Business Analyst, ISSN 0973 - 211X, 42(1), 29-48, ©SRCC

ABSENCE OF FINANCIAL SECTOR IN MODERN MACROECONOMICS: OVERSIGHT OR OVERLOOK

Avinash Kumar Jha*

ABSTRACT

The paper explores the question of why modern macroeconomics ignores the financial sector in its analysis despite Keynes's crucial work on the link between expectations in financial markets and the economy's ability to restore full employment through price mechanism. It explores the evolution of the concept of liquidity trap in macroeconomics text-books and indicates the dilution in it over the decades. Further, the theoretical necessity of efficient market hypothesis for modern microeconomics to ignore the financial sector is elaborated. Policy implications about the economies in general, and the financial sector in particular are highlighted.

Keywords: Liquidity Trap, Efficient Market Hypothesis, Rational Expectations Hypothesis, Keynes, Financial Markets, Modern Macroeconomics.

INTRODUCTION

Macroeconomic theory that has developed since the 1970s lacks any intricate understanding of the financial sector, and focuses primarily on the real markets and disturbances therein. This is despite the fact that the impact of financial markets on both - the ability of an economy to restore full employment, and the efficacy of monetary stimulus was explored in response to the great depression of 1929. Even during the heyday of the post second world war Keynesian policy regime in advanced countries, this area of research didn't get the attention it deserved.

* Assistant Professor, Department of Economics, Shri Ram College of Commerce, University of Delhi, India. Email: avijha@yahoo.com

In the next section, we recall the historical contexts of post war development in macroeconomics in two epochs - prior to the 1970s and after that. The following section consists of the evolution of the concept of liquidity trap (an idea that linked the demand for money and the financial markets) in the text-books over the two epochs. We argue that this evolution indicates a gradual weakening of the concept of liquidity trap, even converging to trivialisation of the concept. This is clearly indicative of the gradual undermining of the role that the financial sector plays in determining the stability of the economy, in pedagogy. In the last section, we argue that a belief in the efficient market hypothesis (EMH) allows the macroeconomic models to completely ignore the financial markets while exploring the stability of the system. The focus shifts to the real markets, where market processes supplemented with the rational expectations hypothesis ensure that the outcomes gravitate towards full employment on their own. The policy implication is to reform the markets to allow their free functioning, so that the economies function in the ways predicted by models. In the financial sector, EMH calls for deregulation, so that the asset prices reflect a better aggregation of information.

HISTORICAL CONTEXTS OF THEORETICAL DEVELOPMENTS

The prevailing understanding of the dynamics of the financial markets is fundamental to the larger macroeconomic policy framework. This was recognised and highlighted by Keynes in General Theory. His main contribution was bringing out the problem of effective demand in capitalism, and the argument that there is no self correcting market mechanism which could pull the economy out of a vicious circle of income-expenditure fall. The instability of expenditure is caused by fluctuations in investment which necessarily involve confidence in future demand. Once the decline in investment sets in, it has a logic of its own. Investment is a component of aggregate demand, and a decline in either means further decline in both. Additionally, Keynes was an important contributor to the area of finance, as he argued that financial market instability is the main cause that triggers a decline in investment.

This understanding of financial markets, supported by the fact that the great depression of 1929 was primarily seen as emerging in the financial sector[2], led to a regulated financial sector in the post war capitalist world. The regulations were based on the idea that the financial sector has to work in a manner which is most suitable for the real economy; and unregulated finance did not do so. This was also the period when demand management was the driving principle of macroeconomic policy of the leading capitalist economies in the world which were linked by bilateral trade arrangements, and managed international capital flows.[3] Politically, this was an era of cold war, and a high wage (both private and social) was seen as essential. The cost escalation due to it was not seen to be a problem as the foreign competition threat was low with managed free trade, and an assurance of demand management. This whole arrangement was based on certain regulation principles ensuring various components mutually complementing each other.

This 'Golden age of capitalism" came to an end with the collapse of the Bretton Woods international monetary system, which was triggered by a rise in petroleum prices. This was the last blow to the system which, by the mid 1960s, was showing signs of stagnation, with demand management causing inflation rather than restoring growth. But a long period of stability and growth led to a huge accumulation of profit which was looking for avenues to making returns, having exhausted the avenues to invest locally. The dollar, as an international currency, in the backdrop of Marshall Plan and huge war expenditures overseas causing its outflux, was anyway circulated globally as eurodollars. It is in this background that a new policy regime was taking shape. It required a theory which, among other things, provided a justification for the free reign of finance (Varoufakis, 2015).

