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**THE RELATIONSHIP BETWEEN BEHAVIORAL
FINANCE AND THE FINANCIAL CRISIS**

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Tez Danışmanı

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ABSTRACT

THE RELATIONSHIP BETWEEN BEHAVIORAL FINANCE AND FINANCIAL RELATIONSHIP

Rıza Doruk Ercan

Behavioral economics focuses on explaining the irrationality of the people's behavior. Behavioral economists expand and advance the conventional ideas with models on decision-making that is adapted with a multidisciplinary approach owing to psychology. Pursuant to the standard economic approach, decisions are made in the context of an exhaustive knowledge of their preferences and their choices are rational. The approach of the behavioral economics shed light on a new study that is called as Behavioral Finance. It focuses on the irrational behaviors of people's investing decisions. The irrational behaviours of the investors might have a relationship with the price bubbles that triggers the financial crisis. Therefore, the relationship between financial crisis and individual behaviors shall be examined. This thesis argues and examines the relationship between behavioral finance and the financial crisis. The research on the investment behaviors is shown that extrapolation error have an important role for decision making. This process is surrounded by imperfect knowledge. Therefore, people have a high tendency to make forecasts for the next step as a result of previous data in time series. It is believed that an unexpected situation might not occur. In order to see that empirical research is conducted with a simulation to see forecasting behavior of people. The research showed that people make a forecast in parallel with the previous changes. It is a visible point of extrapolation error.

Keywords : : Behavioral Economics, Behavioral Finance, Financial Crisis, Extrapolation Error, Cognitive Sciences

ÖZ

DAVRANIŞSAL FİNANS İLE FİNANSAL KRİZLER ARASINDAKİ İLİŞKİ

Rıza Doruk Ercan

Davranışsal ekonomi, insanların davranışlarının irrasyonelitesini açıklamaya odaklanır. Davranışsal iktisatçılar, psikoloji nedeniyle multidisipliner bir yaklaşımla uyarlanmış karar verme modelleriyle geleneksel fikirleri genişletir ve ilerletir. Standart ekonomik yaklaşıma göre kararlar, tercihleri hakkında kapsamlı bir bilgi bağlamında verilmiş ve seçimleri rasyoneldir. Davranışsal iktisat yaklaşımı, Davranışsal Finans adı verilen yeni bir çalışmaya ışık tuttu. İnsanların yatırım kararlarının mantıksız davranışlarına odaklanır. Yatırımcıların irrasyonel davranışları, finansal krizi tetikleyen fiyat balonları ile bir ilişkiye sahip olabilir. Bu nedenle finansal kriz ile bireysel davranış arasındaki ilişki incelenecektir. Bu tez, davranışsal finans ile finansal kriz arasındaki ilişkiyi tartışmakta ve incelemektedir. Yatırım davranışları üzerine yapılan araştırma, ekstrapolasyon hatasının karar vermede önemli bir rolü olduğunu göstermektedir. Bu süreç eksik bilgi ile çevrilidir. Bu nedenle, zaman serilerindeki önceki verilerin bir sonucu olarak insanlar bir sonraki adım için öngörülerde bulunma eğilimindedir. Beklenmeyen bir durumun gerçekleşmeyeceğine inanılıyor. Ampirik araştırmaların insanların tahmin davranışlarını görmek için bir simülasyonla yapıldığını görmek için. Araştırma, insanların önceki değişikliklere paralel bir tahmin yaptığını gösterdi. Bu, ekstrapolasyon hatasının görünür bir noktasıdır.

Anahtar Kelimeler: Davranışsal Ekonomi, Davranışsal Finans, Finansal Kriz, Ekstrapolasyon Hatası, Bilişsel Bilimler

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INTRODUCTION

Behavioral economics focuses on explaining irrationality of the people's behaviours. Because people do not always act selfishly or rationally (Frank, 2006, p. 231-256). In parallel with this direction, Nobel Prize winner Gary Becker, even though not a follower of behavioral economics, was arguing that "when studying behavior can no longer be explained according to income or prices, the explanation can be found in the change in tastes" (Becker, 1998, p. 139).

Behavioral economics approach expands and advances the ideas that are traditional. Because they borrowed with multidisciplinary approximation through which it is fed by psychology regarding the decision-making models.

Pursuant to the standard economic model, decision making process is in the context of an exhaustive knowledge of their preferences and the choices of people are rational. Although rationality of human can be restricted by emotions, the sociable spirit, manipulation of marketing, or inability of individuals to make an estimation for different probabilities, the standard model predictions assume that all decisions and choices are rational. Respect to the behavioral economists' idea, fear of failure has an influence on the people regarding regret. It would cause them to act with the motivation to avoid of failure feeling. Therefore, people are often influenced by external signals.

An effect of regret can cause decision paralysis or consumer inertia. Because in behavioral economics followers' mind, consumer decision must be occupied with opportunity costs. The feeling of regret is also another factor. Regarding to the opinion of generic approach, utility function models are getting integrated with the analysis of preferences. Furthermore, selfishness that is one of the primary argument of neoclassicism is opposed by behavioral economists. The claim is that there are limitations and imperfections for selfishness. Thus, behavioral economists study for those findings. In practice they would like to explain the reason of the irrationality of people while they are making choices. Furthermore, motivation of the decisions that are made would be unlike with predictions in the classical and neoclassical models.

The approach of the behavioral economics shed light on a new study that is called as Behavioral Finance. Irrational behaviors are focused to clarify the investing decisions. These decisions and studies have parallel results with the behavioral economists' practices. In the decision making process, the investor do not have perfectly rational behaviors.

The irrational behaviours of the investors might have a relationship with the price bubbles that triggers the financial crisis. Therefore, the relationship between financial crisis and individual behaviors shall be examined. This thesis argues and examines the relationship between behavioral finance and the financial crisis.

CAPTER ONE

LITERATURE REVIEW

1.1. Development of Behavioral and Cognitive Sciences

Till the beginning of 20th Century the mainstream theories on economy and finance were assuming that all investment behaviors were rational. The researches on psychology brightened that assuming people's investing decisions are rational is not the truth. At the end of 20th Century, studies on cognitive sciences increased and in parallel with this development in order to understand the irrational situations in finance markets Behavioral Finance came to exist. It is multidisiplaner study and derived from psychology, sociology and anthropological sciences (Tufan, 2008: 22). It argues that people are not rational, and that they make transactions using their feelings rather than maximum returns when making investment decisions.

On the other hand, economists often criticize behavioral research for its errors and biases. They argue that these researches do not make a suggestion with an alternative solution for the rational-agent model. It means that the theories regarding intuitive thinking based on the psychology would not encounter the gracefulness and accuracy of smooth regular models of belief and selection however it means also that rational models are psychologically unrealistic. Therefore expecting a rationalty from people is not realistic. Moreover, the offer of Psychology is that the ability to explain different phenomena increases the credibility of integrative concepts and mid-level generalizations. (Kahneman et al., 1999) In parallel with this offer, Kahneman and Shane Frederick (2002) proposes a model of judgement heuristics with the main ideas stated below:

- I. People's judgments and selections are mainly made instinctively;
- II. the rules in the first row have similarity with the rules of perception.
- III. Accordingly, intuitive judgments and selections will rely on visual analogies.

Dan Ariely argues that individuals making decisions after interpreting things around in relationship with others. They do not have self-determination; furthermore their some reactions are uncontrolled for precise stimulus. There are some barriers to have outputs with rational decisions while resisting against some situations that has to compliance with particular combinations of social standards. The zero or in other words free would be define as the precise stimulus. They would affect on friendly applications, affection, favors and economic norms like bill payment, fees and prices. (Ariely, 2010, p. 87).

Hesitations and/or risk are the conditions affect decision making process. It is also another area of research in behavioral economics. In risky conditions, decision-making would not be just cognitive activity. Forwhy the people's reaction in risky or hesitations on uncertain situations have two different levels that are cognitive assessment and emotional reaction. The perception of risk and attitude toward this are relevant with emotions. Amos Tversky argues the rationality of investor behaviors in his studies. In his study in 1995, propensity of investors' on risk is demonstrated. Investors' propensity is really low for taking risk for small losses and they seemed risk-averse. On the other hand, they are careless for a small chance to have a large loss. They have a behavior that is risk-seeking in losses. Nevertheless they are risk-averse whether there is an opportunity to have a gain. This disrupts economic rationality.

In parallel with Amos Tversky's studies and Daniel Kahneman the release of the potential earnings cause a risk-averse on most people. Also, the possibility of the losses cause a risk-seeking bheavior on the same people. Regarding the gambler behavior there is a similar situation. While raising the stakes, he has the hope of eliminating the possibility of losses. Thus, various examinations showed this finding empirically through and have the results for the rejection the classical theory's consequences with the expected utility theory developed by mathematician Daniel Bernoulli.

A cognitive principle of main human errors is established by Daniel Kahneman. These errors are using intuitives, heuristics and bias (Kahneman and Tversky 1972 Kahneman, Slovic, Tversky 1974). Research has the results showing

that individuals have propensity to imitate each other. To mimic the gestures is one point. Also to make decisions of others is another point. Therefore, "social pressure" has to comply with the crowd. Moreover, even between professionals it is seen. Even financial market analysts show same behavior. Herd effect increases the tendency to decrease regret. Because other behavior imitates stimulates a feeling of comfort between individuals. Besides it, rejuvenation of taking responsibilities is stimulated (Muradoglu, 2010, p. 8).

Consequently, sociable behavior boosts the impressions of the economic cycle. Therefore, the similarity between more decisions increased (Rizzi, 2009, p. 89). Additionally, there is a high propensity to consider on the present. Therefore, the importance of the issues in the future decreases. Within this scope, whether people's decision making process on the issues which have a later regret is vital.

1.2. Macroeconomics with Behavioral Approach

Behavioral features explains puzzles by the support of empirical approach. Also they are acknowledged by the economics. Moreover, macroeconomics also introduces behavioral features in many parts. The behavioral economists' opinion is to drive an understanding of macroeconomic phenomena. Because it allows economists to explain real-world behavior than theoretical framework like frictionless plane concept in physics. Also most economists have been using the frictionless plane concept assuming that all behaviors are rational. Some behavioral assumptions like fairness considerations have been driven by macroeconomic models. They explain macroeconomic puzzles. The response to shocks by the economy can be defined as an example.

The microeconomic evidence exists for the features of behaviors. The macroeconomic models incorporated with these behavioral assumptions for the cognitive psychology. Nonetheless it has some problems. Because it is not easy to know the relevancy of the features with macroeconomic models. For instance, while the existence of robust finding for stability in consumption attitude and behavior in macroeconomic ecosystem.

There is a blur point that is the viewing this stability whether it should be viewed as the outcome of some concepts. Habit formation, rule-of-thumb consumption, or other alternatives can be given as examples to these concepts. Other point is limited information or agency problems if macroeconomic models should be associated with behavioral features. Also other deflections from the standard approaches might be associated with this issue. Furthermore, the financial frictions can be given as example. Hence, the need is deep diving by more research.

Liberalism and interventionism economic models' base on the individuals who are selfish and perfectly rational. Nevertheless these individuals has no mark of selfishness because they are willing to bargain away for the welfare of society. This is unfamiliar with the selfishness assumptions. In fact, the individual is complex. Actions of individuals are achieved in failures and these are inconceivable for the conventional economy. Irrationality of the behaviors shall be understood. So people might repeat the same mistakes. The all decision are not the best ones. The risk minimaziton shall be considered as a point and people have lack of this issue. Also emotional motivation drives their business. These issues are behavioral economics catches in great detail.

Behavioral economics' impact on macroeconomics is so widespread. Therefore the discussion on behavioral economics shall be narrow. On this thesis, argues would focus on finance, asset market bubbles and incorporated results from behavioral economics. New Keynesian Model's modifications shall be used for organizing principle. This model is applied to analyze economic instabilities. While evaluating the productivity of monetary policy. Nonetheless, it has some notable empirical shortcomings. Studies to figure out those troubles focused on different approaches. They model consumption, expectations formation, and nominal wage and price setting. However, the motivation behind these studies underlies the specific points that Keynes refers in the General Theory (op. cit., pp. 217, 246-247, 250, and 251, respectively):

“(...)a marginal efficiency which is at least equal to the rate of interest for a period equal to the life of the capital, as determined by psychological and institutional conditions.”

“Thus we can sometimes regard our ultimate independent variables as consisting of (1) the three fundamental psychological factors, namely, the psychological propensity to consume, the psychological attitude to liquidity and the psychological expectation of future yield from capital-assets (...)”

“Now, since these facts of experience do not follow of logical necessity, one must suppose that the environment and the psychological propensities of the modern world must be of as such character as to produce these results. It is, therefore, useful to consider what hypothetical psychological propensities would lead to a stable system; and, then, whether these propensities can be plausibly ascribed, on our general knowledge of contemporary human nature, to the world in which we live.”

“Our first condition of stability...is highly plausible as a psychological characteristic of human nature.”

The four types of behavior that investors have led them out of the rational decision-making process. These are unrealistic optimism, overconfidence, fear - loss and loss of behavior. Unrealistic optimism and Overconfidence are often observed together and causes people to rely on their own investments more than they should, and therefore to underestimate risks. The behavior of herd is the case of other investors, rather than using their own knowledge and skills. Such behavior causes speculative bubbles in the markets. Speculative bubbles are the name given to the situation in which investors deviate from the actual price of securities and traded at these prices. As long as the balloon does not explode, investors do not realize they are in a speculative bubble. The explosion of the balloon creates crises in various areas in the markets. The speculative balloon, first seen in the history of the world, is the balloon of the Tulip Madness experienced in the 1600s. Sixteenth-century Viennese travelers coming to Turkey, they admire the beauty of the tulip gardens they saw, and they took their country back side of tulip bulbs. Tulip cultivation became a madness and influenced Europe. Tulip bulbs have become so popular that even contracts have not yet been signed. At the top of the balloon, it was necessary to pay in the Amsterdam canal to buy a house in order to have some varieties of tulip. In 1637, the tulip spell bubble burst and tulip bulbs fell to only a few cents. Another speculative bubble

following the tulip madness was the South Sea Balloon in the 1720s. Following this, we can illustrate the Great Depression of 1929, the Dot-Com Balloon in 2000 and the 2008 Global Financial Crisis, the most severe crisis after the Great Depression of the 1930s. We will try to examine these crises in the light of the studies done within the framework of the concept of neuroeconomics.

In the previous crisis, underestimation of risk was caused by overconfidence and unrealistic optimism. Also people were not able to notice certain warning signals because of the confirmation bias. Even though these signals eroded investors' faith in the never-ending bull market, confirmation bias prevented them from realizing the facts. Investors became used to easy and high profits as a result of a long period of market prosperity. The self-attribution effect encompassed many market players attributed the gained profits primarily to their own skills rather than to the general market situation. Investment successes strengthened their confidence and boosted up their courage to take even higher risks.

An extrapolation error occurs when people attach too much weight to past trends. The observed data in a short period of time is used for the following period by extending. Without considering the extraordinary events (as assuming them as outliers) would cause many vital defects on the sales based on the long term forecasts. So it shall be remembered by analysts. Keeping a forecast with the assumption of a similar pace of growth may not have healthy results. The representativeness heuristic has a relevance with extrapolation error's psychological grounds. Specially, its variation referred to as the short-series bias consisting in early results and generalizing samples from a limited amount of observations (Gilovich, Vallone, & Tversky, 1985).

1.3. Financial Crisis History

Whether the behavioral biases resulting in incorrect decisions are ignored for major risks, risk management investments are not enough for financial institutions. Absence of these biases affected the collapse of the credit market in 2008. After the collapse of the credit market, the Recession started and became a significant financial crisis in the history. This dissertation outlines a relationship between behavioral

finance and the financial crisis. Behavioral finance especially focuses on the risk decisions and applies it to the structure finance market. (Rizzi , 2015)

Institutions and regulators decided to change their risk systems to address this behavioral issue. Many people try to interpret the work principles of the world. They build some models for these. Behavioral economics gives some tangible senses for risk-assessment errors and possible remedies. Furthermore, Behavioral Finance clarifies that decision processes have an affect on the perception. Also, the behaviors are shaped by the processes. The framework of behavioral finance improves responses to risk changes. Therefore it helps to improve current qualitative risk management. The financial crisis structure can be clarified by these solution set. (Rizzi, 2015).

Behavioral Finance studies on two topics regarding finance markets. First one is that investor's psychology can be a barrier to act rationally. The other one is that investor's arbitrage abilities might be limited for the overpricing situation (Bayar and Kılıç, 2014:185). In accordance with both topics, financial crisis shall be examined within the scope of behavioral sciences including behavioral finance, behavioral economics and neuroeconomics.

Financial crises occur periodically due to various reasons. However, speculative bubbles would be defined as the main reason. A bubble is that the price of an asset rises to a level that is higher than it would be in the absence of the rationality. Furthermore, a rational observer's forecasting might not be a high short-term ROA (return on the asset) for this price level. For instance, in many discussions on 2008 recession the common idea was that a bubble occurred in real estate industry. After 2006, real estate prices had been increased unsustainably and reached to high levels. Whether a bubble is too swollen it would burst. In this case this price bubble burst and triggered widespread defaults on subprime mortgage. It lowered the value of banks' subprime-linked holdings. Then banking system was highly effected beyond the foresights of the qualitative risk management. At this point the financial crisis is considered to be applied by behavioral economics and behavioral finance. Because these applied sciences are as new disciplines with the aim of examining the bubble formation by the improved responses to risk changes. These multidisciplinary fields

consisting of psychology and economics. It aims to analyze investment decisions and investors' behaviors. In this thesis financial bubbles are taken into the consideration by using behavioral analysis.

Financial crisis is caused the questioning the adequacy of the current economic approaches. Because the current economic approaches try to figure out the reasons of the crisis by rational expectations, maximization of utility function and information shocks. These approaches are not defined as adequate to predict the financial crisis or explain the reasons. The current approaches are inadequate because the human behavior can not be predictable. Behavioral finance focuses on this point. It is based on the irrationality of human nature. The investors are human so while making decisions they would not act rationally. It means that the investor would not consider on the profit maximization, he can act with the effects of emotions. For example, even if the selling the stock is the rational option, investor might will to keep and retain it. Or even if it is not a rational option, it can be invested in the same stock as other investors show great interest. Explaining the situations like these with traditional theories would not be adequate.

