

ASSET MARKETS - UNCERTAINTY, RISKY ASSET

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Abstract: Assets are items of value which can be converted to cash. They fall into various classes: property, investment or personal assets. In order to get value, assets are bought and sold in a market known as asset market. Whatever the class of asset, they are affected by uncertainties and these uncertainties translate to risks. Asset valuation drops as economic uncertainty rises. It will seem that much of the variation in asset prices can be attributed to fluctuations in economic uncertainty and expected cash flow growth both of which are important for interpreting asset markets.

Keywords: Risk, uncertainty, assets, asset markets, investment.

1. INTRODUCTION

The need for comfort and to plan for the future cause people to strive to acquire assets. We can therefore describe assets as items of value that are owned and kept over time for the purpose of providing cash which can be used to buy consumption. Asset markets face uncertainties. Some asset classes have higher risk levels than others. It is rational to assume that all investors are risk averse even though some investors are more risk averse than others. Investors therefore, take several measures to reduce the level of risk associated with the uncertainties in their undertakings. Insurance, diversification, securities and many others provide forms of cover for these risks. This paper seeks to review works done previously on the above subject matter. Areas to be looked at are asset markets, uncertainty and risky assets

2. ASSET MARKETS

Assets are items of economic value that are owned and kept over time for the purpose of providing a flow of cash that can be used to buy consumption services. Assets can be grouped into different classes. They can be in the form of Property (i.e. land, building etc): Investment or Financial (bonds, stocks, treasury bills, savings and current accounts etc) and Personal (jewelries, private jets, cars, art collections etc.)

We said before that asset markets face uncertainties. First let us consider a situation of no uncertainty and cash flow of assets is such that the future return of an asset is known today with certainty. It can be said to be riskless. All assets will have the same rate of return. For example, if one asset A has current price P_0 and its expected future price is P_1 then we know for sure the price of today and tomorrow. Now if there is another asset B that can be held between periods 0 - 1 and pays interest r . If we are considering an investment plan to invest in either A or B, at the end of the first investment period we have

$$P_0X = 1 \text{ or } X = \frac{1}{P_0} \dots\dots\dots(1)$$

where x is amount.

So for N1 investment, the future value of the asset in the next period is

$$FV = P_1X = \frac{P_1}{P_0} \dots\dots\dots(2)$$

But for investment B it will be $1+r$(3)

And if asset A = B i.e. they are held in equilibrium then N1 invested in both of them will be worth same in the second period i.e $1+r = P_1/P_0$(4)

We are hoping that our assumption will be satisfied. If not we can do some other thing like selling one unit of asset A in the first period and invest in B and so in the second period we will have enough money to buy back asset A and even have extra money. This is called riskless arbitrage. This is showing there is no equilibrium. In a well functioning market there should not be arbitrage. People are looking for sure things. However, some school of thought contend that there is nothing like risk free asset because the issuer can default. People’s speculation on what may happen causes asset markets to experience high and low prices. Asset classes behave differently in different markets. Expected high price lowers demand and expected high price may also encourage people to expect higher returns. There is a tendency for asset prices to move up and down severally. This is called bubble in asset market. The act of trading with speculators exaggerating the true value of the assets market conditions is the cause of this bubble. The problem is that the bubble may burst and those who purchased more assets at high prices because they were expecting prices to go even higher will now be holding assets worth much less than they originally paid for them.

There are assets that are liquid and others that are not liquid. Liquid assets can be exchanged for cash quickly like treasury bills, stocks, fixed deposit. Illiquid assets are real estates, land, artwork etc. which may not be exchanged quickly for cash.

