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The Nature and Role of Information under Imperfect Markets: A Theoretical Review

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Abstract:
This paper is a theoretical review of the discussions on information as a commodity in the literature of Economics. The paper is presented in four sections- the introduction, Importance and nature of Information as a commodity, Informational issues under imperfect markets: A Theoretical Review and conclusion. In introduction part, the author tried to connect the incomplete information as the byproduct of imperfect markets. In second part, the paper discusses the importance and nature of information as a commodity. And also discusses how it differs from other commodity markets. The third part of the paper is purely a theoretical review on the literature discussing informational issues in the market related with general functioning of the market and also with respect to the existence of equilibria under such markets. Finally, the paper concludes the discussion of the paper by sighting the increased demand for the information in the present markets.

JEL Classifications: D44, D82, D83, E26

1. Introduction

The issues related to information efficiencies of the market stems from differences in the behavior of the market agents with respect to disclosing of information. The imperfect market is always characterized by incomplete information. In other words, incomplete information is a byproduct of imperfect markets. It is quite natural in these markets that market agents possess different information about the same product or market phenomena. No doubt, these additions or deletions in information has a significant influence on the behavior of these market participants. A preferable item without information may change into a non-preferable item with information and vice versa. Anyway, the party who possess better information always enjoy monopoly over the information and may use this informational advantage to maximize his utility. Often such behavior from the informed agents in the markets adversely effects the overall functioning of the markets. In such markets, the decision process of the consumer is highly vulnerable to uncertainties and risks. There are two possibilities for disclosing information - one is by the informed party and the other is by the uninformed party. In the first case, the informed party provides some signals to the uninformed to prove the quality of his product or service among others. For E.g., guarantees and warrantees by the companies in the market. In the second case, the uninformed party filters the information indirectly from the informed party through some proxy variables. For E.g., Health status taken by the insurance companies. Anyway, all these shows that information has an important role in determining the efficiency of the market transactions.

2. Importance and Nature of Information as a Commodity

The recognition of information as a commodity and its importance in the market gave rise to a line of thinking in Economics called Information Economics. Information Economics discusses the importance of information as a commodity as well as a service. Information helps the consumer to assign the returns to the alternatives offered by the market and thereby to arrange his portfolio in his most appropriate manner in the market. Information determines consumers' sovereignty in the markets. Consumers' sovereignty is to be understood as the ability of the consumer to influence the nature and composition of the choice set itself and not as the freedom to exercise choice from a given set of alternatives presented to him (Scitovsky, 1976). Role of information in case of experienced goods such as education, health deserves special attention since it has long run effects in the life chances of a person. Information as a commodity possess special features and it is discussed by many economists in different situations. Some of them are the following;

Firstly, Information is non-rival. The consumption of a unit of information by an individual in no way reduces the consumption of information by of the other. Secondly, information has an inbuilt imperfection – each pieces of information about a given phenomenon may be different if it is collected from different sources and locations. Thirdly, information has its own market value, it reduces uncertainty and affects behavior of economic agents which has economic consequences (Hubbard,1962). Fourthly, information varies from other commodities with respect to marketability. Production and consumption of commodities with risk attached is a substitute for risk bearing. There is lack of optimality due to the non-marketability of the bearing of suitable risks and the imperfect marketability of information (Arrow, 1963). Fifthly, information has 'limited nature' because of its variation in reliability, cost of collection (whether information rises/ reduces welfare depends on cost of information) and limited readily recalling capacity. The

bounded rationality and lack of intelligence of economic agents also contributes to this 'limited nature' of information (Carlton & Perloff, 1980).Sixthly, it is argued that demand for information is a derived one and economic agents need information to maximize their utilities. Different persons demand different information structure depending on their need of information. It is a differentiated commodity; with infinite possible states of nature with un accountable subsets, the commodity space of information accrues infinite dimensions. Seventhly, information is indivisible and useful in integer amounts (Arrow 1962). And finally, information is traded on positive prices. Information is valuable with rational expectations, if nobody has access to it; time is required to know the ways to extract information and this time gap is an inducement to pay for the information (Allen,1990).

3. Informational Issues under Imperfect Markets: A Theoretical Review

The discussions over information in Economics literature can be mainly classified into two- (3.1) informational issues related with general functioning of the market, (3.2) informational issues related with existence of equilibria under incomplete markets.

3.1. Informational Issues Related with General Functioning of the Market

The problems of incomplete information under imperfect markets were part of discussion even in the 17th and 18th centuries -(Adam Smith (1776), Marshall (1928), Sismondi (1814), Pigou (1920), Weber (1925) & Mill (1848). They recognized the cause and consequences of incomplete information. But it never formed center of their discussion. Adam Smith (1776) stated, as firm raises interest, the best borrowers quit the industry, if lender know the risk associated with each borrower the situation would not have risen. Pigou (1920) mentioned externalities as limitation of imperfect markets. Marshall (1928) agreed wages are not task performed due to inability to observe the tasks. Imperfect information leads to imperfect competition (Robinson & Chamberlin ,1933). Hayek (1945) observed that knowledge never exists in concentrated or integrated form. Instead, solely dispersed, incomplete, contradictory and sometimes even cannot enter into statistical form which makes transformation of knowledge a more tough process. Therefore, the central economic problem is the problem of utilization of knowledge, not given to anyone in its totality, rather than allocation of resources. He says, "it is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know". Than going with what is fundamentally wrong in economic thoughts in which either the information "is given" or "is not so available", the real problem is to find out a way to make 'not fully availed information' better dispersed as possible.