---

2 As different from the crisis in the last decades of the 19th century in Europe, which is understood as a crisis of profitability. Capitalism emerged out of this as a system of larger firms, with managerial control, and the financial sector as the main source of capital, rather than the own profits of small firms.(Beaud, 2000)

3 The cost of exit or renegotiation is much smaller in bilateral trade agreements, compared to multilateral agreements governed by WTO. Similarly, without getting into the merits of different macroeconomic policies, the degree of autonomy to any government is higher in case of controlled flow of capital.

The macroeconomics that emerged during the 1970s and after, is not a monolithic idea. There were various approaches coexisting throughout. (Phelps, 1990; Stiglitz, 2015, 2018). But certain ideas and approaches enjoyed centrality, and alternatives were formulated in response to these.

We recall that the dominant narrative in macroeconomics, emerging since the 1970s was based on a complete denial of any disturbance in the economy emerging from the financial sector. We argue below that a theoretical background of this denial is provided by Efficient Market Hypothesis. But before that, we critically examine the evolution of the concept of liquidity trap, with its genesis in Keynes's writing.

We note two crucial implications of these developments - First, the focus of instability in the economic system is limited to the real markets and policy changes in the models. These instabilities are taken care of by price mechanisms coupled with rational expectation hypothesis in the real markets. Its policy implication is to remove all the obstacles that can hinder the functioning of the price mechanisms. Second, the financial markets work best when unregulated, delivering the prices which represent fundamental values. This also applies to the financial institutions which should be allowed to define their functioning according to the requirements of the markets.

NARROWING SCOPE OF LIQUIDITY TRAP

In General Theory, Keynes has extensively studied the impact of financial markets on investment on the one hand, and the reasons why the former always tends to be unstable on the other. He developed his arguments and analysis in the context of proving the finicky nature of investment as the main cause behind the problem of effective demand, and the inefficacy of monetary stimulus to solve this problem (or the extent of wage price deflation required to restore full employment in certain situations) (Keynes, 1936). We can broadly divide these arguments in two categories - First, the nature of finance and investment link, and second, the likelihood of unstable financial markets due to strategic behaviour of the individuals.

FINANCE, INVESTMENT AND LIQUIDITY TRAP

To understand the impact of monetary expansion to stimulate investment, Keynes formulated a problem of portfolio management of an individual. He assumed that she has a choice of keeping her wealth in the form of cash or bond. The return on cash is zero, whereas the expected return on bond depends on its current price, compared to its given maturity price and time. The difference between the two prices, and time involved in maturity of this risk-free asset defines the rate of interest in the market. For a given maturity period and value then, the price of bond at present is inversely related to the market rate of interest.

Whether an individual will invest in bonds or keep cash will depend on her expectations about the *bond price between the present and the time of maturity*. If she expects this price to rise, i.e., she expects the interest rate to fall in this interim, she will invest in bonds. Else, she prefers to hold more of her wealth in the form of cash. So her decision depends on what is the current and expected 'normal' price of bond respectively, or alternatively, current and expected or 'normal' rate of interest. In general, and including bonds, the fundamental premise determining the demand for assets is described as follows. "....It is an inevitable result of an investment market organised along the lines described. For it is not sensible to pay 25 for an investment of which you believe the prospective yield to justify a value of 30, if you also believe that the market will value it at 20 three months hence." (Keynes, 1997, page 155).[4]

In this formulation, one's allocation of portfolio depends on one's notion of expected or 'normal' price of bond or interest rate. This may vary from person to person, but there is a certain current price (or rate) at which almost no one expects it to rise (or rate to fall) in the interim period, hence they prefer cash as a form of wealth.

In this situation, any increase in supply of money will result only in higher holding of money, rather than higher demand for bonds leading to lower rate of interest. This

[4] It's a reprint with the same font and page number of the original General Theory (Keynes, 1936).

came to be known as "Liquidity Trap" later.[5] This construct of individuals' money demand behaviour in the process of wealth management was used by Keynes to argue about the inability of the financial system to adjust and deliver full employment. Consequently, it has been used to show the inefficacy of monetary expansion to enthuse investment. Clearly, the role of expectations about the value of financial investments (money and bond in this case) in determining the money demand is central to it.

