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Situated Cognition and Narrative Heuristic: Evidence from retail investors and their brokers

Abstract

In this paper, I discuss how a situated cognition perspective can reveal the socially constructed nature of seemingly psychological heuristics and errors in market actors' judgements and decisions in financial markets. In doing so, I present a complementary approach to the heuristics and biases research in psychology and behavioural finance. More specifically, I draw on the narrative mode of knowing and explanation in real market settings as a framework to understand the content and the process of socially constructed knowledge in financial markets. Here, narratives of market actors and their underlying frames and causal schemas are assumed to function as a judgement heuristic in processing information flows. I then discuss an application of this approach to a sample of brokerage firms and investment advisers serving retail investors in the Istanbul Stock Exchange (ISE). My findings focus on a shared frame and the associated causal schema about the ISE and global financial markets. This interpretive model underpinned my interlocutors' narrative judgements and forecasts about the ISE's movements and constituted a form of representativeness heuristic and anchoring.

Keywords: Situated Cognition, Narrative, Heuristics, Representativeness, Anchoring, Performativity, Retail Investors, Istanbul Stock Exchange

1 Introduction

In this paper, I discuss why the collection and analysis of market actors' naturally occurring narratives in real market settings should be used as one of the approaches to studying cognitive heuristics and biases in financial markets. My argument for this approach comes from the combination of two positions in humanities and social sciences. The first is that cognition is a type of action that is situated, meaning that cognition takes place in constant interaction with social, cultural and material contexts (Wilson, 1993). Consequently, I argue that cognitive heuristics and biases are socially, culturally, and materially shaped rather than universally latent in human mind. The second is that in this interactive and context-bound cognitive action of human-beings, narration and generating causal explanations are the salient mode of knowing and explanation of observed and experienced situations, events and actions (Bruner, 1986; Polkinghorne, 1988; Lagnado, 2011). I therefore assume the prevalence of narrative mode and causal schematization in market actors' situated cognition of market events and actions.

To substantiate these points and a narrative approach to studying situated cognition in financial markets, I make a brief conceptual and methodological meta-review of the extant psychological and behavioural explanations of judgement and decision heuristics and biases. I then observe a consequence of the ontological and epistemological positions historically taken in psychology and behavioural finance fields – namely , a lack of systematic study of social factors in human judgement and decision-making in non-experimental contexts (DeBondt et al., 2008). This is followed by the introduction of situated cognition as a holistic alternative to understanding judgement and decision-making in financial markets. Here, I also discuss the salience of narrative mode of knowing and explanation in situated cognition, and how collecting and studying market actors' narratives can give researcher natural access to both the content and the processes of socially constructed market knowledge.

In the final section, I demonstrate an application of this approach to retail investors and their brokers in the Istanbul Stock Exchange (ISE). In a field research conducted between 2008

and 2009, I found that narratives from a sociological sample of brokers serving retail investors in the ISE constituted a form of situated frame and associated causal schema. I demonstrate how this interpretive model acted as representativeness heuristic and anchor (à la Tversky and Kahneman 1974) in these brokers' interpretations and predictions of price movements in the ISE. I also discuss the institutional origins and current dynamics of this interpretive model in the ISE, including econometric evidence on the model's possible effect on the ISE's co-movements with global markets. The paper concludes with recapping the conceptual and empirical points made about the usefulness of situated cognition and narratives in our behavioural understanding of market outcomes.

2 Psychology, Behavioural Finance and Social Construction of Reality

Starting with the bounded rationality assumption of Herbert Simon (1955) based on several factors such as limited cognitive capacity of individuals, information availability, and the time and costs associated with optimizing decisions, the psychological explanations of individual cognition and decision making have undermined the expected utility and Bayesian updating framework of rational choice theory. Tversky and Kahneman (1974) studied the effects of uncertainty on human cognition. These concern situations where available information is insufficient to sensitize people to statistical and probabilistic properties of the given situation and to make judgements in accordance with the rational choice framework. Tversky and Kahneman (1974) found out that under such circumstances, people resorted to short cuts or cognitive heuristics such as representativeness (formation of beliefs that violate probability and statistical rules), availability (of information and its salience), and adjustment and anchoring (in relation to arbitrary reference points). Kahneman and Tversky (1979) then looked at evidence on how, under full information on gains/losses and their probability, people acted in ways that violated several tenets of the expected utility theory. These tenets are the centrality of overall wealth in decisions, the determination of the utility of a prospect by aggregating the probability-based outcomes of that prospect, and risk aversion (Kahneman and Tversky, 1979, 263-4). To explain

these violations, Kahneman and Tversky (1979, 271) theorized that individuals first reframed the given prospects into simpler terms of gains or losses in reference to a neutral point. Moreover, this framing could be partly affected by how the situation was formulated. People then evaluated the outcomes by generating and attaching them decision weights that ‘do not coincide with stated probabilities’ (274). Tversky and Kahneman (1981) referred to these processes as “decision frame” and argued that decision frame is partly controlled by ‘the norms, habits and personal characteristic of the decision maker’ (453).

These groundbreaking studies demonstrated that individuals while making decisions under informational certainties or otherwise do not necessarily think and make decisions in a probabilistic framework. After these, behavioural finance has emerged as a meaningful challenge to the rational actor-efficient market framework of modern finance theory (Forbes, 2009). As authoritative reviews of the field have noted (Hirshleifer, 2001; Daniel et al., 2002; Barberis and Thaler, 2003; DeBondt et al., 2008), there are institutional and market-exchange based limits to arbitrage, which is put forward by modern finance as one of the explanations why mispricing -if ever occurs- always disappears. As the cause of mispricing and long-running aggregate abnormalities in asset returns not expected by modern finance theory, behavioural finance points to individual sources of decision-errors or biases such as cognitive heuristics, self-deception, and emotions, and to Kahneman and Tversky's theory on our preferences.

From a methodological perspective, one common feature among the reviewed studies in the above surveys is the way they use aggregate market data. This can be described as deductive because asset pricing models of modern finance theory are used to detect anomalies in aggregate market data. These anomalies are subsequently explained by what Barberis and Thaler (2003) call ‘stories’ about what might have actually happened. Naturally these stories are informed by the behavioural theories associated with beliefs and preferences discussed above. When it comes to the detection and explanation of behavioural patterns among different groups of investors

such as females, college graduates. (Barberis and Thaler 2003:1099), a similar deductive approach is used .

Partly because of this deductive approach and its limitations on our imaginations about financial markets, two of the surveys studied above (Hirshleifer 2001, DeBondt et al 2008) and several studies to which they refer (e.g. Shiller 1984) call for a specific research agenda. This research agenda is complementary to deductive approaches to the state and effects of individual beliefs, psychology and preferences. It concerns the study of the effects of sociological factors on individual and market level outcomes. For instance, in Shiller (1984), Hirshleifer (2001), and Akerlof and Shiller (2009), we see a call for specific focus on how social dynamics or processes are involved in belief and preference formation, diffusion and disappearance, and how these might affect market outcomes. In a theoretically broader argument, DeBondt et al (2008) call for a conceptualization of reality and individual actors in the context of financial markets and societies as social constructions. As they put it, such a conceptualization means studying ‘the tangible content of people’s thought processes... [in] reference to social, cultural and historical factors’ that eventually shape these processes. In DeBondt et al’s (2008, 9-10) understanding, meanings people generate about ‘their motives, outlook, self-image’, and hence their actions are not merely individual-psychological and isolated. They happen in socio-cultural and historical contexts, which generate role structures and expectations from these roles. De Bondt et al (2008, 10) refer to the resultant collective beliefs and practices in financial markets and economy as ‘intuitive economic stories’ and ‘economic arguments’. They argue that ‘the content, style and structure of these stories’ can explain why we see certain persistent patterns related to investment and consumption in different markets and economies. DeBondt et al (2008, 10) also note the importance of technology in increasing our cognitive capacity, and of institutions in generating predictability and reducing the cognitive load in our judgements and decisions.