Grossman (1977) and Lucas (1975) presented their market models with continuous adaptation of new information (Stiglitz 2000). Stigler (1961) connected on information or knowledge with price dispersion in the market and inevitable search. Greater amount of search will lead to a smaller dispersion of observed selling prices, by reducing the number of purchasers who will pay high prices. Dispersion is a positive function of search which in turn depends on the nature of commodity- expenditure on the commodity, geographical size of the market, fraction of repetitive buyer or sellers. The buyer with more information makes more search. Identification of the sellers and the discovery of their prices is an example showing the importance of search for information in the market. The price dispersion exists because knowledge becomes obsolete and as the market grows, there appear a set of firms who specialize in selling information and gradually it will lead to monopoly in the provision of information (Stigler,1961).

The information production can-not be considered as a homogeneous, single activity rather than generating from various R & D analysis. And information fusion(combining of information structure), information fission (breaking of information structure) and addition of noise are the elements of information production. Information producing firms generally claims monopoly power and individuals also in the form of patents, copy rights etc. (Allen (1990). According to Stigler, imperfections in capital markets can be explained in terms of transaction costs which includes the information costs. And even small information costs will have profound effect on market transactions.

Whenever the imperfect information exists it will not allow the markets and the contracts to be completed. With imperfections, market will be incomplete (Arrow (1974), Radner (1968), Williamson (1979)). The labour markets may be characterized by unemployment and the credit market by credit rationing. The firms might not lower the wages even if workers were ready to work at the lower wages because it may reduce the productivity and thereby increase the cost of the labour (the efficiency wage hypothesis). And this information structure of the market gradually create monopoly in information. That is, in the absence of imperfect information incentives and the contracts will not get this much importance in Economics. Carlton & Perloff (1980) wrote, if incomplete information exists, either the market does not exist or existing quality varies across brands; where high quality may not be supplied or desirable qualities of the market may vanish and firms will have an incentive to reduce information. And, firms may purposively rise the cost of consumers search, through unnecessary differentiation with respect to price and brand to rise market power.

3.2. Informational Issues Related with Existence of Equilibria under Incomplete Markets

Another sort of discussions surrounding information was about the nature of equilibria under the markets characterized by incomplete information. Akerlof (1970) presented his classic model with no equilibria. Wilson (1979) pointed out, if buyers are the price setters, each buyer announces the prices and a price distribution emerges stretching below and above the market clearing price, instead of a single equilibrium price with little tendency to change the price. If sellers are the price setters, there will be an interaction between the buyers and the sellers on expected price and quality, the pattern of expectations may be consistent with walrasian equilibria or an equilibrium with continuous distribution of prices. According to Wilson each buyer is also a seller simultaneously. Therefore, the important thing is, the conditions on the demand curve and supply curve must correspond to conditions on the demand and supply curves of the uninformed agents. Colin Rose (1993), connected the occurrence of equilibria (under adverse selection specifically) with price elasticity of average quality. If price elasticity of average quality is less than one (Downward sloping demand curve) it can -not

generate multiple equilibria. if it is greater than 1(upward sloping demand curve) it can generate multiple equilibria. And, if it is 1, (perfectly elastic demand curve) no multiple equilibria can exist.
Some studies connecting the possibility of equilibria with in formativeness of the system. Grossman & Stiglitz (1980) model, (extension of noisy rational expectation model of Lucas) studies information flows among traders where, price plays the major mechanism of passing information from informed to less informed. The number of individuals who are informed is the endogenous variable in this model. Traders deals two assets- risky asset and safe assets with return ‘u’ and ‘R’ respectively. As per model, an increase in quality or decrease in cost of information increases in formativeness of the price system. And informationally efficient markets (price reflects market information) are impossible when information is costly. There may be no equilibrium at all in the market for information or if information is not readily available (Allen,1990). Carlton & Perloff (1980) wrote, if there are enough informed consumers, equilibrium price equals marginal cost and if not (few consumers are informed and others incur search cost) equilibrium price may be more than or equal to marginal cost.

4. Conclusion

The paper presented a theoretical review over the discussions of information in the literature of Economics. The discussion shows the importance of information in determining the overall transparency in the market transactions. It is true that information is always traded on positive prices. Because of this reason, information selling units are operating in the modern markets only for selling the demanded information. The growing importance of the consulting services such as educational, legal, placement consultancies shows the importance of information in the markets.

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