Financial markets include both information and noise. Therefore they are in complex forms. Information affects fundamental values. Noise is the opposite of information and means inaccuracy in ideas and data. Shortcuts, rules of thumb, or heuristics to process market signals are developed by risk managers in financial institutions. Behavioral finance investigates how risk managers gather, interpret, and process information and noise. Particularly, the process features perception and also cognitive bias. Therefore models can be built by influenced behavior and it can shape decisions. It means that the biases can change the decisions.

Behavioral finance offers a new way of looking at the processes taking place in capital markets. By referring to psychology and examining on the imperfections of human mind, it makes clear to see the mistakes of both individual and professional investors (Szyszka, 2010: 121).

Two emotions guide people when investing (Shefrin & Statman, 2000). These are fear and greed. The fear is about losing the existing standards of living. Therefore,

they have a tendency to keep a portion of savings in very safe securities like treasury bonds. This type of securities are designed to preserve the real value of money in time. Greed is about the desire of jumping to a higher standard of living. This motivates investors to accept unnecessary risk with the hope of gaining high profits. Very safe and high risk instruments can be included in a portfolio without considering on the correlation between two. It is related with narrow framing consisting of analyzing problems in an isolated manner (Kahneman & Lovallo, 1993; Kahneman & Tversky, 1984; Read, Loewenstein, & Rabin, 1999).

In people's mind, there is a mental accounting. This is created as separated account for the various types of expenses and incomes. For instance, the money won in lottery is easier to spend than hard-earned savings. As rationally, one dollar equals one dollar regardless of how easy or hard to be earned (Szyszka, 2010: 121).

Besides greed, underestimated risk is another noteworthy point regarding the behavioral and physiological bias. Forgetting risk is often seen in the midst of the chase after higher and higher rates of return. An overconfidence occurs and it is an causative situation for underestimating risk (Szyszka, 2010).

There are four general apperances of overconfidence: above-average effect, calibration effect, illusion of control, and unrealistic optimism (Barber & Odean, 2000; Glaser & Weber, 2007; Odean, 1998). First, people tend to overestimate their knowledge and skills while considering on an opinion or making assessments about their surrounding reality. In various surveys, 60% to 90% of respondents stated that their driving abilities were above-average. Moreover their sense of humor greater than others or that their chances of passing away because of a specific disease were lower than average. (Barberis & Thaler, 2003; Svenson, 1981; Weinstein, 1980). Therefore, it can be assumed that people generally believe that they are better than the average person in a given field. It is called as above-average effect. A significant number of people overestimate their predispositions. Because whether we split all humanity in accordance with the talents specified above, the above average talented ratio would not be over 50 per cent. (Keren, 1991; Lichtenstein, Fischhoff, & Phillips, 1982; Yates, 1990).

Overconfidence is also appeared as calibration effect. When asked to people for an information or to make estimates on something that are not exact. However these estimates are pointed that people very often indicate overconfidence in parallel with their level of knowledge. According to the research of Alpert and Raiffa (1982), responses with a high certainty turn out to be correct approximately 60% of cases. People who are asked to make a prediction on the long-run changes in specific values would indicate more confidence than the predictions in the short term (De Bondt, 1998). Another factor regarding the self-confidence is the gender. Usually, men have more confidence in comparison with women (Deaux & Emswiller, 1974).

The illusion of control is manifested by overconfidence. People believe that the random incidents might be affected by their actions. For example, according to Langer (1975), higher values are given by the lottery players on the tickets which were filled by their selections instead of a machine (Szyka, 2010).

In addition to the illusion of control, overconfidence also causes optimism and wishful thinking. Errors in planning are might be related with excessive optimism. The studies of Buehler, Griffin and Ross (2002) are about the improper estimation of the time that needs to be completed as planned assignments. The trouble has both plans would show effects on large-scale public investment. Furthermore, previous mistakes would not be a teaching factor for people. Although they aware of the wishful thinking and optimism of previous forecasts, they still prefer to believe that their predictions will accurate for the next time. (Szyka, 2010)

Self-attribution bias support overconfidence. It includes successes and mistakes. Even random successes are attributed by people to themselves. On the other hand failures are not related with themselves (Taylor & Brown, 1988). This self-attribution is a proof of lack of objectivity. This lack would cause the continuous overconfidence and a barrier for self-improvement. The beliefs are analyzed slowly and it is sign of confirmation-bias that is tendency to search information to confirm their previous beliefs or hypothesis. Also they prevent from encountering the facts have contradiction with their adopted opinion or they can mix with that opinion (Lord, Lepper, & Ross, 1979; Wason, 1966).

The true cause-effect relationship between two variables people concentrate on the simultaneously observed cases. A given strategy which did not bring an outcome in parallel with the expectation shall not be selected by the people. This selective approach creates an illusion of availability. It means that connecting with incorrect convictions or even implement them, showing overconfidence at the same time (Einhorn & Hogarth, 1978).

During the last bull market period, extrapolation error was committed by the people. The prices had been increasing for a long time therefore the expectation is continuation of the trend. The types of investment are claimed as never bringing losses. The issue for property market was the same. The increase in the prices had a continuous increase over decades. A drop in the price was not expected. An economic boom occurred in the commodity market as a sequel. The argument of many analysts was like demand in the Asian economies. Also there was an underestimation of risk. It was nourished by the people's propensity to treat the things seems like impossible would not occur. Hence, the concept that an unfortunate coincidence was not accepted. It was looked very unlikely. Similarly, people ignored the risk of failure of positive developments that were assessed as highly probable and treated almost as a certainty. The fact showed that the coincidence of such almost impossible cases not only came true but also proved to have an enormous impact on the entire economy in the World. Fischhoff et al. (1977) argued that people have high tendency to ignore the possibility of occurrence of unlikely developments and, simultaneously, to treat highly possible scenarios as certain. Kahneman and Tversky (1979) theoretically clarified that in their prospect theory. With respect to the prospect theory, two function affects the total assessment of utility of a specific decision-making scenario. These functions are the S-shaped value function and the weighting function and these are subjective for each decision maker. Kahneman and Tversky pointed that one of the properties of the weighing function is its discontinuity for the probability values close to zero and close to one. Figure 1 shows that the function assigns the value of zero to very low probability arguments, and the probability arguments close to one are assigned the

value of one. This clearly demonstrates the investors' tendency to treat unlikely events as impossible and highly likely ones as absolutely certain.(Szyka, 2011)

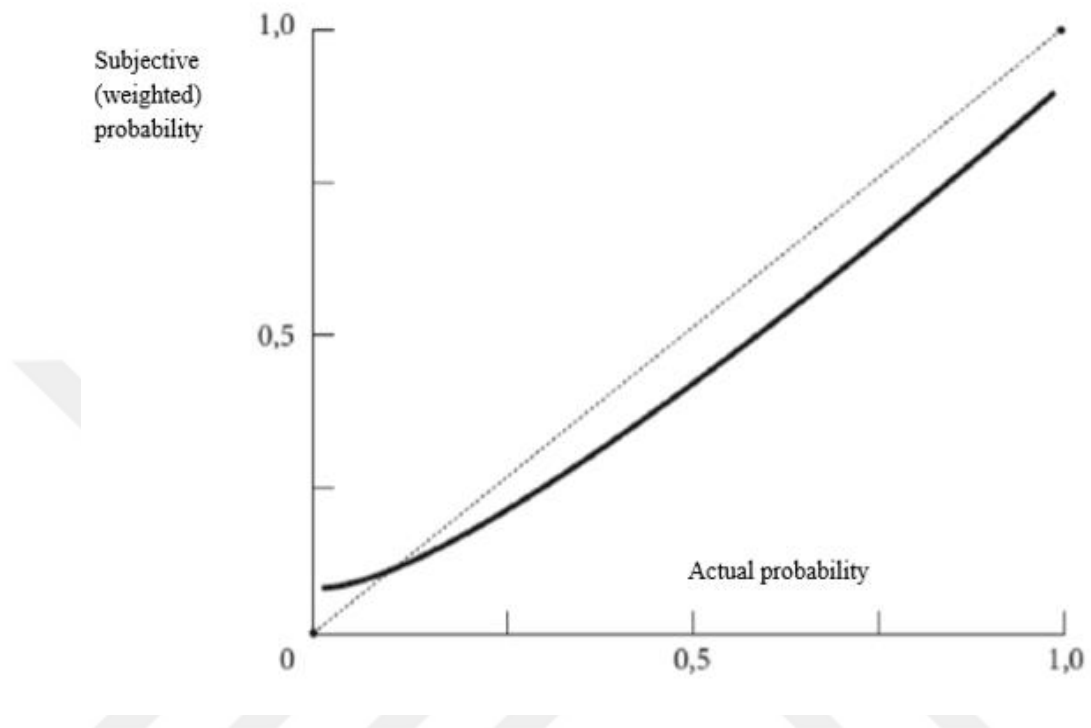


Figure 1. The Probability weighting function Source: Syzka,2011

CHAPTER TWO

DEVELOPMENTS

2.1. Need for Economics

The production, distribution and consumption of goods and services shall be organized and coordinated within a process. It is necessary for every society. The need occurs due to:

- The resources or inputs have a limit,
- The technical knowledge limits the ability of utilizing these resources to produce goods and services,
- Output would be limited by a regulator or an individual,
- In the Western culture, the cultural or physical factors shape demands and this situation would cause an inavailability of economic resources.

These limited resources shall be allocated with their highest value. Those preferences within constraints are known by an individual to use resources to satisfy those. This requires three factors regarding the management of resources. This management of resources are based on having information, knowledge and making choices. The tale of Robinson Crusoe (1719) who who was alone in an island with highly limited resources and it was written by Daniel Defoe(1659-1731). He faced many challenges. After entrance of Friday, the allocation problem are changed. The case in social life, the goods shall be distributed as well as deciding which production.

Within the scope of an economist approach, it is important to answer these questions to produce;

- What shall be produced?
- Which way is the best for producing?
- Through which individuals the goods and services shall be got?

Stories regarding the allocation of the resources can be described among the classics of literature. Victor Hugo's (1802-1885) story *Les Misérables* (1862) can be another important example. While a society is aiming to answer these questions would be the milestone of the stories. The nature of society is shaped by this aim. Also this aim has an influence on the answers. The possible methods to organize economic activities of individuals. Regardless the method, it is always required to accommodate the behavior of the humans as society members.

"The history of economic thought is a study of the more significant methods" (Robinson, 2000). Economic thoughts have three steps. First step is regarding the analysis. Next, describing the actual relationships. The third step is the explanation of the relationships within to scope of actual perspective or ideal one for economic systems. A base point for assessing the efficiency of the industrial economies is evaluated by the alternative explanations. A basis is also provided by economics theories and models. By this basis, modern approach for industrial economies might be described.

Economics definitions would be made like the study on the methods of organization of the economic functions.. Various definitions can be made for economics. Jacob Viner's definition is "Economics is what economists do.". Alfred Marshall described economics as: "Political Economy or Economics is a study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and use of the material requisites of wellbeing. Thus it is on the one side a study of wealth; and on the other, and more important side, a part of the study of man." (Marshall, 1890). Marshall emphasizes that economics is a social science. In a social system; the individual has a role. It is "a part of the study of humanity".

Human behavior shall be examined multidisciplinary because it is sophisticated. Social behavior is even more complex. Therefore, it is necessary to abstract from reality. Models present this abstraction. These models can be presented as tales, graphs, mathematical systems and other reflections that can describe the relations among the concerned issues in all kind of systems. Economic behavior

studies are based on three fundamental reasons. First, as an academic discipline it has an aim to understand, describe and explain the world and as human we have same to discover to world in which we live. Second, it is desired to make prediction and check the processes. Also the outputs are desired to be checked as a practical matter. Third one to make an explanation and prediction for the economic issues. Perceptual mapping and values of the members in the societies would be shaped. Hence, theories can influence the values held by the members of society. Models or “stories” are reflection of our culture. Story telling has a role to transmit values and civilization. With their theories and models, actually economists can be defined as story teller. By these stories they try to grant the character to society.

The determination, identification and analysis compose the steps of integration behavior. This needs information to be collected, interpreted and communicated. Objectives shall be known for acting rationally in decision making process. Within the concept of limited resources, individuals shall make a preference among competing alternatives. It must be known that their preferences to make suitable choices. The problem for a group is that everyone has different preferences. Thus, the preferences would have a priority. By providing criteria to the priorities, identification of the alternative usage of resources that would be produced. “Which individual would buy a new car?” is a key question for the weighting the value like prioritizing. The weighting of values is considered as the minority of inputs like the objectives. Each preference process shall be designed regarding allocation of resources. There is a duration of approaches to the trouble of allocation.

Initially, free market system is individualistic. Therefore, the preferences of each individuals shall be known by themselves. Furthermore, their voluntary choices shall be coordinated with encouragement. Also the preferred weights shall be appropriated by the individuals. Secondly, the authority might centralize the allocation process and make decisions. It would cause that individuals would be disallowed to make a choice. The third one is an ecosystem where tradition is the basis of the decisions; behavioral patterns which were proper long since would be entrenched. While the framework of the economy is emphasized by the traditions of the market, the market system would keep dominating.

Early 1700's with the Physiocrats a bias for ideology and the primary allocative mechanism importance for markets occurred. Then Adam Smith underlined this. Economic problems are tried to be solved conventionally with the lights of these approaches. The all regulatory units to control all processes and activities in economics are not different than dominance. The dominance of the market causes the troubles for allocation and the layout of behaviors within the scope of economics.

Sub-systems and the other components compose the economy. The economy is considered to use reductionist perspective by Western scientists. By this perspective, social system include many sub-systems including politics, religion, other processes and institutions. Each parts of the systems can be discreted more and more. The systems of insurance, medical education and hospital are related with the health care system because it composes these systems. The connection and influence between the systems are natural.

2.2. Society and the Economy

All parties in economy interact with society. This is an interactive relationship. The perspectives among social and attitudes regarding the orchestration of the economy would be influenced by the system and the beliefs in political side. Therewithal, economy would have a vital influence on the political system by the performance and the framework. The economics school of thought and approaches are explained by individual behaviors and attitudes. Because these are helpful to understand the relationships and the interactions of each factors which are the components in the explanation. Two relevant functions are the base of the economic system. The first one of these functions are contributing to the wellbeing of the individual and the second one is allocation of limited resources. These would have reflections. One of these reflections would be on the operational promotion of the commitment of society. Individual autonomy and the public welfare shall be balanced and the other reflections is regarding this point. The obtainment of these reflections and the functions shall be defined as synergistic. The conducting the allocation process has a clear texture and more convenient. The individual demands and desires are not

balanced conveniently in comparison with the other function. In order to define these two separate functions, the allocation process shall be emphasized.

There is an important task for any economy. The autonomy of the individual and public welfare are ought to be balanced. Two approaches to this issue might make clear. There is an inherent harmony of demands and interests betwixt the members in society. It might be interpreted as also there are inherent processes resulting in a conformity among interests. Secondly, perspective is that disaccord between these members' interest exist. Classical and Neoclassical economics figure that many conflicts would be resolved in a free market ecosystem by complimentary exchanges. Furthermore, Marxist approach also believe that a disaccord between classes appears inherently. Capitalism would have an unavoidable collapse due to this disaccord.

Regarding the relationships of economics to the social system, there are also different views. At one of these views, the economy and the systems based on this might be positioned as the first determinant of the social system. Therefore, it has propensity to have that the economy is the most significant factor in comparison with the other aspects of society. For example, Karl Marx (1818-1883) applies "modes or techniques of production" to assess the developments of society besides the mortal failure of the "capitalist system". Nonetheless, Austrian economists like Karl Menger (1840-1921), and Ludwig von Mises (1881-1973) and Neoclassical economists try to specify the pros of market system. They believe that an optimal allocation of resources would be resulted by the rationality in decision making of the individuals. They agree on that economic behavior of a human forms the ideal framework of social institutions. It reflects economic factors and guiding for remedies for the troubles of community and people. Consequently, this view creates the perception that economics (economic theory) can explain most if not all human behavior. The belief that economic theory can be used to explain history, sociology, politics, religion, family life, sexual behavior and crime is referred to as "economic imperialism." (Swedeberg, pp. 34- 38) The other important view is that the social system determines the processing of the economy. Karl Polanyi (1886-1964) makes the argument in his book, *The Great Transformation* (1944), that there was a shift in mainstream thought from the perspective that the

economy was an element to serve society to the view that society is an element to serve the economy and economic interests.

Modern principles of economics texts typically identify the economy as a process whose primary function is to allocate or ration resources and questions with respect to be answered with respect to the use of resources:

(1) What goods and services should be produced?

(2) How many of each should be produced?

(3) What techniques should be used in the production and distribution of the goods and services?

(4) When the production or use of the goods and services take place?

(5) Who should get the benefits of the use of each good or service?

The answers to these 5 questions are determined by a variety of factors including:

- the endowment of resources and the physical nature of the relationships among them,
- the level and nature of our understanding of those relationships, or technology,
- individual objectives,
- the objectives of society, (which reflect the organization of society and the institutions that coordinate the preferences and behavior patterns of individuals within society)
- information about alternative choices and the probable outcomes of alternative choices,
- perceptions of relationships among the individuals within the society
- values held by individuals, and
- the methods used to describe, analyze and identify potential alternatives and outcomes also shape the answers.

Swap, opposition, charity, dominance, heritage and robbery can be instance for mechanisms which are used by society for the purpose of allocation of resources. Conventional economic theory has a propensity to analyze swap. Swaps with other name exchange has a logic that occurs in the market that is a social institution. A market fosters people to be a part of buying, selling and trading cycle and it shall create a motivation with attracting in purposeful exchanges. This situation reflects the preferences of the individuals involved. The assumption of the market theory is that the individuals have a knowledge on their choices and they would not not lower their utility. In other words, every choice increases or does not decrease the welfare of an individual. Jeremy Bentham's Utilitarianism (1748-1832) is critical for the economic theories. It ensures that the aggregated utility function of people is the same with the society's utility.

In the context of economics, the absolutist and the relativist are two approaches. The absolutist has a propensity to assume that there are exact "facts or truths". These kind of opinions and samples of behavior are comprehended as global. Each generation of economists is seen as correcting errors made by their antecedents and adding new insights within the absolutist approaches. Mercantilists, Physiocrats and some other works were fixed and improved by Adam Smith. He combines them with his new comprehension. Then, this combination, correction and improvement is made by Alfred Marshall for in Smith and others.

