MSc Organisational & Social Psychology

Do good decision-makers in the Fund Management industry use intuitive decision-making?

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Abstract

Many studies have examined the Naturalistic Decision-Making (NDM) field and several have explored fields such as fire-fighting and sport. Few have examined the financial sector, and none have looked into how the most senior and accomplished decision-makers in the fund management industry use pattern matching and intuition in their investment process.

This study investigates how the best-performing fund managers use NDM, or 'pattern recognition', to make decisions. Good performers seem to oscillate between using 'intuition' and a more analytical approach. Furthermore, this study explores how social and organisational factors support or prevent decision-makers from acting on gut feel.

The research for this dissertation was based on twenty in-depth interviews with senior decision-makers within the fund management industry. The interviews identified the most important cues which trigger pattern recognition amongst fund managers. The study then focused on the usage of intuitive decision-making; apparently, most fund managers move between System 1 and 2, depending on the decision backdrop and where they are in the investment process. A minority had implemented procedural systems to hold their own intuitive judgement 'in check'. Individual factors such as experience and faith in gut feel were discussed subsequently.

As predicted by the NDM literature, situational elements included lack of information, complexity and time pressure. Within the social factors, it was clear that pattern recognition increased with experience, while a senior management position made it easier to act on gut feel. Lastly, within organisational factors, most interviewees were not keen to foster an environment where intuition was encouraged; despite being intuitive decision-makers themselves, they promoted and nurtured a more 'analytical' framework in their respective investment firms.

The findings contribute significantly to existing research on NDM and have valuable implications for both researchers and practitioners.

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1.0 Introduction

This research aims to understand how the best performing Fund Managers (FMs) in the asset management industry use Naturalistic Decision-Making (NDM) or ‘pattern recognition’ to make decisions. Furthermore, this study aims to investigate how organisational and contextual factors support or prevent decision-makers from acting on gut feel. Please note that I use the expressions ‘pattern recognition’, ‘intuition’ and ‘gut feel’ relatively interchangeably throughout the dissertation.

Many studies have examined the NDM field (Gore et al, 2015; Klein, 2015) and several have explored it within fields such as fire-fighting (Klein et al, 2010) and sport (Macquet & Skalej, 2015). Few have examined the financial sector (Hensman & Sadler-Smith, 2011), and none have looked into how the most senior and accomplished decision-makers in the fund management industry use pattern matching and intuition as part of their investment process.

NDM has been defined as the study of how people use their experience to make decisions (Zambok & Klein, 1997). Klein (1998) argues that intuitive decision-making underpins expertise and that, by observing cues and pattern matching, people develop decision-making within specific contexts. Gigerenzer’s (2008) central thesis is that good decision-making is helped by biases and heuristics. Kahneman (2011), however, historically argued that gut feelings were dangerous because the heuristics and biases which underlie decision-making could lead to errors. His views now seem more nuanced, and intuitive decision-making is seen as more intertwined with expertise.

The research for this dissertation was based on twenty in-depth interviews with senior decision-makers within the fund management industry. The study is particularly intriguing given the high ‘Value at Risk’ decisions discussed, and the vast amounts of money managed by the respondents. The median amount of assets controlled by the FMs in the study is $12bn, while the average length of experience is 24 years. It is normally exceedingly difficult to access this secretive group of very senior decision-makers.

The study is organised as follows: Chapter Two reviews ‘intuition’ literature. Chapter Three states the Research Objectives, whilst Chapter Four focuses on the research design and methodology for data collection and analysis. Chapter Five provides the results and findings, linked to the relevant literature. Given the very rich findings and intriguing quotes, I have made this the larger part of the study. The dissertation finishes with a conclusion and topics for further investigation.

1.1 Motivation for the thesis

The research was inspired by my own twelve years working as a hedge fund Chief Executive Officer and Chief Investment Officer (CIO). Increasingly in my own firm, we put systems, procedures and checklists in place to minimise investment mistakes. Mistakes are, as a consequence, fewer, but a negative consequence of this was reduced idea generation and slower decision-making. Eventually, it had become difficult, even for me as CIO, to make investments without working through an increasingly cumbersome and time-consuming analytical process.

As a practising hedge fund manager, I wanted to understand how the best operators in the industry made their decisions. What type of analysis lay behind big share purchases or multi-billion dollar currency trades? I was also interested in how people’s views on their own intuition developed over time, and to what extent people rely on others’ gut feel. Lastly, I wanted to investigate how corporate setting and culture impacts the use of intuitive decision-making.

