Investment Management
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Lecture - 26
Market Efficiency

Hello there. We are discussing about Investment Management as part of the MOOC investment management. So, far we have discussed about different type of investment alternatives or financial securities that an investor can choose from for the purpose of making investment.

Having discussed about different investment avenues such as equity, debt and mutual funds now, we need to discuss about constructing a portfolio. But before that we need to discuss about what factors or aspects determine the choice of instrument or financial securities to make a part of the portfolio. And to begin with today's session we will discuss on market efficiency.

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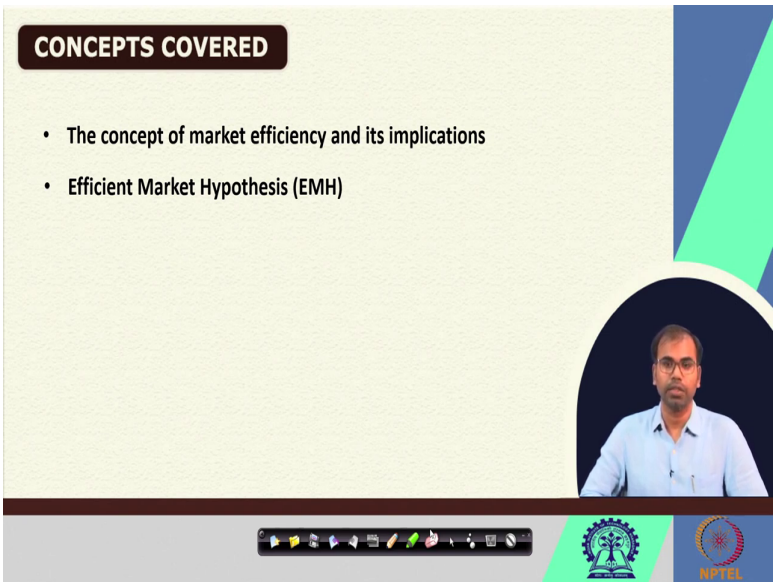

Basically, we are going to talk about the concept of market efficiency and what are the implications that we have for market efficiency in the form of portfolio construction. And also, we will discuss a little bit about efficient market hypothesis as a finance theory and its implications for investment management in general.

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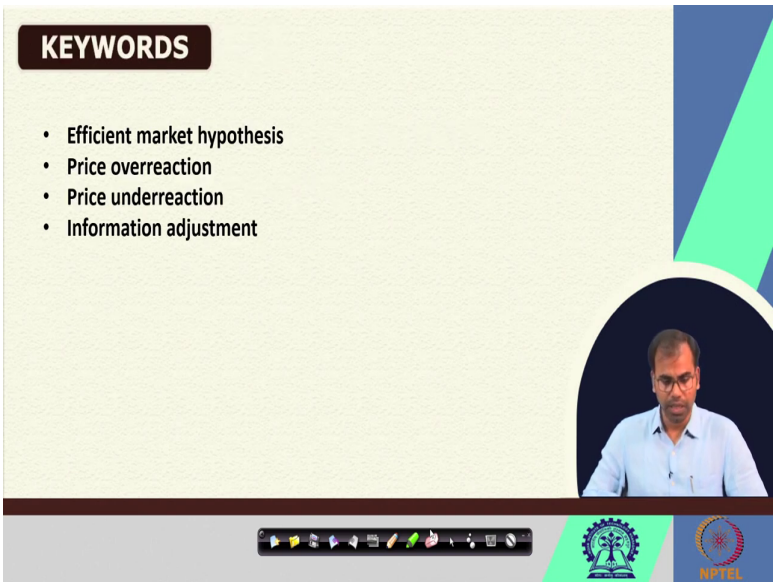