Economic theory is an output of the relativist approach. The foundation of this approach is that "useful" or "true" can be changed in accordance with time and place. This situation brings that all institutions form the economic theory. Although, relativist and absolutist hold interesting features somewhere between extreme points might be balanced.

Over all people and communities have behavior pattern within the global scope. Nonetheless, many factors influence our perceptions, values and behavior like cultural features, technology and other factors. Mark Blaug states; "No assumptions about economic behavior are absolutely true and no theoretical conclusions are valid for all times and places, but would anyone seriously deny that in the matter of

techniques and analytical construct there has been progress in economics?” (Blaug, 1985). In order to make decision on the components shaping the integrity of progress.

The economy, society and technology are connected. The influence between them can not be denied. Different views on social system the relative importance and the relationships are the gain. The aspect of causation is an important reason of debate. The technology might be primary specification of economic and social systems or the technology is specified by these systems. Different views on these issues would shape the methods for description and analysis of the relationships. The course regarding the technology, economic and social systems are altered by the output of the analysis. Outputs of the industrial revolution influenced the ideas of Karl Marx. Meanwhile, Marx’s work regarding the developments was effective on the studies of history of economics. The developments in the former Soviet Union and China can be given as an example. The presence of the technology economic and social systems has influenced. Also this influence has been seen on the world. Economists build the theories of economics with the scope of the societies they belong. In other words, their opinions and views are shaped by that scope. But large mainstream approaches at the society might be influenced by the theories representing the unprovided approach. Society reflects the Economic Theory but on the other hand it is also determined by the economic theory. The factors theory, perspective and methods are used to see the Economic behavior and Economic processes. In order to assess these processes, it shall be understood what influenced the nature of the objective.

2.3. Ideology, Theory and Policy

Ideology, theory and policy choices are very important for understanding the perception. Economic choices and policies are interrelated with each other and they shall be considered irreplaceable to study history of economics. It will make easier to understand the reasons the beliefs and interpretation of the economics ideas. The explanation of our beliefs is contributed by the interaction that is seen between ideology, policy theory and their outcomes. According to Joan Robinson, “ideology is much like the proverbial elephant, it is difficult to define but we know one when we

see it” (Robinson, 2000). Ideology is not a basic notion and takes various forms. The perceptions and patterns of the behaviors are altered and influenced by this notion.

There are political and epistemological studies shall be in association with ideology. Attitudes, perspectives, values and beliefs generate ideology. The evaluation of judgement of morality is also altered by ideology. This notion is a foundation of a culture.

The origin of ideology would be varied. Storytelling and theory are used to create ideology. They transmit and embed in a culture. Ideology is reinforced and emphasized in the fables or stories in many societies and these techniques are used commonly to create a robust structure for the ideology in the minds of the individuals. Many stories, fables have this technique in their content.

A wellknown instance is “The Little Red Hen” that emphasizes the significance of collaboration and hard work. According to Joan Robinson, “It was the task of the economist to overcome these sentiments and justify the ways of Mammon to man. No one likes to have a bad conscience. Pure cynicism is rather rare. Even the Thugs robbed and murdered for the honour of their goddess. It is the business of economists, not to tell us what to do, but to show why what we are doing anyway is in accord with proper principles.” (Robinson, 2000) Behaviors based on self-interest proved by a market theory saying that people are following their interests.

Theories explain that a member in a community or society focuses on self-interest. Whether the ethics, duty, morality, sympathy and other issues are ignored by the theories, the individuals would have a feeling to be right in behavior ignoring those similar issues. Troubles may start from the issues that was skipped by ideology. Market ideology is shaped by John Locke (1632-1704), Adam Smith (1723-1790), Jeremy Bentham (1748-1832) and the other philosophers. In order to interpret simply their studies, self-interest is described as the insulated lead that guides the behavior. As seen in the studies, the ideological heritage is complex and rich.

Theories shall be positioned as another subject to be touched.

A theory is an sophisticated principal consisting of a set of stable, consistent propositions that has an explanation for a certain class of phenomena. All aspects of a

phenomenon are not able to be included in this set of propositions. Theories utter the perceived or expected relationships between phenomena or affairs..

In a theory, a causal relationship is mostly seen like event X “causes” event Y. Causation is not convenient to link. X certain statement is would be on correlation. For instance, events “X” and “Y” are correlated, or event “Y” has a propensity to realize while event “X” realizes. Therefore, it is believed that events X “ and “Y” are in a relationship with causation.

Theories are submitted like model which has various sense. It is a canonical or an outline that can be used to indicate, judge or make a comparison between variables. In other words model might be described as a summary in economics. Axiom are the beginning point of a model. These axioms get the basis of the relationships. Models might be in various forms. They would be demonstrated as anecdote. The causality in economics are mainly expressed by mathematics. “The models which are emitted as equations, systems of equations or graphs representing mathematical relationships between a dependent variable and a set of independent variables” .(Reynolds, 2007).

The statements regarding sensed relationships are affected by the ideology and by turns, affects the ideology. Obvious propositions that are accepted by the axioms would be determined largely by the ideology. The basis of theories might transform into these axioms. In the words of Peter Lichtenstein; “It is essential, therefore, to point out at the very outset that economic theory has a very subjective, ideological aspect to it.” (Lichtenstein, 1983) Whether a theory is accepted as true, it will pragmatize the ideology. Also it should be remembered that the axioms and base of the theories are provided by ideology. According common approaches an ideology not excluding human behavior assumes that the behavioral inputs are mechanical. It also yields to a system of theories. These theories explain the mechanism of individual choice. The ideology of individualistic is reinforced and justified by the outputs of the system of theories on the system of market. The working principle of the work is explained by these models and theories. The role of science is developing and testing the accuracy of these explanation. Theories represent the relationships among relevant phenomena.

The certainty of this knowledge is more likely to apply supposed knowledge as a foundation of preferences and policy.

Another noteworthy topic shall be policies. While making decisions, the members of societies have to consider on the effects and responsibilities on nature and the another people.

Behavior of individuals shall be steady with operating process of the society while coordinating and integrating all patterns. It is framed by policy that may be implicit or explicit. Policy has a key role for ruling the game. The preference decision process is conducted within the scope of the social policies. "Traditions, customs and culture shape implicit rules. Social institutions might need a rule set. Noncompliance with this set may result in social sanctions. Laws, orders and both private and public regulations form explicit policy. Generally, explicit rules are purposely composed and declared by social institutions" (Reynolds, 2007). In the words of Mark Blaug: "It may be granted that, even in its purest form, economic theory has implications for policy and in that sense makes political propaganda of one kind or another. This element of propaganda is inherent in the subject and, even when a thinker studiously maintains a sense of Olympian detachment, philosophical and political preferences enter at the very beginning of the analysis in the formation of, as Schumpeter would have it, his 'vision': the preanalytical act of selecting certain features of reality for examination." (Blaug, 1985).

The concept of rational behavior defends that there is ought to be a consistency between policies and theory. Preferences between alternatives by the usage of knowledge to get the proper and desired utility might be driven rationally. The concept of rationality is built on that mental set. Choices bring results. According to mechanical view that builds the model for science is in parallel with the concept that there is a causal relationship between events. Modern economics is confirming that world's resources are not infinite. "These resources might be used to satisfy unlimited human wants. The selection of any alternative basically means that other possibilities were not selected. If an institution in society chose to increase the money supply, there will be effects that are increase in monetary prices that include interest rates. An increase

in interest rates might reduce expected returns from endeavors that use borrowed money; also, there would be an effect on the willingness as a decrease in borrowing money to make an investment” (Reynolds,2007).

Chain of causes and effects depends on the theory and observations of previous events. The actual chain of causes and effects may or may not be independent of the expectations that were composed by the theories. Policies and preferences are parallel with the basis of the expectations of particular actions’ particular outcomes. Choices are made based on opportunity cost according to modern economic theory. A comparison that is made between the choice effects and the next best choice’s expected outcomes form the decision. Theories, “knowledge,” intuition, feelings and emotion are the basis of the choices. However, the scientific approach were only covering knowledge and theories as the basis of choices.

“While the economic process is an complementary part of society and the social system, economics has become more specialized. The Greek philosophers and medieval scholars did not see economics as separate from other issues in society while writing and pondering on the economic problems” (Reynolds,2007).

“Economic events and phenomena were began to be distinguished by the Mercantilists in the 1500’s and the Physiocrats in the mid 18th century between other aspects of society. Economics was seen as a part of the natural order of things and a component of society. Adam Smith (1723-1790), studying in the last half of the 18th century was a moral philosopher” (Reynolds,2007). Moral philosophy’s modern name is “social science.” Smith studied on economic relationships (An Inquiry into the Nature and Causes of the Wealth of Nations, 1776) within the scope of a society with a moral system (The Theory of Moral Sentiments, 1759) and a legal system (Lectures on Jurisprudence, 1762-3 and 1766). The term “political economy” appears in the title of David Ricardo’s (1772- 1823) “Principles of Political Economy and Taxation (1817) and later in John Stuart Mill’s (1806-1873) Principles of Political Economy, With Some of Their Applications to Social Philosophy (1848). David Ricardo’s work was a milestone in the development of economics as an analytical discipline” (Reynolds,2007).

During the middle of the 19th century the discipline of economics started to focus on economic behavior gradually. The approaches were becoming aware of the social context of economics. However, this awareness was not considering all aspects of social behavior. “In 1838 Augustin Cournot (1801-1877) issued *Researches into the Mathematical Principles of Wealth*. William Stanley Jevons (1835-1882) in his 1871 *Theory of Political Economy* used the locution political economy. In the same year Karl Menger (1840-1921) applied the title *Principles of Economics* and Leon Walras’ (1834-1919) contribution was titled *Elements of Pure Economics*. Alfred Marshall (1842-1924) provided the foundation for Neoclassical economics with *Principles of Economics* (1890)” (Reynolds, 2007).

“The trend was from philosophy to social analysis to political economics to economics from the Greeks to the end of the 19th century. The changes in the titles of major works reflect that the development of economics was getting separate, distinct discipline. It is a proceeding element that was considered in philosophy as ethics. It brings an apprehension with the material inferences of an allocation process through a market system” (Reynolds, 2007).

“Economic theory and explanations need the use of mathematics to be understood. But it shall be positioned as a tool to understand the relationships. In order to express economic ideas as equations or systems of equations requires simplification and abstraction. Concerning purely economic behavior rather than the relationships of economic behavior to the social system creates difficulties to measure and quantify many social relationships. By the late 1800’s economics had appeared as a separate academic discipline. Moreover, many of the other social sciences such as anthropology, sociology and psychology, emerged and matured as separate disciplines during the Victorian era and the early 1900’s” (Reynolds, 2007).

“One of the mutual perceptions on economists is that they never agree. It can be argumentative, but there is more agreement than is commonly believed. The history of economic thought has the development and evolution of many different schools of thought” (Reynolds, 2007).

2.4. Economics Schools

As one of the first economics schools mercantilism shall be pointed. Eli Heckscher recommended that Mercantilism grew between Middle Ages and laissez-faire. Mercantilist approaches to the economy and society at the beginning of Heckscher's time period would be base of the economic writers' thoughts in mid-eighteenth century (Heckscher, 1954). Mercantilism defends a nation's economy that is regulated by government in order to increase national strength. The mercantilist economic thought lost its sophistication as well as its changing mode of analysis over time and standard interpretations missed many things to fit mercantilism into a "school" pattern in the long scanning of economic doctrine and its development.

“A group of French writers who were led by François Quesnay (1694-1774) and called themselves the economists and also they became known as the Physiocrats. They believed that wealth of nations was derived solely from the value of land agriculture or land development” (Reynolds, 2007). By the European Enlightenment era's effect thinkers began to apply scientific principles not only to the natural world, but also to society. Scholars set out to discover “laws” of human interaction, in order to be able to explain how human society works. In Quesnay's analysis, he distinguished economy in three sectors that are manufacturing, agriculture and idle consuming the food but not contributing. Also Cantillon worked on the economics with this current, and published “Essai” that is the first dissertation on economics. It influenced works of Smith, Say and Bastiat with cause and effect methodology, monetary theory and risk taking.

Adam Smith (1723-1790) started Classical economics approach. Classical economics is widely regarded as the first school of economic thought. Division of Labor and the Invisible Hand concepts were born in this period and made Adam Smith famous. He thought *The Theory of Moral Sentiments* was his most important work. It discussed the tendency of the people to admire wealthy and look down upon the poor. Also Say is another important thinker in that period and he systemized the works of Smith. He is also well known by the Say's Law stating that supply creates its own demand. Ricardo, Malthus and Mill are another famous big thinkers having the

Classical Economics approach. Ricardo became popular with his theory of comparative advantage implying that trading is useful for everyone, even poorer nations. Population growth belongs to Malthus and it suggests that people are poor because they are immoral since they produce more children than they can support. The Greater Synthesizer of Classical Economists is Mill who foresaw the need for many economics concepts such as the involvement of the government to correct inevitable inequalities.

Industrial Revolution changed the world. People moved away from their farms and into the factory. Production was done with the use of machines running on steam power. Inequality became higher and some new approaches that are Neoclassical Economics, Marxism and Marginalism. Neoclassical Economics assumes that people have rational preferences and act independently based on full information. They maximize their utility and firms maximize the profits. This way would bring an equilibrium to the economy. Marginalists tried to prove that Marxism was wrong regarding capitalism because he became popular by demonstrating inevitable exploitation of working class.

Marshall as a mathematician pointed at which markets clear, facilitated by the push and pull mechanism of supply and demand by Marshallian Equilibrium. Walras also formulated marginal theory of value and put forth the general equilibrium scheme that was then expanded by Pareto Optimality. Also Jevons is another big thinker of Neoclassical School defined economics as science of pleasure and pain. Also he suggested that individuals rationally maintain a maximization of their self interest.

Marx and Engels suggested that capitalism was characterized by a few problematic things. The means of production is owned by a lucky few and they forced the people to sell their labor.

John Maynard Keynes' (1883-1946) works resulted in the Keynesian school. This school emerged during the great depression. After stock prices started falling in the US, the market crashed globally on Black Tuesday. The Great Depression had devastating effects in countries rich and poor. Personal income, tax revenue, profits

and prices dropped and international trade decreased by more than 50% and unemployment in the US rose to 25%. Keynes published General Theory in that period and set the Keynesian Revolution. His work changed the perspective for the relationship between government and economy. Keynes thought neoclassical economics only described a small part of the situations that may arise. In his General Theory, he discussed that full employment does not occur naturally. It is either a coincidence or a deliberate government choice.

The 1970s saw a great period of stagflation(unemployment plus inflation) that Keynesian Theory could not explain. That's because Keynesian theory had argued inflation caused by tight labor markets and that mass unemployment should be accompanied by price deflation, not inflation. This made it easy for the Chicago school to take over. By addressing Keynesian macro level points but now applying the same theoretical principles with Neoclassical economists a new approach was emerged that was Monetarism. Friedman is the father of Monetarism and his work Capitalism and Freedom is all about voluntary exchange in a capitalist system It is divided into New Classical and New Keynesians. The difference is that New Keynesians simply believe that the equilibrium to be adjusted in a longer time than New Classics think.

New Classical approach include Chicago School and New Classics are advocates of Real Business Cycle. They argue that the agent cannot make the same mistake and give rise to another wave of rational expectations. They bring back the notion of continuous market clearing and deny the possibility of unemployment. We mistakes over and over again. In the Chicago School approach for example Friedman argued that people do not make the same mistakes over and over again. But Lucas argued that people undershoot, overshoot and end up being correct on average.

New Keynesian approach emerged after the end of Bretton Woods. Bretton Woods was formally ratified by the Jamaica Accords in 1976. By the early 1980s, all industrialized nations were using floating currencies. New Keynesians recognize that certain real world imperfections and stickiness may delay adjustments and thus may require broad government policy response but not based on Keynesian theory or principles. Mankiw, Taylor, Krugman and Stiglitz are the big thinkers of New

Keynesian approach. Mankiw built on Keynes' idea of sticky prices. In this work on menu costs, he shows that it takes time for restaurants to adjust their prices. As such, disequilibrium can be expected. Mankiw known by many for his blog, and has been advisor to many republican politicians. When the Hicks' ISLM model turned out to have flaws, the LM curve was replaced with Taylor's Taylor-Rule. Later, this rule was adapted and formed the basis for the dominant perspective today: the New Monetary Consensus.

Many know Krugman from his column in the NY Times. His work on economies of scale provided greater insight on trade and earned him the Nobel prize in 2008. Krugman has since written a lot for general audiences. Another thinker Stiglitz is a professor at Columbia University in New York. His latest book titled "The Great Divide: Unequal Societies and What We Can Do About Them" deals with the increasing levels of economic inequality.

Reaganomics, alongside Thatcherism tries to promote low inflation, the small state, and free markets through tight control of the money supply, privatization and constraints on the labor movement. Both formed a key part of the worldwide economic liberal movement. These approaches were brought by Reagan and Thatcher. Then, it formed the application of psychology to economics. Behavioralists run experiments to find out how people really act and make decisions. This method is different from the neoclassical, assumptions-based approach. Big thinkers of this approach are Kahnemann, Thaler and Rabin. Kahnemann established a cognitive basis for common human errors that arise from heuristics and biases. He developed prospect theory describing people's choices between different risk-options, when the probabilities of different outcomes are unknown. The other big thinker Thaler said "Conventional economics assumes that people are highly-rational-super rational and unemotional. They can calculate like a computer and have no self-control problems. Also Rabin's topics of interest include errors in statistical reasoning and the evolution of beliefs, effects of choice context on exhibited preferences, reference-dependent preferences and errors people make in inference in market and learning settings.

“Mainstream economics” is describing the body of theory that was represented by Neoclassical and Classical economics. There are other schools that are also significant. As seen in the above the schools might overlap on many issues.

“There are two noteworthy ways of classifying human nature that influence perspectives of different economic schools of thought. The first one is viewing humans as basically good or evil. If humans are basically good, social institutions would be enough to limit behavior. William Godwin (1756-1836) believed that humans were good and social institutions encouraged them to be bad. As an alternative, if humans are basically bad, it is necessary to constrain their behavior. The second, is that human nature is fixed by nature or is the outcome of the surroundings. The history of economic thought dares to identify the schools and to determine the factor for creation, evolution and ultimate success or failure an intellectual construct” (Reynolds, 2007).