In the following sections, we argue that the correct application of the above idea is to locate the reasons for failure of higher availability of funds to enthuse people to make individual investments (real or financial) which would cause higher (real) investment in the economy. Accordingly, we have given different definitions of liquidity trap, from the narrowest to broadest. The question of which one is the actual liquidity trap is a matter of nomenclature, and has been avoided here. But we examine which of these best describe the role of the financial markets in determining the efficacy of monetary stimulus to induce investment.

In the next subsection we examine the idea of liquidity trap in standard textbooks of previous generations to conclude that they never took the concept in the broad sense of the term, but in the limited sense of the cash-bond description. The later generation textbooks though either completely abandoned even an oblique reference to any portfolio choice decision in determining the efficacy of monetary policy, or did it superficially without advancing analysis of policies based on it. The idea of liquidity trap was reduced to situations where the rate of interest is zero, and hence cannot be reduced any further by monetary expansion.

The above approach then allows us to completely abandon the examination of financial market behaviour to understand the full impact of macroeconomic policies. We further argue that this approach is justified by Efficient Market Hypothesis, and

---

[5] The phrase "Liquidity Trap" is not used by Keynes. It's not clear who used it first, but Ackley uses the term in the text-book written in 1961, indicating that it gained currency quite early.

implicit use of its strongest version in REH based literature. Implicit - because it allows the omission of the behaviour of the financial markets and its impact on investment.

FAILURE OF MONETARY EXPANSION IN CASE OF GENERALISED 'LIQUIDITY TRAP'

We define "Liquidity Trap" in the following four ways:-

LT0 - Since rate of interest is already zero, monetary expansion will not reduce it further. This definition has been used by most of the textbooks written in the 1990s and after.

LT1 - Since the rate of interest is so low, most people expect it to decline. Given the choice between cash and bond, this implies that they expect zero return on cash to be better than negative return on bonds. So an increase in money supply will only lead to higher cash holding with individuals and banks. This essentially means a change in money demand function itself, or velocity of money, in response to the change in money supply.

LT2 - The portfolio is expanded to include shares, other financial instruments, real estate, gold etc, apart from money and bonds. LT2 is a context in which any increase in availability of funds will mostly translate into higher money demand or imported gold. There will be no increased demand for financial instruments or existing real estate which could cause more real investment in the economy, e.g., no boom in the secondary market which can cause a boom in the primary market leading to higher real investment, or no increase in real estate prices which may cause new construction. This would happen because individuals don't expect prices of these assets to increase in future.

Lt3 - Monetary expansion causes higher demand for financial assets as these are expected to give better yield than zero yield of cash. This causes a boom in the secondary market but does not cause new real investment in the economy as the

expectations about the economy in future are bleak.[6] This is a bubble caused by monetary stimulus. The notional wealth of some people may increase, and to the extent it causes higher consumption in the economy, the stimulus is successful. But if there is an absence of substantial increase in expenditure, it is LT3.

We take LT2 to be the most appropriate interpretation of Keynes's argument about the ineffectiveness of monetary stimulus to boost demand, even though he has primarily elaborated on LT1. In certain situations, it can be stretched to LT3 as giving the same results, but this requires certain additional peculiarities of the economy to be included, and is hence too specific, even though not rare.

We note that the concept of liquidity trap was introduced in the textbooks since 1970s through the IS-LM framework. In the next section it is highlighted that LT1 was used in most macroeconomics textbooks until the 1980s. Though not comprehensive like LT2, it highlighted the importance of individuals' expectations about the value of assets in their respective wealth management, in determining the effectiveness of monetary stimulus in demand management. We further argue that LT0 is devoid of any formulation about the individuals' choice of form of wealth, and hence concludes that monetary stimulus is ineffective only when rate of interest is already zero. We conclude that this is a complete trivialisation of the idea of liquidity trap by stripping it of its essence.

