exchange depreciation and appreciation. External variables are the third group of macroeconomic variables. This group captures variables that are essentially beyond the control of a domestic government or central bank such as changes in oil prices. Before delving into the specific macro-economic variable of interest, the study will discuss the general theoretical relationship between the various groups of macro-economic variables and excess market return.

The first group of macro-economic variables to be discussed with respect to excess returns is economic policy variables. Fiscal policy, which is an economic policy variable, as mentioned above can be proxied using the ratio of government spending to GDP. Expansionary fiscal policy has the implication of creating demand for domestic goods and services through increased government spending and lowering of taxes. This implication leads to an increase in the excess stock returns since domestic companies are able to increase their expected cash-flows due to increased demand, thus raising stock prices. However this is only possible in the short run. Sustaining an expansionary fiscal policy in the long run leads to high interest rates which has the effect of reducing excess returns. Darrat and Brocato (1994) supported this conclusion empirically in their study that analyzed the relationship between the Federal budget deficit and stock returns.

On the other hand, an expansionary monetary policy dictates that a there is an increase in the growth rate of money supply and a decline in short term interest rates. Such economic conditions make it conducive to increase investment output in the economy and often results in increased profitability of firms, and thus higher excess returns. The downside to such a policy stance is increased expectations of inflation, since there shall be too much money chasing few goods and services, leading to a dynamic time-inconsistent monetary policy evaluation; where the expansionary monetary policy is reversed bringing back the excess returns to equilibrium.

Considering the overall effect of policy variables on excess returns, it worthwhile to mention that monetary policy tends to have a more significant impact on excess stock returns in the short run. This is because transmission of monetary policy from the real sector of the economy to the financial sector of the economy tends to be much faster and effective than fiscal policy, due to the responsiveness of the economy to changes in interest rates and money supply. Fiscal policy has more significant long run effects on the excess stock returns compared to monetary policy, because the transmission mechanism of government spending and tax policy has impact in the long run.

Intermediate policy targets otherwise known as performance indicators affect excess returns since they give an indication of economic imbalances, which are as a result of a change in policy variables. These indicators which mainly include spreads between long term and short term interest rates, economic growth and inflation, are largely centered on expectations of economic agents who conversely invest in the stock market.

An increase in spreads between short and long term interest rates, mirrors expectations of future economic growth thus resulting into higher excess returns, since investors impose a higher risk premium on stock returns.

However as pointed out by Asness (2000), the relationship between interest rate spreads and excess returns is uncertain, since a high interest rate spread increases inflationary expectations in the economy which may result in contractionary fiscal policy and consequently a reduction in excess returns due to high interest rates.

The analysis of inflation and its subsequent effect on excess returns is somewhat ambiguous and largely dependent on the type of inflation. For instance, cost push inflation usually leads to a declining in the productive output of an economy, and lowers excess returns, while demand pull inflation, which largely affects the consumption side of the economy; is associated with increased economic output and as a result leads to higher excess returns. This relationship shall be delved into further to determine the long run and short run effects of inflation on the equity risk premium, taking Kenya as a case study.

Bekaert and Engstrom (2008) point out that economic performance variables have an individual effect on stock returns or excess returns, but are the nonetheless inter-related. The implication is that effect of inflation on excess returns though direct is not exclusive. Changes in Inflation also have an impact on other performance variables such industrial production and interest rate spreads which in turn have an effect on excess returns. Therefore the impact of an economic variable (in this particular case, inflation) on the equity risk premium cannot be studied in isolation. Other economic variables should be included in the empirical model since they have significant explanatory power as established in literature.

The last group of macroeconomic variables identified is external economic variables or economic variables of external balances. These variables often inform investors' decision. Variables that fall under this category include ratio of current account balance or capital account balances to GDP or exchange rate fluctuations. An imbalance, or specifically a deterioration of a country's trade balance, often represents disequilibrium in the domestic and foreign demand of goods and services.

A paper by Shah (1999) gave empirical evidence that excess returns should be positively related with the trade or current account of a country. This paper went to further show, that a protracted disequilibrium in the trading account has an impact of the country's foreign exchange, which in turn also affects excess returns. More studies have been carried out on the impact of volatilities in the foreign exchange market of a country and the excess returns of stock markets for instance by Gavin (1989) and Oxelheim and Wihlborg (1987) and have had more or less the same conclusion. These studies show that depreciation in the real currency of a country leads to cheaper domestic assets which induce foreign investors to purchase more domestic stocks resulting into an increase in stock prices. However, the role of bandwagon expectation does not necessarily attract foreign direct investment in the long run; with fears of a further depreciating currency lowering expected stock returns.