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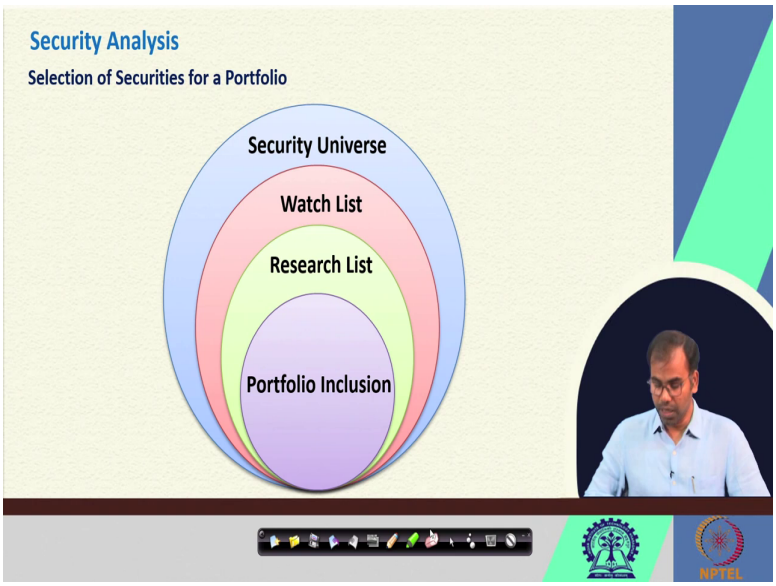

Basically, when we talk about security analysis or construction of a portfolio, the process typically follows the following structure. When we talk when we have to select a security or a financial instrument to be included in a portfolio, basically we start with a security universe where we will have different type of alternatives, different instruments, different financial securities from where an investor can choose the most relevant or most appropriate instrument to be included in portfolio.

So, basically, we have to first go to the security universe or the pool of securities from which an investor can choose securities or instrument for inclusion in the portfolio. So, as an investor I will probably have to identify a pool of securities or let us call it security universe. And then from that pool of security we will identify selected securities for our watch list

which means, if we have let us say 2000 companies that are listed on any Indian Stock Exchange that basically that list of securities is our security universe.

And then by following our own investment objectives, if we decided that I need to invest only in X, Y and Z sectors or so, and so, industries then those stocks belonging to those sectors or industries will be forming the our watch list. And subsequently we will do a research on a very selected set of companies from which based on the inputs that we get from the research are being done. We get the final set of securities that we will consider for inclusion in our portfolio.

So, basically, we start with a very large number of financial securities which basically is used for narrowing down to fetch a watch list. From that watch list we will identify a selected securities for intense or deep research for analysis. And finally, from that securities which we have researched sufficiently will consider a selected set of securities for our portfolio.

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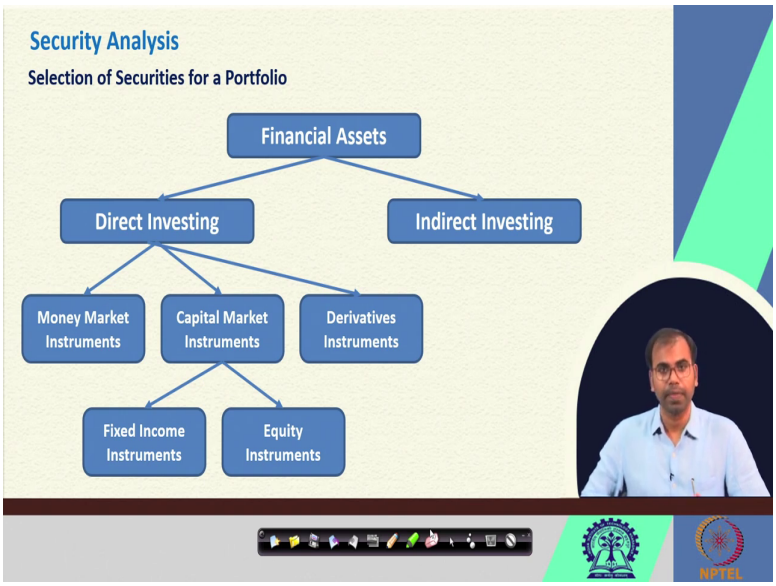

Now, when we talk about selection of securities in a portfolio basically these securities are the financial assets which we have for consideration of portfolio construction. And these financial assets could be offered to an investor for direct or indirect investing. Indirect investing can be done through mutual funds that we have discussed already where we learned that if an investor does not want to invest directly in securities market.

The investor can choose mutual fund where the money is pooled from different investors and that money is managed by trained professional money managers who will be looking into the investment activities on behalf of the investors who have given their money for investment in mutual funds.

And when it comes to direct investing then we have different type of instruments where we can invest our money. For example, we can put our money in money market instruments, we

can put our money in capital market instruments and we can also put our money in derivative instruments where the derivative can be can be based on several underlying securities, may it capital market instruments or money market instruments.