In any society, the economic process is evolved by a complex matrix of individuals, organizations, rules and relationships. This is the output of perceptions, values, beliefs, knowledge and technology. The economic process is related with society and is embedded in all aspects of the culture. An awareness of the social, historical and philosophical context is needed for an apprehension of general concept. Training individual economists might be significant to increase the know-how to apply economic tools. Without an understanding the benefit and cost analysis of the context this training is still possible. However, the difference between training and education shall not be skipped.

The economic processes function’s alternative perspectives and explanations are studied by the history of economic thought. Identifying the agents that foster different views on the economy is the most vital aspect of this thought. It is also important to follow up the evolution of the tools used for analysis and understand how the different perspectives and conditions encourage the use of different tools. In the own words of Mark Blaug “The task of the historian of economic thought is to show how definite preconceptions lead to definite kinds of analysis and then to ask whether the analysis stands up when it is freed from its ideological foundation. It is doubtful whether Ricardo would have developed his theory of international trade without a

strong animus against the landed classes; but this theory survives the removal of his prejudices.” (Blaug, 1985)

“Different approaches to economics shall be understood for the differences and how they have evolved over time. Changes in the historical and philosophical context encouraged more critical analysis of current economic tools and their applications with three opportunities. First, a comprehensive understanding of the current state of economic analysis is provided. Second, an alternative perspectives is suggested to extend, improve or alter the tools and analysis. Third, a degree of humility and respect for others is encouraged” (Reynolds, 2007).

Consequently, as a summary of the economic thoughts and the motivation to search the economic schools, a timeline is prepared and submitted in the following page.

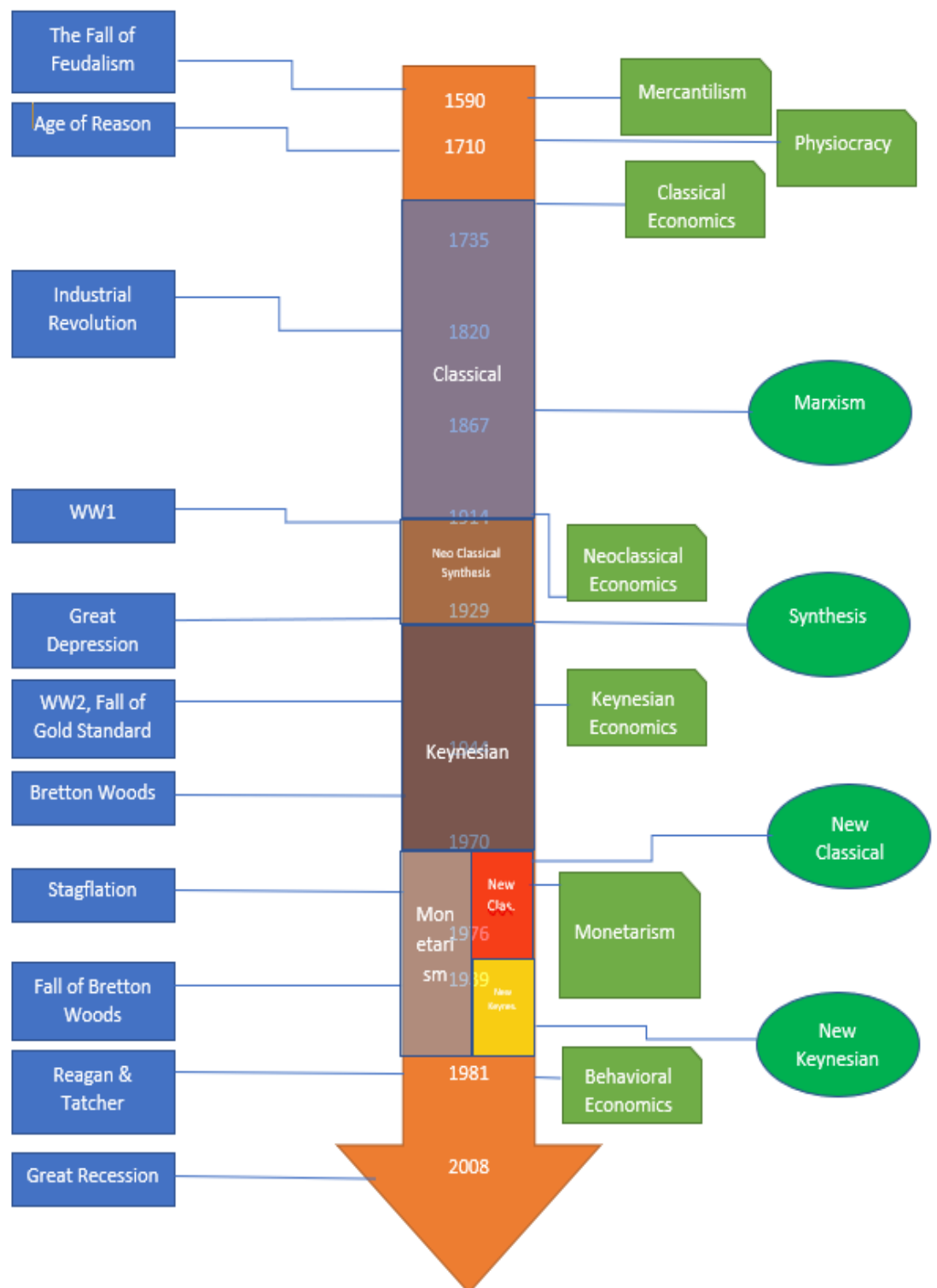


Figure 2. The History of Economics

CHAPTER THREE

BEHAVIORAL ECONOMICS, BEHAVIORAL FINANCE AND THE RELATIONSHIP WITH THE FINANCIAL CRISIS

3.1. The Effects of Ideology, Theory, Policy and Outcomes

“Ideology, theory, policy and outcomes have multidirectional and multifaceted relationship. Therefore each concept influences and is influenced by each others” (Reynolds, 2007). A flow diagram might guide this relationship in an ideal world.

“Ideology provides the axioms and base of the theories. The ideology is influenced by peer groups, family, religion, social position, education, training, ethnicity and gender etc. The values, principles, attitudes, beliefs and perspectives generate the ideology at the social level. At this level religion, education, the legal system, philosophy, and all the other components of society related to ideology. The theories and ideology must be consistent because ideology has a direct relationship with stories and the theories. Whether a theory is based on ideology, this can be defined as expressions and explanations on the nature of things and their relationships” (Reynolds, 2007).

In order to make an interpretation regarding the structure that is provided by theories. This is an output of the observation of the facts. As an outcome of this interpret, knowledge occurs. This “knowledge” provides a foundation for choices and policies. Each of them have results. These results are assessed to compare with expected outcomes of the theory. If the results are not steady with these, then it shall be reconsidered on the theory and the policies.

“Evaluation of results shall be compared with the values, attitudes and beliefs expressed by the prevailing ideology” (Reynolds, 2007). If there is an inconsistency with the expected outcomes theory, the theories might be modified. Also the case for ideology would be same. The change in theories are greater ease and speed. But ideology changes slower. An alteration in ideology might be reflection to an

alteration in theories. As an example of this situation, Copernican Revolution be given as an example that is stated in the story below:

“The classic example of theory changing faster than ideology is the story of the Copernican Revolution. The Copernican Revolution began as a change in the theories that explained the observed orbits of planets. The theory evolved over time through the work of Nicholas Copernicus (1473-1543), Tycho Brahe (1546-1601), Galileo Galilei (1564-1642) and Johann Kepler (1571-1630). The Copernican theories were published in 1543. The heliocentric theory of the system of planets and their relation to the sun were in conflict with ideology that was primarily an expression of the Church. The observations and predictions of the Copernican model were more consistent with the new theories than the Ptolemaic system. The theory changed quite rapidly; in 1543 Copernicus’ system was published, in 1609 Kepler published New Astronomy, and in December of 1610 Galileo verified that Venus orbits the sun, thus showing that the Copernican system was a more accurate theory (explanation) than the Ptolemaic system. By 1611, the Jesuits at Collegio Romano had verified Galileo’s astronomical observations and honoured him. The ideology related to the theories of planetary movement changed more slowly. It is also in 1611 that the Inquisition decided to investigate Galileo. In 1613 Galileo responded by writing a letter on the relationship of his findings to the scripture, and by 1615 Galileo went to Rome to defend himself. In 1633 he was questioned by the Inquisition, detained, and threatened with torture and imprisonment. Ultimately he was placed under house arrest and died in 1642, almost 100 years after Copernicus’ publication. The basic ideology had resisted change in the face of empirical evidence. Overtime however, the ideology was modified to produce a consistency with the theory and observed outcomes. The evolution of economic thought is also a story of ideology, theory, policies and outcomes. Neoclassical microeconomic theory of the late 19th and early 20th centuries focused on explanations of a self equilibrating market economies that always returned to full employment equilibrium. The policies it fostered were free market polices. Yet the outcomes of the great depression (1929-1941) were inconsistent with the theories and the ideological values that were held. The result in this case was a shift in the

theories; Keynesian economic theory replaced, at least for a time, the neoclassical models” (Reynolds, 2007).

3.2. Fields in Economics

Currently, as discipline economics consisting of various topics. “General Economics and Teaching; Methodology and History of Economic Thought; Mathematical and Qualitative Methods; Microeconomics; Macroeconomics and Monetary Economics; International Economics; Financial Economics; Public Economics; Health, Education and Welfare; Labor and Demographic Economics; Law and Economics; Industrial Organization; Business Economics; Economic History; Economic Development, Technological Change, and Growth; Economic Systems; Agricultural and Natural Resource Economics; Urban, Rural, and Regional Economics; and Other Topics can be the majors” (Reynolds, 2007).

“Each of these categories is can be divided sub-categories. For instance, Urban, Rural, and Regional Economics is divided into General, General Spatial Economics, Household Analysis, Production Analysis and Firm Location, Transportation Systems, and Regional Government Analysis.” (Reynolds, 2007).

Work can be divided into 3 categories that are descriptive economics, analytical economics and applied economics (Cochrane, quoted Reynolds, 2007).

In descriptive economics, relevant facts about particular topics shall be collected. The descriptions are about special components of the foundations or descriptive statistical methods. “William Petty (1623-1687) explained economic realities by Political Arithmetic (completed about 1676; see Spiegel, p 124) that estimates national wealth and national income” (Reynolds, 2007). It is unthinkable to categorize and measure all fact. As a result, making choices becomes necessary like choosing factors to define would indicate the terms of the tales.

Analytical Economics shall be defined by another way. In economic theory, a system works and important features of such a system shall be examined in a simplified explanation (Cochrane, quoted Reynolds, 2007). In accordance with this analytical economics is willing to define conjectural relationships among the factors. Therefore,

it is related with the concept of “cause and effect.” A key feature of analytical economics is built by models and theory. Therefore, it is most frequently emitted as equations. Heuristic purposes are applied by graphical representations of these equations. “Applied Economics can be defined as an application of descriptive and analytical economics. The process of identifying problems and selecting among alternative solutions would be applied. Analytical economics shall be used by applied economics to select among alternatives. It is also used for intention of policies. The components of the monetary system and the general relationships among these components shall be assumed as known. Following this knowledge, it can be used to suggest or prescribe policies. The questions on money supply, interest rate, the level of employment (or unemployment), the level of prices and other components can be described and the relationships can be clarified. Therefore, altering one variable to achieve desired changes in another can be possible” (Reynolds, 2007).

“Whether the economics focus on the relationships and behavioral patterns of individuals, firms, or industries, it shall be defined as microeconomics. Modern, orthodox microeconomics has tendency to focus on exchange relationships in a market environment. These exchange relationships are simplified and mainly have relevance with monetary costs and benefits. Especially in monetary terms, marginal costs and marginal benefits are measured. Each agent attempts to optimize the goals. Consumers are defined as utility maximizers; firms are profit or sales or market share maximizers. This mechanism is coordinating individual choices and behavior. Also it is called as methodological individualism” (Reynolds, 2007). Price and quantity are the key factor of the relationship of the mutual effects of the agents in markets. Also three steps represent the general structure of microeconomic analysis. These are identifying alternatives, developing a criterion for the assessment of each feasible alternative and the objective.

Towards the end of 1800’s, microeconomics originated as a discrete branch of economics. Alfred Marshall’s *Principles of Economics* (1890) can be defined as the foundation of microeconomics with the approach as the combination and extended part of the previous thoughts. Neoclassical microeconomics are global. Therefore it is the base of microeconomics. These are easy to apply for any culture.

“On the one hand, there is a dominant ideology in the methodology of microeconomics. Modern microeconomics has a high propensity to support the ideology of market systems. The first developers of microeconomics were Greek philosophers. Xenophon (430-355 BCE) who was student of Socrates, expressed opinions regarding the division of labour and the allocation of resources. Plato (427-347 BCE), another student of Socrates developed the concept of expertise of justice and the foundation for the existence of the city-state. He stated that justice was each person doing that for which were appropriate” (Reynolds, 2007).

“Aristotle overlooked oikonomiks as natural and necessary. During the period of the Roman Empire and middle ages, the economics set to the justice, exchange, and other microeconomic topics. During the Renaissance (approximately 1350 or 1450 to 1700), economics discussed more macroeconomics. Then during the period of the Mercantilists (approximately 1500-1776) an interest occurred for the development of nations and the growth of national economies.” (Reynolds, 2007).

Macroeconomic issues are also emphasized by the approaches of the classical economics. Macroeconomics focuses on the entire economy. The economy of the nations and the world is indicated by initial care in macroeconomics. Within the scope of macroeconomics, the descriptive economics is evaluating National income accounts. Employment, price levels and interest rates are key issues. Furthermore, economic stability and economic growth are also significant topics in macroeconomics.

“To develop models to explain and/or to make predictions of the forces that affect the aggregate measures of economic activity, analytical macroeconomics is applied. The outcomes and models developed in macroeconomic theory are used to design and defend policy formulas. Due to the close relationship of macroeconomics to policy choices, comparing ideologies bring different solutions to the troubles. Similar to microeconomics, the infrastructure of macroeconomics is based on the objectives. As distinct from microeconomics, in the case of macroeconomics, the objective may be an economic variable that is level of employment, inflation, growth,

etc. or the policy that theory looks for supporting or defending free markets, intervention, planning, etc” (Reynolds, 2007).

“In order to achieve particular levels or variations in employment, incomes, income distribution, interest rates or price levels, macroeconomic policy may be used” (Reynolds, 2007). On the other hand, in order to defend or attack ideological perspectives, macroeconomics may be used also. “While the Greeks’ experience was with city-states, Xenophon (430-355 BCE) the revenue of Athens was the key topic. But, it was the Mercantilists, Physiocrats and Classical economists who prognosticated on components of the wealth of particular societies or nations. They were trying to focus on macroeconomic relationships” (Reynolds, 2007).

“Microeconomics was contemplated principally as it involved to macroeconomic goals. Macroeconomics became less important during the period between 1850 to 1929. The discovery of Neoclassical economists was that equilibrium and believed that markets might tend to provide full employment equilibrium. The macroeconomy can be described as a self-equilibrating mechanism and it optimally allocates resources. Classical economists defined recessions, panic, depressions and unemployment, as temporary aberrations” (Reynolds, 2007). A renewed interest occurred in macroeconomic theory and policy by the Great Depression that began in 1929. Beginning of the “Keynesian” flow is based on John Maynard Keynes’ (1883-1946) General Theory of Employment, Interest and Money in 1936. Macroeconomic framework is reconsidered by Keynesian approach reconsidered.

Recently, both micro and macro theories have been contained. Ordinarily microeconomic theory or macroeconomic theory can be focused by an economist. Therefore, some researches have been conducted on the microeconomic foundations of macroeconomics and others are on the macroeconomic foundations of microeconomics. The integration of the behavioral and cognitive sciences is also covers both theories and foundations.

3.3. Behavioral Economics and Behavioral Finance

The need is occurred to reconsider how financial systems are regulated and the interprets of mainstream economical approaches as a result of the global financial crisis. “Because a systemic failure of the economics profession became clear. More than three decades, economists have ordinarily developed and relied on models that neglect key factors including heterogeneity of decision rules, overhauls of forecasting strategies, and modifications in the social context. It drives results in asset and other markets. These models fail to connect with the actual evolution of the real-world factors. Furthermore, the current academic journal has largely crowded out research on the natural causes of financial crises. There has also been little quest of early indicators of system crisis. Also possible ways to estop this disease from developing were also referred” (Colander, 2009). Insomuch that browsing through the academic macroeconomics and finance literature, absence from economic models would cause a systemic crisis” . In other words, the failure is an otherworldly event that appears with the absence of the economic models. This interpret and approach create an untouchable reality for the models. “Most models, by design, offer no prompt handle on how to consider on or deal with this recurring phenomenon” (Colander, 2009).

The long academic legacy of earlier economists’ study of crisis phenomena can be found in the work of Walter Bagehot (1873), Axel Leijonhuvfud (2000), Charles Kindleberger (1989), and Hyman Minsky (1986), to name a few major examples. This tradition, however, has been disregarded. The most recent literature provided blindness against the upcoming storm.

According to Systemic Failure “ In their analysis of the risk management implications of CDOs, Krahnen (2005) and Krahnen and Wilde (2006) mention the possibility of an increase of ‘systemic risk.’ But, they conclude that this aspect should not be the concern of the banks engaged in the CDO market, because it is the governments’ responsibility to provide costless insurance against a system-wide crash. We do not share this view. On the more theoretical side, a recent and prominent strand of literature essentially argues that consumers and investors are too risk averse because of their memory of the (improbable) event of the Great Depression (e.g., Cogley and

Sargent, 2008). Much of the motivation for economics as an academic discipline stems from the desire to explain phenomena like unemployment, boom and bust cycles, and financial crises, but dominant theoretical models exclude many of the aspects of the economy that will likely lead to a crisis. Confining theoretical models to ‘normal’ times without consideration of such defects might seem contradictory to the focus that the average taxpayer would expect of the scientists on his payroll.”

In parallel with the blindness opinion, ‘allocation of scarce resources’ definition would be short-sighted and misleading. The study of optimal decisions in well-specified choice problems are also under Economics. “Natural dynamics of economic systems are missed in many researches and this instability participates to its complex dynamics. Without a sufficient understanding of these dynamics, main factors that influence the economic sphere of our societies would be not be caught. This insufficient definition of economics often causes to be disregarded questions on the coordination of actors and the possibility of coordination failures by researchers. Truly, analysis of these issues might need a different type of mathematics than that which is generally used now by many important economic models” (Colander, 2009).

