The Philosophical Paradigm of Financial Market Contagion Research.

***Sandeep Rao**

Abstract

Philosophical underpinning is important in research as this leads to investigation as per a specific paradigm. Every subject domain has a dominant paradigm in which the research is carried out. This paper surveys various journal articles in finance, specifically in financial markets contagion and spillover effects, to find the research paradigms and finds that the dominant paradigm in finance and market contagion research is functionalism-positivist. This provides opportunities to conduct research in other paradigmatic approaches. This paper explores the possibility of using an interpretivist paradigm to the financial market contagion research.

Key Words: *Paradigms in finance, Functionalism, Interpretivist, positivism, financial market contagion*

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'*The only thing I know, is that I know nothing*' *– Socrates*

(A) Introduction

The selection of an appropriate paradigm lays the ground for the intent, inspiration and expectations of research (Mackenzie and Knipe, 2006). This essay identifies the dominant philosophical position in the realm of Finance discipline specifically the areas of asset pricing, corporate finance and market efficiency. These areas provide the theoretical foundations for foreign portfolio investments and to understand the financial markets contagion. Several articles related to finance discipline and financial market contagion are surveyed to identify the

philosophical underpinnings under which the research is carried out. This paper looks for the dominant paradigm in financial research specifically the area of financial market contagion. Further, this paper explores the possibility of conducting research in financial market contagion using interpretivist paradigm, a non-dominant paradigm in the discipline's research.

The origins of philosophical thoughts are quite interesting as they originated from mythological beliefs followed by the natural philosophers (Heraclitus, Parmenides, Thales, Anaximander, Anaximenes, Empedocles, Anaxagoras, Democritus, were all considered pre-Socratics) who were mainly concerned with the nature of the physical world. Around 450 B.C., the Sophists brought 'scepticism' into philosophy and they, basically, questioned as to whether the natural phenomenon were understood because of social induction? These critical enquiries led to social criticism. Socrates tried to show that there were universally valid and absolute norms, and finding these definitions were based on human reason alone (rationalism) (Gaarder, 1994). Rationalism is a philosophical view that knowledge is gained independently of stimulus from senses, and our concepts and knowledge is constructed purely on reason (Markie, 2017). Aristotle (384-322 B.C) challenged the platonic 'ideal forms' and opined that observation and categorisation lead to knowledge gathering. Following René Descartes, 'Rationalism' and 'Empiricism' became dominant in research. Empiricism states that knowledge is based on sensory experience (instead of innate ideas) and emphasizes empirically discovered evidence which is 'value-free'. Newtons's Scientific methods and empiricism influenced the present philosophical position of positivism. This brief discussion on the origins of the philosophy provides us theoretical perspectives in philosophy.

Etymology of 'Paradigm': It originates from the Greek word 'παράδειγμα' (paradeigma) which means model, example or pattern. Guba and Lincoln (1994) defines paradigm as a set of beliefs, accepted on faith, about the researcher's views of the world , its nature, his place in it and his relationship with it. Thus, a paradigm describes the ontological, epistemological and

methodological questions to the problem stated. Thomas Kuhn (1996) discusses that the common characteristics of 'how a research (scientific) is structured, approached and interpreted' as a paradigm. Subjectivity and Objectivity are the two approaches to the study of social science. This forms a continuum on which ontological, epistemological, human nature and methodologies vary (Morgan and Smircich, 1980). Table 1 shows some definitions of some of these terminologies constructed from O'Gorman (2008).

Table 1 showing the terminologies relating to Philosophy

Term	**Meaning**
Ontology	It is the metaphysical study about the reality, the question of what is the truth and what is the nature of being?
Epistemology	It is the metaphysical study of how knowledge is known, what constitutes it and how it is understood.
Methodology	"The study and application of methods."
Deduction	It is a priori argument. The knowledge is gained by way of arriving at a proof by the way of different evidences about a hypothesis.
Induction	It is a posteriori argument, in which the knowledge is derived using empirical investigation.

Source : Constructed from O'Gorman (2008) in the book "Mapping research methods" (O'Gorman and MacIntosh, 2015), page 54

Table 2 shows Four paradigms namely Functionalist, Interpretive, Radical structure and Radical humanist as identified by Burrell and Morgan (2005).