2. Situated Cognition, Social Construction Of Reality, and Narrative Knowledge

To shift our focus from deductively explaining abnormalities in market outcomes by psychological theories built on experiments lacking social context (Pressman, 2006), and to generate sociologically informed explanations of these abnormalities, we can draw on the concept of situated cognition. In broad terms, situated cognition conceptualizes knowing as task-oriented social action that happens in relational, cultural and material contexts (Brown et al, 1989; Wilson, 1993, 72, Barsalou 2008, Smith and Conrey, 2009). This perspective starts with the assumption that knowing happens via representations that are attempts at mentally and/or physically manipulating 'objects involved in a situation' to understand their relationships with each other, and their consequent transformations (Seel, 2001, 407). These representations, as espoused in standard cognitive theories (Barsalou, 1999, 2008), may take stable forms such as cognitive schema that exhibits rule-like understanding of objects, actors, and situations endemic to a specific environment- namely, 'content full' schema, or universal forms based on 'abstract' reasoning that has no bearing in real life experiences of the person cognizing (Ohlsson 1993, 52).

The novelty of situated cognition is that knowing is seen as an action outcome in which schemas, whether 'content full' or 'abstract', interact with the context where cognition takes place. This interaction generates 'momentary outcomes' of knowing in which 'attributes of a situation evoke and shape particular schemas and... schemas make particular attributes of the situation salient' (Elsbach et al 2005, 424). There is no hierarchical relationship in this model between schema and context. Instead a constructive relationship is assumed where 'mind projects order onto the diversity of world phenomena', structuring it in a certain way, and it is constrained in this structuring 'through the external world' (Seel, 2001, 408). Another important aspect of situated cognition is understanding knowledge and knowing as distributed phenomena. This refers to not only the interactional underpinnings of knowing and knowledge among people, but also the role of instruments and tools, whether they are physical, theoretical or organisational, in our cognition (Smith and Corney 2009, Michel 2007, 508). All in all, situated cognition implies

a cognitive system that comprises individuals' mental and physical capacities alongside other factors that generate momentary cognitive outcomes.

Understanding cognition in situated and constructive terms does not necessarily mean that cognition is 'infinitely flexible and responsive to the situation' (Smith and Corney 2009, 459), and that our knowledge of the world is arbitrary. Communicative, relational, organisational and socio-cultural contexts constrain our cognition in particular practices (Michel, 2007, 509). From a general perspective and coming back to DeBondt et al's (2008) argument about socially constructed reality, the roles and associated norms we internalize as role holders are one such aspect of situated cognition. As Berger and Luckmann (1966, 47) explain it, these roles are constituted of typifications of objects and situations, and action scripts in institutionalized realms of life such as family and financial markets. We are assumed to internalize these roles as social reality in the capacity of role holders and observers of others. Berger and Luckmann (1966, 55-6) use the concepts 'semantic fields' and 'classificatory schemas' to refer to the total sum of these objectified and internalized typifications and action scripts. Language functions as the store and conveyor of social stock of knowledge that exists in a multiplicity of semantic fields and in a range from generalist and most shared to esoteric and endemic to communities of practice (Berger and Luckmann, 1966).

Another aspect of situated cognition- namely, communication and interaction among members of a semantic field such as financial market, can explain how socially constructed knowledge in the form of typifications and action scripts endemic to certain roles are generated, objectified and internalized. For instance, Nonaka and Toyoma (2005) point to dialogue and practice among members of an organisation by which individual subjectivities or tacit knowledge are shared/ externalized, and then synthesized with others' externalized knowledge, to be internalized again. Nonaka and Toyoma (2005, 432) describe this as 'a social process of validating truth' and a way of 'expanding knowledge' within organisations and between organisations and market. As Holland and Doran (1998, 137) demonstrate in the case of fund

managers, this type of dialogue and practice process within and across financial institutions and stock market companies functioned alongside commonly used instruments and tools of observation, measurement and calculation in fund management field. This social process constituted for fund managers not only a knowledge base with its typifications and action scripts but also a cognitive skill by which they were able to generate and process information, and incorporate it in their continuous valuation of assets' economic worth. At a broader level, however finance professionals and investors in their social construction of knowledge about financial assets are also subject to dynamic conditions of broader semantic fields such as markets and economies, and to these fields' socio-cultural aspects such as shared constructs, fads and fashions in knowledge and action (Holland and Johanson, 2003, 479-482).

The literature cited above implies first that situated cognition for individual and organizational actors in financial markets happen in nested semantic fields - narrower fields existing separately such as fund management, retail investment and brokerage are institutionalized within broader fields of markets and economies. Second, situated cognition, by virtue of its distributed and interactive nature, generates shared knowledge and practices, which are continuously externalized, objectified and internalized again, resulting in reifications and modifications in the social stock of knowledge in nested semantic fields. Third, depending on one's situation or position in these fields, which includes their knowledge creating social capital and interactions, one has a command of the social stock of knowledge with different degrees and modes of awareness and internalization. That is to say, a fund manager or analyst would share with other fund managers and analysts a certain structured cognition and decision-making process and resultant intellectual capital (Holland and Johanson, 2003, 466-7). This would differ from that of retail investors and their brokers, despite the possibility that both types of actors can be aware of each other's knowledge by publicly and privately available sources, and market relationships (Holland, 2006, 308). Such an awareness or sharing of other's knowledge does not necessarily mean a naïve internalization or consensus about knowledge's truth-value across

actors and fields. Instead, it implies cognitive resources for reflexivity and strategic action in a field (Berger and Luckmann, 1966, 192; Fligstein and McAdam, 2012, 10)

While situated cognition of market actors is shaped by the above mentioned communicative, relational, organisational and socio-cultural dynamics of social construction of knowledge, market actors' narratives about their unfolding market experiences constitute both a tool and a store of knowledge in these nested semantic fields. Narratives of market actors help externalize, objectify and reify the historical and contingent features of a market as social facts. The implication of this conceptual understanding of narratives and social construction of knowledge for judgement and decision-making under uncertainty is two-fold.

On the one hand, the observed tendency of people to violate certain tenets of probability theory and statistical rules (see Glovic et al 2002 for a comprehensive review of theory and evidence) or what Tversky and Kahneman (2002) refer to as 'intuitive' or 'naturalistic' thinking, might stem from internalizing a certain semantic field. This mode of thinking, which is characterized by causal associations between situation at hand and the relevant social stock of knowledge, generates more coherent explanations within a given semantic field compared to a purely probabilistic mode (Tversky and Kahneman, 2002, Sloman, 2002). The strength of this mode of thinking can be seen in the fact that even information availability does not always guarantee a shift to probabilistic thinking (Kahneman and Fredrick 2002).