“Nevertheless, a little warning is given by financial economists to the public regarding the fragility of their models. In fact, they saw individuals and businesses construct a financial system based on their work. There are possible (Indeed, few researchers explored the consequences of a breakdown of their assumptions, even though this was rather likely) explanations for this collapse to warn the public. One of these explanations is a lack of understanding explanation. So, the researchers might not know the fact that the models were fragile” (Colander, 2009). Another explanation is that they did not think that their job to alert the public.

A misunderstanding of the role of the economist and an ethical fault would cause the explanations above. Normally, all scientists including all economists have a moral accountability for checking the models’ capacity that was built by them. Moreover, they need to check if there any improper usage of the researches. Currently, there are not similar approach by professional economic scientists. Because while

financial engineers are leading it becomes absurd. Because many brilliant scientists did not get the capacity of the models. (Colander, 2009)

3.3.1. Models

“The allocation of scarce resources definition is predominantly of the Robinson Crusoe (representative agent) type that was applied by the economic textbook models. Financial market models are acquired by letting Robinson plan and conduct his financial affairs as an extra to his well-thought-out utility maximization over his finite or infinite sources. It is expected lifespan taking into account with right probabilities all potential future incident” (Colander, 2009).

On one hand, mathematical portfolio and risk management models have been the academic foundation of the enormous increase of trading volume and diversification of instruments in financial markets. New derivative products obtain market penetration only if a specific industry standard has been built for pricing and risk management of these products. Usually, pricing principles are extracted from a set of thoughts on an ‘suitable’ process for the underlying asset including the primary assets on which options or forwards are written together with an equilibrium standard such as arbitrage-free prices. With that mostly comes advice for hedging the native risk of a derivative position by balancing it with other assets that deactivate the risk pose. The most substantial example is absolutely the progress of a theory of option pricing by Black and Scholes that eventually (in the 1980s) could even be implemented on pocket calculators. “At the same time with Black-Scholes option pricing, the same principles led to the widespread introduction of new plans under the heading of portfolio insurance and dynamic hedging that just tried to implement a theoretically risk-free portfolio composed of both assets and options and keep it risk-free by close rebalancing after changes of its input data (e.g., asset prices). For programmed products for credit risk, the basic module of derivative pricing is not applicable so that one has to depend on a kind of convenient evaluation of these contracts on the base of the former data” (Colander, 2009).

The exciting growth of the markets for concerted products that are most prominently collateralized debt obligations and credit default swaps - CDOs and CDSs was made feasible by development of such simulation-based pricing tools and the appropriation of an industry-standard for these under the guidance of rating agencies. “Barry Eichengreen (2008) says “development of mathematical methods designed to quantify and hedge risk encouraged commercial banks, investment banks and hedge funds to use more leverage” as if the very use of the mathematical methods declined the underlying risk. It is also added by him that the models were forecasted on data from periods of low volatility and thus could not struggle with the arrival of major changes. Furthermore, it is the discussion that such major changes are particular to the economy and cannot be easily rejected” (Colander, 2009).

“The *ceteris paribus* assumption becomes unrealistic in the modern world. A good sampling is the U.S. stock market crash of October 1987. Triggered by a small decrease of prices, automated hedging strategies engendered an landslide of sell orders that out of the blue led to a fall in U.S. stock indices of approximately 20 percent within one day. With the massive sales to rebalance their portfolios (along the lines of Black and Scholes), the related actors could not notice their attempted crucial adjustments, but rather beared major losses from the following large macro effect” (Colander, 2009).

There is also a quite different aspect of the danger that is named as control illusion. “The mathematical rigor and numerical precision of risk management and asset pricing tools tend to obscure the weaknesses of models and assumptions to those who have not developed them and do not know the potential debility of the assumptions and it is genuinely this that Eichengreen says. Naturally, models are only approximations to the real world dynamics and partly built upon quite epic assumptions (most notoriously: Normality of asset price changes which can be rejected at a confidence level of 99. 9999.... Anyone who has attended a course in first-year statistics can do this within minutes)” (Colander, 2009).

“Potential weaknesses of risk management models shall be considered by market participants and regulators and they have to become more sensitive towards

these topics. Since, without the knowledge of a ‘true’ model, robustness should be a key concern. By considering on more than a single model, model uncertainty is ought to be taken into account. For instance, one could rely on probabilistic models that cover a whole range of specific predictions (Föllmer, 2008). The theory of robust control supplies a toolbox of techniques that could be applied for this goal, and it is an approach that should be considered” (Colander, 2009).

3.3.2. Unrealistic Model Assumptions and Unrealistic Outcomes

“Rational expectations and a representative agent are the main assumptions of many economic models. Rational expectations teaches an economist to specify individuals’ expectations to be fully coherent with the structure of his own model. This concept can be considered as merely a way to close a model. A behavioral interpretation of rational expectations would purpose that individuals and the economist have a complete understanding of the economic mechanisms ruling the world” (Colander, 2009). According to the Discussion Papers on Financial Crisis and the Systemic Failure; “Rational expectations models do not attempt to formalize individuals’ actual expectations: specifications are not based empirical observation of the expectations formation process of human actors. Thus, even when applied economics research or psychology provide insights about how individuals actually form expectations, they cannot be used within RE models. Leaving no place for imperfect knowledge and adaptive adjustments, rational expectations models are typically found to have dynamics that are not smooth enough to fit economic data well.”(Colander and others, 2009:7)

“In psychology and behavioral and experimental economics there is human. The head stones of many models in finance and macroeconomics are rather provided despite all the conflicting evidence discovered in empirical research. It shows that human subjects act in a way that carries no similarity to the rational expectations module and also have troubles discovering ‘rational expectations equilibria’ in repeated experimental settings. Rather, agents display diversified forms of bounded rationality using heuristic decision rules and displaying immobility in their rebound to

new information. They have also been shown in financial markets to be strongly influenced by many reactions like emotional and hormonal” (Colander, 2009).

“There is also another considerable issue named as external consistency. Economic modeling has to be comparable with insights from other branches of science on human behavior. It is highly suspicious to stick to a specific view of humans in economic settings that is inconsistent with evidence” (Colander, 2009).

There is an outlook named as ‘representative agent’ in various actual models. Their suggestion is that modelers confirm the most extreme organizations of conceptual reductionism (Lux and Westerhoff, 2009)

“The macro events that are understood by microeconomic regularities, economists have to reconsider on the concept of micro foundations of macroeconomic models. Whereby economic activity is of an interactive nature, economists’ micro foundations have to allow for the interactions of economic agents. Because of the interaction dependance on differences in information, motives, knowledge and capabilities, this alludes to heterogeneity of agents. According to the example at the Discussion Paper on the Financial Crisis and the Systemic Failure of Academic Economics “Only a sufficiently rich structure of connections between firms, households and a dispersed banking sector will allow us to get a grasp on systemic risk, domino effects in the financial sector, and their repercussions on consumption and investment. The dominance of the extreme form of conceptual reductionism of the representative agent has prevented economists from even attempting to model such all important phenomena. It is the flawed methodology that is the ultimate reason for the lack of applicability of the standard macro framework to current events” (Colander, 2009).

Once one acknowledges the importance of empirically based behavioral micro foundations and the heterogeneity of actors, a rich spectrum of new models becomes available. The dynamic co-evolution of expectations and economic activity would allow one to study out-of-equilibrium dynamics and adaptive adjustments. Such dynamics could reveal the possibility of multiplicity and evolution of equilibria (e.g. with high or low employment) depending on agents’ expectations or even on the

propagation of positive or negative ‘moods’ among the population. This would capture the psychological component of the business cycle which – though prominent in many policy-oriented discussions – is never taken into consideration in contemporary macroeconomic models”.(Colander and others,2009:9)

“It is noteworthy that understanding the formation of such low-level equilibria might be much more valuable in coping with major ‘efficiency losses’ by mass unemployment than the pursuit of small ‘inefficiencies’ due to societal decisions on norms such as shop opening times. Models with the agents might also open the door to the incorporation of results from other fields: network theory has been mentioned as a clear example (for models of networks in finance see Allen and Babus, 2008). ‘Self-organized criticality’ theory is another area that looks like having some appeal for explaining boom-and-bust cycles (cf. Scheinkman and Woodford, 1992). Incorporating heterogeneous agents with imperfect knowledge would also bring a preferable framework for the analysis of the use and emission of information through market operations and more direct links of communication. If one accepts that the dispersed economic activity of many economic agents could be described by statistical laws, one would even take stock of ways from statistical physics to model dynamic economic systems (cf. Aoki and Yoshikawa, 2007; Lux, 2009, for examples)” (Colander and others,2009).

3.3.3. Robustness and Data-Driven Empirical Research

Currently in dynamic general equilibrium models, there is not only have weak micro foundations, their empirical performance is ot close to the satisfactory (Juselius and Franchi, 2007). Actually, the relevant thread of empirical economics has more and more avoided testing their models and has instead turned to tuning without prominent consideration of goodness-of-fit.

In place of beginning to a data driven model with an ad-hoc specification and questionable ceteris paribus assumptions, the key features of the data is ought to be explored via data-analytical tools and specification tests. David Hendry provides a well-established experimental methodology for such research data analysis (Hendry,

1995, 2009) as well as a general theory for model selection (Hendry and Krolzig, 2005); clustering practices such as projection pursuit (e.g. Friedman, 1987) would provide other options for the diagnosis of key relationships and the decrease of complexity on the way from empirical measurement to academic models. Cointegrated VAR models would provide a path towards diagnosis of strong structures within a set of data (Juselius, 2006), for instance, the forces that are component of equilibria that are pushing forces, which give rise to stochastic trends, and forces that right deflections from equilibrium like pulling forces, which give rise to long-run relations. Interpreted in this way, the ‘general-to-specific’ empirical approach has a good chance of identifying a multivariate, path-dependent data-generating process and relevant dynamic macroeconomic theories. Unlike approximations in which data are suppressed by prior restrictions, the Cointegrated VAR model provides the data with a comprehensive context in which to speak freely (Hoover et al., 2008).

Economists shall not give policy recommendations on the base of models with a weak empirical grounding and extent possible, make clear to the public how strong the support of the data is for their models and the outcomes drawn from them.

3.3.4. A Research Agenda to Cope with Financial Fragility

“The financial fragility concept implies that a given system might be more or less responsive to produce crises. It seems clear that financial innovations caused the system to become more fragile. Obviously, the existing linkages within the worldwide, highly connected financial markets have yielded the overflows from the U.S. subprime problem to other layers of the financial system. Many financial innovations caused to create links between formerly unconnected players. On the whole, the degree of connectivity of the system has presumably enhanced tremendously over the last decades. As is well known from network theory in natural sciences, a more highly connected system would be more efficient in coping with certain tasks like distributing risk components, but will often also be more inclined to shocks and the systemic failures. The network vulnerability’s systematic analysis has been undertaken in the computer science and operations exploratives” (Colander, 2009).

According to the Discussion Paper with the topic ‘The Financial Crisis and the Systemic Failure of Academic Economics’(2009) “Such aspects have, however, been largely absent from discussions in financial economics. The introduction of new derivatives was rather seen through the lens of general equilibrium models: more contingent claims help to achieve higher efficiency. Unfortunately, the claimed efficiency gains through derivatives are merely a theoretical implication of a highly stylized model and, therefore, have to count as a hypothesis. Since there is hardly any supporting empirical evidence (or even analysis of this question), the claimed real-world efficiency gains from derivatives are not justified by true science. While the economic argument in favor of ever new derivatives is more one of persuasion rather than evidence, important negative effects have been neglected. The idea that the system was made less risky with the development of more derivatives led to financial actors taking positions with extreme degrees of leverage and the danger of this has not been emphasized enough.” (Colander and others,2009:14)

“One neglected area is the degree of linkage and its interaction with the stability of the system” (Colander, 2009). In accordance with the belief of Department of Economics at University of Copenhagen on financial system; “We believe that it will be necessary for supervisory authorities to develop a perspective on the network aspects of the financial system, collect appropriate data, define measures of connectivity and perform macro stress testing at the system level. In this way, new measures of financial fragility would be obtained. This would also require a new area of accompanying academic research that looks at agent-based models of the financial system, performs scenario analyses and develops aggregate risk measures. Network theory and the theory of self-organized criticality of highly connected systems would be appropriate starting points.

The danger of systemic risk means that regulation has to be extended from individualistic (regulation of single institutions which of course, is still crucial) to system wide regulation. In the sort of system which is prone to systemic crisis, regulation also has to have a systemic perspective. Academic researchers and supervisory authorities thus have to look into connections within the financial sector and to investigate the repercussions of problems within one institute on other parts of

the system (even across national borders). Certainly, before deciding about the bail-out of a large bank, this implies an understanding of the network. One should know whether its bankruptcy would lead to widespread domino effects or whether contagion would be limited. It seems to us that what regulators provide currently is far from a reliable assessment of such after effects.

Such analysis has to be supported by more traditional approaches: Leverage of financial institutions rose to unprecedented levels prior to the crisis, partly by evading Basle II regulations through special investment vehicles (SIVs). The hedge fund market is still entirely unregulated. The interplay between leverage, connectivity and system risk needs to be investigated at the aggregate level. It is highly likely, that extreme leverage levels of interconnected institutions will be found to impose unacceptable social risk on the public. Prudent capital requirements would be necessary and would require a solid scientific investigation of the above aspects rather than a pre-analytic laissez-faire attitude.

We also have to re-investigate the informational role of financial prices and financial contracts. While trading in stock markets is usually interpreted as at least in part transmitting information, this information transmission seems to have broken down in the case of structured financial products. It seems that securitization has rather led to a loss of information by anonymous intermediation (often multiple) between borrowers and lenders. In this way, the informational component has been outsourced to rating agencies and typically, the buyer of CDO tranches would not have spent any effort himself on information acquisition concerning his far away counterparts. However, this centralized information processing instead of the dispersed one in traditional credit relationships might lead to a severe loss of information.”(Colander and others, 2009:13)

“Standard loan default models failed markedly in recent years (Rajan et al, 2008). It has to be noted that the price system itself can aggravate the difficulties in the financial market (see Hellwig, 2008). One of the logics for the pungent fall in the asset valuations of major banks was not only the loss on the assets on which their derivatives were based, but also the common response of the markets to these assets.

Since markets became aware of the risk involved, whole assets were written down and it was in this aspect that a small industry of the market corrupt the rest. Wide parts of the asset holdings of major banks suddenly lost much of their value. Therefore, the price system itself would be destabilizing as prospects change” (Colander, 2009).

On the macroeconomic aspect, it would be charming to develop early warning plans indicating the creation of bubbles. Compounds of indicators with time series techniques would be beneficial in specifying deviations of financial or other prices from their long-run averages. Signal of constructional change that is particularly towards non-stationary trajectories might be a sign of changes of the behavior of market subscriber of a bubble-type nature.

3.4. Bubbles

“According to many discussions, the main factor of the financial crisis is the idea that there was a real estate “bubble”: that, by 2006, due to a conflict of some kind, or to irrational thinking, real estate prices had been pushed up to unsustainably superior levels. According to a general acceptance, the bubble burst, triggering widespread defaults on subprime loans, dragging down the value of banks’ subprime-linked holdings, and setting off a run on the banking system.

The term “bubble” is widely used. However it is rarely defined, because it is hard to define. A working description for the purposes is: a bubble is an section in which irrational thinking or a friction induces the price of an asset to rise to a level that is higher than it would be in the lack of the friction or the irrationality; and the price level is that a rational observer, equipped with all available information, might predict a low long-term return on the asset.

A bubble’s role in recent events might be defined as critical role. Not surprisingly, led many scientists to call for more research on why bubbles form” (Barberis, 2011).

In the own words of Barberis(2011); “We lack theories of bubble formation, but rather that we have too many such theories. As a result, rather than rushing to

develop entirely new theories of bubbles, we should perhaps first test and refine the theories we already have.

It may be useful to list some of the theories of asset market overvaluation that already exist in the behavioral finance literature. The theories can be categorized based on whether they focus on investor beliefs or on investor preferences”.(Barberis, 2011:3)

“The current crisis might be described as an example of the final stage of a well-known boom-and-bust model that has been repeated so many times in the course of economic history. There are some aspects making this crisis different from its predecessors: Initially, the preceding boom had its origin in the development of new financial products that opened up new investment possibilities. I is supposed to be touched that most previous crises were the consequence of overinvestment in new physical investment possibilities. Second, the global dimension of the current crisis is owing to the enhanced connectivity of our already highly interconnected financial system. Both apperances have been largely ignored by academic economics. Research on the origin of uncertainty, overinvestment and subsequent slumps has been considered as an outlandish side track from the academic research agenda and the curriculum of most economics programs. It was incompatible with the antecedent of the rational representative agent. This paradigm also made economics sightless with respect to the role of interactions and connections between actors like in the changes in the network structure of the financial industry brought regarding by deregulation and introduction of new structured products. Indeed, much of the work on infection and herding behavior (see Banerjee, 1992, and Chamley, 2002) which is closely connected to the network structure of the economy has not been incorporated into macroeconomic analysis” (Colander, 2009).

The field of behavioral finance researches are the result of less than fully rational behavior on the part of some agents in the economy. According to Barberis(2011) “For guidance on how people leave from full rationality, it advocates a close reading of research in psychology. The field has focused, with some success,

on three areas of application: the pricing of financial assets; the portfolio choice and trading decisions of investors; and the behavior of firm managers.” (Barberis, 2011)

Can behavioral finance propose a useful perspective on the financial crisis of 2008? Especially, can ideas from psychology help us to make sense of the crisis? “The process of gathering and analyzing behavioral data from the crisis period is impossible. Researchers may eventually finalized that psychological factors were significant during the crisis. However, they might also complete that they were not of first-order significance with the beneficial for understanding the crisis” (Barberis, 2011).

“According to the general belief, there are three main theories. The first discusses that a bubble forms when investors disagree with an asset’s future prospects and there are short-sale constraints (Miller, 1977; Harrison and Kreps, 1978; Scheinkman and Xiong, 2003; Hong and Stein, 2007). The logic is straightforward. Suppose that some investors are very bullish on an asset’s probability, while others are very bearish. In the availability of short-sale constraints, the price of the asset will only reflect the views of the bullish: bearish investors will stay out of the market. In other words, the asset might be overvalued” (Barberis, 2011).

