

Is the existence of property cycles consistent with the Efficient Market Hypothesis?

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Abstract

A number of empirical studies have confirmed the existence of property cycles in various mature real estate markets. In this paper, we will see whether these results fit in with the existing relevant theories.

The efficient Market Hypothesis (EMH) is one of the cornerstones of the mainstream finance. In the context of the equity market, one of the generally accepted implications of the EMH is the future price of a security is unpredictable. The real estate market, by various empirical studies, has found to be weak form efficient. It is thus natural to infer that no property cycle exists as otherwise it would imply the predictability of property price and that is not consistent with EMH.

This study, after reviewing the up-to-date literature, found the Efficient Market Hypothesis has taken on a new face; it is separated from the Random Walk Hypothesis (RWH). Due to its infallibility in empirical testing, it could well be recessed to the role of benchmarking the relative efficiency of the market. The apparent inconsistency between the existence of property cycles and EMH therefore disappears.

The behavioural school of finance proclaims that market may not be efficient all the time and provides an explanation for this. Under this school of thought, the apparent conflict between the existence of property cycles and EMH again disappears.

Key words: Property Cycle, Efficient Market Hypothesis, Behavioural Finance

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Introduction

A number of empirical researches have confirmed the existence of property cycle in various mature real estate markets. (Wilson and Okunev (1999), Brown and Kim (2001), Wang (2003)) Such empirical results are *prima facie* not in consistence with the Efficiency Market Hypothesis (EMH), one of the cornerstones of the mainstream finance. As in all scientific enquiries, the theoretical side has to make amendments or in times, subject to complete overhaul or revamp to accommodate for the newly found experimental evidences. It is under this background that the authors wish to conduct a literature review on the latest development of the theoretical development of Efficient Market Hypothesis; at least as far as real estate market is concerned.

Louis Bachelier technically first raised EMH in 1900 in his PhD thesis. Experimental testing was first carried out by Cowles in the 1930's and was heatedly discussed in the academic circle subsequently and culminated in Fama's seminal paper in 1970. Fama made a comprehensive survey of the then EMH discussions in the special edition of Journal of Finance in the context of equity and debt market. It is and was clear that in his mind EMH was made reference to stock market and bond market only. Real estate market is certainly not included. The lending of EMH to real estate market was first made by Gou (1984) and empirically tested in various mature markets such as Case and Shiller (1989) and Brown and Chau (1997) etc. The general consensus is that real estate market is at most weak form efficient.

The following two decades saw further empirical testing on EMH and more anomalies such as size effect, January effect etc were identified by the mainstream finance camp. Concurrently, Behavioural finance school emerges and raises a different viewpoint on the market efficiency. Section one of this paper will examine the main concerns and findings of the mainstream finance camp. Section two will look at the ideas of the Behavioural Finance camp. Section three is the conclusion.

Section One: School of thought of mainstream finance

In his two survey papers, Fama (1970, 1991) took the market efficiency hypothesis to be the simple statement that “security prices fully reflect all available information”. This simple definition is in fact very rich in content. It relates to ‘available information set’ and whether it is ‘fully reflected’ in security price. Fama (1970) further made the assumption that ‘the conditions of market equilibrium can be stated in terms of expected returns and that equilibrium expected returns are formed on the basis of (and thus “fully reflect”) the information set F_t have a major empirical implication – they rule out the possibility of trading systems based only on information in F_t that have expected profits or returns in excess of equilibrium expected profits or returns.’ Malkiel (1992) has accordingly provided an explicit definition of EMH in the New Palgrave Dictionary of Money and Finance as follows:

“A capital market is said to be efficient if it fully and correctly reflects all relevant information in determining security prices. Formally, the market is said to be efficient with respect to some information set ... if security prices would be unaffected by revealing that information to all participants. Moreover, efficiency with respect to an information set ... implies that it is impossible to make economic profits by trading on the basis of [that information set].”

The last sentence of Malkiel’s definition on economic profits sets out clearly the foundation of empirical work on market efficiency. EMH requires an equilibrium asset pricing model and a model of ‘expected’ returns. A constant ‘expected’ return was generally assumed but in recent years, there is more interest in equilibrium models with time varying ‘expected’ security returns.