On the other hand, by collecting and analysing narratives of market actors, we can gain access to market actors' semantic field, and explore how they ordinarily reason about unfolding market events and situations, actions of actors and their motivations. Although narrative as a form of discourse is not the only mode by which we generate written and oral discourse, other forms include argument, exposition, and description among others (Smith 2003), putting our experiences into narrative form is seen by cognitive psychologists as the most salient and naturally occurring mode of knowing and explanation for human beings (Herman, 2003; Polkinghorne, 1988; Bruner, 1986). The narrative mode simply refers to making sense of our

experiences by putting actions and events in temporal and causal order. This means that narratives generate meaning by going beyond a mere chronology of events and actions, and by plotting them together in a way that reveals how these are perceived to be causally contributing to the outcome under explanation (Legnado, 2011). They therefore have the potential to reveal those causal schemas market actors generate, reenact, and modify “on the fly” in their judgements and decision-making in financial markets. Here, on the fly or *in situ* oral and written reactions of market actors to events and situations can exhibit features of an argument or description, yet they would have the hallmark of narrative thinking—namely, the combination of causal thinking with unfolding experience in time. In financial markets, the resultant narratives can be seen as amounting to ‘microstructural models’ or ‘heuristics’ that explain and predict the unfolding state of markets (Rebonato, no date, 6).

To recap the arguments made about situated cognition, social construction of reality, and narrative knowledge, we can argue that judgement and decision-making in financial markets are shaped by a number of relational, material, institutional and socio-cultural factors. These factors constitute the context where situated cognition takes place, and underpin the social stock of knowledge that narrows down the outcomes in individual's on the fly cognition. Nevertheless, situated cognition implies neither infinite flexibility nor fully rigid cognitive processing and outcomes. Instead, it implies a socially shaped cognitive resource base by which individual actors ordinarily cope with the uncertainty and indeterminacy of ‘particular interactive situations’ (Tsoukas, 1996, 15-18).

This type of processual and interactive understanding of cognition also applies to narrative thinking. The narrative mode, which is generally contrasted with the logico-scientific mode—i.e. deducing explanations for events and actions from logic, universal truths, and scientific theories such as probability, does not necessarily mean that meanings are generated arbitrarily in narratives. Not only do narratives draw on the logico-scientific mode (Polkinghorne, 1988), but they are also subjected to audience effect and intertextuality (Boje

,2001). Audience effect means that narratives are relational- they are told for specific purposes for specific audiences, which underpins their content, mode of delivery, and plots (Tilly, 2006). Intertextuality on the other hand refers to cross-references to other narratives that recount past experience, which means that narratives thrive on on-going experiences and past stories (Boje, 2001). These two factors are intimately associated with the typifications or framing of actors, actions, and situations that are central to the social construction of reality and knowledge in a given semantic field (Berger and Luckmann, 1966). Narratives therefore thrive on and modify these typifications, and reflect the historically sedimented, continuously reified and modified knowledge endemic to a semantic field (Czarniawska 2008, 36).

2.1. Studying Situated Cognition In Financial Markets: Observation and Narrative Analysis

Sustained close-up observation of market actors in their natural settings, i.e. financial organisations and trading floors has advantage over standard interviews in studying cognition and decision-making in financial markets (Preda, 2007, 520). This is because observation allows access to naturally occurring descriptive data on the semantic field and the situated cognition setting in which financial market actors operate. This type of in-depth descriptive data can be obtained by recording market actors' actions and interactions, and the resulting cognitive outputs such as their oral and written discourses. These observations should ideally last until the collected descriptive and discourse data reaches saturation- namely, new inputs into the data become repetitive from both process and content perspectives (Atkinson and Hammersely, 2007). Triangulation of observations with another method such as interviews with observed actors helps reach data saturation and judge the validity of observation-based findings (Denzin, 2006, 471) Triangulation also allows researcher to generate a holistic account of the meaning and significance of observation-based findings from his/her interlocutors' perspective-'emic' explanations, which researcher can later turn into interpretive or 'etic' accounts by using social-scientific theories and concepts (Fetterman,2008:289).

While observations and interviews can give a richer description of the situated cognition in financial organisations, analysis of *in situ* narratives, would specifically help researcher identify the generation and reification tools of the social stock of knowledge in these organisations and explore how these tools might be functioning as judgement and decision-making heuristics in the given field. As described by Czarniawska (2008) in the context of narrative research in organisations, these tools are frames (typifications), and causal templates (action scripts). The analysis of plot structures, i.e. the specific order of sequencing in narratives, reveals causal templates and associated action scripts, whereas the analysis of narrative elements, i.e. events and actors that are attributed causality and intentionality, respectively, reveals frames or typifications on these elements (Czarniawska 2008, 35-7).

Once frames and causal templates are identified in the narrative data, researcher can then explore various themes. One of these is how these cognitive schemas correspond to heuristics and biases identified in behavioural finance, and how they might be associated with specific decisions and aggregate outcomes in a given field or a market. Another is more sociological and concerns how these cognitive schemas are associated with the institutional evolution and dynamics of semantic fields of a market. In the following sections, I discuss the findings from such a research I conducted on the social dynamics of cognition and decision-making in retail investing and brokerage field in the Istanbul Stock Exchange (ISE) between 2008 and 2009. Although the research was conducted in the above-described methodological framework, below I discuss in more detail the data collection and analysis methods employed during the research.

3. Stories from the Istanbul Stock Exchange

Although, the ISE is an instrumental case (Stake, 1994:237) to study social dynamics of cognition and decision-making in an equity market, there are certain features of the ISE that reveal the historically evolving situated cognition contexts for its retail investors and brokers. The ISE, which is the only organized equity market in Turkey was opened in 1986. In 1989, foreign investors were allowed to invest in the ISE. In 1995, the ISE became a fully automated

equity market. With the full automation, more and more brokerage firms combined their telephone dealing platforms with online platforms for retail and institutional investors. However it was in late 2001 when the ISE established a remote access system by which dealers and investors alike could send direct orders via brokerage firms' online trading platforms. This undermined the importance of the ISE's trading floor and the floor brokers, and made brokerage firm headquarters the central nodes of investment advice and trading flow in the ISE. Since the ISE's opening, the equity market has been a multiple price-continuous auction market where investors' orders are matched in price and time priority.

There are four types of investors in the ISE based on domicile and legal status. These are Turkish retail, Turkish institutional, foreign retail and foreign institutional investors. In the first decade of the ISE, probably owing to the manual mode of trading and data collection, the publicly available information on these investor types had not been as detailed and easily accessed as they have been in the post-automation of 2001. Since its foundation in 2001, the Association of Capital Market Intermediary Institutions of Turkey (ACMIT) has been publishing annual reports on these investors' equity market activities among other topics. These analyses stretch back to 1999. On the other hand, some local data vendors and secondary resources (Yildirim, 1995, 1996) provide patchy figures on some of these investor types' trading and investment preferences. These stretch back to the beginning of the 1990s. Together, these sources point to several interesting numerical figures about the average Turkish retail investor in historical perspective. These are: he/she has been a short-term investor with average portfolio holding periods of several weeks. He/she has provided the bulk of liquidity in the ISE by consistently generating more than half of the annual trading volume over the years. Concomitantly, his/her share in the total market value of the shares traded in the ISE have been decimated over the years and taken over by institutional investors, most being foreign institutional investors. On a related note, according to the World Bank figures on stock market turnover rates, i.e. the ratio between total trading volume and total market capitalization,

indicating how often shares change hands, the ISE has been historically a high turnover market compared to the relevant regional and country turnover figures (WB, 2012)..

According to the ACMIT figures for 2009, almost a third of the approximately one million Turkish retail investors in the ISE reside in Istanbul, and they own two-thirds of the market value of shares owned by the Turkish retail investors. Perhaps not incidentally, almost all the 89 brokerage firms active in the ISE by the time of my research were head-quartered in Istanbul, and most active retail clients, who traded frequently and generated a significant commission revenue were served by investment advisers in these headquarters.¹

This brief history and the numerical figures demonstrate some significant features and outcomes of the Turkish retail investing and brokerage field. Having discovered these during the preliminary field research at ISE headquarters in the summer of 2007, I then decided to shift my investigation focus to brokerage firm headquarters in Istanbul. My field research in the headquarters of three Istanbul-based brokerage firms between 2008 and 2009 has elucidated some of the situated cognitive and historical-institutional processes behind the semantic field of retail investing and brokerage in the ISE.