Other variables that may comprise economic external variables include external shocks such as changes in oil prices. Since is oil is a crucial input of production, a sudden price increase in oil prices tend to negatively impact most firms and reduce expectation of cash-flows thereby leading to a reduction in stock prices. A study carried out in Germany, Japan, Unites States and United Kingdom showed that for net oil importers, there is a negative correlation between oil prices and excess returns. This would imply that for an oil exporter, increases in the oil prices leads to an improvement in their trade balances which in turn translates into higher excess returns.

1.1.2 Inflation and Equity Risk Premium

Of particular interest of study is the relationship between is inflation volatility and excess market return. Nonetheless, before delving into the relationship between inflation and excess stock returns, the relationship between inflation and basic stock returns shall be first examined.

The exploration of the relationship between inflation and stock returns is not new to financial literature. The original idea that relates asset returns, or a nominal interest rate to expected inflation was formally capture by Irving Fisher. Fisher (1930) stated that the nominal rate of return of an asset is comprised of a real rate plus the expected inflation rate, and hypothesized that the two are independent. Subsequent financial literature has generalized the fisher hypothesis stating that equity stocks; which are claims against business assets, offer the best hedge against inflation. This would therefore mean that nominal stock prices and returns should be able to reflect expected inflation and the correlation between the stock returns and expected inflation should be positive ex ante.

Empirical studies regarding the relationship between inflation and stock market returns fall into two major schools of thoughts; the first stating that there is a positive relationship between the two variables and the other stating that the two variables are negatively correlated.

Proponents of the positive relationship between inflation and stock market returns believe that stock markets offer a suitable hedge against inflation as an investment. Bodie (1976) states that since equity stocks represent a claim on a business's real assets, then the real change in equity prices should be un-affected too. Since firms are able to predict their future earning and profit margins, it follows that the expected earnings should factor in expected inflation. Since equity stocks are a claim on future earning it theoretically proves that stock market should serve as a hedge against inflation at least in the long run. In contrast, John Maynard Keynes (1924) famously noted that "the long run is a misleading guide to current affairs. In the long run we are all dead"; he

however stated this in regard to the role of government intervention in controlling inflation.

Several empirical studies have shown support for the positive relationship between inflation and stock returns. Firth (1979) concluded that there exists a positive relationship between stock returns and inflation in the United Kingdom; thereby finding consistency in the generalized fisher hypothesis. Boudhouch and Richarson (1993) used data sets from both UK and USA between the years 1820 to 1988 and established that over long horizons there was indeed a positive relationship between nominal stock returns and inflation. These findings were also echoed in Greece after Ioannidis and Lake (2004) carried out a similar research using data between the years 1985 to 2003.

The other school of thought regarding the relationship between inflation and stock returns is that they are negatively correlated. The negative correlation between stock returns and inflation would therefore imply that stocks are an imperfect hedge to inflation. There are two main reasons that have been put forth and supported empirically as to why this negative relationship exists. Fama (1981) suggested that since stock prices reflect a firm's future earning potential, an economic downturn due to an expected rise in inflation would depress stock price. This argument is based on the premise that inflation is negatively correlated to future economic output which in turn impacts negatively on stock returns. This conclusion was drawn by Spyrou (2001) regarding Greece for the period 1990 to 1995.

A more theoretical approach to the proposed negative relationship between inflation and stock returns was offered by Wilcox (2012) in the context of the Dividend Discount Model (DDM). Within this model, a stock can only exhibit a positive or neutral relationship to inflation if the following three conditions hold; first, inflation is correctly anticipated by market participants, secondly, expected inflation affects nominal return and nominal dividend growth in the same way and lastly the real rate of return and real dividend growth are positively related to expected inflation. A violation of any one of the assumption above shall lead to the conclusion that stocks are not a perfect hedge for inflation, and thus exhibit a negative correlation with inflation.

However since the predominant concept in the conditions put forth under the DDM is expected inflation, what if inflation is not correctly anticipated by investors? This would violate the first assumption of the model and bring about a significant concept on the impact of unexpected inflation on stock returns and excess stock returns.

Empirical studies into unexpected inflation and stock returns began around the period of 1970 to 1980, when there was wide spread stagflation-combination of high rates of inflations and low growth of output, in major economies around the world. Studies by Lintner (1965), Geske and Roll (1983), Fama and Schwert (1977) and Jaffe and Mandelker (1976) reported a significant negative relationship between unexpected inflation and stock market returns. From a theoretical standpoint, Lintner (1965) argues that such a relationship holds because equity prices fall in the presence of unexpected inflation as a result of an increased need of companies to use external financing, thus increasing the cost of capital of a company. This increase results in reduction of the optimal rate of real growth.