2.0 Literature review

NDM, intuition or gut feel is now seen as a vital component of decision-making, and literature on the topic is substantial and quite well-developed. To avoid repeating existing literature reviews (e.g. Gore et al, 2015), this review will be relatively brief. Instead, part of the literature is integrated into the Results and Discussion section.

Historically, scholars (e.g. Smithson, 1989) argued that decision-makers should strive to minimize ambiguity by seeking to maximise data input. However, Klein et al (2006) point out that information can be misleading and irrelevant, and that large amounts of data can slow down or obscure the decision-making process, especially in complex and uncertain environments (Lipshitz & Strauss, 1997; Klein, 2015).

Within this 'Intuition' literature, there have been three main research themes of interest. The first is how biases and heuristics can help experts make good decisions, the main exponent being G. Gigerenzer. The second major vein focuses on NDM, now a thriving area of psychology, with particular focus on how professionals use their cognitive skills to perform complex tasks. The third vein, perhaps best represented by Kahneman, examines how heuristics and biases underlie decision-making, with a particular focus on error. I review these areas below.

2.1 Biases and heuristics.

Gigerenzer's central thesis is that good decisions are made with a narrow, but highly tuned, set of information and thought processes. These are encapsulated as 'gut feelings'. Dane et al (2009) state that: 'the effectiveness of intuition relative to analysis is amplified at a high level of domain expertise.' (p. 187) Domain knowledge fosters a sophisticated associative process that produces accurate intuition.

Gigerenzer and Brighton (2009) explore how 'fast and frugal' heuristics foster effective decision-making. They explain that heuristics are 'cognitive processes that ignore information'; less information, computation and time can in fact improve accuracy (p. 107). Decision speed and decision effectiveness are often thought to be at odds. But Gigerenzer and Gaissmaier (2011) critique this position, arguing that ignoring cues can make for better predictions. One way to simplify the analysis is to seek 'one-good-reason' heuristic cues, find the first that allows a decision to be made, and then stop and ignore all other cues.

Gigerenzer and Brighton (2009) note that the expression 'less is more' does not mean that the less information applied, the better the performance. Rather, it points to the existence of a point 'at which more information or computation becomes detrimental' (p. 111). Mousavi and Gigerenzer (2014) add: 'One reason for this smokescreen is the assumption that all decisions need to be justified by numbers, as if all risks could be calculated.' (p. 1676)

2.2 Naturalistic Decision-Making (NDM)

NDM has been defined as the study of how people use experience to make decisions (Zambok & Klein, 1997). Klein argues that intuitive decision-making underpins expertise, and that people develop very honed knowledge for decision-making within specific contexts (they pattern-match and see cues). This domain-specific experience is what enables decision-makers to compress learning, 'chunk' information and pattern-match (Klein, 1998; Simon 1987). This concurs with Ericsson and Charness (1994), who argue that on average it requires ten years to acquire expertise.

Whilst Gigerenzer's work focuses on the cognitive process that underlies gut feelings, Klein looks at how we use information to make intuitive decisions. The organisational contexts covered in recent literature include fields as diverse as aviation (Orasanu, 2005), military (Militello et al, 2015), sport (Macquet & Skalej, 2015) and health (Reiter-Palmon, 2015). Often used is the critical decision method (CDM), a retrospective technique that provides insights into critical incidents by eliciting different types of cognitive and social expertise.

Kahneman and Klein (2009) identify two conditions that must be satisfied for an intuitive judgement (pattern recognition) to be genuinely skilled. The situation must provide 'valid cues to the nature of the situation', which must be 'specifiable' (p. 520). Furthermore, people must have an opportunity to learn the relevant cues, asskilled intuition will only develop in an environment of sufficient regularity.

2.3 System 1 and System 2

The final vein examines how heuristics and biases underlie decision-making, with a particular focus on error. Research suggests that the intuitions of domain novices are generally based on relatively simple, context-insensitive heuristics (Tversky & Kahneman, 1974, Dane & Pratt, 2007). As Bazerman (2006) notes, these intuitions tend to be biased and thus inaccurate.

Kahneman (2011) argues that gut feelings are dangerous, because they are highly susceptible to error. He proposes that people use simplifying heuristics to make judgements, but that reliance on heuristics causes systematic errors in predictions. However, the picture is more nuanced than this, and he accepts that expertise is very much intertwined with intuitive decision-making. This dual-process theory underlies much of the above literature, and is covered at length in Kahneman (2011). System1 and System 2 produce fast and slow thinking (features of intuitive and deliberate thought) respectively.