In Fama’s (1970) first survey paper, he proposed a number of models for the movement of price of security, including that of submartingale and the random walk model (RWM). From then onwards, efficient market hypothesis becomes sort of synonymous with the random walk model. This is an unfortunate circumstance and a large number of empirical tests on EMH linked with the test of RWM.

Testing on the daily and weekly security data, the RWM does appear to accurately describe the experimental data. However, when it comes to less frequent market data, particularly quarterly and yearly data, even Fama and French (1988) had to admit that certain serial correlation did exist: “The autocorrelation is weak for the daily and weekly holding periods common in market efficiency tests but stronger for long-horizon

returns”. That means the market does have some kind of long-term memory and RWM does not fit the data.

As time progresses, the EMH proponents modified the EMH to include information and trading costs. Grossman and Stiglitz (1980) have proved that no excess returns or profits would be obtained as long as the cost of gathering and processing of information and trading cost are properly accounted for.

The main obstacle to test the market efficiency is the joint-hypothesis problem. In Fama (1991)’s own words “Market efficiency per se is not testable. It must be tested jointly with some model of equilibrium, an asset-pricing model. This point, the theme of the 1970 review (Fama (1970) says that we can only test whether information is properly reflected in prices in the context of a pricing model that defines the meaning of “properly.” As a result, when we find anomalous evidence on the behavior or returns, the way it should be split between market inefficiency or a bad model of market equilibrium is ambiguous.”

On the basis of this fact, surely market efficiency can never be rejected, but likewise, it can never be proved to be right and have its position be elevated to that of accepted theory; so it remains a hypothesis. Naturally people will start to question the value of EMH as its validity is not empirically testable. To someone, it may be considered not pass the acid test of scientific knowledge yet while some other considers that the concept of market efficiency may be retained with some modification. Campbell, Lo and MacKinlay (1997) suggested, "Market efficiency is an idealization that is economically unrealizable, but that serves a useful benchmark for measuring relative efficiency." They also suggested "many of the techniques ... can be more profitably applied to measuring efficiency rather than to testing it. And if some markets turn out to be particularly inefficient, the diligent reader of this text will be well-prepared to take advantage of the opportunity."

Fama (1991), in turn, suggested focusing the main areas of research of EMH from the three forms of efficiency based on different information sets to Tests of return predictability, Event studies and Tests for private information; to better reflect the change in direction of interests of the academic community in the past two decades.

Tests of return predictability attracted much interest since the middle of 1980’s and popular forecasting variables include ratio of price to dividend or earnings (Shiller (1984), Fama and French (1988), Campbell and

Shiller (1988)) and term structure variables (Keim and Stambaugh (1986), Campbell (1987), Fama and French (1989)).

While the earlier work focused on the predictability of daily, weekly and monthly returns, later work shifted to the predictability of return over longer horizons. The most striking result is that while the predictable component of returns is only a small part of the variance of daily, weekly and monthly returns, it is of value close to 40% of the variance of 2 to 10 years returns (Fama 1991). Campbell, Lo and MacKinlay (1997), using the value-weighted CRSP index of stocks traded on the NYSE, the AMEX, and the NASDAQ, over a sample period from 1927 to 1994 (and two sub sample periods of 1927 to 1951 and 1952 to 1994), found that in the regression of returns over dividend-price ratio, the R^2 statistic, over a four year horizon, is 26% for the full sample and 42% for each of the sub samples. All these suggest that predictability of returns, at least over a reasonably long horizon, is not impossible.

The general consensus is that real estate market is weak form efficient at most. The empirical evidence of the existence of property cycles may infer the predictability of the property price. This is, however, compatible with the EMH in its new form as prescribed by Campbell, Lo and MacKinlay (1997). On the practical side, the real estate market is of higher illiquidity when compared with the equity and debt market. The cost of gathering and processing of information and trading cost of real estate is also much higher than that for trading stock and debt security. In practical terms, all of these provide a great deterrent for anyone who wishes to take advantage of this cyclical phenomenon unless the situation is too excessive.