LIQUIDITY TRAP IN TEXTBOOKS

In General Theory, the term liquidity trap is not used. Use of the term in the sense of LT1 though starts soon. Ackley (Ackley 1961, page 192) has spoken of an "extreme form of speculative demand for money might make automatic full employment impossible even if wages and prices were entirely flexible". He goes on to explain how bond prices higher than yielding a certain rate are considered too high, and

[6] A current example is the boom in Indian stock market, with the real economy's performance rather bleak, and the RBI's explanation in terms of monetary stimulus. (New Indian Express, 27/05/2021)

wealth holders would be unwilling to invest in bonds. He further goes into the necessity of extreme wage-price deflation to achieve full employment in such cases. He argues that "in the face of speculative concept of normal rate", extreme inflation or deflation of the price level may be required. This is further emphasized on pages 384-385.

Whereas the treatment of liquidity trap in Ackley is different from directly addressing the efficacy of monetary policy, and revolves around extreme wage price deflation needed to reduce transaction demand of money (thus increasing real money balance), the centrality of speculative demand of money and it's interest elasticity through expectation about bond prices is central to the notion of liquidity trap.

Branson, like most of the next generation popular textbooks, relies on a neat graphical representation of IS-LM framework and the idea of liquidity trap has been discussed in that context (Branson 1979, page 60,95,132-35). It explains the high elasticity of speculative demand vis-a-vis interest rate, and consequently LM curve by referring to a too high a bond price or too low an interest rate. The emphasis of the book though remains on explaining "Classical system" and "Keynesian System". A flat LM curve at the low interest rate was given as the situation of liquidity trap in Branson and most of the popular textbooks of this generation. These also mentioned the failure of monetary expansion to boost the output at a low level of output and interest rate.

Even the flat LM curve at very low levels of interest rate was given up in undergraduate textbooks of 1990s (Dornbush et.al., 1993).

Dornbusch and Fischer[7] make a reference to the choice between money and bond, but see the possibility of liquidity trap, the failure of monetary expansion to reduce

[7] The first edition of the famous text-book written by them was published in 1977. In this work reference is made to 6th edition (1993) and 11th edition (2011).

interest rate, only when the rate is already zero.[8] Further they say, "The possibility of a liquidity trap at low positive (rather than zero) interest rates is a notion that grew out of the theories of the great English economist John Maynard Keynes. Keynes himself did state, though, that he was not aware of there ever having been such a situation, nor are we today, 60 years later." (Dornbusch and Fischer, 1993). We examine this claim about Keynes's writing below in this section.

They then go on with a positively sloped LM curve in the rest of the book, considering LT not worthy of any further exploration, except a reference in the context of crowding out when it is mentioned that if LM is flat there would be no increase in interest rate causing decline in investment due to increase in government expenditure.

The LT occurring only at zero rate of interest is further discussed with examples in later editions (Dornbusch et al., 2011).

Unlike the books by Ackley and Branson, Dornbusch et al emphasize the "transmission mechanism" - a process through which monetary policy affects aggregate demand. They speak of more than two assets, and the change in their demand and prices due to change in money supply (or increase in real balance). And then they say that monetary stimulus would reduce the rate of interest, thus getting back to the only money and bond story of Keynes. Further, they acknowledged that for monetary policy to be effective, the spending (investment, consumption, local government expenditure) must respond to this lowered rate of interest (Dornbusch et al, 2011, page 252).

It's not very clear though how the prices of other assets (shares, houses etc) are linked with rate of interest in the same way as the bond prices. Nor is it clear as to why the prices of these assets cannot be expected to fall, yielding a negative return- a case ruled out by Dornbusch et al. for bond and thus they insist on LT only at zero rate of interest.

---

[8] To their credit, "Transmission Mechanism" of monetary expansion to aggregate demand is given lucidly. In this context, the importance of portfolio arrangement of individuals is also given. But immediately after that the concept is reduced to zero interest rate.

So effectively, *Dornbusch et.al. indicate the broadest sense of liquidity trap, i.e., LT3, then somewhere get back to LT1, and then settle with LT0, and insist that failure of monetary expansion to boost aggregate demand and output can take place only at an already zero rate of interest*.

LIQUIDITY TRAP AND GENERAL THEORY

Chapter 12 to 15 of General Theory discuss the nature of money demand of individuals, its relations with expectations about asset prices, the unstable nature of asset markets due to this behaviour of individuals regarding demand for assets including money, and then the efficacy of monetary expansion to give a boost to investment.