And when we choose capital market instruments, we know that we have fixed income securities such as bonds or debentures and we have equity instruments such as stocks where we can invest directly in the share of a company. Now, with these plethora of alternatives an investor has to understand what theories or factors or what aspects of market essentially is going to drive the choice of or selection of securities for the purpose of portfolio construction.

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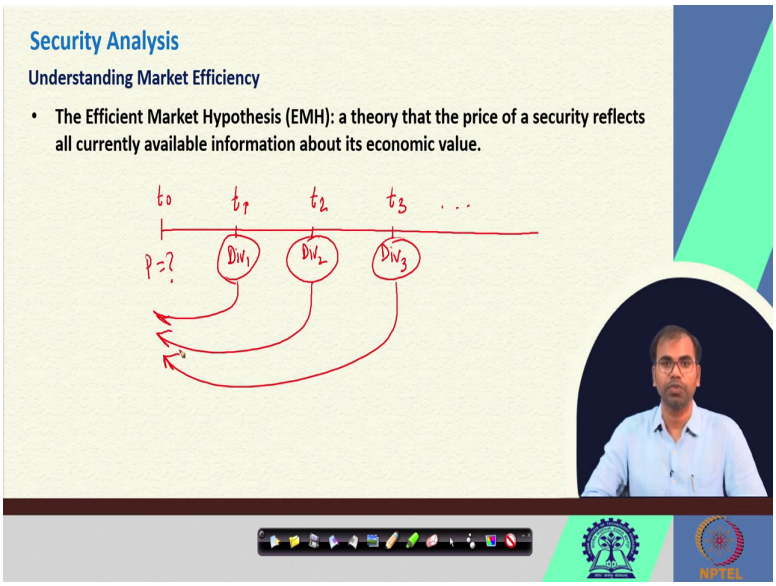

Now, to begin with we need to understand the market efficiency and when it comes to market efficiency, we know that the theory efficient market hypothesis states that the price of a security should reflect all currently available information about its economic value.

When we talk about a financial security such as a stock, we know that the price of the stock should reflect about the future earning potential of the company and the part of future earning that is due or that is going to be given back to the investors will be reflected in the security prices or stock prices.

So, for example, if I say an investment investor is willing to invest in the security stock of a company at time 0, the price of this stock at time 0 should reflect the price the value or the economic value that the stock is going to be generating over a future period in the form of let us say dividend for multiple years in future period and this this future earnings for the shareholders should be determining the price of that stock in today's time.

We have discussed about fundamental theory of dividend discount model where we know that the future dividends or expected dividends on any stock can be used to determine the current price of a security. So, basically this efficient market hypothesis assumes that the price of a security typically reflects all currently available information about its economic value which means, any information that is going to come with respect to a security should reflect in the price change.

Which means, if there is a positive information about a company that should reflect in an upward price change in the stock of that company and if there is a negative information coming to the market then that should reflect in the negative price change in the stock of that company.

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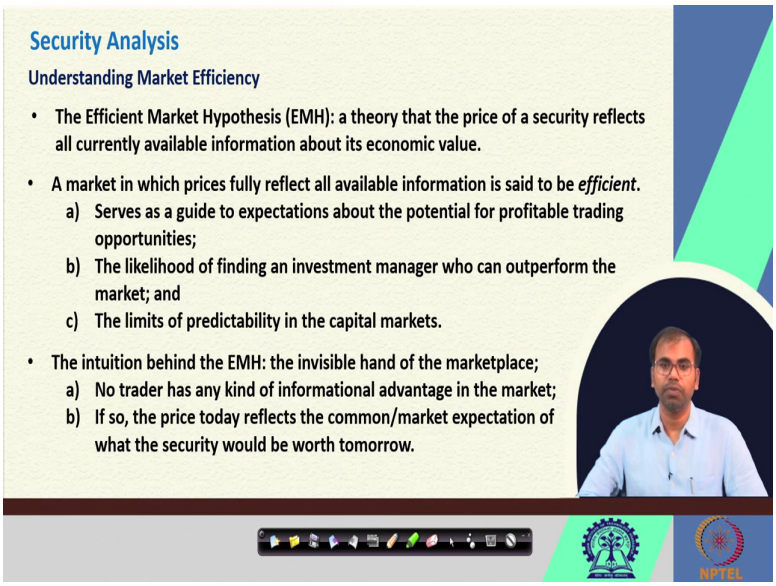

Essentially when we say an efficient market, we mean that a market in which prices fully reflect all available information and an efficient market essentially serves as a guide to expectation about the potential for profitable trading opportunities.