“Another theory of overvaluation argues that bubbles arise because investors extrapolate past outcomes like returns, earnings growth, or default rates. Also the outputs of these assessments are too far into the future (Lakonishok, Shleifer, Vishny, 1994; Barberis, Shleifer, Vishny, 1998; Greenwood and Hanson, 2010). This assumption is usually motivated by Kahneman and Tversky’s (1974) representativeness heuristic. According to this heuristic, people expect even small samples of data to reflect the properties of the parent population. As a result, they draw overly strong deductions from these small samples, and this can lead to over extrapolation. The accompanying article by Barberis and Shleifer (2003) presents a model of bubble formation based on over-extrapolation of past returns, itself motivated by representativeness.

Third is based on overconfidence. When investors, in an effort to estimate an asset’s basic value, gather and analyze information, they become overconfident regarding the usefulness of this information” (Barberis, 2011).

“There are many belief-based bubble formations. Furthermore, there are also some preference-based models. A theory on the preference-based models argues after investors gain in their holdings of an asset, they become less risk averse and their risk appetite increased. Because there was “house money” effect: in short, having experienced gains, they are less concerned about future losses because any losses will be cushioned by the prior gains. Their reduced risk aversion leads them to buy the asset even more enthusiastically, thereby pushing its price up even further” (Thaler and Johnson, 1990; Barberis, Huang, Santos, 2001).

“The second preference based theory is quite different. This preference-based model of overvaluation argues that bubbles are particularly likely to occur in stocks relevant to a new technology (Barberis and Huang, 2008). The reason is that investors view these stocks as lottery-like: should the new technology deliver on its early expectation, some of the stocks may have huge increases in value. In parallel with that many people have a strong preference for lottery because, as Kahneman and Tversky (1979) argue, the people have a tendency to overweight low probabilities. In other words, they may overvalue the stocks similar with that. A theory of this type may define the case of high valuations of U.S. technology stocks in the late 1990s” (Barberis, 2011).

“The recent behavior of the real estate market is the second type of belief-based model is one of all these models as useful for understanding the mindset. The model that argues that bubbles occur due to the people over-extrapolate the past when making forecasts. It is inadequate to assume that households were over-extrapolating. Since homes are generally purchased with the help of outside financing. It is necessary to argue that the individuals involved in the provision of this outside financing were also over-extrapolating. Furthermore, the tales might continue as follows. A real estate bubble formed because of an oversupply of housing loan to home buyers, principally in the form of subprime loans. This is occurred because, through the process of securitization, the subprime loans would be borrowed or lent to manufacture securities. These securities are in the scope of the investors and they were namely securities with AAA ratings. Significantly, investors were too enthusiastic on these securities, because the AAA ratings were often not truly deserved” (Barberis, 2011).

The U.S. stock market in the 1920s and the 1990s, the Japanese real estate and stock markets in the late 1980s, not to mention the South Sea bubble of 1720 and the tulip mania of the 1630s – all of these are the pictures of a tendency on the part of some market participants to extrapolate past price increases too far into the future” (Barberis, 2011).

The recent plunge in real estate prices was far more destructive to the U.S. economy than the technology stock prices’ plunge a few years earlier. Cognitive dissonance and risks in the banking system became argumentative. One possible reason for this is that, in one case, the banking system was mostly unaffected, while in the other, it was heavily compromised. Particularly, over the course of several years leading up to 2007, banks built up large holdings of subprime loans and of subprimelinked securities. When a fall in house prices started, these holdings’ value also decreased. This fall triggered what Gorton (2010) describes as a crippling run on the banking system. This, in turn, led to a decline in the supply of credit to the economy. By contrast, when technology stock prices collapsed, banks were barely affected: their exposure to these stocks was relatively small.

“A noteworthy point is that there are at least two reasons of subprime securitization may have lent itself particularly well to belief manipulation. The first reason is that subprime-linked products were perceived as complex. Given their confusion, it would have taken considerable effort to disprove the claim that they were relatively safe. This may have made it easier for people to trick themselves about their risks. The second reason why it may have been easy for people to hold damaged beliefs on the risks of subprime securities is because there was a reasonable argument that appeared to justify these beliefs. The argument was that due to house prices had been rising for many years, the rise was assumed to be continued. Whether they did keep rising, then subprime defaults would be low, as the risks of subprime-linked securities.

The belief manipulation hypothesis might be thought of as an alternative to the “bad incentives”, “bad models”, and “bad luck” views. However it can also be thought of as a base for the bad models view. In the belief manipulation view, like in the bad models view, mortgage traders are unwitting of the risks they are taking. The belief

manipulation view explains why the situation was like that. In short, their choice was to become unaware” (Barberis, 2011).

“Psychological amplification mechanisms would not be ignored. “During the crisis period, many kinds of risky assets experienced dramatic price declines. These price declines were surprisingly large, given the relatively small delinquencies among subprime loans. Psychological amplification mechanisms are related to loss aversion and ambiguity aversion. These two concepts that have been broadly studied in behavioral finance. Also these two concepts may also have a significant role. Briefly, the idea is that, both institutional and individual investors experienced increases in loss aversion and ambiguity aversion afterwards suffering losses in their risky asset holdings. This caused to reduce their holdings of risky assets, thereby pushing the prices of these assets down even further. An increase in uncertainty aversion was central to the crisis has already been put forward (see, for example, Caballero and Krishnamurthy, 2008, Easley and O’Hara, 2010, and Krishnamurthy, 2010). Many economists are accustomed with ambiguity aversion However, economists are typically much less aware of a literature in psychology” (Barberis, 2011)..

“Heath and Tversky (1991) submitted a theory of ambiguity aversion which they classified the “competence hypothesis.” The idea is that a person might be either ambiguity averse or ambiguity seeking. It is depending on how competent he feels at analyzing the state at hand. The concept “competence” applies to how much the person feels he has a knowledge on a situation relative to what could be known. In accordance with the competence hypothesis, if the individual does not feel competent at analyzing some situation, he will feel ambiguity averse. Conversely, if he does feel competent at analyzing the situation, he might be ambiguity seeking” (Barberis, 2011).

“In one experiment, they tell their bachelor student subjects at San Jose State University that the situation they are analyzing is also being studied by a group of graduate students at Stanford University. It was one of their most striking findings is that they can alter subjects’ degree of ambiguity aversion by manipulating their feelings of authorization. An increase was seen in the San Jose State students’ ambiguity aversion. It may also be useful to financial economists because they suggest

a way of understanding the large declines in risky asset prices during the crisis. In the language of Heath and Tversky (1991) and Fox and Tversky (1995), once investors suffered some crucial losses in their holdings of risky assets – losses that encountered with surprising and confusing developments in the market for subprime-linked securities – they felt less competent at analyzing these assets. This made them more ambiguity averse, causing them to reduce their holdings of risky assets, by that means further lowering the prices of these assets.” (Barberis, 2011).

A crucial concept shall be defined. It is loss aversion. Experiments of Kahneman and Tversky’s (1979) indicates that people act more emotionally to losses. Whether they face with a loss, they do not would like to suffer with another one. Furthermore, their loss aversion feeling improves. The initial price drops beared results with suffering loses for many investors. As suggested by Thaler and Johnson (1990), loss averse would increasase among the investors who experienced losses,. Thus, their tendency to reduce their risky asset holdings. Following that price drops would occur or continue.

CHAPTER FOUR

AN EMPIRICAL RESEARCH ON EXTRAPOLATION-ERROR

When people attach too much weight to past trends, an extrapolation error occurs. Especially those were occured during a relatively short period of time and in inadequately extending them onto subsequent future periods. The observed behavior of the real estate market is a belief-based model and it is one of all these models as useful for understanding the mindset of extrapolation error. “The model is arguing that bubbles occur due to the people over-extrapolate the past when making forecasts. Also U.S. stock market in the 1920s and the 1990s, the Japanese real estate and stock markets in the late 1980s, South Sea bubble of 1720 and the tulip mania of the 1630s can be another examples. All of these are the pictures of a high propensity on the part of some market participants to extrapolate past price increases too far into the future” (Barberis, 2011). By considering on these issues, the answer that is required to see is the decisions of the people’s by the past trends. An empirical study of behaviors of the

people on what they expect for a trend without perfect knowledge on the next movement of the variable. Hence, the purpose of this research is to investigate, from people's own forecasts in accordance with the past trends to see the existence of extrapolation error.

$$H_0; \theta_0 \in \Theta_0 \quad H_A; \theta_0 \in \Theta_A$$

H_0 is for the null hypothesis and H_A is for the alternative hypothesis. The union of null and alternative hypothesis defines a hypothesis $H \in \Theta = \Theta_0 \cup \Theta_A$ called the maintained hypothesis.

H_0 = There is a relationship between the forecasts and past trends.

H_A = There is not a relationship between the forecasts and past trends.

This is a qualitative study based on a forecast simulation that was implemented on the people who live in Turkey. Simulation data would be independent from the answers of the participants. Qualitative methods are used as they can reveal information, uncover dimensions such as irrationality, thoughts and motivations and provide insight during the forecasts. In the simulation, the main goal to observe is the forecast behavior of the participant. Therefore, a budget to conduct or other market conditions are not shared with the participants. The only need from them was to make forecasts for an asset for the next period by indicating the past trends.

The study consisted of 100 people randomly living in Turkey from different financial literacy levels by random selection. It was appropriate to seek random selection of participant for this study, by sharing the simulation via online channels including Facebook Messenger, E-Mails Services and Whatsapp Messenger.

In the simulation, participants were asked to make a forecast regarding the value of three assets named as X, Y and Z that are independent each other for the following period that is not given. The X was figuring bubble asset that was increasing and the expectation was from the participants to make a forecast as an increase in accordance with the previous change in the value. In addition, Y was a stable asset and Z was a decreasing asset. In the simulation, the participants did not manage a budget or were not investing anything. The only expectation from the participants was

to make a guess or forecast for the following period that was unknown. Due to this, the causality regarding the stress, budget or the market conditions would be ineffective. Therefore, participants tried to make a forecast regarding the previous changes but their choice that was ‘There is insufficient data to make a forecast’ was always active. This simulation observed their forecasting or guessing behavior.

The measurement was based on the phenomena on extrapolation error. The expectation was that the previous changes in a variable would affect the forecast behavior and the participants who were asked to make a forecast would not expect an unexpected change in the data for the following period.

In accordance with the expectations, the null and alternative hypothesis are submitted below. Initially, the changes in X are given in the appendix.

H₀ = There is a relationship between the forecasts and past trends.

H_A = There is not a relationship between the forecasts and past trends.

In the following table the changes and the forecast behaviors are shared. In order to test the hypothesis, the regression model was applied.

Table 1. The Changes of Asset X and the Forecasts for the Following Period

Period	Change	Decrease	Increase	Insufficient Information to Make a Forecast	Stable
2	4,5	4	69	25	2
3	1,5	5	63	16	16
4	-0,3	76	5	16	3
5	2,3	7	71	16	6
6	1	7	65	15	13
7	-10	65	16	16	3

In accordance with the results of the participants’ forecasts as ‘increase’ are correlated with the changes in the value of X. Particularly, the most participants made a forecast on increase while it has an upward trend. While the changes were 4,5 and 2,3 increase, the increase expectation for the following period was over 65%. Also the P value is over 0,05 so the null hypothesis can not be denied.

Table 2. Regression Between Increase Answers and the Changes of X

<i>Regression Between Increase and Changes of X</i>	
Multiple R (Correlation)	0,34948
R Square	0,122137
Adjustable R Frame	-0,09733
Standard error	30,9221
Observation	6

Table 3. Coefficients, Standard Error, t-stat and p-value Between Increase Answers and the Changes of X

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intersection	72,98095	35,57801	2,051294	0,109529

The changes of X and the answers on decrease have a high correlation while it was going down. It would be parallel with the Keynes' essay:

“We are suffering just now from a bad attack of economic pessimism. It is common to hear people say that the epoch of enormous economic progress which characterized the nineteenth century is over; that the rapid improvement in the standard of life is now going to slow down—at any rate in Great Britain; that a decline in prosperity is more likely than an improvement in the decade which lies ahead of us.

I believe that this is a wildly mistaken interpretation of what is happening to us. We are suffering, not from the rheumatics of old age, but from the growing-pains of over-rapid changes, from the painfulness of readjustment between one economic period and another. The increase of technical efficiency has been taking place faster than we can deal with the problem of labour absorption; the improvement in the standard of life has been a little too quick; the banking and monetary system of the world has been preventing the rate of interest from falling as fast as equilibrium requires.”(Keynes, 1930)

Table 4. Regression Between Decrease Answers and the Changes of X

<i>Regression Between Decrease and Changes of X</i>	
Multiple R (Correlation)	0,699455
R Square	0,489237
Adjustable R Frame	0,361546
Standard error	26,8773
Observation	6

Table 5. Coefficients, Standard Error, t-stat and p-value Between Decrease Answers and the Changes of X

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intersection	26,56047	10,97971	2,41905	0,072838

As seen in the Table 4 and 5 changes of X and Decrease Forecasts have a high correlation and the P value is higher than 0,05; the null hypothesis cannot be denied.

There was an option that was figuring not giving a decision on making a forecast. Whether a participant feels that there was not enough information to make a forecast; “Insufficient Information to make a forecast” was able to be chosen. It is assumed that it would be chosen by the participants in the initial questions due to insufficient data. Therefore the null hypothesis and the alternative ones are submitted below.

H0 = There is a relationship between not giving a decision and the previous data

HA = There is not a relationship between not giving a decision and the previous data

Table 6. Regression Between Decrease Answers and the Changes of Y

<i>Regression Between Decrease and Changes of Y</i>	
Multiple R (Correlation)	0,679276
R Square	0,461415
Adjustable R Frame	0,326769
Standard error	1,535027
Observation	6

Table 7. Coefficients, Standard Error, t-stat and p-value Between the Periods and Insufficient Choice

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intersection	10,33178	3,212025434	3,216592	0,032385

The P value is lower than 0,05; hence the null hypothesis is denied.

In accordance with the expectations, the null and alternative hypothesis are submitted below. Initially, the changes in Y are given in the appendix.

H0 = There is a relationship between the forecasts and past trends.

HA = There is not a relationship between the forecasts and past trends.

In the following table the changes and the forecast behaviors are shared. In order to test the hypothesis, the regression model was applied.

Table 8. The Changes of Asset Y and the Forecasts for the Following Period

Period	Change	Decrease	Increase	Insufficient Information	Stable
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				to Make a Forecast	
2	0	2	14	18	66
3	0	8	10	16	66
4	0	13	8	15	64
5	0	6	15	14	65
6	0	10	5	12	73
7	0	7	5	13	75

In accordance with the results of the participants' forecasts as 'stable' are correlated with the changes in the value of Y. Particularly, the most participants made a forecast on stability while it had a stability trend. Also the P value is over 0,05 so the null hypothesis can not be denied.

Table 9. Regression Between Increase Answers and the Changes of Y

<i>Regression Between Increase and Changes of Y</i>	
Multiple R (Correlation)	0,148854
R Square	0,022157
Adjustable R Frame	-0,2223
Standard error	5,110435
Observation	6

Table 10. Coefficients, Standard Error, t-stat and p-value Between Increase Answers and the Changes of Y

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P- value</i>
Intersection	68,16667	2,086326	32,67306	5,23E- 06

The changes of Y and the answers on stability have a high correlation while it was stable.

Table 11. Regression Between Stable Answers and the Previous Period Data

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<i>Regression Between Decrease and Changes of Y</i>	
Multiple R (Correlation)	0,774769
R Square	0,600267
Adjustable R Frame	0,500334
Standard error	3,267444
Observation	6

Table 12. Coefficients, Standard Error, t-stat and p-value Stable Answers and the Previous Data

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intersection	59,55238	3,759421	15,84084	9,28E-05

As seen in the Table 11 and 12 changes of Y and Decrease Forecasts have a high correlation and the P value is higher than 0,05; the null hypothesis cannot be denied.

There was an option that was figuring not giving a decision on making a forecast. Whether a participant feels that there was not enough information to make a forecast; “Insufficient Information to make a forecast” was able to be chosen. It is assumed that it would be chosen by the participants in the initial questions due to insufficient data. Therefore the null hypothesis and the alternative ones are submitted below.

H0 = There is a relationship between not giving a decision and the previous data

HA = There is not a relationship between not giving a decision and the previous data

Table 13. Regression Between Stable Answers and the Insufficient Choice

<i>Regression Between Decrease and Changes of Y</i>	
Multiple R (Correlation)	0,940256
R Square	0,884082
Adjustable R Frame	0,855102
Standard error	0,822308
Observation	6

Table 14. Coefficients, Standard Error, t-stat and p-value Between the Periods and Insufficient Choice

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intersection	19,55238	0,946122	20,66581	3,24E-05

The P value is higher than 0,05; hence the null hypothesis cannot be denied.

In accordance with the expectations, the null and alternative hypothesis are submitted below. Initially, the changes in Z are given in the appendix.

H0 = There is a relationship between the forecasts and past trends.

HA = There is not a relationship between the forecasts and past trends.

In the following table the changes and the forecast behaviors are shared. In order to test the hypothesis, the regression model was applied.

Table 15. The Changes of Asset Z and the Forecasts for the Following Period

Period	Change	Decrease	Increase	Insufficient Information to Make a Forecast	Stable
2	-1	74	4	18	4
3	-1,1	80	4	14	2
4	-1	68	7	14	11

5	-2	78	5	9	8
6	-1	82	5	9	4
7	-3	82	4	9	5

In accordance with the results of the participants' forecasts as 'increase' are correlated with the changes in the value of Y. Particularly, the most participants made a forecast on increase while it has an downward trend. While the changes were 4,5 and 2,3 increase, the increase expectation for the following period was over 65%. Also the P value is over 0,05 so the null hypothesis can not be denied.

Table 16. Regression Between Increase Answers and the Changes of Y

<i>Regression Between Decrease and Changes of Y</i>	
Multiple R (Correlation)	0,699455
R Square	0,489237
Adjustable R Frame	0,361546
Standard error	26,8773
Observation	6

Table 17. Coefficients, Standard Error, t-stat and p-value Between Increase Answers and the Changes of Y

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intersection	26,56047	10,97971	2,41905	0,072838

The study shows that there is a relationship between the changes in the values and the forecasts for the following period. People have a high tendency to expect the

continuous in the time series. They do not have an expectation on a change in the time series. It is parallel with the previous extrapolation error tests.



CHAPTER FIVE

CONCLUSION

The Economics has a timeline. During this timeline there were many changes. However, the human factor was always in the heart of all concepts. While financial innovations can be useful in preventing psychological factors that lead people to become depraved, the paper suggests that the same psychological factors might be always in the heart. This may be particularly true for all financial innovations that are complex. This complexity would cause to miss some vital points.