Hoffman (2007) states that System 1 is particularly useful if the situation closely parallels those previously experienced. Taken out of their expert contexts, the usefulness of decision-makers' intuition decreases. Conversely, analytical thinking is slower and more effortful (Dane & Pratt, 2007). Such thinking is governed by conscious information processing, which is more time-consuming and demands more attention than non-conscious thought (Schneider & Chein, 2003).Decisions on tasks involving maths or logic, in which one can show the steps used to reach a solution, are better taken analytically following a sequence of procedures (Sadler-Smith & Sparrow, 2008).

But Salas et al (2009) argue that conscious deliberation is a 'low-capacity' channel that can easily be 'overwhelmed by large amounts of information; however, intuitive processing is parallel in nature and quickly integrates complex sets of cues.' (p. 9)

2.4 Gap in the literature

Kahneman and Klein (2009) lay to rest some concerns about different ways of conceptualising decision-making, while acknowledging that scholars from different research traditions have much to offer each other. Gore and Sadler-Smith (2011) demonstrate that NDM demystifies intuition by identifying the contextual cues experts use to form judgements. And Kahneman (2011) admits that the accurate intuitions of experts are explained by the effects of prolonged practice, rather than by heuristics. System 1 is 'more influential than your experience tells you, and it is the secret author of many of the choices and judgements you make.' (p. 13)

Interestingly, much of the academic literature seems to posit that decision-making can be properly studied in various laboratory settings. However, experts most frequently face situations with which they are relatively familiar. Despite this, empirical studies of NDM have been rare; engagement with the financial sector especially so. Some work has been done in investment banking (Hensman and Sadler-Smith, 2011) but currently lacking is an analysis of people in the fund management industry who make major investment decisions and move around billions of dollars. Through an empirical study of senior decision-makers in this industry, this dissertation aims to fill this gap.

3.0 Research Objectives

The use of pattern recognition in fund management is an important research area that has received inadequate attention. Past research has examined intuitive decision-making in other fields, but so far the group of people sitting at the apex of the financial system has not been properly investigated. Drawing on relevant literature regarding NDM, heuristics and biases, the goal of the current study is to explore the following questions:

1. Do good decision-makers in the Fund Management industry use intuitive decision-making?
2. What are the contextual factors that shape intuitive decision-making in Fund Management?

4.0 Methodology

4.1 Research Design

The method of data collection used in this project is interviewing, due to the power it gives the researcher to explore topics in an iterative way. For Kvale and Brinkmann (2008), interviewing is a conversation that has a structure and purpose. Moreover, it is designed to ascertain the interviewee's perspective on a specific topic (Tarr, 2015). The face-to-face nature of interviews enables researchers to follow up with more in-depth questions, in a way that self-administered questionnaires cannot do.

The main disadvantage of interviews is that they are lengthy, so it can be difficult to convince interviewees, particularly people such as this sample, to commit the necessary amount of time. Another limitation is the difficulty of drawing out causality; without further testing, we cannot be sure to what degree these attributes may be found elsewhere – in this instance, in less successful fund managers. Interviews require careful preparation and compliance approval; it is also time-consuming to transcribe and analyse the data. For this specific research project, however, the benefits of interviews clearly outweigh the disadvantages.

The critical decision method (Hoffman et al, 1998) was used to structure the interview protocol (see appendix A). In general, initial 'open-ended' questions about respondents' views on intuitive decision-making were followed by semi-structured questions. The first set of questions covered the workings of the investment organisation and interactions within it. Secondly, interviewees were asked about an investment case with a favourable outcome, with particular focus on input factors. The third section was outcome-focused.

Depending on the answers, follow-up questions often went beyond the initial scope of the questionnaire. As Tarr (2015) points out, the goal is to allow for co-construction of meaning between researcher and interviewee. In order to 'drill down' into the topic, it is important that additional unplanned questions are asked to follow up on what the interview object says (Robson & McCartan, 2011).

As the interview is intrinsically linked to the formation of initial analytical insights and emerging classification of thematic content analysis, the two are difficult to separate. It was expected that several themes would begin to emerge during the interviewing stage, and that subjective interpretation of the information collected would begin forming an important part of the interviewer's analysis early on in the process. Ultimately, therefore, the interview and thematic analysis formed an iterative process, with the choice of further questions dependent on the results of previous interviews (Hsieh & Shannon, 2005).