Table 2 showing the four major paradigms

Paradigm	**The philosophy**
Functionalism	Its approach is to search for rational elucidations of social affairs with a highly pragmatic orientation. The emphasis is on generating knowledge based on problem oriented approach, that is to find practical solutions to the problems at hand.
Interpretivist	Its approach is to seek explanations based on human consciousness and subjectivity. A researcher tries to generate knowledge from his individual perspective rather than just observing as a detached observer. It sees the social world as a process emerging out of the human interpretations and involvement.
Radical Humanist	This approach is based on Sociology of radical change. It has a subjectivist approach to beliefs, which emphasizes the importance of surpassing the confines of existing social provisions/norms.
Radical Structuralist	This approach is also based on Sociology of radical change but, It has a objectivist approach to beliefs.

Source : Constructed from Burrell and Morgan (2005)

Paradigm, is defined as follows, and I quote (Harré, 1987), "A combination of a metaphysical theory about the nature of the objects in a certain field of interest and a consequential method which is tailor-made to acquire knowledge of those objects."

Hitherto, this paper has discussed about the general theoretical perspectives to philosophy and its paradigms. The following sections discusses, the Dominant paradigm in Finance (B), Paradigmatic position of in Market contagion research (C), Other paradigms in Finance (D), Interpretivist approach to Market contagion (E) and Conclusion (F).

(B) The Dominant paradigm in Finance

The Research in finance can be broadly classified into study of corporate finance and financial markets. Findings in these researches has provided inputs for bringing change in the industrial practices, policy regulations and in understanding the causal effects of variety of market variables under study. A large body of research in finance involves developing theories, stating hypothesis and building models around them which are then empirically tested.

'Philosophy of science' and 'theory of society' are the foundations on which finance theories are developed (Ardalan, 2003). Until the late 1980s 'rational behaviour', 'perfect market' and 'free information availability' were the keystone ('ideal' assumptions) of major financial theories. When an investor/ decision maker seeks maximisation of his utility defined over a number of arguments, he is said to have 'behaved rationally' (Ryan, 2002). Perhaps, these assumptions resemble the 'Platonic realism' as explained by Plato's theory of Forms/ideals. Asset pricing (Merton, 1975, Black and Scholes, 1973), portfolio construction (Markowitz, 1952, Sharpe, 1964, Ross, 1976), investment decisions, capital structure and cost of capital (Modigliani and Miller, 1958), efficient market hypotheses (Malkiel and Fama, 1970) are some of the major theories in finance based on which legion of empirical work has been conducted. New age financial theories are mostly based on realism and 'Walrasian general equilibrium'

with research using scientific methodology under positivism (Findlay and Williams, 1980). Realism is the ontological view of what we know and that, reality is independent of human perceptions.

Nevertheless, empirical study provided evidence of several anomalies in the theories that could not be explained with the aforesaid assumptions alone. This is because of the abstraction of the real world in formulating these theories. Thus, in the 1980s, researchers started looking at theories based on '*irrational behaviour*' (Shefrin and Statman, 1985, Bondt and Thaler, 1985), '*imperfect markets*'(Reynolds, 1938, Levy, 1978, De Long *et al.*, 1990, Amihud and Mendelson, 1986, Jensen and Meckling, 1976) and explanations of theory of firm based on managerial behaviour and ownership (Jagannathan and Wang, 1996). In imperfect markets information flow may not be free to all investors, returns and asset prices may be influenced by random noise trading

Following LeRoy and Porter (1981) and Thaler (1993), the question of whether mass psychology was an important factor behind the stock valuations in the market was asked by Shiller (1984). This line of thought is a shift in the dominant metaphorical structure, however, debates are mostly with in these structures and no clear shift from functionalist paradigms are observed. "A metaphor serves to generate an image for studying a subject. This image provides the basis for detailed scientific research that attempts to discover the extent to which features of the metaphor are found in the subject of inquiry" (Ardalan, 2003).

In their exploratory analysis, McGoun (1992), Kavous Ardalan (2000, 2001, 2003, 2004, 2007), Gendron and Smith-Lacroix (2015), find that core of finance research (Theories, PhD program, Conferences, Journals) lack diversity in paradigms and is dominated by the *functionalist paradigm*.