3.1. **Methods**

I secured access to the headquarters of three brokerage firms (Firm A in February 2008, Firm B in April 2008, Firm D in May 2009) where investment advisers, who worked for the retail sales departments of these firms, served relatively high wealth and/or high frequency trading retail clients of each firm. These three brokerage firms had around 50,000 Turkish retail clients all around Turkey. However the investment advisers I directly observed in four different trading floors (two from Firm A) served in total around 1,000 clients who constituted the very core of these firms' client portfolio and retail brokerage revenues. These clients mostly invested in the ISE equities but a small minority of them (almost all from Firm A) traded frequently in the ISE futures contracts too. In total, the retail sales departments of all three firms generated around 4.5 per cent of the annual trading volume in the ISE in 2008 and 2009.

In my selection of the observation sites, I used a method called sociological sampling in field research (Gold 1997). This method of case selection refers to finding a number of sites and informants who have potential to exhibit and reflect on various emergent themes related to the phenomenon investigated. Considering the difficulties of securing access for observation-based research in financial markets (MacKenzie, 2011), a sociological sampling, despite not meaning statistical representativeness for findings, still provides advantages over observation in a single site. Multi-site investigations increase the external validity or transferability of observation-based findings when other similar sites of social action are considered (Bryman, 2008:33). In this respect, all three sites represent variations and commonalities in the ISE's retail investing and brokerage field, which I discovered by triangulation (Denzin, 2006). More specifically, I interviewed ten senior market professionals from nine leading brokerage firms that contributed significantly to the ISE's annual trading volume, four managers and one expert from the ISE overseeing the equity market trading, the general manager of the ACMIT and its head of research, and four Turkish retail investors who have significant weight in parts or the whole of daily trading activity in the ISE. The list of interviewees is provided in the appendix.

I stayed in each firm around two weeks to do direct observations and conduct interviews. The dates of each site research and the duration of direct observations are provided in the findings section. It should be noted here that some of the days at each site were used for triangulation discussions and interviews. To record the naturally occurring conversations among the trading room staff, I used a notebook and sometimes a voice recorder wherever it was permitted. I was not allowed to access telephone conversations between investment advisers and clients on anonymity and technical difficulty grounds but I overheard a few conversations as such when a speaker phone was used. Because trading floors were relatively small and populated by five to ten investment advisers, it was easier for me to follow most of the verbal utterances and note these down contemporaneously without having to rely on a voice recorder. However it should be stated here that my field notes do not contain all the things that had been said in the

trading room such as the routine football banter on Mondays! I focussed on those conversations and solo reactions about market events and actions. To triangulate the observation based findings, I held informal discussions with my interlocutors and formal interviews with the following staff overseeing each firm's retail brokerage operations: floor manager, operations manager, branches manager, and general manager. These interviews took place during each field site research and are not listed in the appendix.

The observation data were analysed to identify *in situ* narratives within for the aforementioned purpose of identifying frames and causal templates and demonstrating how they generated and reified the social stock of knowledge in these organisations. The identification was made according to an operationalized definition of sensemaking narratives drawn from organisational narrative research (Gabriel, 2000; Boje, 2001,): Sensemaking narratives are discourses beyond a sentence by which narrator connects two or more clauses together for retrospective and/or prospective explanation.

To distinguish among the recurring plot structures in the collected narratives, I introduced four plot logics that draw on Boje's (2001:101) causality or stream analysis in narratives and reflect the spectrum of reasoning I encountered in the field data. These are "cause-effect", "correlation", "randomness", and "proto-story". As discussed before, establishing cause-effect relationship between events and actions within a temporal frame and based on an observed/predicted outcome is foundational to narrative reasoning (Polkinghorne, 1988:21). Correlation logic in my interlocutors' narratives emerged in the form of perceiving correlation relationships among stock market indexes, generally across equity and futures markets abroad and in Turkey, when there were no news events to explain market movements. Randomness logic is about interpretive moments when my interlocutors failed to make sense of the events and actions they observed on the screens in a meaningful manner and made their puzzlement clear in their narratives. Proto-story, an organisational narrative concept borrowed from Gabriel (2000), refers to narratives in which my interlocutors' explanations fell short of invoking one of the

logics and simply sequenced selected events and actions without connecting them meaningfully with a direct explanation or prediction. Within the data, I also encountered narratives in which a past market outcome was invoked, generally in full, to point to the similarity between that past outcome and the current situation. The explicit reasoning in similarity logic was that because of the similarity, the current situation should resolve like the way the past situation did.

The other significant part of my analysis was narrative element analysis, i.e. classifying actors and phenomena that frequently featured in the narrative data. Here the aim was to link the plot logics with local and international actors and phenomena in order to discover how my interlocutors framed these 'actants'- human and non-human entities that are capable of acting and being acted on (Czarniawska, 2004, 80)-in relation to causal templates.

4. Findings

The table below present the total number of narratives identified in each of the four trading rooms directly observed. These narratives are classified according to a number of categories significance of which is discussed later in the paper. .

Table 1 here

4.1. The Influence of Technology and Organisational Division of Labour on Situated Cognition in Trading Rooms

Before discussing the findings, it is important to describe the technological and organisational circumstances in which the observed investment advisers narrated the market events and actions because these circumstances influenced the situated cognition of investment advisers. Their description can thus help readers contextualize the findings discussed below. Investment advisers relied on a computer and multiple screens to follow the news and data flows on the ISE and other markets. These computers were powered by standardized software provided by local data vendors for data transmission, presentation and analysis, and for order logging and

execution. Investment advisers used telephones (with headsets) to communicate with their clients. As discussed in detail in Cetina and Preda (2007), the technology that the investment advisers used in the ISE was an example of a scopic market system.

Scopic here refers to both suffix “scope” that is used to describe observation devices such as telescope, and scope's other meaning, i.e. to look at or examine carefully (Dictionary.com). The contemporary mode of representation and observation in financial markets is scopic. Computer screens and the interconnected systems of data collection, processing and transmission constitute the market device by which market actors carefully examine unfolding events and actions with ‘intensity and preparedness’, and participate in market activity (Cetina and Preda, 2007,132). As discussed by Cetina and Preda (2007), the most important components of the scopic market systems-namely, the presentation of individual data streams (price, trading volume, news, etc.), order matching, and conversation channels for traderswork in a sequential flow mode, i.e. piece by piece and processed/disseminated at particular moments in time. Owing to the contemporaneous representation of multiple data streams, Cetina and Preda (2007, 132) describe market actors' observation and cognitive mode before the screens as a mode of moving around individual streams, and following and anticipating the flows within, which are ‘grounded more in a structure of feeling rather than in modes of calculation’.

These conceptual descriptions pretty much captured what the investment advisers whom I observed in all the four sites were doing before their computer screens. It was observed that the investment advisers gave their constant attention to their screens with eye movements and sometimes slight tilts of head, to be able to focus on a specific part of the screen. They also used their computer mouse and keyboard to log in client orders, retrieve more in-depth and/or historical data, and run analysis functions such as charts. As an external calculation tool, many used a table calculator to do rudimentary calculations. Many more complex calculations such as those on client accounts, quoted companies, and markets were generated by the software on their computer. In all the trading rooms, with the exception of Firm A's branch, there was also the

presence of one or more analysts on quoted companies and the Turkish economy, either in person or via telephone or email. This technological and analyst assistance or distributed cognition freed up investment advisers' time.