If the market is said to be efficient or if we believe that the markets are efficient then we can use this market efficiency argument for deriving our expectations about the potential for profitable trading strategies which will be based on the future potential or future earnings of the stock or the instrument.

Market efficiency also provides the likelihood of finding an investment manager who can or who may outperform the market in one way or the other and it also provides the limits of predictability in the capital market which means, if we believe that markets are efficient to

certain level then we cannot predict market beyond certain limit and that is given by the efficient market hypothesis.

Essentially the efficient market hypothesis as a theory is based on the argument that there is an invisible hand of the marketplace which will eventually correct everything and all information should automatically be reflected in the prices of the securities at some certain point of time.

It also proposes that no trader has any kind of informational advantage in the market and if so, the price today reflects the common or expectation of the market of what the security would be worth tomorrow. So, the price that I am paying for a security today should reflect on the overall or average expectations of the securities worth in future period.

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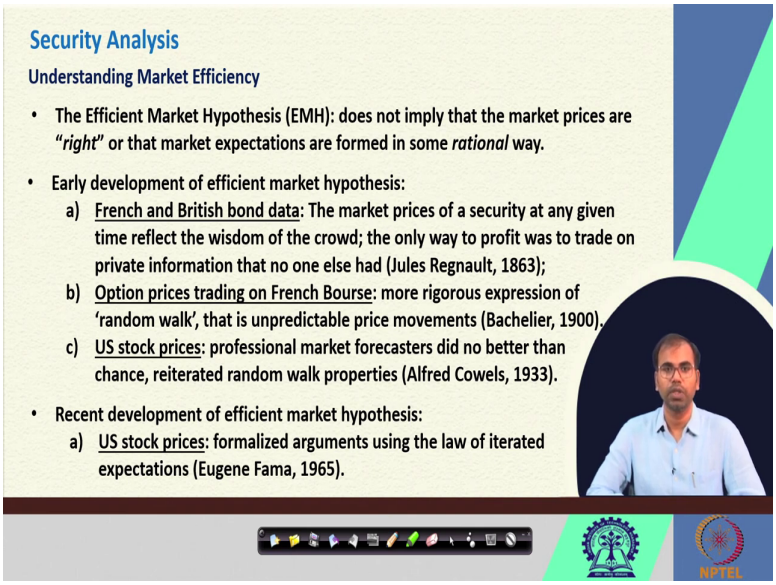

With this argument we should also know that efficient market hypothesis does not imply that the market prices are always right or for that matter the market expectations are formed in a rational way.

We believe that even if the markets are efficient, it only shows that the prices reflect the information that are coming to the market and not necessarily the right price has been determined by those information because market is all about aggregated investors or market participants and market participants does not necessarily behave in a rational way. So, market efficiency does not talk about rationality in the sense of price determination.

In fact, if we go to the history of market efficiency we can go to as early as 1863, when economist or rather a trader of French and British bonds use the data on those instruments and he figured out that the market prices of a security at any given point of time reflect the wisdom of the crowd and the only way to profit was to trade on private information that no one else had.

So, if you are trading on any private information that is not really private which means if that information is available with someone else essentially there is no way you can outperform everyone. So, outperform if to outperform everyone else you need to have a private information that is really private which means that is not held by anyone else in the market.

Subsequently in 1900 Bachelier provided the argument and empirical evidence using option prices trading on French bourse and suggested that there is a more rigorous expression of random walk which states that stock prices or for that matter security prices in financial markets in general follow a random walk and there is unpredictable price movement which cannot be predicted by typical mechanism.

Subsequently 1933 Alfred Cowel's used the US stock prices data and provided evidence that professional market a forecasters did no better than chance or luck and he reiterated the random walk properties of stock prices and suggested that if markets are efficient then there is

no point of putting of effort towards outperforming the market because no trader has an upper hand here.

With all these historical development of market efficiency we come to know about the great theory of efficient market hypothesis as proposed by Eugene Fama in 1965. He used US stock prices and formalized arguments using the law of iterated expectations and proposed the random walk theory in the form of efficient market hypothesis.