Section Two: School of thought of behavioral finance school

Broadly speaking, microeconomics is to study the behavior of consumers and producers. Financial economics is to study the behavior of investors under conditions of uncertainty. The recognition of the important role of human nature in the field of economics dates back to the early twentieth century. Clark (1918) says that “the economist may attempt to ignore psychology, but it is a sheer impossibility for him to ignore human nature, for his science is a science of human behavior. Any conception of human nature that he may adopt is a matter of psychology, and any conception of human behavior that he may adopt involves psychological assumptions, whether these be explicit or not.” Most of the mainstream finance is based on the assumption that investors are ‘rational’.

Slovic (1969, 1972) first worked on misperceptions about risk from a psychological angle. Tversky and Kahneman (1974, 1979) then studied heuristics, biases and frame dependence. In the eighties, a number of anomalies, which are not consistent with empirical results, began to emerge. The most notable ones were raised by Shiller (1981) on volatility, De Bondt and Thaler (1985 and 1987) on overreaction of investors and Shefrin and Statman (1985) and Odean (1998) on loss realization etc. In a way, all of these studies first questioned the efficiency of the market and then touched upon other related issues progressively.

(a) Types of traders

This school provides an alternative view of the behavior of the economic agents of the capital markets. It assumes the existence of two types of traders: rational (information trader) and irrational (noise trader), contrary to the assumption of the mainstream finance of having only one type of trader, the information trader. Kyle (1985) and Black (1986) first coined the term noise trader and asserted that some investors traded on noise rather than information. Psychology has a part to play in the investment decision-making process.

We have some psychological evidences as follows. Some traders do not look at the final wealth for their decision making process but on the attainable gains or losses relative to some reference points only as revealed by Kahneman and Tversky (1979) in their ‘Prospect Theory’. People, in choosing investments, are influenced by how the decision is framed. Benartzi and Thaler (1995) pointed out that people tend to allocate more money to stocks than bonds when they see a very

impressive history of long-term returns relative to bonds, than if they see the volatile short-term stock returns.

Mainstream finance also argues that even though not all investors are rational, their actions are random and hence will cancel out each other. Shiller (1984) argues that investor sentiment behaves like epidemics and noise traders may behave socially and follow each other's mistakes by listening to rumors or imitating their neighbors. Shiller's argument can best explain the herd instinct of the professional fund managers.

(b) Possibility and extent of arbitrage

Mainstream finance argues that even some of the investors are not rational; the existence of sophisticated arbitrageurs would take advantage of the temporary inefficiency of the market quickly and bring the price to its fundamental value. Sharpe and Alexander (1990) define arbitrage as 'the simultaneous purchase and sale of the same, or essentially similar, security in two different markets at advantageous different prices.' As arbitrage is a risk free exercise, only a few arbitrageurs will be sufficient to take care of any temporary market inefficiency efficiently.

The real world situation, however, is different. Real world arbitrage is risky and hence limited as proposed by Shleifer and Summers (1990). Close substitute of security are extremely difficult to come by even for stock or bond index. There is therefore basis risk the arbitrageurs have to bear and so there is no risk free hedge for the arbitrageurs.

Another risk the arbitrageurs have to bear is that of what De Long et al. (1990) called 'noise trader risk'. Even though what the arbitrageurs think is right, the price will go back to its fundamental value eventually but it may take some time. The time span involved may be something the arbitrageurs cannot afford to carry their positions. One of the most recent examples is that while the NASDAQ index was around its high in early year 2000, who dared to short the market? It could go much higher before it followed the law of gravity.

In view of the above empirical and theoretical challenges, the behavioral finance school questions the validity of the efficiency of the market at all times. Obviously, the existence of property cycle is compatible with the behavioral finance school.

Section Three: Conclusion

The efficient market hypothesis certainly plays an important role in the development of modern finance, though the joint-hypothesis problem puts it in an awkward position. It did arouse much academic interests on the efficiency, absolute or relative, of the markets in the past several decades and led to better understandings of the market participants and the market itself. To sum up, one can say that the EMH still survives the rigorous theoretical arguments and empirical testing, as long as it resurges as an idealised concept upon which the reality make comparison to it from time to time.

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