Investment advisers therefore frequently conversed with their clients, especially with those whom traded on a daily basis. Similar to what Cetina and Preda (2007) described about the mode of observation and cognition before scopic screens, during these conversations, investment advisers explained what had been going on in the markets and what to expect in the coming minutes, hours and days. Investment advisers also conversed among themselves and with their analysts. These generally started after a reaction by an investment adviser or an analyst to something happening on the screen. Occasionally, their loud reactions to screen events were not followed up by their colleagues. The narratives captured during my observations came from these collective and individual sensemaking efforts to understand the connections between events and actions observed on their computer screens and predict their future course.

4.2. A common framing and causal schema in all observation sites

As discussed before, the observations were made between February and April 2008, and in May 2009 in four different sites. After carefully analysing the observation data, narratives were identified according to the operationalized definition. What are the major findings from this analysis? To begin with, in all the four sites, the investment advisers framed the ISE as an emerging market that should move in tandem with the indices in more developed markets of the world such as the Deutsche Aktirien Index (DAX) in Germany, the Dow Jones Industrial (DJI) in the USA. Thanks to the geographical location of Istanbul, these indexes overlapped with the ISE in trading hours to varying degrees. The biggest overlap happened between the ISE and the DAX.

To give an example of a narrative that invoked this frame and the associated causal schema, on my very first day of observation in the field (19 February 2008) at Firm A headquarters, I witnessed and recorded the following conversation while I was sitting between

the strategist Ahmet and an investment adviser, Mehmet, and directly overseeing another investment adviser, Hakan, and his screen (all names henceforth are pseudonyms). In the room, there were three more investment advisers and two analysts. Each investment adviser served around 15 high frequency and/or high net worth Turkish retail investors:

Hakan: *What is the deal behind Germany* [the DAX spot and futures indexes]?

Ahmet has a glance at his double screen : *It is profit realization!*

Mehmet in a tongue in cheek manner: *Does everything have to happen for a reason?*

Hakan: *Then the guy* [his client] *is asking on the phone and I have nothing to say!*

This conversation attests to the several points made before, and intimates some other regularities about the situated cognition of market professionals in scopic market systems like the ISE. To begin with, we see a very short narrative here that explains “the deal behind Germany” by attributing the motive of realizing profit to anonymous investors in the German stock market. One event directly observed (falling index value) on the screen is plotted with an intentional action that is assumed to be happening, and observed via falling index values. The narrative is about the past and present, making a causal explanation. It does not make any prediction. Hakan, after getting the response, does not react to the explanation along the lines of “what profit?” or “whose profit?” Here, all the narrators share an ongoing market experience or the intertextuality of narratives (Kristeva, 1980) which allows them to link the repeated past situations with the present. Also, there is the unspoken reason or shared causal schema as to why investment advisers in Istanbul, whose clients do not invest in the DAX, have to worry about the German stock market.

One might object to my interpretation here on the intertextuality because of Mehmet’s reaction to this narrative, which seems to undermine the explanation itself and the whole notion of making sense of the markets in this way, especially when there is no news event or new information to update one's expectations. However, as the day unfolded, Mehmet generated stories similar to “the profit realization” story, explaining what was happening in market indices

abroad and more importantly connecting them to market movements in Istanbul, invoking the correlation logic. Mehmet did so whilst he was conversing with others in the room and his handful of high frequency trading clients on the telephone. Mehmet's initial reaction to Hakan was more about the usual banter in the trading room, which I was to witness time and again. On the other hand, Hakan, with his response to Mehmet, made very explicit what their role as investment advisers in the retail brokerage field necessitated, especially in the communicative context they shared with their clients. As investment advisers looking after high frequency trading Turkish retail clients, they had the role of generating and communicating timely interpretations of price and index movements, and keeping a sort of constant cognitive tab on the pulse of markets for their clients. Here, as in other communicative contexts under uncertainty, the maxim of information/interpretation value trumped over the maxim of truth or the quality of that particular information/interpretation (Grice, 1975 cited in Tversky and Kahneman, 2002, 45-6).

From an organisational perspective, Firm A, like other brokerage firms serving Turkish retail investors, generated most of their income from retail investor activity (see endnote I). This meant that investment advisers were tasked by brokerage firm managers with striking a balance between persuading their clients to trade frequently and keeping their clients' portfolios under sustainable risk. As mentioned before, certain monitoring tools helped advisers in this role. Nevertheless, the interpretive aspect of this role – namely, continuously making sense of the markets and predicting their future course with trading advice tailored for clients' preferences rested with investment advisers.

The frame that placed the ISE as an integral part of a network of stock markets around the world was a shared interpretive tool among the investment advisers in the headquarters trading room of Firm A. It also underpinned many narrative interpretations of the unfolding market events and actions. I was in Firm A headquarters between 19 February and 5 March 2008 and my observations lasted eight and a half days. Over the course of my observation in Firm A

headquarters, out of the 293 narratives collected, 54 per cent of these narratives invoked this frame directly or indirectly within all the plot logics discussed before. From an interpretive perspective, some of these narratives, like the first narrative example above implied that events and actions from abroad were relevant to the ISE without making this explicit. Some others on the other hand mentioned the ISE directly at the receiving end of a news or market event abroad, generally from the USA, and Germany, and to a lesser extent from powerful emerging markets such as Russia and Brazil. They then explained and/or predicted the ISE-related event/action accordingly, implying a causal or correlation relationship, and sometimes sanctioning a trading move accordingly.

The following occurred on 25 February 2008 at 15:30 pm right before the January 2008 US new home sales data was released (all times henceforth are GMT+2). The expectation survey result was – 4 per cent and available from Reuters and Bloomberg screens in the trading room. The expectation was announced to all investment advisers and their clients beforehand by email and verbal reminders. All the investment advisers were ready for the data release; some investment advisers prepared orders to be sent to the ISE futures once they heard whether the data was good or bad in relation to the expectation survey. Then the research assistant Hande, who was responsible for simultaneously announcing and interpreting the data shouted: ‘-5.3 *very bad data*’. Another investment adviser, Onur, next to whom I was sitting on that day shouted: ‘*Awful data*’. I then observed that a few orders were sent in this 30 second period, mostly sell orders and some corrections in the order amounts. Then, Onur explained to one of his clients on the line what happened: ‘*When the [US new home sales] data came, it [the ISE futures] made 200-300 point down, now it gives reaction from that point*’ He then repeated the explanation to another client on the line.

In Firm A’s branch, I observed an investment adviser and three Turkish retail investors for a total of three and a half days between 6 and 13 March 2008. From the narratives told in this room and from my discussions with the residents of the room, it became apparent that they were

rather critical of the frame as a trading strategy but internalized it strategically as a means to make sense of and predict the ISE's daily movements. One of the investors in the room said the following, when I asked him what he thought of the frame being invoked frequently in the headquarters trading room: *'They [investment advisers] are like parrots you know, "the DAX is up, the DAX took off", it means nothing, we look at the fundamentals [of company performance] here'* (Informal discussion 5 March 2009). Indeed these three investors and their investment adviser were much more interested in news and data flows about those ISE shares on their radar than what happened abroad. Nevertheless, most of those shares belonged to a group of around 200 shares that were not very liquid nor covered by securities analysts in Istanbul and in other important financial hubs such as London. This lack of securities analyst coverage in this group of shares contrasted with the intense coverage by securities analysts of around 100 shares, such as banks, industrial and service companies, which also constituted the ISE's major indices. Moreover, the latter group of major index shares were also more exposed to the effects of the frame owing to the frame induced daily trading by Turkish retail investors in these liquid shares. As a result, the residents of the branch invoked the frame to explain the ISE's index movements. The frame was thus not turned into a meaningful trading strategy owing to the branch residents' preferences to invest in that particular type of 'uncovered' ISE shares discussed above. Consequently, in this branch, the frame was invoked in 23 per cent of the 93 narratives collected.