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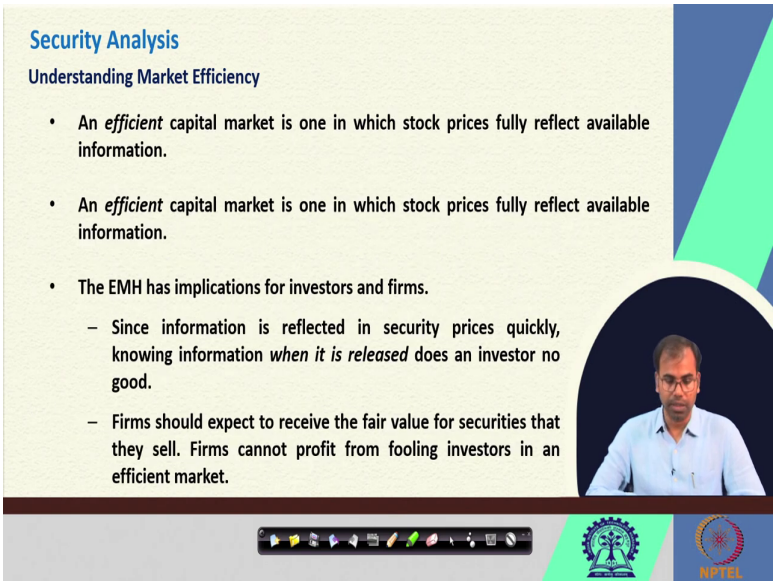

And in according to efficient market hypothesis an efficient capital market is the one in which stock prices fully reflect available information. An efficient capital market essentially is the market where no information has been left behind in terms of absorption in the prices that should be updated whenever there comes a new information and this mechanism or this argument of efficient market hypothesis has implications for both investors.

And firms because information is reflected in security prices quickly any information that is known to any investor, but it is already released in public has no additional advantage for any investor. Which means, if information is known to an investor when it is released it does an investor no good the investor has no advantage for this information.

At the same time firms should also expect to receive the fair value of securities that they sell and as a consequence firms cannot profit from fooling investor in an efficient market because information are available to everyone. So, it is not possible for firms to fool investor for a consistently long period.

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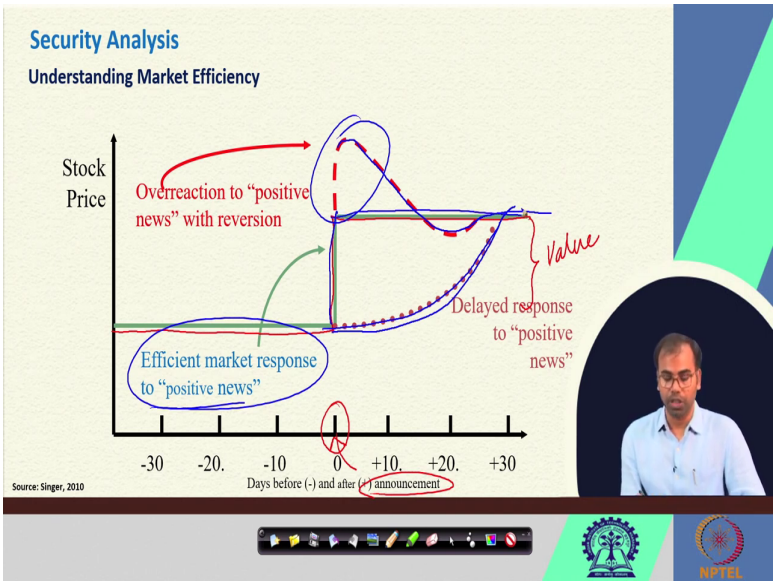

If we talk about efficient market efficiency in in in the sense that whenever comes a new information basically if we talk about a market where some event happens or some announcement is made at time 0 at this point of time this announcement is made, then if the

prices are moving in this way, then the moment the information is available and let us assume that the information is positive or its a good news the announcement is favorable for the company.

Then suddenly the stock price should react positively and it should reflect immediately and then it will remain over there. So, basically this is the value economic value of the information in the sense that the prices should increase by this much because of the additional information or announcement that is made, but apparently this is the efficient response and as we were saying the markets might not be efficient in the true sense.

So, if markets react in this way, then we can call it over reaction to the positive news which means the market the stock prices in the market where the value on the day of announcement increases so, much that is not justified, but it also corrects over a period of time and then subsequently it will come to the equilibrium.