Positivist paradigm focuses on facts, looks for causality and fundamental laws by reducing phenomena to its simplest elements. Emphasis is on formulating hypotheses and testing in order to operationalise concepts so that they can be measured (O'Gorman and MacIntosh, 2015).

The general paradigmatic structure of research in finance is as follows

- ***Ontology*** – Financial research is inclined towards objectivism (Ryan, 2002, Jayne, 2010). Objectivism is seeing the world as a concrete structure (Morgan and Smircich, 1980) and it is external to the researcher (Mark Saunders, 2015).
- ***Epistemology*** **-** Social science research epistemologies are Positivism, Critical Realism[1], Action Research and Interpretivism (O'Gorman and MacIntosh, 2015). Most of the research in finance tends towards use of precise and highly specific data for analysis, and use of scientific method (systematic observation, collection of data, developing theories and testing hypothesis) for deduction. Probably, that is why 'positivism' is more popular. According to O'Gorman and MacIntosh (2015), objective ontology typically concur well with positivist epistemology.
- ***Human Nature*** **–** Under the cause and effect mechanism, every individual interact with one another and with the society (Bettner,McGoun and Robinson, 1994)
- ***Methodology***

  The finance literature recognises 'models' which are abstractions of reality after continuous refinement and validation. Thus, according to Ryan, Scapens and Theobold (2002), the dominant methodology in finance is Lakatosian[2], in which there is focus on model building, and testing. A set of independent (explanatory) variables, the construct of the model and its predictive implications defines the model's theoretical scope (Ryan, 2002).

  - *Negative heuristics* - Research in financial discipline started with universal generalised theoretical models based on behaviour limiting assumptions like

rationality, market efficiency, free information availability. These are highly unlikely assumptions, but suits well to build the basic model to explain the phenomena.

- *Positive heuristics* - Anomalies discovered in empirical research using the models are considered to provide new dimensions to refine the model further. Thus, competing models are developed either by curtailing the assumptions or with new assumptions. This is seen widely in asset pricing and portfolio optimisation theories.
- *Method* - Literature shows 'Nomothetic method' which focuses on creation of generalisation of laws and use of scientific methods to obtain 'objective' knowledge is the dominant method in finance. There have been attempts to use the idiographic approach, which focuses on the individual agent/ investor/ firm. General rule may not be applicable because idiographic approach takes the view that every individual is different (example: how a specific FPI may react to reconstructing his portfolio may not be based on the generally accepted norms).
- Deductive reasoning seems to be the motivation behind most of the methods used in financial research, however, Lakatosian positive heuristics in literature tends to lean towards the opinion that methods used may also be motivated by abductive reasoning.

The literature review presented above and the table 3, which tabulates a list of articles surveyed for this essay (major financial theories, topics on foreign portfolio investments and financial market contagion) support the argument that functionalist paradigm is the dominant paradigm in finance research, even though a minority of articles have adopted other approaches.

Table 3 : Articles in Finance Research

Slno	Subject area	Author/s (year)	Paradigm
A	Asset pricing	(Merton, 1975, Black and Scholes, 1973)	Functionalism

B	Portfolio construction	(Markowitz, 1952, Sharpe, 1964, Ross, 1976, 1980)	Functionalism
C	Investment decisions, capital structure and cost of capital	(Modigliani and Miller, 1958, Fama, 1978, Weston, 1963)	Functionalism
D	Efficient market theories	(Malkiel and Fama, 1970, Fama, 1991, Shanken and Smith, 1996)	Functionalism
E	Agency Theory	(Jensen and Meckling, 1976)	Functionalism
F	Dividend theory	(Miller and Scholes, 1978)	Functionalism
G	Investment Analysis	(Donnell,Kramar and Dyball, 2013)	Critical realism
H	Theory of economic reality	(Maali and Jaara, 2014)	interpretivist
	Foreign portfolio flows and effects on market and firm	(Vihang Errunza, 2001, Acharya,Anshuman and Kumar, 2016, Anwar and Sun, 2015, Amiram, 2012)	Functionalism
I	International Finance	(Vihang Errunza and Losq, 1985, Vihang R. Errunza and Miller, 2000)	Functionalism
J	FDI Effects	(Barbopoulos *et al.*, 2014, López-Duarte and García-Canal, 2007) (An, 2012)	Functionalism
K	Contagion, crisis and spillover effects	(Bowe and Domuta, 2001, Calvo and Mendoza, 2000, Jeong and Kim, 2010, Yaha,Singh and Rabanal, 2017, Meyer and Sinani, 2009, Cai,Tian and Hamori, 2016, Changqing *et al.*, 2015, Cipriani,Gardenal and Guarino, 2013, Jung and Maderitsch, 2014, Mollah,Zafirov and Quoreshi, 2014)	Functionalism
L	Stock Market reaction	(Jonathan, 2012)	Interpretivist
M	FPI implications on macro-economic factors	(Sebastian Ofumbia, 2008, Jacob, 2013, Todea and Plesoianu, 2013, Khan and Banerji, 2015)	Functionalism