As quoted and discussed above, the fundamental premise determining the demand for assets is expectations about the price of the asset. The price today will depend on average market expectations about the future. Keynes then goes on to elaborate the consequence of 'mass psychology' on the market for assets, offering extremely insightful observations about the strategic behaviour of individuals in his famous beauty contest parable, combined with the motive of moving ahead of the crowd, but not away, and definitely not behind, while acting in financial markets.[9] Beauty contest parable has later been formalised as p value beauty contest game, and has been studied extensively in the last 25 years. (Nagel, 1995; Thaler, 2000, 2015)

In chapter 13 of General Theory, Keynes defines liquidity preference as a motive in addition to holding assets to yield returns (page 168). In fact, he asserts that rate of interest is a cost of parting with liquidity, rather than a reward for abstaining from consumption, as viewed in classical economics. He goes on to define transaction, precautionary and speculative demand for money, with the motive for the last one being "the object of securing profit by knowing better than the market what the future will bring forth" (page 170).

[9] Some mathematical expressions of beauty contest parable have been developed to check the possibility of individuals learning the rational expectations equilibrium (Frydman, 1982; Jha, 2020). P value beauty contest game though remains the best formal expression of Keynes's parable.

Clearly, so far what he has in mind is the portfolio management of the individuals with money as one component in it with its characteristic of being liquid (and zero yield), along with and different from other assets which may give positive or negative yield and compromise on liquidity.

The above suggests that Keynes was trying to argue that the (speculative) demand for money depends on the expectations of the individuals about the prices of various assets in the future. Clearly, a pessimistic view about the future would lead to higher demand for money resulting from both the expected negative yield on assets and liquidity preference. If one develops this line of reasoning, one can derive LT2 from it, instead of LT1.

The reason Keynes limited his subsequent elaboration to money holding vs. bond-holding question could be historical, or due to a simpler market for bonds, with the only complication being short term and long term interest rates. It is worth noting that the idea of efficient market hypothesis was formulated half a decade before it, as an attempt to explain the bond market in France (Read, 2013). In any case, this limitation led to money demand, bond price, and interest rate relation coming to the centre stage of what came to be known as liquidity trap. It was unfortunate that among the Keynesians of different schools also, the analysis of different financial markets and their relation with the efficacy of monetary stimulus was not given the attention it deserved. It could partly be due to the regulated nature of the financial sector until the 1990s when most of the deregulation took place. A subsequent interest in p value beauty contest game to explain the dynamics of the financial markets has emerged, but it is still to make inroads into the mainstream macroeconomics formalisation (Thaler, 2000, 2015). This is despite the fact that the 2008 crisis popularised phrases like 'crisis of confidence' and 'crisis of liquidity', essentially indicating a change in money demand function itself, or change in the velocity of money - indicating liquidity trap in the sense of LT2.

But limiting to LT0, instead of LT1 has robbed the concept of liquidity trap of its essence. A restriction to LT0 in Dornbush et al, is argued on the basis of two reasons -

First, there is no reason why anyone will hold money (other than for transaction motive) offering zero return when the prevailing rate of interest is positive. This reason ignores the idea of "liquidity preference", and the fact that in a more generalised portfolio, various assets may be expected to yield negative return. In fact, Keynes tried to show the negative yield for bonds also, in the short run. In the long run it will be definitely positive, but why not postpone the decision to buy bonds until they have fallen, before they start to rise? Secondly, it is stated that Keynes himself has said that it is the most unlikely situation, and has never been observed in the past. Actually, Keynes has said, "But whilst this limiting case might become practically important in future, I know of no example of it hitherto" (page 207, Keynes, 1936,). In the very next paragraph Keynes talks about the two historical situations - one in which the demand for money collapses in Russia and central Europe after the war, and the other in which the opposite happens - "a financial crisis or crisis of liquidation, when scarcely anyone could be induced to part with holding of money on any reasonable terms" in USA in 1932.The assertion about Keynes by Dornbusch et al seems to come out of a selective reading of the text.

Indeed, one expected the new books and editions, at least after the 2008 crisis, to contain a better treatment of financial markets, and definitely a broader treatment of the idea of liquidity trap. If the concept of liquidity trap in the sense of any of the above definitions seems insufficient to provide a reasonable framework for studying the relationship between financial markets and monetary policy, there is a need is to explore it further theoretically, rather than assume it away completely. In the next section we further elaborate this issue.