Bernard (1986) showed that changes in excess returns are best explained by differences in systemic risk. However, the paper also concluded that stock returns of different firms, respond differently to unanticipated inflation. Asikoglu and Ercan (1992) on the other hand demonstrated that inflation tends to impact the profit growth of a company and this is a key determinant of the sensitivity of stock prices to inflation volatility

Using high frequency data, Adams, McQueen and Wood (2004) found the inflation–stock return relationship is negative and stronger for large capitalized stock exchanges in the presence of unexpected inflation. Wei (2009) showed that equity returns of companies with lower book-to-market ratios are more negatively correlated with unexpected inflation.

The two main econometric models that were considered appropriate to model volatility of the macroeconomic variables were the Vector Autoregressive Models (VAR) and Conditional Heteroscedastic Models. There is vast literature in finance that documents the use of VAR model to capture excess returns and other appropriate variables that exist in underlying theory. Campbell, Lo and MacKinlay, (1997) and Cuthberston (1996) are examples of researchers how have widely documented the use of VAR models in empirical finance.

Despite the popularity of the use of VAR models, Smith and Winkens (2002) contend the use of this model in being able to adequately make valid conclusions regarding risk premiums relationships. The main contention surrounding VAR Models is that the main underlying assumption is that investors are risk neutral as opposed to being risk averse which in turn supplants the no arbitrage condition. Risk neutral investors do not place an emphasis on a risk premium since they seek to earn a risk free rate of return from their investments. On the other hand risk-averse investors require a risk premium which involves the modeling of conditional covariance terms with factors influencing it. Generally, a VAR model does not include conditional co-variances and hence is not an appropriate model for use in this particular study.

Research Gap

Research dedicated to studying the relationship between inflation and equity risk premium borrows from the inflation-stock return studies. However, Brandt and Wang (2003) stressed that news about inflation dominates news about consumption growth in accounting for the variation in excess market returns. In the same paper,

evidence was presented that equity risk premiums tends to increase if inflation is higher than expected and decreases when it is lower than anticipated. It would seem reasonable to conclude that expectations about the level of inflation have an impact on the equity risk premium.

This research has its importance rooted not only in its intrinsic usefulness in asset pricing and portfolio management, but also because the reconciliation between the Efficient Market Hypothesis and the predictive power of macroeconomic variables. Hence the definition and empirical determination of the relationship proposed by this study would be useful in informing how investors' perception of risk changes with respect to macroeconomic volatilities. While returns are an importance aspect of financial markets, the other side of the coin; risk, must be investigate further. Therefore studies should focus more on seeking to establish and dissect the inflation risk as established by literature and the compensation thereof to investors.

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The review of existing literature revealed that bankâ€™s liquidity has significant influence on banking outcomes such as banks performance, banks risk-taking behaviour, moral hazard, and other financial risks. However, we find that empirical evidence on all these is majorly skewed toward developed market.Â The purpose of this paper is to review empirical studies on the effect of bank liquidity on their risk-taking behaviour and show other directions for future research. This would provide additional insights to researchers, policy makers, and other stakeholders a better understanding of the various factors that affects the banks liquidity. While inflation-linked bonds and derivatives have been developed to hedge the effects of inflation, their limited supply and liquidity lead many investors to continue to rely on the indirect hedging properties of traditional asset classes.Â In this section, we briefly outline the key theories proposed to explain the relationship between the major asset classes and inflation, and we review the empirical literature, focusing on the most important historically as well as some recent contributions. A. Cash.Â In periods of proactive monetary policy, inflation volatility is kept low while real interestÂ Equity risk premium The â€œequity risk premiumâ€ hypothesis, was initially outlined by Malkiel (1979) and Pindyck (1994). Equity Risk Premium Formula in CAPM. For calculating this, the estimates and judgment of the investors are used. The calculation of the Equity risk premium is as follows: Firstly we need to estimate the expected rate of return on the stock in the market, then the estimation of risk-free rate is required, and then we need to deduct the risk-free rate from the expected rate of return. Equity Risk Premium Formula: Equity Risk Premium Formula = Market Expected Rate of Return (Rm) â€“ Risk Free Rate (Rf). The stock indexes like Dow Jones industrial average or the S&P 500 may be taken as the barom