(C) Paradigmatic position of in Market contagion research

With growing capital market integration, we observe that the world's major stock markets have a correlation in their directional movement. However, in this vector, the magnitude of changes may be different. While this is an observation, empirical studies based on actual stock market data have been analysed by various authors.

The Market contagion effect is the spreading of the disturbances and volatility in asset returns from one market to another. The greater the integration of the world capital markets, higher is the velocity and magnitude of the contagion. The Sensitives of the market to the shared macroeconomic risks and the information asymmetry influences the severity and trend of the contagion (Kodres and Pritsker, 2002). Emerging markets have higher levels of information asymmetry, therefore the contagion effects are more severe on these markets (Lhost, 2004).

Foreign Portfolio Investment (FPI) is investment by non-residents in various financial securities including shares, bonds, convertible securities and others. Studies have provided different theories on the determinants of FPI (Goncalves and Eid, 2016, Garg and Dua, 2014, Roque and Cortez, 2014, Kim,Sung and Wei, 2011). With growing market integration the flow of capital both into primary and secondary markets across border have resulted in implications on liquidity, and other macro factors. There is also a large body of literature to provide evidence on the market integration (Aalto, 2014, Hertel,Ramankutty and Baldos, 2014, Berger and Pozzi, 2013). Various studies have also been conducted to access the impact of macro events on financial markets and general economy specifically to analyse financial markets contagion.

There is a legion of research within the domain of financial markets volatility and contagion (Tai, 2003, Dungey *et al.*, 2006, Dooley and Hutchison, 2009, Coudert, 2010, Suliman, 2011, Rafaqet and Muhammad, 2012, Verma and Mahajan, 2012, Bouaziz,Selmi and Boujelbene, 2012, Celık, 2012, Del Brio,Mora-Valencia and Perote, 2014). Kenourgios and Padhi (2012) investigated the information transmission during Asian, Russian and Argentine crisis, studies on the 2008 sub-prime crisis impact on the Indian stock markets (Ali ,Afzal and June, 2012, Verma and Mahajan, 2012, Dooley and Hutchison, 2009). UNIDO (working paper 2006) has examined important transmission channels, whereas Bartram and Söhnke M. (2007) have quantified the global banking system's systematic failure.

The effect of contagion is not limited to the equity market, but literature shows that there is existence of contagion of crisis on Bond Markets (Bianconi,Yoshino and Machado de Sousa, 2013, Dungey *et al.*, 2006); Future Markets (Tai, 2003); CDS Markets (Coudert and Gex, 2008), foreign exchange markets (Celık, 2012). The large country effect, contagion and spillover effects in the Gulf Cooperation Council economies (Suliman, 2011), VaR performance during the 2008 crisis and sovereign debt crises (Del Brio,Mora-Valencia and Perote, 2014).

Market contagion research (also see I, J,K,M in table 3) approaches are mostly based on Functionalist paradigm with positivist Epistemology. The financial markets are systematic with defined set of rules and regulations. Information flow from one market to another, or from corporate to the investors, determines the inputs for investment and portfolio decisions. The data related to financial market micro and macro economic variables are usually considered with objectivism, as it is, without any involvement, interpretation or interference from researcher's point of view.