MODERN MACROECONOMICS AND EMH

In this section, we try to understand what enabled macroeconomics since the 1970s to ignore the financial sector. One manifestation of it is the dilution, if not trivialisation, of the concept of liquidity trap in the undergraduate textbooks. At an advanced level of pedagogy and research, this period was dominated by the Dynamic Stochastic General Equilibrium models (Stiglitz, 2015, 2018). Stiglitz has comprehensively

reviewed the Real Business Cycle theories and the DSGE models. Amongst other things, his criticism includes the misplaced emphasis on micro foundation as a necessary condition for a rigorous theoretical formulation while ignoring those factors of individual behaviour which are not only more important than the ones that are included (e.g., credit rationing more important than interest rate), but are fundamentally altered by the changes at aggregate level (e.g., the behaviour of banks when faced with liquidity constraint). Deviations from the predicted outcome of the model are explained by exploring minimal changes in the model, e.g., nominal price and wage rigidities.[10] In the absence of a well-specified and sufficiently heterogeneous financial sector in these models, the question of stability is absent from the very framework of analysis. About the 2008 crisis Stiglitz says, "In the run-up to the crisis, monetary authorities focused on inflation rather than on what they should have been focusing on - financial stability; and some of their (especially deregulatory) actions clearly contributed to financial instability. The DSGE models provided them (false) assurance that they were doing the right thing." (Stiglitz, 2018).

Stiglitz talks about the "second strand" built on market imperfections and modern information theory which resurrected the approach of Fisher who explored the macroeconomic dynamics emerging out of flexibility and debt-deflation, as different from the Hicksian interpretation of Keynes based on wage-price rigidity.[11] The second strand approach has also led to renewed interest in Minsky.

This strand has remained an academic exercise though, with little impact on the overall policy framework, despite the "bail-outs" and stimulus packages post 2008 crisis. How post-pandemic economics will evolve is a matter of speculation at this point.

---

[10] Stiglitz calls it the Hicksian interpretation of Keynes, as different from Fisher's approach.

[11] It is worthwhile to mention here that the discussion of liquidity trap in Ackley revolves around the question of the ability of the system to achieve full employment through wage-price deflation when demand for money is highly elastic to interest rate. This is also the approach in General theory where Keynes explores how much money from transaction and precautionary purposes has to be released for the economy to be in full employment when the speculative demand is infinitely high at any given interest rate (Ackley, 1961; Keynes, 1997).

HOW MACROECONOMICS IGNORES THE FINANCIAL SECTOR?

Any macroeconomic model has to be a simplified and solvable specification of the economy. The real question is what one chooses to highlight and what one chooses to ignore in it. Clearly, any part of the economy which is not a source of significant instability can be justifiably ignored. Should we assume that the financial sector is one such part? What could be the justification for it? In the following subsection we argue that a belief in Efficient Market Hypothesis provides a reason to these models to ignore financial markets and instead concentrate on the changes in real markets with rational expectation hypothesis. Any deviation from the model in the real world is interpreted as a reason for reforms in the economy to make it 'efficient'. Indeed, this is how macroeconomic theory has impacted the policy framework throughout the world. One can locate both the reasons for the "Stabilisation program" and "Structural Adjustment Program " advocated by IMF-WB twins in this approach to macroeconomics.[12] The necessity of the strong version of EMH for the omission of the financial sector and the response to the deviation from the perfect information paradigm is discussed below.

'EFFICIENT' IN EMH AND 'RATIONAL' IN REH

EMH consists of two separate components - First, the stock prices follow a random walk. The idea was proposed by Bachelier, a French physics doctoral aspirant, at the turn of the 20th century.[13] The idea of random walk is fundamental in the sense that it is not derived from any specific assumption about the behaviour of the agents. The only

---

[12] This is not to deny that there are independent reasons supporting these policies. But a homogeneous set of policies advocated for all the economies required a grand narrative which was provided by these models.