The vital point might focus on the behaviors. Because behavioral approach would figure out the issues regarding the economic models. Especially in the financial crisis, bubbles were the triggers. These triggers were directly related with the human behaviors. The investment behavior is based on a decision-making process. However this process is made without perfect knowledge that was assumed in many economics schools and thoughts. In parallel with the literature review and the empirical researches, one of the factors in the investment behaviors is extrapolation error. There is a high tendency on over-extrapolate the past when making forecasts and bubbles occur due to this behavior. In order to see tht for the empirical research a simulation is set and conducted. The results of this research showed that people's forecasts are shaped by the previous data. For the investment behavior, it is noteworthy.

Consequently, the empricial studies and other points figure out that economics thought, schools or models without human would not be sufficient to interpret the real world. Irrational people behavior drives the macro economy like cells in an organism or atoms in a material.

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APPENDIX

The Changes of the Assets at the Research



Figure 3. The first and Second Period of X

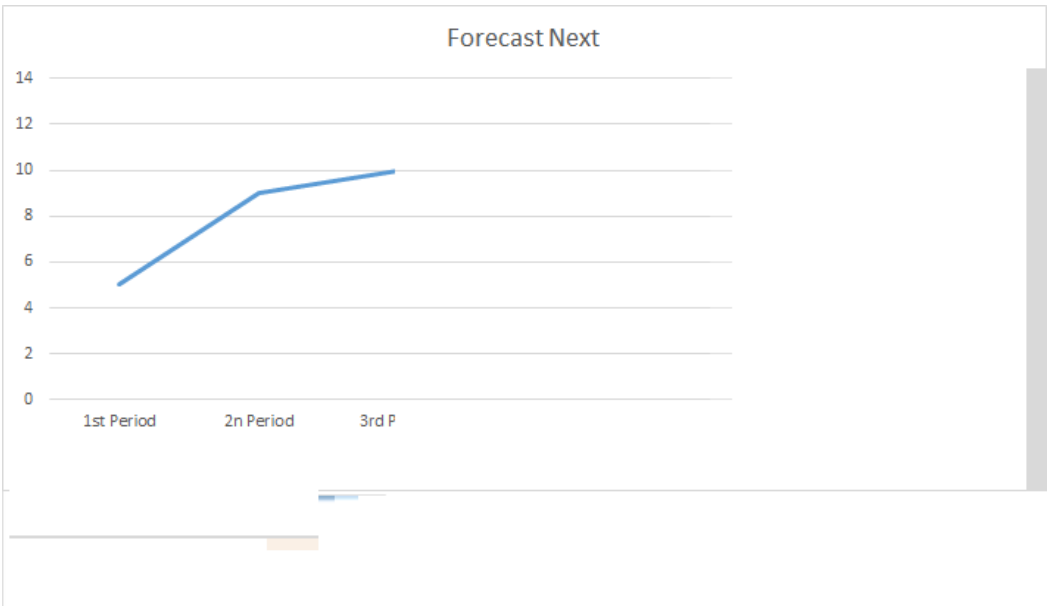


Figure 4. The Third Period of X

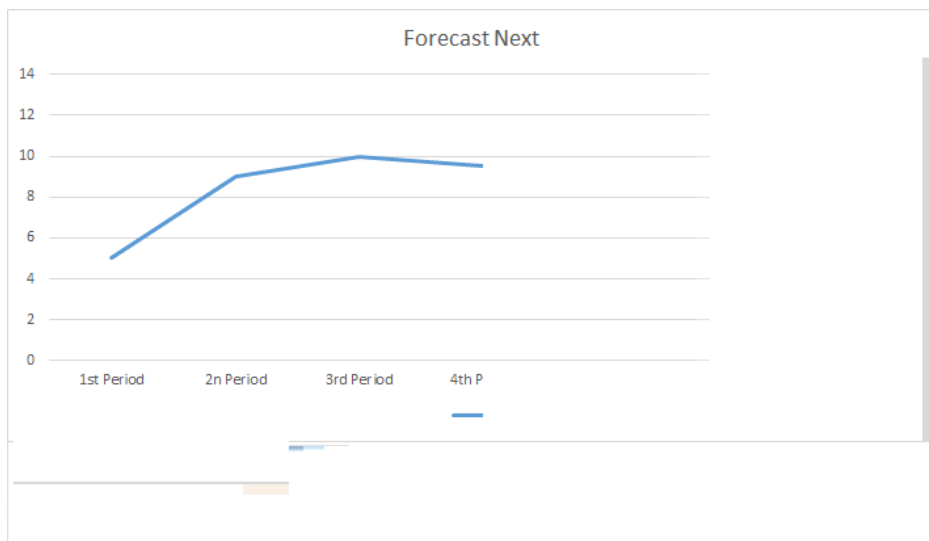


Figure 5. The Fourth Period of X

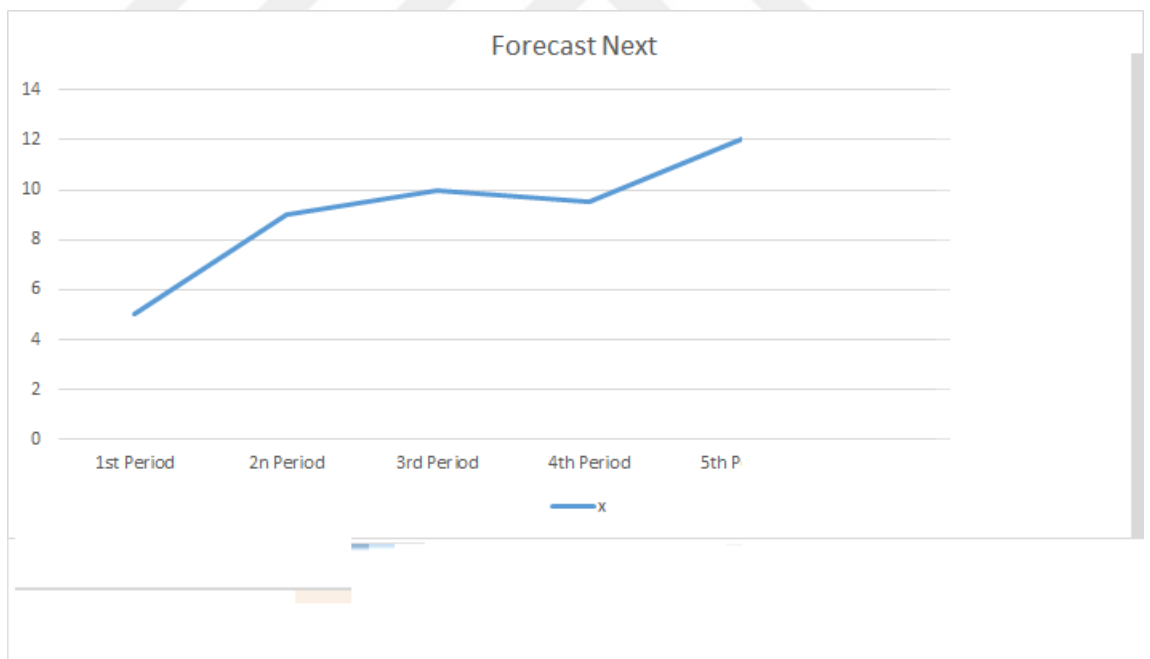


Figure 6. The Fifth Period of X

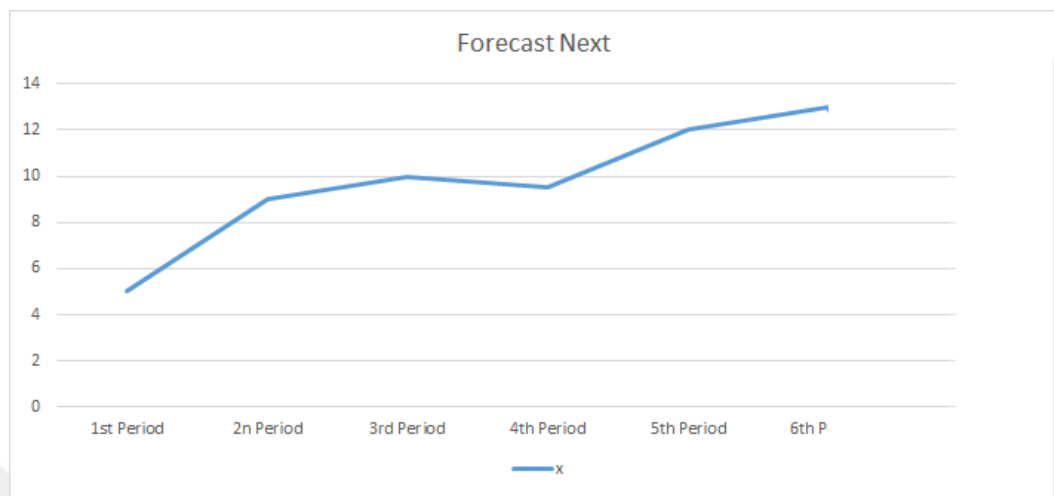


Figure 7. The Sixth Period of X

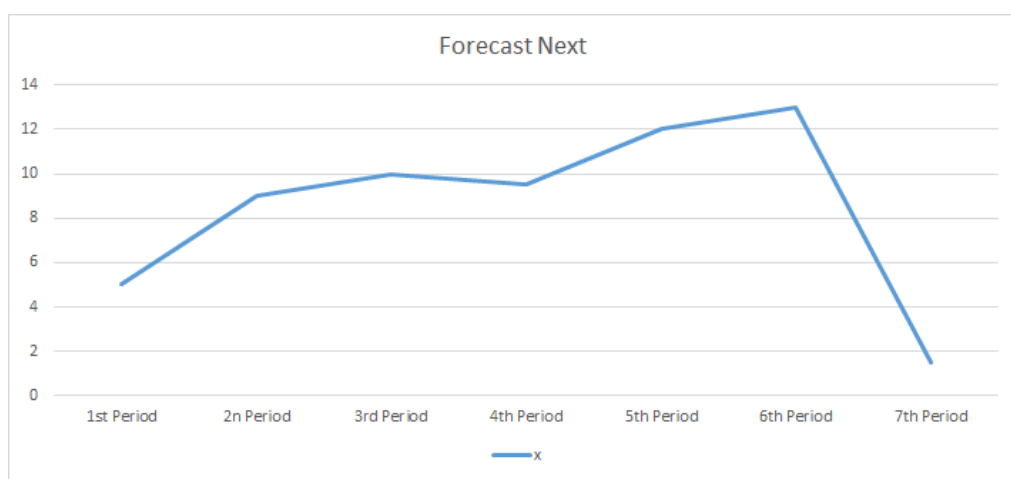


Figure 8. The Seventh Period of X



Figure 9. The First and Second Period of Y

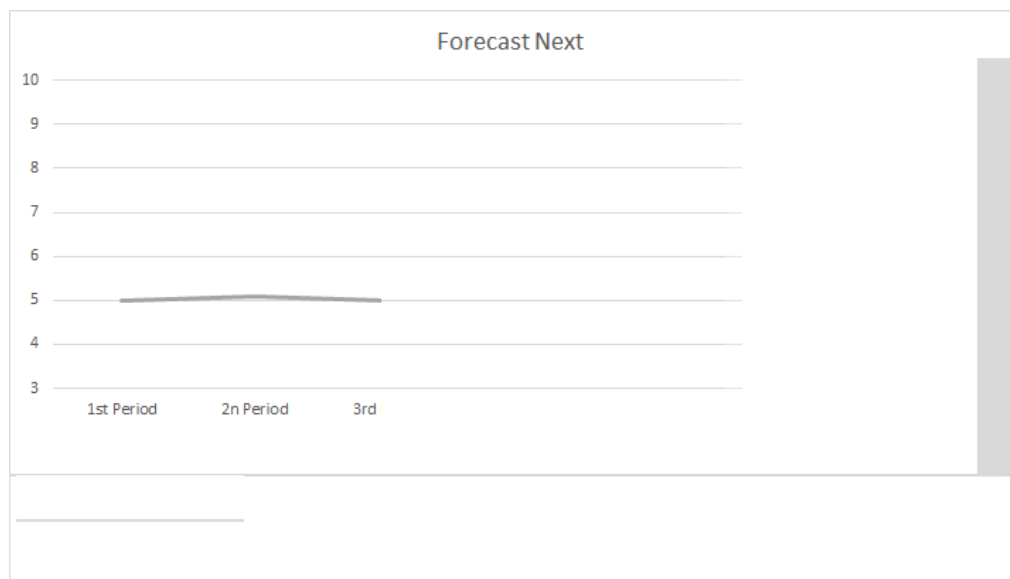


Figure 10. The Third Period of Y

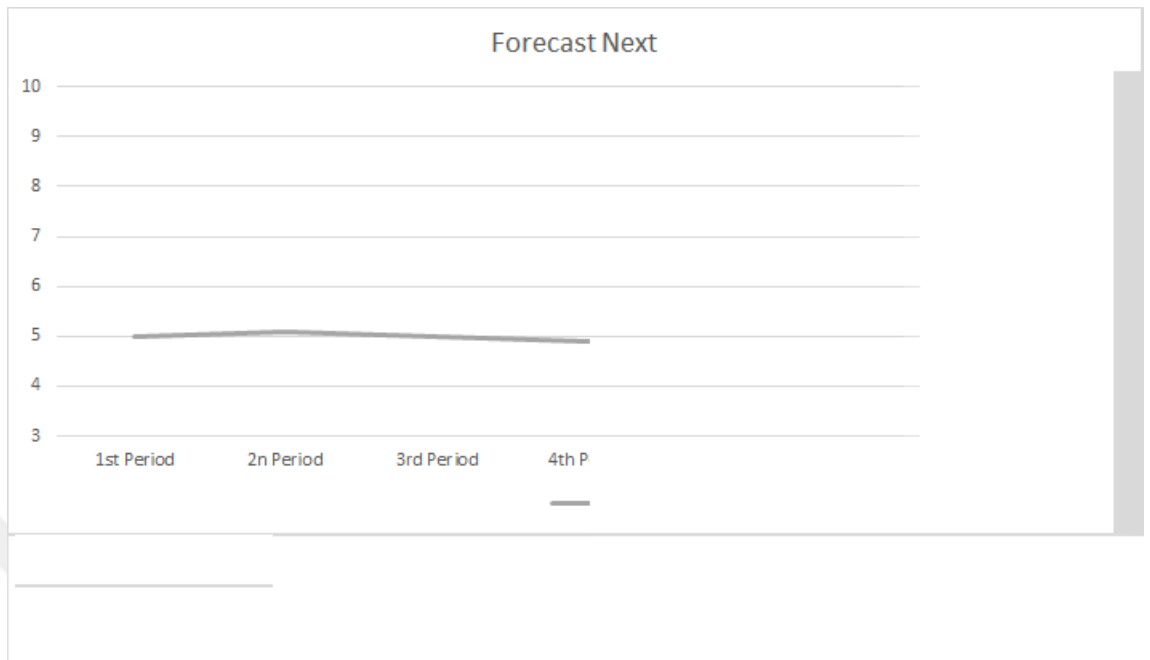


Figure 11. The Fourth Period of Y

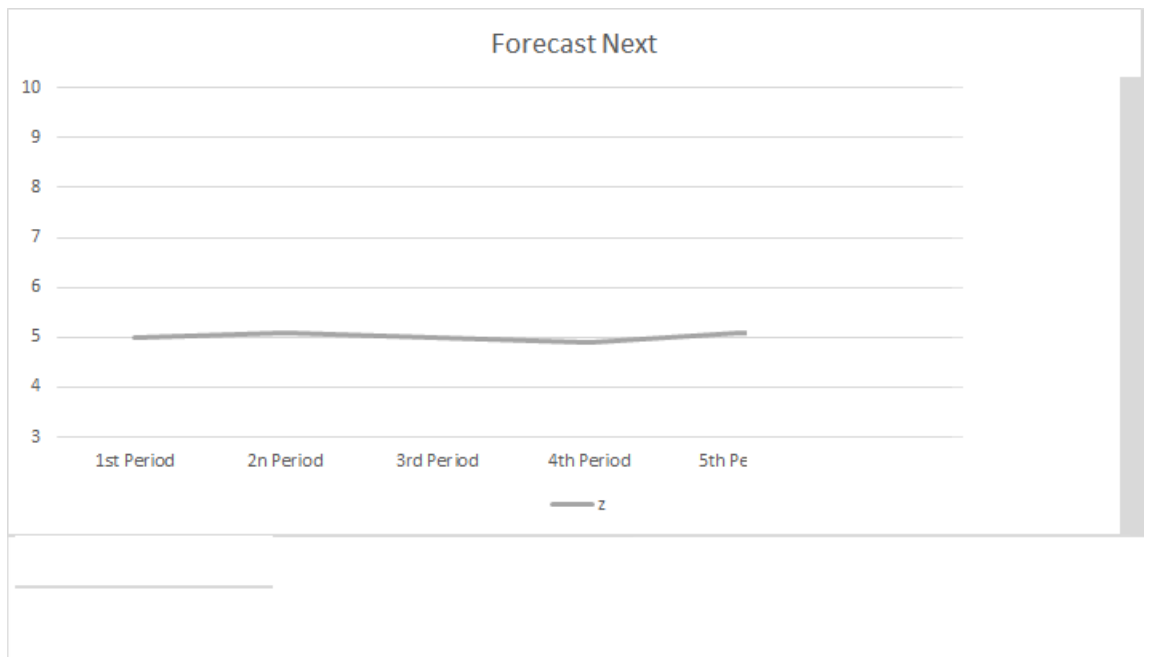


Figure 12. The Fifth Period of Y

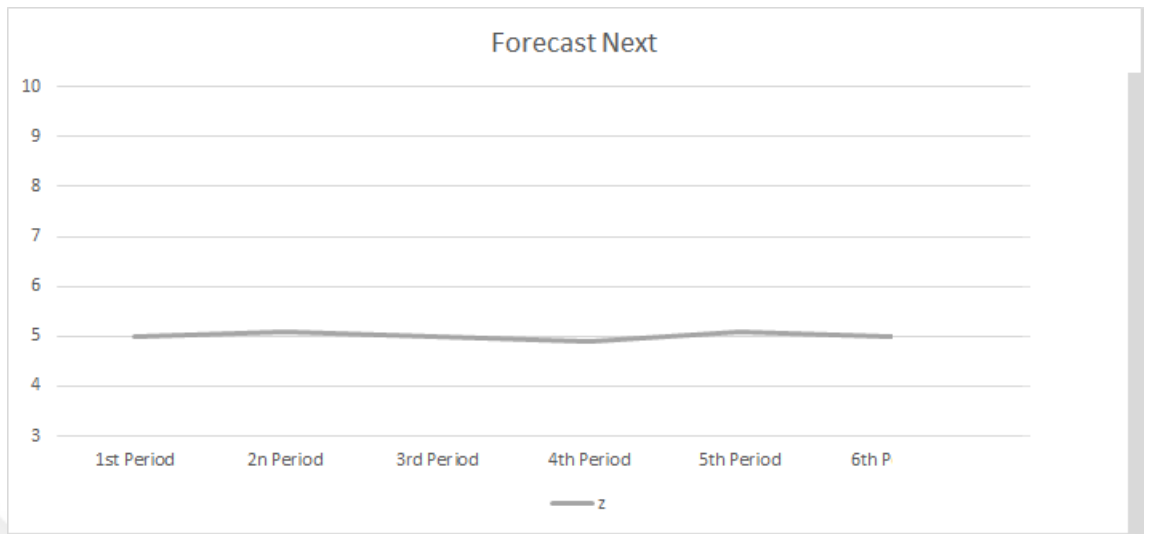


Figure 13. The Sixth Period of Y

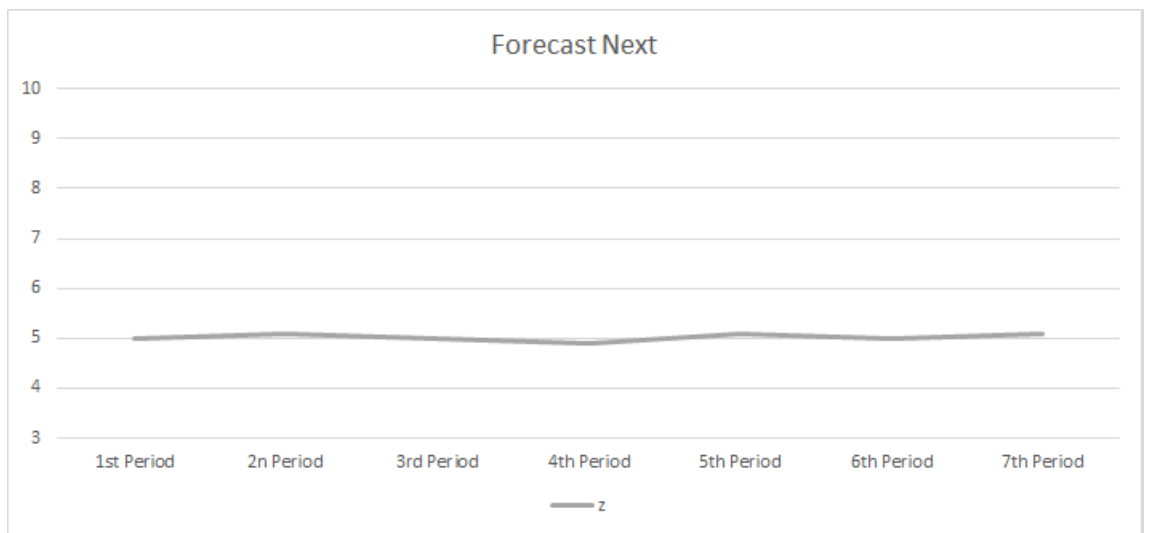


Figure 14. The Seventh Period of Y

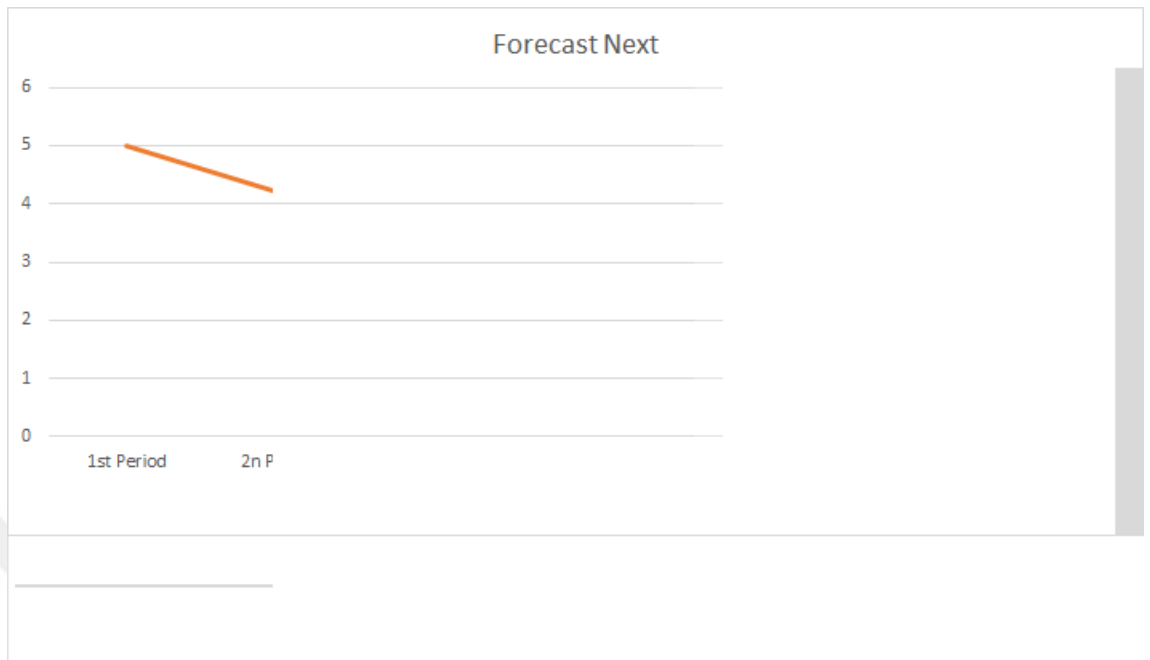


Figure 15. The First and Second Period of Z

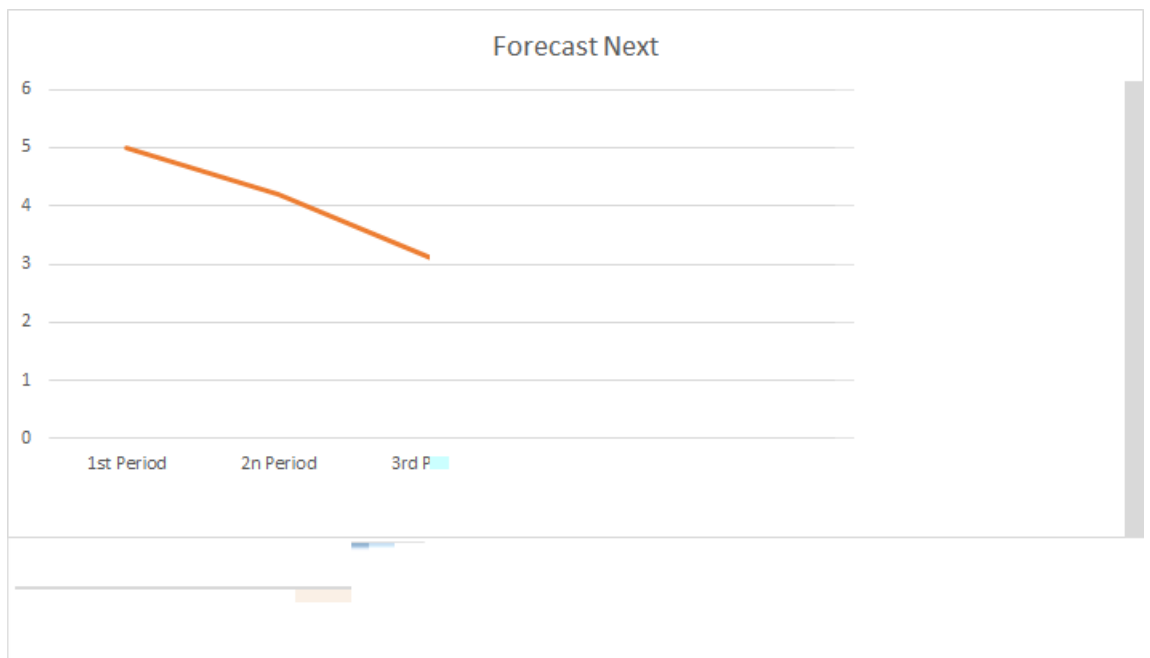


Figure 16. The Third Period of Z

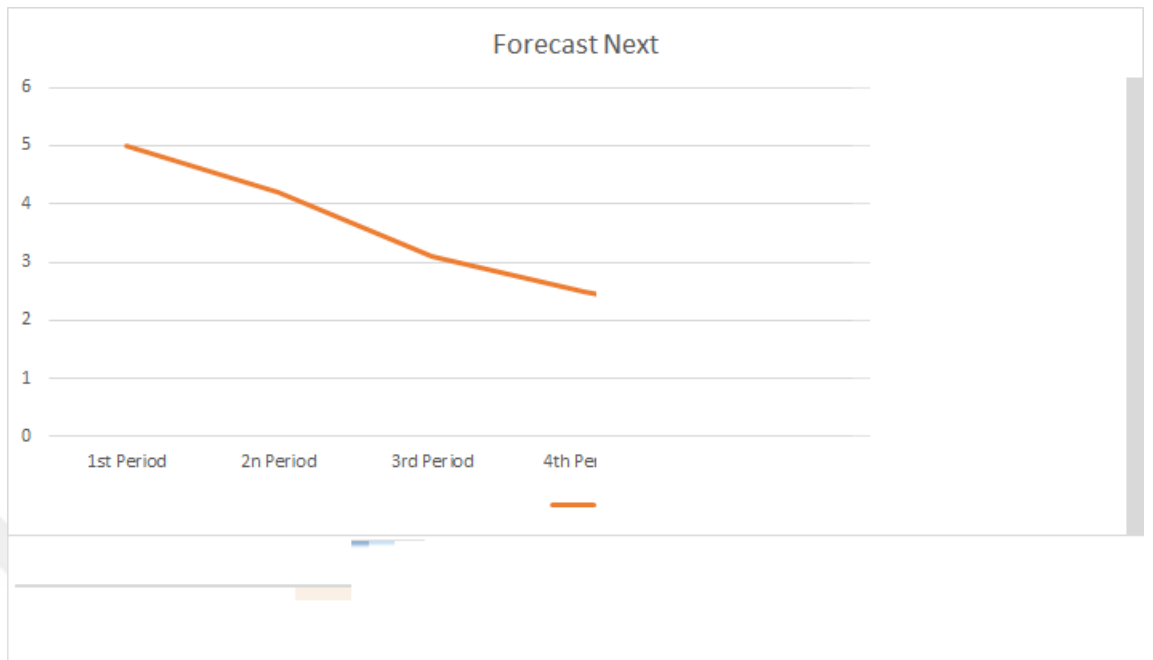


Figure 17. The Fourth Period of Z

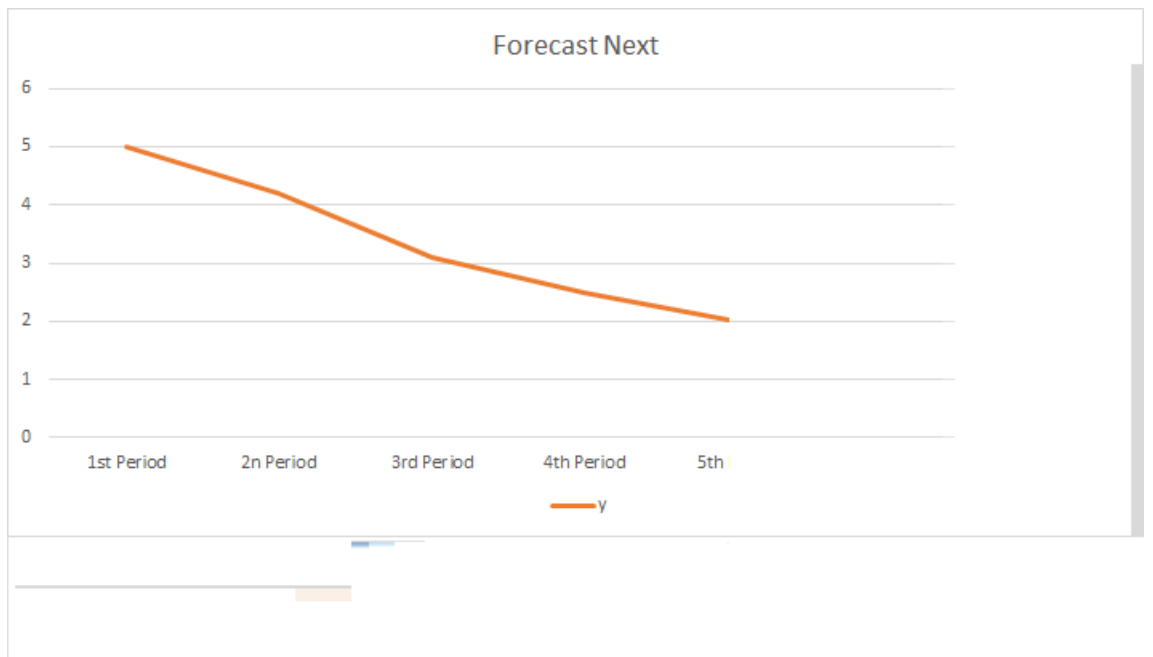


Figure 18. The Fifth Period of Z

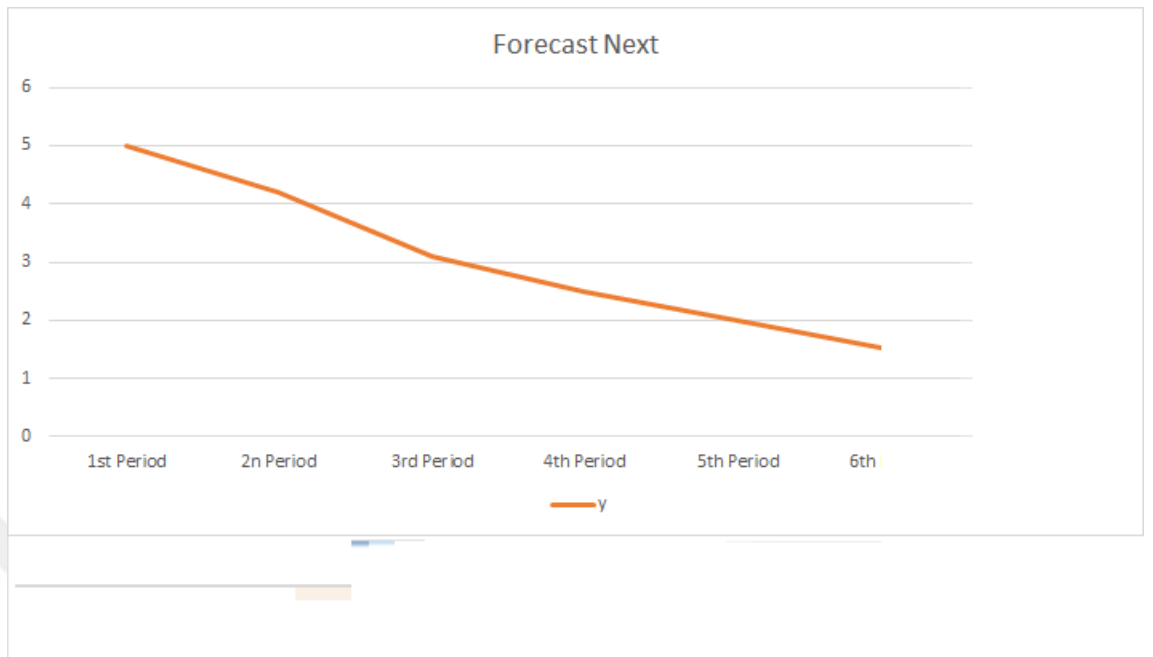


Figure 19. The Sixth Period of Z

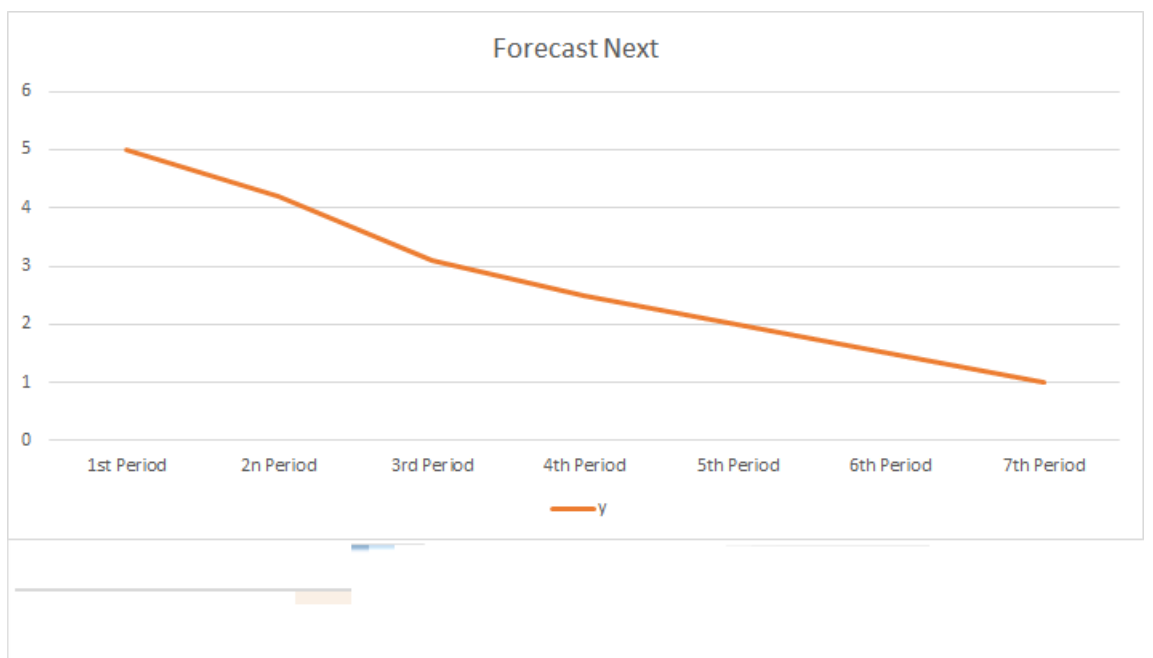


Figure 20. The Seventh Period of Z