3. UNCERTAINTY

We face risks every minute whether we are having pleasure or doing business because uncertainty exists. While known factors are already considered in efficient market prices, the main sources of market instability are the unknown factors called uncertainty (Slovik 2010). Uncertainty is an obvious fact of life. One standard assumption in financial economics is that rational decision makers are able to figure out the probability distribution of events that affect asset prices. (Antonio and Francesco 2010). People are faced with making choices under different circumstances and they are faced with the probability that the state of affairs in question may occur or may not occur. Therefore, from the perspective of stability in the asset market, the most important aspect is the degree of market uncertainty not risk. A lot of work has been done on what is known as the Knightian uncertainty and ambiguity aversion on asset prices (e.g. Epstein and Wang, 1994, 1995; Anderson, Ghysels and Juergens, 2007; Epstein and Schneider, 2010).

Additional work has been done on this Knightian uncertainty by Dicks and Fulghieri (2018). They proposed a new theory of systemic risk which they differentiated from systematic risk. Their contention is that because of uncertainty aversion, bad news on one asset class worsens investors’ expectations on other asset classes causing systemic risk. They concluded that increasing uncertainty makes financial system more fragile and more prone to crisis. This has implication for public policy debates on management of financial crisis.

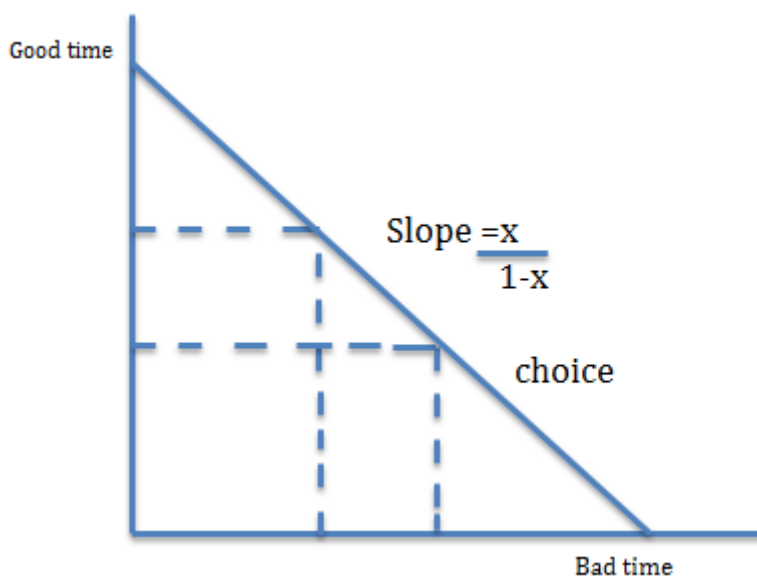


Fig:1

Again choices people may want to make may depend on the utility derived from one choice say X over another, say Y and if Π_1 and Π_2 are probabilities of X or Y actually occurring then the utility function can be written as

$$U(X_1, Y_1, \Pi_1, \Pi_2) \dots \dots \dots (5)$$

However, we can diversify by investing in asset markets in the face of uncertainties. For example, if you have X amount of Naira to invest and there are two businesses you are considering and because you are not certain of the market predictions, you can invest some money in each of them. By diversifying your investment i.e. investing something in the different assets you will be reducing the risk on your investment. Even in cases where investments move almost in the same direction like in stock of similar items, diversification still gives a great deal of protection from risks. People can also use insurance when they are making choices in the face of uncertainty. In the case of a disaster, they will not lose everything.

The stock market also plays a roll in risk sharing in uncertain situations for both owners of the company and shareholders. For owners of the company they spread their risks by issuing shares to a large number of shareholders while the shareholders use the stock markets to reallocate or redistribute their risks. A shareholder can quickly sell his shares if he needs money to invest elsewhere or if he feels that the company is taking too much risk or is too conservative for his liking. If we compare risks in insurance and stock market, there is still an element of risk in the aggregate for stock market because the value of shares may crash but for insurance, no risk in aggregate to the investor because the person insuring is able to reduce risk to zero.