[13] This predated Einstein's formulation of Brownian Motion using the random walk (Read, 2013), the first introduction of random walk to the world. Bachelier tried to explain the fluctuations in the market for government bonds which were issued to aristocratic class as compensation for the loss of their privileges. The day to day fluctuations were important for those who dealt in option derivatives. His work was largely unacknowledged in physics and statistics both. Only in the 1950s his approach was studied and brought to the world by Samuelson.

microeconomic foundation present in EMH or REH based models is that all the agents have the same mean expectation of the future outcome as the outcome itself. The random walk is consistent with and simply superimposed on this, and hence called fundamental. This remains true throughout the evolution of EMH through Bachelier to Samuelson to Fama. The absence of a micro-theoretic or behavioural justification about the aggregated belief means the empirical validation of EMH has been extremely important and celebrated until it could no longer be (Thaler, 2015). Random walk dynamics is characterised by a mean with ever increasing dispersion of probability distribution of the outcome (price). For long, it was believed that the mean represents the fundamental value of the share. This was done through asserting the informational efficiency of the prices and arbitrage profit made by rational agents.[14] A price lower than its fundamental value will make the rational agents buy the share causing prices to move up, thus stabilising the system. The past plays no role in determining this behaviour (as the deviation in each period is random), and anyone betting in the opposite direction will be weeded out by the losses (Fama & French, 1988). Whereas, the differentiation was made between strong and weak versions of EMH, the latter recognising the unavailability of some information about the future, the belief in the mean representing the fundamental value was not given up entirely (Fama, 1965; Read, 2013 page 104).

The necessity of all the future information for the random walk to be around the fundamental value was proved by Lucas, and subsequent modifications made by Fama (Lucas, 1978). Simply put, Lucas concludes that rational individuals optimising with all the available information, and the market following a random walk is not, in itself, sufficient to establish stock price representing fundamental value as mean. Full information of the future is necessary for the 'efficient' part of EMH. This is the second component of EMH as used in economics. In the finance literature where the purpose of analysis is to merely predict asset prices based on some model, the weaker variant of EMH continues to be applied, *but if one must*

[14] Grossman paradox highlighted that if prices are informationally efficient and information gathering is costly for traders, rationality dictates them avoiding this cost and just observe the price, But this implies absence of any agency who would make the market stable through arbitrage profit (Grossman & Stiglitz, 1980).

insist on the mean price representing full information about the future, the strong version becomes a necessity.

Real Business Cycle and later DSGE models explore the impact of supply shocks and policy changes on the real economy. While doing so they implicitly assume that the financial sector is not a source of substantial disturbances. This has been enabled by a belief in the efficiency of the financial markets justified by EMH. Having ruled on the efficient outcome in financial markets, the model can concentrate on other changes in its specifications. Additionally, these models assume rational expectations where rational implies the individuals having the same expectation stochastically as the actual outcome of the system. But REH, on its own, may not ensure full employment as the correct or rational expectations are compatible with multiple equilibria, as we have learnt from the sunspot literature (Cass & Shell, 1983; Evans, 1991). As it's argued that what matters is not fundamentals, but what people have learnt to believe as fundamentals. We can conclude that 'rational' in REH does not ensure efficiency in the sense of full employment.

If the economic system is repetitive[15] then REH delivering efficient outcomes can be justified so long as any internal disturbance in demand-supply equalising outcome can be taken care of through a price mechanism. If the source of disturbance is external, then convergence to equilibrium is guaranteed by individuals perceiving these disturbances correctly (eg, temporary or permanent), and the speed of convergence would depend on the time the individuals take to process the signals emerging out of these external disturbances. That they process it correctly, is simply hypothesised.

But certain internal disturbances may not be taken care of through the price mechanism. It happens in those markets where a higher price or any other reason may create an expectation of even higher price, and it results in higher net demand. *The inverse relationship between net demand and prices is broken, and both follow the expectations about themselves (random walk hypothesis of EMH assumes away any*

[15] Agricultural economy, as Stiglitz describes it.

benefit of such learning, or expectations). This implies that any change in expectations may cause the downward or upward spiral of prices, or possibly settling at some other equilibrium level. Asset markets, and particularly financial asset markets are like this. It's the polar opposite of a fresh fish market in a village where both supply and demand are given and the price settles at a particular level, with expectations playing no role whatsoever.

In any economy, if the price of assets start to collapse or settle at a lower equilibrium price, the investment is likely to fall. This would result in aggregate demand in the economy falling short of the value of total production, resulting in an economy at a level less than full employment with no mechanism available to gravitate towards it.

The strong version of EMH with the assets reflecting all the future information, and hence their respective fundamental values, rules out such internal disturbances, leaving the field only for changes outside the financial markets. As described above, this ensures the full employment outcome with REH and price-mechanism.