It is also possible that the prices might react in an under or reaction way and here we can see that there is a delayed response to a positive news and in this sense the stock prices do not react immediately it reacts in a very slow way and subsequently it will go to the equilibrium. So, any situation other than efficient response can be questioned as the market the efficiency of the market.

If market the stock prices react in a very aggressive way which means if there is an over reaction to any announcement this is also not a case of efficient market and if the stock prices reflect in a very delayed manner, then also it is not a case of efficient market. So, efficient market the information should be reflected in the stock prices instantaneously and it should be reflected in this way.

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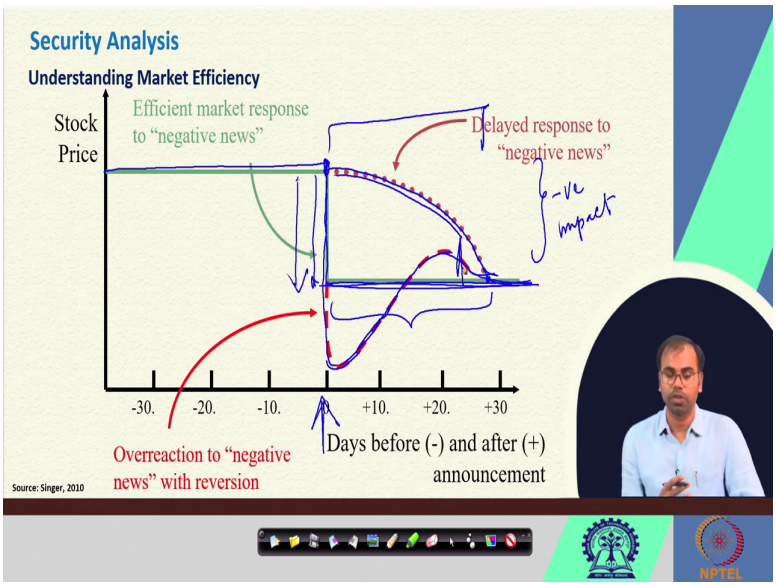

This is about positive news if we talk about a the reverse case where we have a situation where the negative news is negative which means, the prices the stock let us say is trading at this price and the moment this announcement was met at this point of time the stock prices fall to this level and then it remains at this level for the forth coming time.

So, this is the negative value or negative impact of the information that is coming to the market and any deviation from this response would basically be considered as a non efficient situation non efficiency of the market which means if there is a response like this we can call it over reaction to the negative news where the reversion is reverse reversion happens which means the stock reacted too sharply, but eventually over a period of time in the next coming few days the stock recovered and then it remains at the equilibrium.

And similarly, there can be a delayed response which means, the stock prices do not react sharply, but rather it reacts in a very slow manner and this is also a case of non-efficiency of the market or inefficiency of the market. Now, if we look at this these scenario from a trader or investor point of view we know that if we do not if the markets are not efficient then prices will not come to this level immediately.

If this is a negative impact which means prices should go down this much, but since markets are not efficient or sufficiently efficient then the investor has an opportunity a window to trade to this for this these many days which means if the announcement is made at this point and as an investor as a smart investor you know that the prices should go to this level and remain at this level in forthcoming days then eventually the prices will fall to this level, but till the time it falls to this level the investor has a window to make abnormal profit

And in this way the investor can sell if the investor is holding the stock investor can sell at any point of time during this period and it will make some money and in other case it can be the reverse situation where investor can make money because of the slow response of the market or sometimes over response over reaction as well.

Now, with this understanding of reaction of stock prices because of the level of market efficiency, we know that markets can be a efficient at different level as highlighted in the theory.