4. RISKY ASSETS

When there is no guarantee on return on investment in an asset due to price volatility we can call it a risky asset. Different assets carry different levels of risk i.e. some are less risky than others. For example, holding a corporate bond is less risky than holding a stock. Assets like equities, real estates, commodities and even currencies have a significant degree of price volatility and therefore can be seen as risky assets.

Mean-Variance Utility: This uses probability distributions as a way of dealing with choices investors will make under uncertainty. We want to measure risk (variance) against expected return. Looking at expected return and variance or risk of an investment, investors attempt to make more efficient or rational decisions on asset investment choices. The mean-variance model was originally developed by Markowitz (1952). It says that investors would want to select the business portfolio with minimum variance for a given expected return and a maximum expected return for a given variance under the condition that the utility preference function must be quadratic and returns have to be normally distributed. Even though acknowledging that the Markowitz portfolio theory gives a method of analyzing how good a given portfolio is based on only the means and variance of the returns on the assets contained in the portfolio, Marling and Emanuelsson (2012) insist that variance of portfolio is not a complete measure of risk by investor because it is impossible to say what the value of risk for a given portfolio is. Hence they say the model is not used in practice.

A lower variance will be preferred where we have two investments with same expected returns. Higher return may be higher risk. One reasonable assumption we make about investors is that they are risk averse. When faced with choosing between two investments with same expected returns but different risks they will prefer the one with lower risk.

In using mean-variance model to analyze portfolio problem i.e. combining risky assets and maybe one risk free asset: let us say that the one risky asset is stock and the risk free asset is treasury bill (which will always pay fixed rate of interest r_f whatever the situation). If the stock market does well the investment does well but if otherwise, the investment does poorly. Let M_s be the return on this asset if state S occurs and if Π_s be the probability that that S will occur. Let r_m be expected return on this risky asset and δ_m is the standard deviation. If the investor holds a fraction of his wealth X in risky asset and the other fraction of his wealth in risk free asset, then expected return on this portfolio will be:

$$r_x = \sum^n \text{ we have}$$

$$r_x = xr_m + (1-x)r_f \dots\dots\dots(6)$$

This is telling us that the expected return on this portfolio is a weighted average of the two expected returns and the variance (risk) will be

$$\delta_x^2 = x^2 \delta_m^2 \dots\dots\dots(7)$$

Here it is assumed that $r_m > r_f$ because a risk averse investor will never want to hold or keep a risky asset if its expected return is less than that of a risk free asset. A higher investment in risky asset will give higher return but greater risk is involved. In combining the risky and risk free assets we produce a portfolio whose expected return reflects its components but with considerably lower risk i.e. a portfolio whose risk is smaller than the sum total of all its individual components.

However, Goldstein and Pauzner (2004) argue that investors' portfolio diversification may generate systemic risk because negative information on an asset class generates wealth loss to investors. They further said that if investors are less risk averse, this wealth loss may increase investors' risk aversion sufficiently for them to switch to other asset class that is not affected by the initial shock. Buyers and sellers do not care about assets in isolation. They care about how those assets fit into their entire portfolio (every asset they own). An asset that seems to be very risky to someone may appear less risky to another person because he has other assets which balance the risks out. Kodres and Pritsker (2002) talk about model transmission of idiosyncratic shocks across asset markets by investors rebalancing their portfolios' exposures to shared macroeconomic risks among asset classes.

5. INDIFFERENCE CURVES

In choosing portfolios an investor aims at maximizing expected return given his tolerance for risk and minimizes his risks given a target expected return. We can use indifference curves also to show how the investor will behave faced with risky situation. Indifference curves define investors' utility.