To understand the implications of the foreign portfolio investment it is required to establish the causal effects between the various observable data on the dependent variables (ontology). Positivism approach (epistemology) means that the financial markets and conditions are concrete, and the meanings are identified and measured using scientific empirical methods. This is done through systematic scientific approach or formulating hypotheses collection of data and testing the hypothesis based on a suitable model (Methodology). The above requires a functionalist philosophical approach with positivism and the methodology using various research methods which tilts towards quantitative techniques of measurement and using inferential deduction of reasoning.

Most of the studies in the literature are conducted using research methods involving econometric methods like ARCH, GARCH, ARMA, Multivariate co-integration method (Kasa, 1992), Johansen's (1988) co-integration framework, Dynamic conditional correlations of Engle (2002), heat map tool developed by the IMF ('Global Financial Stability Report: Financial Stress and Deleveraging Macrofinancial Implications and Policy', 2008, 'Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systemic Risk', 2009), Dynamic Conditional Correlation GARCH (Cho and Parhizgari, 2008, Celık, 2012), Mutually exciting jump processes (Aït-Sahalia,Cacho-Diaz and Laeven, 2015), univariate approach of modelling volatility (Oberholzer and Venter, 2015), the Johansen's test and Granger tests, VECM (Vector Error Correction Model) to find out the long run and the short run causal relationship among variables (Masih and Masih, 1999, Jayech, 2016, Vortelinos, 2016) and the market returns for shocks can be studied with the help of impulse response function (de Braganca,de Sales Pessoa and Rocha, 2014, Jin and An, 2016).

Most of these research methods try to establish the causal and transmission channels rather than ex-post implications. They try to model the market movement's trend, causes of FPI and extent of market integration. Other literatures focus on the FPI implications on macro factors like capital formation (Sebastian Ofumbia, 2008), Volatility (Jacob, 2013), informational efficiency (Todea and Plesoianu, 2013), and impact on economy and society (Khan and Banerji, 2015).

Randomised trials are the most scientific research method that can be employed, however their effectiveness in behavioural sciences which has variables that may change in long term are limited (Price and Dahl, 2012) . According to Price and Dhal (2012), 'The ''natural experiment'' approach, a quasi-experimental method commonly used by researchers these days, exploits settings in which there is naturally occurring variation that ''randomly'' influences the amount and type of media that individuals are exposed to.'

Shock-based causal methods otherwise natural experiments are used by several research articles in corporate finance (Atanasov and Black, 2016). According to their research 'shocks', which are exogenous, can be used to distinguish between the treatment and control groups providing credible impact information by assessing the counterfactuals using methods like Difference-in-Difference (DiD), Regression Discontinuity designs (RD), Instrumental Variables (IV) and Event Studies (ES).

It is observed that, typically, a researcher seeks explanations of market contagion occurrences by understanding the equilibrium and the stability of the financial markets. Models are constructed to reflect the aggregate characteristics of the market determined by the constituent variable units. Thus, the research approach of positivism (epistemology), Determinism (Human Nature) and Nomothetic methods, predominantly used by most of the research in financial markets contagion concurs well with Functionalism philosophy.

(D) Other paradigms in Finance

Ardalan (2001) talks about recognising the diversity in research paradigms to enrich the knowledge via other dimensions rather than a single constrained approach of Functionalism. Along with Weir (2013), he criticises the current research skew towards funtionalism has made the finance research more myopic.

In their paper, Bettner, Robinson and McGoun (1994), discuss about various research publications using different methodological approaches like Grounded theory, case studies, Ethnographic analysis, Action research and Historical techniques. Ardalan (2001) lists Baker and Wruck (1989), Lintner (1956), O'Barr and Conley (1992) and others as using interpritivst research paradigm. He also emphasises that the Radical humaist and Radical structuralist research paradgms are non-existant (Ardalan, 2001, 2004).

Even though the research on behavioural finance considers human psychology in analysing the effects in financial markets, as in Saunders (1993), these are mostly methodological shifts and

not fully explored under interpretivist paradigm. Infact, widely known as father of behavioural economics, Thaler stated that 'the behavioural finance was nearing its end' as the current research incorporated behavioural reponses in their models (Richard Thaler, 1999).