To give an example, the following conversations started around 15:30 pm (when the US markets opened) on 10 March 2008 between the investment adviser Furkan and Arda, one of the three retail investors in the room and a novice retail investor compared to the rest. In all the instances of narratives in which there was no news event, the narrators invoked the correlation logic. When there was news, it was the cause-effect logic that was invoked. All the narratives are about the past and present, yet the last sentence conveys a generalization about Turkish retail investor behaviour that can help Arda the novice investor predict the future:

Arda: *They are selling IsBank [national-bank quoted in the ISE] heavily, why?*

Furkan: *It is because they [investors] are selling abroad!*

Around 20 minutes later:

Arda: *They [investors in the ISE] are selling again everywhere [in major ISE shares], why, the DAX is good!*

Furkan: *Because there are sells in the USA; they [investors in the ISE] get panicky very quick 15 minutes later (five minutes after the better than expected US consumer goods sales data were announced at 16:00 pm)*

Arda: *Eee what, now they [investors in the ISE] are buying!*

Furkan: *I've told you, they [investors in the ISE] do [according to] whatever happens in the USA and in the DAX!*

In Firm B and Firm D, the frame was almost equally ubiquitous with 48.5 per cent of the 128 narratives captured in Firm B, and 42 per cent of the 82 narratives in Firm D. I was in Firm B headquarters between 8 and 17 April and my direct observations lasted seven days. In Firm B headquarters there were ten investment advisers, each looking after around 60 high net-worth and/or medium frequency trading investors. I made my observations in Firm D headquarters a year later between 4 and 13 May 2009. My direct observations there lasted five days. In Firm D's headquarters there were 5 investment advisers each serving around 40 high net worth and/or high frequency trading clients.

In both sites, there were the presence, via regular email updates and telephone connection, of strong research teams composed of macro economy and sector analysts. The research teams in each site, like their counterparts in other firms serving institutional investors, covered around 100 quoted ISE companies that constituted a large part of the ISE 30 and ISE 100 indices. Unlike Firm A's smaller research team that was composed of two analysts and one strategist to serve Turkish retail clients, these larger research teams in firms B and D were formed exclusively to serve, alongside their institutional sales colleagues, institutional clients from Europe, Turkey, and the USA.

However, the investment calls of the research departments in firms B and D were generally translated by the trading strategist of each retail sales department. This meant that the

strategists would combine these professional and generally longer-term investment calls with chart analysis and news flows to make them more suitable for the short-term investment preference of their Turkish retail clients. Here, the frame and the associated causal schema also played a role in these translations as expectations about news and market events abroad were incorporated in these short-term share specific calls.

In this vein, sometimes the frame overrode chart-based share-specific dynamics pointed by the strategists. The following narrative-cum-trading advice was given by Berna, one of the ten investment advisers in Firm B headquarters, on 8 April 2008 to one of her clients. I noted down Berna's reaction only but asked her later to explain me what the client asked. The client, who had made a profit on a recently opened position in a holding company share (covered by the in-house analyst), wanted to increase his position after he received a chart note from the strategist about an upside potential in the share. Berna reacted as below, which can be seen as a narrative predicting the future, and convinced her client to close the position:

You should not increase your position. Instead, realize your profit and start over with another position. It is because the DOW will probably open negative today, and then your profit or worse an increased position in Koc [name of the holding company] will take a hit.

The frame rarely failed to explain the figures on scopic screens. In such rare circumstances, investment advisers resorted to the logic of randomness in their narratives (11 instances) and exuded a sense of confusion. As an example, the following narrative was told by Erhan, an investment adviser in Firm B's headquarters, to one of his clients on the phone (9 April 2008):

We can't make sense of it really, we look at abroad, they are all in minus, but we [the ISE] is up in positive... I can't really say anything [as to why it is like this] here [in the ISE] really...

More than a year after my observation in Firm B and the above stories by Berna and Erhan, the strategist and five investment advisers in Firm D' headquarters were also observed to have frequently made sense of the ISE events by looking afar at the US and other developed country markets (42 per cent of the 82 narratives collected in Firm D). As an example of this

shared and continuous cognitive stance, I provide a proto-story example from Firm D which invoked the frame but did not make a direct correlation explanation about the state of the ISE from the frame. In all the sites, there were 265 proto-stories told and 91 of them invoked the frame in a similar way to one below:

Helin the investment adviser: *Ismail, the indices abroad are all negative, what is happening?*

Ismail the strategist: *There is actually no news from abroad...*

Melda the investment adviser: *And the market [the ISE] has now come back [verbalizing the ISE index turning negative too, but not explicitly linking it to the negative indices abroad with a correlation logic].*

Attesting to the ubiquity of the frame in the narrative dataset, in all the sites, out of the 265 cause-effect stories, 129 invoked the frame in addition to the 91 proto-story, 44 correlation, 11 randomness, and one similarity plot-logic narratives, taking the narrative outcomes of the frame to a total of 276 narratives (46 per cent). On the other hand, the different modes of internalizing the frame discussed above also explain some other noticeable variations presented in Table 1. Cetina and Preda (2007,116) argue that scopic market systems undermine social network-based or private information search in markets. As can be seen in the table, in all the trading rooms except Firm A branch, such private information was hardly used in making sense of market movements and resulting narratives- the highest usage is 4 per cent from Firm B and the lowest is 1.2 per cent from Firm D. Instead, it was predominantly the market data flows (517 out of 598), especially those from abroad that helped the investment advisers make sense of the market outcomes. In Firm A branch on the other hand, owing to their share preferences, residents continued to rely significantly on private information from social networks in their sensemaking efforts and consequent narratives (20 per cent). I discuss the significance of Table 1 figures on the narrative's temporal orientation later in the paper.

4.3. The frame's endurance and origins

As discussed above, there were similarities and differences in organisational positions and strengths of each brokerage firm. Despite the differences, the frame and the associated causal

schema, which positioned the ISE as part of a global system of financial markets, were shared in all the four sites. This was irrespective of whether one internalized this frame strategically or objectively. The frame was also an enduring one. More than one year after finishing my observations in Firm B, I started my observation in Firm D and immediately recognized the frame and the associated causal schema in action in investment advisers' conversations and narratives. Although the global market conditions were different in April 2008 (the eve of a global economic and financial meltdown) and May 2009 (offshoots of recovery in the collapsed global financial and economic system), the ISE was still at the receiving end of any economic and financial event abroad.

As part of my field research, I also made observations in two institutional sales departments, one in a fourth firm in July-August 2008, and one in Firm D in May-June 2009, and in an asset management company in April 2008. In these sites, the frame was also invoked, although in appreciably lesser frequencies, and mostly during executing client orders (institutional sales) and portfolio adjustments (asset management company). My observations and discussions with my interlocutors in these sites demonstrated that the frame was strategically internalized to cope with the ISE's daily trading dynamics originating from the Turkish retail investors' consistent reactions to markets abroad. As one fund manager put it '*These co-movements between the US [markets] and the ISE happen because of the domestics' [Turkish retail investor] psychology*' (Informal discussion, 18 April 2008). Another fund manager intimated his feeling of overreaction when I asked about the frame: '*When they fart there [in the US markets], we soil ourselves here [in the ISE]*' (Informal discussion, 18 April 2008). As can be inferred from these reactions, the frame was hardly invoked as an investment strategy to be used or shared with institutional clients in these institutional investment sites. As mentioned before, the investment strategies in these sites were predominantly informed by security analysts' valuations of the ISE companies, and by macro economy strategists' econometric forecasts on the Turkish economy.