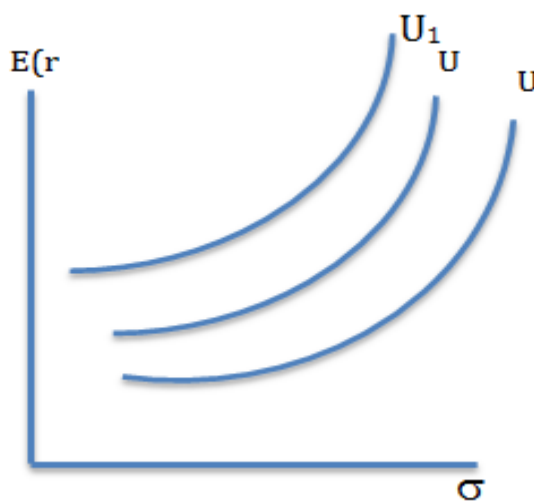


Fig: 2

Investor wants higher mean (utility), therefore will prefer to be on indifference curve U_1 . Along each indifference curve the investor is indifferent to what happens in the market.

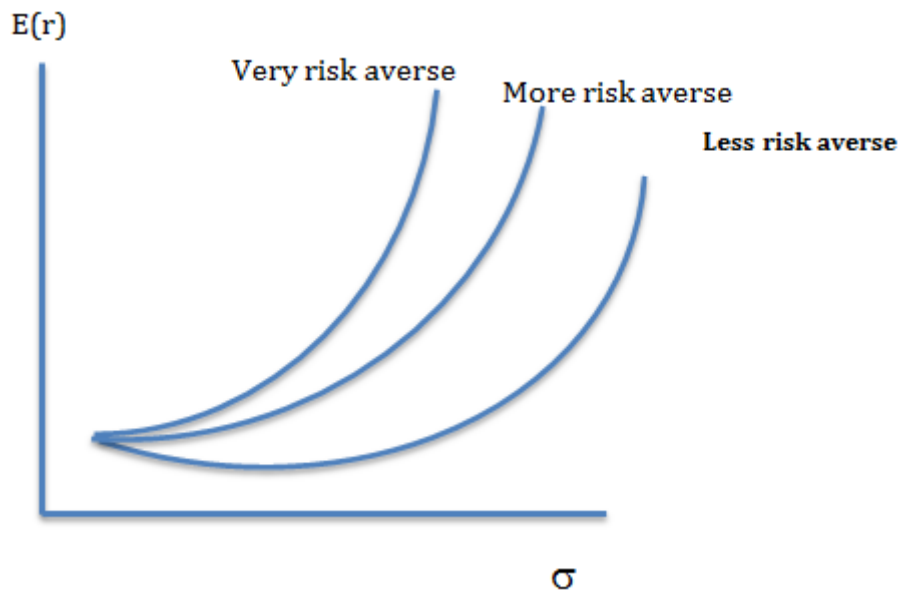


Fig: 3

Nand et al (2014) discovered that with longer investment period, the indifference curve starts becoming flatter showing that the investor is willing to accept a larger amount of risk. More risk averse investor prefers investment with lower risk while less risk averse investor prefers investment with higher expected return.

We can also measure the riskiness of an asset compared to another one by how they are correlated. For assets that are negatively correlated with each other there will be reduced overall risk. They are valuable because the value of an asset does not depend on its own riskiness but on the correlation of its return with other assets as we have said before.

Market Equilibrium for Risky Assets: Safe assets have to earn same rate of return on investment. For risky assets after adjusting for risk all assets have to earn the same rate of return. If one asset has a higher risk adjusted rate of return than another one, investors would prefer to hold the asset with higher risk adjusted rate. This is why for the equilibrium condition for risky assets we have:

Risk adjustment = total risk of assets x price of risk.

6. CONCLUSION

Assets are bought and sold in asset markets. These assets are items of value that can be converted to cash. Asset markets face uncertainties. These uncertainties can be taken care of through diversification, insurance and stock market. For stock market as a means of taking care of uncertainty, owners share their risks by selling shares to a large number of buyers and buyers use shares to reallocate their risks. For risky assets buyers and sellers do not care about assets in isolation but they care about how those assets fit into their entire portfolio.

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