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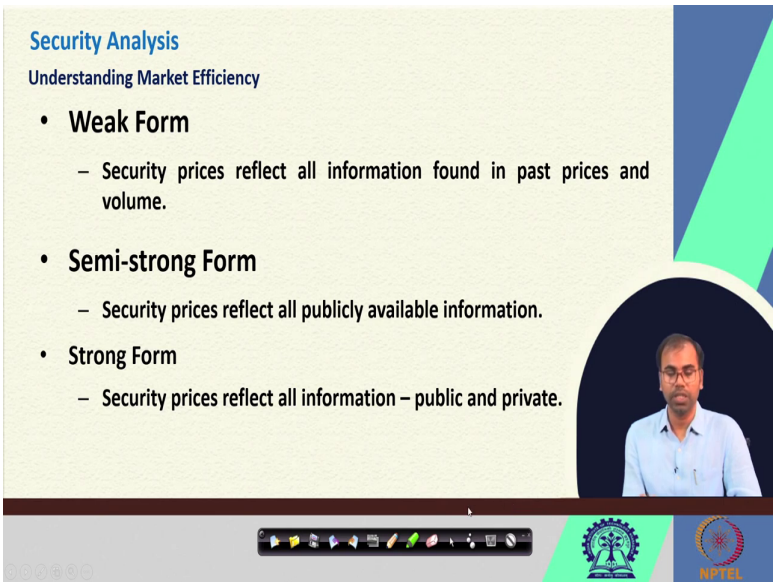

We know that market efficiency can be categorized into three forms as described by Eugene Fama in his 1965 theory he suggested that markets can be efficient at three different levels

The first level is weak form of efficiency essentially when we call a market weakly efficient or if a market is having weak form of efficiency, then we believe that the security prices reflect all information that are found in past prices and trading volume which means, if markets are believed to be weak weakly efficient all historical information with respect to prices and trading volume will be reflected in the security prices.

There is no advantage of having those historical or past information with regard to stock prices and trading volume if markets are believed to be semi strongly efficient or markets are

semi strong form of efficient. Then security prices reflect all publicly available information including historical information which means the stock prices.

The prices of the security should reflect not only the past prices and volume, but also current information that are available in the form of any announcement any news any annual report or accounting statement or any other source of data from where any information related to the security related to the stock are available.

Which means, in weak form of efficiency markets if the markets are believed to be weakly efficient then stock prices security prices reflect only the historical information if markets are believed to be semi strong strongly efficient. Then security prices or stock prices reflect all publicly available information and when it comes to strong form of efficiency of the market which means if markets are believed to be strongly efficient then security prices reflect all information whether it is public or private.

It also implies that if a market is believed to be strongly efficient it processes all the information quickly and it not only incorporates past or historical information related to prices and trading volume, but also considers information pertaining to annual reports financial statements which are released from time to time.

And certain information that might have some implications for future that can be absorbed or reflected in the security prices if the markets are believed to be strongly efficient here the market efficiency is in the form of speed of information adjustment because whenever a new information comes to the market this new information should reflect in the prices or reaction of the prices and if information is positive then reaction is favorable reaction is upward and if information is negative then reaction is downward.

As we have seen in these two graphs, we know that the graph which basically is shown in this through this line we know that this is the situation where we can call a market to be strongly efficient because the moment the announcement is made we see the stock prices falling to the level.

And then stock price remains at that level in the forthcoming days which means, whenever the information comes to the market about that particular security the price of the security reacted sharply and this level is maintained for forthcoming days unless new information comes.

Again, this days number of days for future can vary because maybe there is another information that might come to the market and let us say this comes at this point of time and this market is positive this this this news about the stock is positive.

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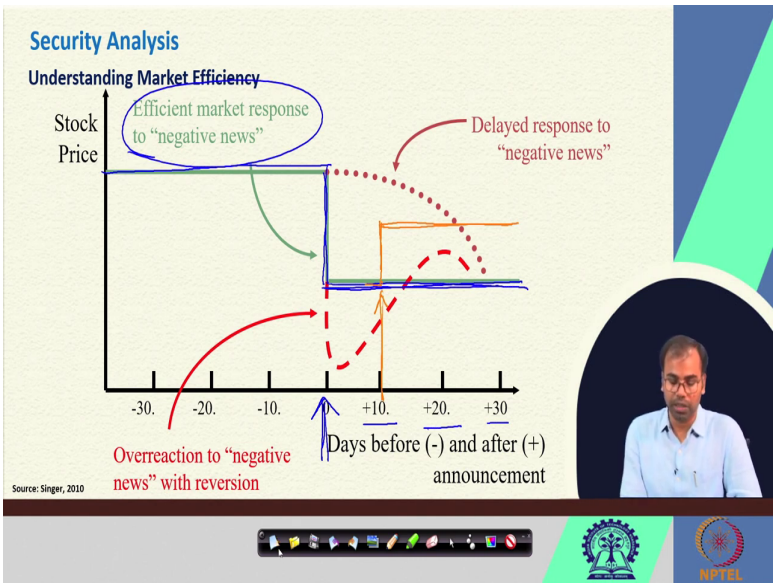

So, suddenly the stock prices can go up and can remain that at that level in the forthcoming future. So, this this kind of market efficiency needs to be understood before we identify stocks or before we consider a particular stock for inclusion in our portfolio.