Despite these differences in the way frame was internalized, i.e. strategically versus objectively, for an outside observer like me who spent around 11 months in Istanbul in 2008 and 2009 and followed the ISE very closely in that time period, it was not easy to ignore the ubiquity of this frame and the associated causal schema in written and oral commentary on digital data platforms, brokerage firm websites, financial news portals, business TV channels, and so on. During my interviews with employees of other brokerage firms and with notable Turkish retail investors, this frame and the associated causal schema were also acknowledged as an important explanatory factor for the ISE's movements. Some of my interlocutors even joked about the ubiquity of the frame in pointing to its internalization among the members of general public who were interested in the ISE. A regional retail sales manager in a leading brokerage firm made the following remark (Interview, 1 September 2008):

10 years ago, the market would rally with [rumours about] what leading local investors were doing, now the shopkeeper in Afyon [a small Anatolian city] asks about the future of Tom [DOW] Jones [we both laugh and he adds this really happened], then you hear in a village in Kars [an Eastern province bordering Iran and Armenia] 'What will the FED do?' [this was a joke]. Now people [retail investors] look for a story, a justification before they trade [in contrast to just following influential local figures].

I asked my interlocutors in the four sites and beyond about the historical and logical reasons behind this frame and the associated causal schema. The answers varied. Many referred to the resurgent presence of foreign institutional investors in the ISE in the new millennium which, they believed, had made the ISE "a globalized market" and more open to the vagaries of global economic and financial events. They contrasted this situation with the 1990s when, they believed, the ISE's agenda and indices were most of the time moved by local economic, political and financial actors, and events. Hande, an experienced investment adviser from Firm B stated the following that captures this view well (Informal discussion, 9 April 2008):

'Why we look at what happens abroad, US data etc., because after the 2001 financial crisis in Turkey, the ISE and the Turkish economy have rebounded well and foreigners have bought up the market. This has also coincided with the liquidity surge from the USA following the Dot.com crash and 9/11. All these have changed our perceptions here about the ISE.'

Related to this global liquidity factor, many also mentioned to the deteriorating global economic and market conditions since 2007, which underpinned the concerns in the retail investing and brokerage field about what the foreign institutional investors in the ISE would do in the face of these conditions. To predict that too, investment advisers looked abroad and invoked the frame frequently.

Few got more specific about the assumed underlying economic factors behind the frame, and pointed at the Turkish economy's export links with developed economies such as Germany:

Nothing like this was followed before, but globalisation has made markets connected, and that is why we follow what happens abroad. I think there should be one-on-one relationship between our market and the markets with which we have trade relationships. Look at India, we don't have any significant relationship as such and we don't look at what happens in their financial markets. But the DAX, yes we follow closely, because Germany is our biggest trade partner, and their real economy is at the centre of financial markets and Europe. (Interview, Head Of Branches, Firm A 14 March 2008)

Some on the other hand just dismissed the objectivity of the frame and the associated causal schema as exemplified in the "parrot" and "soiling ourselves" quotes before. Despite these differences, one can argue that the significant stock ownership presence of foreign institutional investors in the ISE in the new millennium is a shared knowledge that underpins the frame's endurance and the different explanations on its origins in the ISE. As long as the foreigners continue to be the dominant investors in the ISE in terms of ownership and the Turkish retail investors continue their high frequency trading preference, the frame and the associated causal template are poised to endure in different semantic fields in the ISE.

5. Discussion

Irrespective of the differences in usage mode and frequencies, for all my interlocutors in the four sites, the frame and the causal schema was, to use Tversky and Kahneman's (2002, 22-23) term, constituted a significant 'model' or 'heuristic' by which they made sense of the unfolding market situations both abroad and in the ISE, and also predicted the latter. As Kahneman and Frederick (2002, 53) put it, the general purpose of a heuristic is to substitute a

target attribute with the heuristic attribute in one's judgement about the target attribute. The frame and the associated causal schema that I observed in my interlocutors' narratives constituted representativeness heuristic from the 'model and outcome' perspective (Tversky and Kahneman, 2002, 23). With this heuristic, my interlocutors associated the figures they observed on their computer screens, such as index values, share prices, and trading volumes, with the frame and the associated causal schema. The observed figures from abroad and Turkey made sense only as the necessary manifestation of this internalized interpretive model rather than a manifestation of some other probably unrelated cause that could not be fathomed by or was not relevant to the model. Consequently, and in line with what Cetina and Preda (2007) described about cognition in scopic market systems, this cognitive process and its recurring narrative outcomes were not grounded in a mode of calculation and/or probabilistic model. Instead, they were informed by naturalistic or intuitive thinking particular to the situated cognitive systems found in these observation sites.

I therefore did not observe any of my interlocutors, including analysts, using or planning to develop any scientific or practitioner econometric model to quantify and measure the global and local macro and micro economic variables and effects associated with this frame. Instead, the frame and the associated causal schema had been underpinned by a number of historical events in the ISE discussed above. They were also kept reified and internalized as a social fact by the investment advisers' ongoing narrative explanations and predictions of daily market events and actions from abroad and Turkey. These information flows were ever present on the investment advisers' scopic screens. The investment advisers therefore made a continuous effort to follow such flows from abroad. They tried to have a constant cognitive tab on these "market movers" in places far away from Istanbul and Turkey to make sense of the ISE's movements. This type of data from abroad can thus be seen as an important 'anchor' (Tversky and Kahneman, 1974; Chapman and Johnson, 2002, 130) for my interlocutors that helped them to make sense and predict the local share and index values.

In fact, looking at Table 1, one can observe that the narratives were not all about past events. Nearly half of them predicted a future state in the market. This was also the case in the 276 narratives that invoked the globalized ISE frame. The narratives in general and the frame in particular can therefore be seen as not only an anchor but also a cognitive model that increases confidence among investment advisers in their knowing and predicting the states of the markets. Considering the marginal presence of 11 frame-invoking randomness narratives in the dataset, it seems that the investment advisers had little difficulty in making sense of the markets by using the frame. Also, as can be seen from the table, more than 80 per cent of the narratives happened in conversations. This type of learning by collectively narrating experiences in particular ways, i.e. by drawing on the frame, is similar to Gervais' and Odean's (2001) model on how investors can individually and collectively learn to be overconfident about their ability to judge the relevance and significance of information and to generate meaningful returns.

Gervais and Odean (2001) argue that such overconfident investors, who are assumed to trade on irrelevant information and/or sell winners and buy losers, may survive in markets where they have successful periods in return generation and where there are lots of new comers. In the case of the ISE's retail investing and brokerage field, the overconfidence of investment advisers could be attributed to the ubiquity of the frame across different investor and broker types, and to the historically institutionalized short-termism and high frequency trading of retail investors.

Brown et al (1989, 37) point out that recurring features of an environment where situated cognition takes place can afford recurring sequences of action. The ubiquity on investment advisers' computer screens of data from abroad and Turkey,, the institutional and historical underpinnings of the frame such as the ongoing strong presence of foreign institutional investors in the ISE, and the short-term investment preference of Turkish retail investors that sustain the bulk of brokerage firms' income constituted some of the recurring features of the situated cognition environment for the investment advisers. These features afforded them a recurrent type

of narrative explanations and predictions, and led to the featuring of the representative heuristic, anchoring, and overconfidence in their narrative judgements about the unfolding markets.