CONCLUSION

The near absence or very basic treatment of the financial sector in modern macroeconomics, when finance is increasingly becoming crucial for almost all the economies, is ironic. We have argued that the evolution of the concept of liquidity trap over the decades is aimed towards eliminating the concept of money as a form of wealth, and thus denying any justification for Keynes's speculative demand for money, which depends on the expectations about the prices of the other assets. This eliminates the possibilities of events in the financial sector which can make the monetary stimulus blunt and ineffective. This approach relies on the view that financial markets will always represent the fundamental values of the assets concerned. EMH is used to justify this, which assumes away any benefit of learning from the past to form expectations about the future. Thus, modern macroeconomics starts to focus on the changes in real markets only, completely ignoring a heterogeneous financial sector in its model specifications. Rational Expectations and

price mechanisms are then used to get the economy's ability to maintain full employment on its own.

REFERENCES

Ackley, G. (1961). Macroeconomic Theory. The Macmillan Company New York.

Beaud, M. J. (2000). A History of Capitalism. 1981. Reprint. New York: Monthly Review Press.

Cass, D., & Shell, K. (1983). Do Sunspots Matter? Journal of Political Economy, 91(2), 193–227. https://doi.org/10.1086/261139

Dornbusch, R. & Fischer, S.(1993). Macroeconomics,6th ed. , Mcgraw-hill College,ISBN-13: 978-0070178441

Dornbusch, R., Fischer, S., & Startz, R. (2011). Macroeconomics,11th ed. McGraw-Hill, NY http://dspace.uniten.edu.my/jspui/handle/123456789/18297

Evans, G. W. (1991). Pitfalls in Testing for Explosive Bubbles in Asset Prices. The American Economic Review, 81(4), 922–930.

Fama, E. F. (1995). Random Walks in Stock Market Prices. *Financial Analyst Journal*, 51(1),75-80

Fama, E. F., & French, K. R. (1988). Permanent and Temporary Components of Stock Prices. Journal of Political Economy, 96(2), 246–273.

Frydman, R. (1982). Towards an Understanding of Market Processes: Individual Expectations, Learning, and Convergence to Rational Expectations Equilibrium. The American Economic Review, 72(4), 652–668.

Grossman, S. J., & Stiglitz, J. E. (1980). On the Impossibility of Informationally Efficient Markets. The American Economic Review, 70(3), 393–408.

Jha, Avinash K., J. (2020). Beauty Contest and Learning in Rational Expectations Based Stationary State. Business Analyst, 41(2), 225–240.

Keynes, J. M. (1936). The general theory of employment, interest and money. Harcourt, Brace.

Keynes, J. M. (1997). The general theory of employment, interest, and money /. Prometheus Books.

Lucas, R. (1978). Asset Prices in an Exchange Economy. Econometrica, 46(6), 1429–1445.

Mondal, D. (2021, May 27). RBI expresses concern on India's equity market 'bubble', New Indian Express, 'RBI expresses concern on Indias equity market 'bubble'- The New Indian Express

Nagel, R. (1995). Unraveling in Guessing Games: An Experimental Study. The American Economic Review, 85(5), 1313–1326.

Phelps, E. S. (1990). Seven schools of macroeconomic thought: The Arne Ryde memorial lectures. Clarendon Press ; Oxford University Press.

Read, C. (2013). The Efficient Market Hypothesists. Palgrave Macmillan UK. https://doi.org/10.1057/9781137292216

Stiglitz, J. E. (2015). Towards a General Theory of Deep Downturns (No. w21444). National Bureau of Economic Research. https://doi.org/10.3386/w21444

Stiglitz, J. E. (2018). Where modern macroeconomics went wrong. Oxford Review of Economic Policy, 34(12), 70–106.

Thaler, R. H. (2000). From Homo Economicus to Homo Sapiens. Journal of Economic Perspectives, 14(1), 133–141. https://doi.org/10.1257/jep.14.1.133

Thaler, R. H. (2015). Misbehaving: The making of behavioral economics. (pp. xvi, 415). W W Norton & Co.

Townsend, R. M. (1983). Forecasting the Forecasts of Others. Journal of Political Economy, 91(4), 546–588. https://doi.org/10.1086/261166

Varoufakis, Y. (2015). The Global Minotaur: America, Europe and the Future of the Global Economy. Zed Books Ltd.