In the closely related field of accounting, studies using structuration theory by Giddens are classified as interpritivist. Maali and Bassam (2014) use interpretivist paradigm to construct 'economic reality'. Accounting concepts and theories are widely used as an integral part of research in Finance. Accounting provides substantial data inputs required for corporate accounting and other investment analysis

In their paper Donnell, Kramar and Dyball (2013) explore and identify the challenges in applying 'Critical Realist' epistemological viewpoint to investment analysis. Jaune Bisman (2010) provide a detailed discussion of using critial realism[2] in accounting research.

(E) Interpretivist approach to Market contagion

Under the global financial system where large cash flows occur between different economies through multinational commercial banks, hedge funds, international portfolio management schemes, asset management companies and others, the financial contagion can spread rapidly during and post crisis. Especially with cross border obligations and claims created through various derivatives, credit default swaps, CDO and other structured financial products, the spread of contagion can even affect economies which are remotely related to a crisis. Large capital outflows leading to systemic failures has resulted in global recessions particularly the emerging economies.

Failure of various financial intermediaries often lead to liquidity crisis, which in turn has a dominos effect resulting in bankruptcies across industries, unemployment, inflation, devaluation of currency etc. Thus, Financial contagion has become a major inducement for regulators and government bodies to reassess their policies towards capital flow restrictions,

market regulations, monetary and fiscal measures. Supranational bodies like the EU, IMF also require planning the international financial architecture which can contain the negative effects of contagion. These issues could be addressed effectively only when there is a sound understanding of the true reasons and the exact transmission mechanisms of the contagion and spillover.

Though there have been several papers elucidating the issues mentioned above, these are not completely without limitations and there is scope for further studies in this realm. Policies relying on research which cannot establish true underlying causes of contagion and effects of macro events on capital flows can lead to adverse outcomes. Perhaps, these failures have been one of the reasons that the current functionalist approach to Market contagion studies has not provided complete knowledge about the field.

Considering that other paradigms and methodologies can provide new dimensions in understanding financial market contagion research, this section explores as to how research on Foreign portfolio investments (FPI) and contagion can be studied using *Interpretivist approach*. Understanding 'why the market contagion occurs' can be viewed as a social construction, based on subjective experiences of culture and language, rather than through a objectivist positivist paradigm lens.

Interpritivsit approach to the study of market contagion will require the researcher to be a participant rather than an observer of the contagion and taking a subjectivist approach. This may require the researcher to be involved in the investment process. One approach can be using the qualitative techniques involving interviews, observations, document reviews, visual data analysis. The approach must be idiographic and nominalist, in order to understand the process in a given context, to develop ideas through induction and looking at totality of each situation.

The mapping methods can be used to identify various stakeholders like investors (retail, institutional investors, hedge funds, pension funds and others), media, industry, government and other regulatory bodies. The study must be multidimensional which includes, and not limited to studying actions and policies, information dissemination processes, investigating factors involving human psychology like herd mentality. Idiographic methods are suitable to study these aspects.

The interpretivist approach will be to understand the aggregate behaviour of market participants (FPI, retail investors and other Institutional investors), financial contagion together with political, social and ethical issues. Universal theories and rules of finance are not considered as valid for this approach. A combination of Ethnomethodology, hermeneutic, Multiple participant meanings, Social and historical construction and dialectical methodologies would be appropriate.

(F) Conclusion

The research in finance is dominated by the positivist paradigm. Literature on financial theories and in topics related to financial market contagion research are skewed towards functionalism-positivism. However, according to Findlay and Williams (1980) it would be a normative judgement to resist that positivist approach should be employed in finance. This opens a very wide unexplored domain in which the financial theories can be developed, understood or critiqued using non-positivist paradigms. For most of the research on foreign portfolio investment implications and financial market contagion, the objective of the study and methodologies are based on functionalism, with a positivist epistemology using model building, testing hypothesis and deductive reasoning. It is required to take a different paradigmatic approach to explore the possibilities of adding to the knowledge of understanding

market contagion. This paper provides inputs for how the contagion research can be conducted using an interpretivist approach.

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Notes

1 Critical Realism – see Brown, A. (1999) 'Developing Realistic Methodology: how new dialectics surpasses the critical realist method for social science.'. Economics Discussions Paper, 66.

2 Further refer to Lakatos's Methodology on http://www.loyno.edu/~folse/Lakatos.html