As I argue above, the frame and the associated causal schema can be seen as endemic to the ISE's retail investor and brokerage field, not just to the four observation sites where I collected data. Although not associated with my arguments and findings, there are recent econometric studies on the ISE's co-movement and return integration with developed and emerging country markets. For instance, Berument et al (2011) have found out that between 2000 and 2010, there has been a strong one-way correlation between unexpected shocks in various US indexes, foremost among them the DJI (which my interlocutors called the DOW and carefully followed), and the movements of the ISE 30 (blue chip index) and other ISE indices. According to Berument et al (2011), the effects of individual market shocks from the USA on the ISE were not just contemporaneous. They also explained the seven-day period movements of various ISE indexes. Interestingly, Berument et al (2011, 89) refer to two US indices, the Russell 2000 and the AMEX Composite (small and medium sized company indices in the USA) as affecting various non-financial ISE indices' movements the most. They speculate that this might be because of American small-cap investors' desire to diversify their portfolio across foreign markets that are small and middle size capitalization in nature such as the ISE.

In Berument et al (2011), there is no reference to the Turkish retail investors' probable role in the generation of these observed co-movements as the biggest liquidity providers to the ISE. In my field notes, there is no single phrase or sentence noted down on the AMEX or the Russell 2000. These indexes were unknowns to my interlocutors in the observation sites and beyond. The discrepancy between Berument et al's (2011) speculative explanation and my field research-based insight calls for more dialogue between sociologists and behavioural finance scholars. This is necessary for a better understanding of the sociological and behavioural dynamics and consequences of situated cognition in financial markets.

Nevertheless, Berument et al's (2011) econometric findings about ISE's movements in the last decade support my argument that the frame and the associated causal schema are endemic to the ISE retail investor and brokerage field, which has historically enjoyed the leading role in daily price movements in the ISE. In a way, the frame, when considered with the above-discussed econometric evidence, can be seen as taking on a performative function similar to how MacKenzie (2006) described an economic model formatting a real life market rather than reporting on its existing state.

6. Conclusion

In this paper, I have discussed the components of a situated cognitive system that underpins individual market actors' cognition and decision-making. Foremost among them are the institutionalized and internalized roles, norms, and the social stock of knowledge in a financial market. These imply that individual psychological factors are not the only reason behind the emergence and proliferation of judgement and decision heuristics and errors. In a given financial market, professionals and investors alike construct, maintain, modify, and socialize into a social stock of knowledge and the roles and norms springing from it. As pointed out by behavioural finance scholars, this social stock of knowledge may manifest itself in the form of fads and fashions or intuitive economic stories/arguments that spread like an epidemic and persist for some time. Other aspects of situated cognition systems such as representation and calculation technologies also matter for individual market actors' judgement and decision-making as they provide a cognitive environment with recurring features. The study of behavioural origins of anomalies observed in financial markets such as overconfidence, optimism, overreaction, and underreaction can therefore benefit from understanding cognition and decision-making as happening in a situated cognitive system and underpinned by a social stock of knowledge. In this vein, narratives of market professionals and investors alike can reveal the contours of this knowledge stock, and its effects on judgements, decisions, and aggregate market outcomes.

As I have discussed it in the case of the ISE, the recent story that characterizes the social stock of knowledge in this emerging market has been about the ISE's changing status in the global financial system. This status is believed to be reinforced by the increasing presence of foreign institutional investors in share ownership and, to lesser extent, in trading volume in the ISE. This story does not have only one plot. There are different interpretations, evidence, and actors featuring in my interlocutors' arguments about the "globalized ISE" frame and the associated causal schema. Despite these differences in explanatory plots, and whether one internalizes this frame and the associated causal schema objectively or strategically, this interpretive model acted as representative heuristic and anchors in my interlocutors' narrative explanations and predictions of the unfolding market events in the ISE. They were thus influential on their Turkish retail clients' cognition and decision-making, and possibly on the econometrically observed co-movements of the ISE with developed stock markets. Because the Turkish retail investors have historically been generating bulk of the liquidity in the ISE, this representative heuristic and anchor could not be ignored and thus was strategically taken into account by foreign and Turkish institutional investors and their brokers in their trading and portfolio adjustments in the ISE.

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Appendix-List of Interviews

Retail sales- All interviewees are from different brokerage firms. The exceptions are interviewees 2 and 9.

1. General manager, brokerage firm, 26 February 2008
2. Head of a branch, brokerage firm, 8 May 2008
3. Head of retail sales, brokerage firm, 15 August 2008
4. Retail sales manager, brokerage firm, 18 August 2008
5. Retail sales assistant manager, brokerage firm, 27 August 2008
6. Regional retail sales manager, brokerage firm, 1 September 2008
7. Head of retail sales, brokerage firm, 4 September 2008
8. General manager, brokerage firm, 10 September 2008
9. Chief floor broker, brokerage firm, 12 September 2008
10. Head of a branch, brokerage firm, 17 June 2009

Interviewees from regulators and brokerage sector

1. Assistant general manager, Surveillance Department, ISE, 27 June 2007

2. Expert, Statistics and Valuation Department, ISE, 29 August 2008
3. General manager, Surveillance Department, ISE, 29 August 2008
4. Assistant general manager, Equity Market Department, ISE, 11 September 2008
5. General manager and Head of research, ACMIT 15 July 2009

Notable retail investors in the ISE

1. A retail investor and a former broker from pre-automation era, 19 July, 2007
2. A client of Firm C and a former broker of a notable retail investor, 11 August 2008
3. A client of Firm D and a former brokerage firm owner, 18 June 2009
4. A client of Firm D, 24 June 2009

Table 1. Narratives collected during observations.

	Cause-effect	Correlation	Proto-story	Randomness	Similarity	Total	Market data use	News-private information	Self-narrative	Past	Past and present	Present	Present and future	Future	Past, present and future
Firm A HQ	120	22	139	11	1	293	266	81-6	39	34	65	73	62	12	47
Firm A BR	47	3	42	1	1	94	62	18-19	21	8	15	28	29	-	14
Firm B HQ	56	16	48	5	3	128	107	39-5	22	5	17	40	38	3	25
Firm D HQ	42	3	35	2	1	83	82	35-1	2	3	31	13	15	5	16
Total	265	44	264	19	6	598	517	173-31	84	50	128	154	144	20	102

Note: HQ, headquarters; BR, branch.

In the Turkish brokerage sector, there is usually a minimum asset threshold a retail investor has to commit to a brokerage firm to be able to get the services of headquarters-based investment advisers, a service that is more personalized and comprehensive than online and execution-only service via telephone dealers. This minimum amount varies from firm to firm and also depends on the frequency of trading on the part of the client. In the brokerage firms where I made my observations, the asset threshold figure was generally more than 50,000 TL, which according to the ACMIT figures for 2009 puts an investor within an approximately 175,000 strong Turkish retail investor group who commit between 10,000 TL and 1 million TL to investing in the ISE. The bulk of the brokerage firm revenues (above 70 per cent on average since 2003 according to ACMIT figures) come from fees on client transactions and loans. Although exact commission fee rates are kept confidential, my interviews with senior managers in the observation sites and beyond revealed that depending on the trading volume and/or assets committed, commission fees varied. For instance, in Firm A headquarters, I was told, the fee rates were one of the most competitive in the retail brokerage field owing to very high frequency trading clients there. In Firm B headquarters however, commission fees were said to be on the high side in the field owing to less frequently trading clients and comprehensive research service given to them. In Firm D, one of the biggest brokerage firms in Turkey, the fee rates varied depending on clients' trading frequency but the rates in Firm D headquarters were competitive in the sector owing to high-frequency trading and/or high net worth clients there.