For an investor understanding three different form of efficiency matters because not all markets are efficient at the same level even if we consider a particular economy or particular market to be efficient of certain type may be weakly efficient or semi strongly efficient or strongly efficient, but within that market also different assets might follow different level of efficiency for example, equity market might be semi strongly efficient, but some other market for example, bond market might be weakly efficient and so, on.

So, with this understanding of market efficiency we conclude this session.

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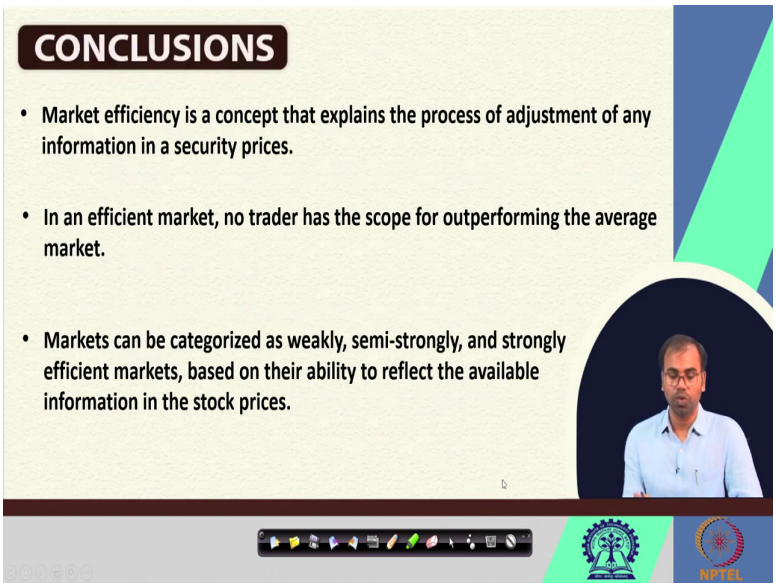

And we discussed earlier that market efficiency as a concept states that the process of adjustment of any information in security prices can be varying it can be quickly absorbing in in in terms of reflection in the security prices or it can take some time in a typically strongly

efficient market no trader has the scope for outperforming the average market or average investor out there.

And as per Eugene Famas theory of efficient market hypothesis markets can be categorized as weakly semi strongly and strongly efficient markets based on their ability to reflect the available information in the stock prices. And accordingly, the selection of securities or consideration of buying or selling decision can be made by an investor with this I conclude.

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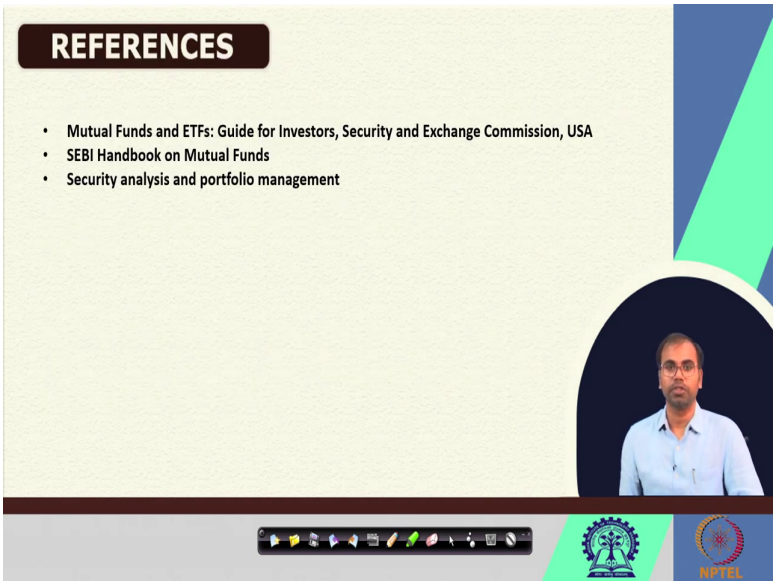

Thank you very much.