Braun and Clarke (2006) explain that the coding process involves immersion in the data through repeated readings, moving back and forth through the interview transcripts, generating codes and collating this into categories. It is essential to make sure that each category is distinct and that it all relates back to the research question. It can be perceived as a form of pattern recognition wherein emerging themes become the categories that researchers analyse (Fereday & Cochraine, 2006).

4.2 Participants & Procedure

Between April and June 2017, twenty participant FMs were recruited through a personal request by the researcher, who runs a company in the same industry. These FMs are widely considered to be the most accomplished practitioners in the asset management industry; most run their own investment companies. All knew the researcher personally – the problems and challenges of which

will be acknowledged later. All those approached agreed to take part in the study. The interviews took place in meeting rooms, either at the interviewees' offices, or in the researcher's.
Since one of the hypotheses is that domain-specific experience is what enables decision-makers to compress learning (Klein, 1998; Simon 1987), the main criteria for selection of FMs were track record, seniority and length of experience. Ericsson and Charness (1994) argue that it generally requires ten years to acquire expertise; the candidates recruited well-exceeded this, with average industry experience of 24 years. This sample of very senior and experienced decision-makers thus had a total of 480 years of fund management experience between them. The assets under management (AuM) controlled by the funds totalled $3.3trillion, but this number is inflated by a large mutual fund and a Sovereign Wealth fund, and so the median AuM of $12bn better represents the underlying size of the firms in the study.

In Appendix C, there is a full transcript of one of the interviews. This person has twenty years of industry experience and has been the CEO of his own investment firm for ten years.

4.3 Data Analysis

Thematic analysis offers a methodological and rigorous approach to discovering themes from qualitative interviews (Attride-Stirling, 2001). The subject of this study is very under-researched due to the difficulty of accessing a population of top-performing FMs; this increased the need for an inductive approach, whereby a theory was generated from information received, rather than by pre-defined codes (Glaser and Strauss, 1967).

Interviews were scheduled to last approximately forty-five minutes. They were recorded, transcribed and analysed using a three-stage procedure (Butterfield et al 1996). These stages were Unitizing, Categorizing and Classifying. A topic guide/interview protocol was emailed to FMs ahead of the interviews. Before the study, the topic guide was piloted on the researcher himself as well as two of his colleagues.

A form of thematic network analysis adapted from the J. Attride-Stirling model (2001) was used to analyse the interview transcript. To achieve this, interviews were split into sentence segments. In total, six general themes and twenty-three sub-themes were abstracted from the interview transcripts. The first three themes (Cues, Usage, Individual factors) relate to Research Question 1 and the last three (Situational factors, Social factors and lastly Organisational Factors) to Research Question 2.

5.0 Results and Discussion

5.1 Cues that trigger decision-making

This section is structured by some of the cues which trigger intuitive decision-making amongst FMs; it will also explore the theme of cues itself. Simon (1992) came up with the following definition of skilled intuition: '…the situation has provided a cue: This cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition.' (p. 155)

Kahneman and Klein (2009) believe that 'skilled judges are often unaware of the cues that guide them.' (p. 524) This does not seem to be the case in this study: respondents had a high level of meta-cognition when it came to 'trigger cues'.

Table 1: Cues	
Share price moves as a signal	‘Price movement could be incredible, could create a lot of gut feeling effects in situations…for example in merger arbitrage…then you can kind of smell a rat, right?’ (FM1) ‘(company name) was very similar…the stock goes down for a day and then just stabilises.’ (FM2) ‘When Trump won the US election…there was a big rotation into financials and cyclicals, away from defensive stocks.’ (FM3)
Valuation	‘Depending on the price versus what we think the company is worth…’ (FM4) ‘The valuation was implying something so disastrous abut the company that the upside was compelling.’ (FM5) ‘We wait for attractive valuations.’ (FM3)
Contrarian positioning	‘I think that without the gut feel…you will not make ‘out of the ordinary’ decisions.’ (FM4) ‘Usually the risk reward is much higher if it is a contrarian trade, and you usually make the most money if you are acting counter to the market.’ (FM2) ‘It was very heavily shorted and so it ticked the natural kind of contrarian box.’ (FM5) ‘Shorts are more of a perception trade rather than actually looking at the facts.’ (FM2)
Similarity of business model or situation	‘I know this is going to work because it has the same characteristics as a lot of previous investments that have worked.’ (FM3) ‘That’s something that I had seen in other internet growth names.’ (FM5) ‘You just feel like this is a “copy/paste” like they have done in (company name).’ (FM4)
Change in company fundamentals	‘This is something else that is going to get destroyed by technology.’

	(FM7) 'So the competitive situation changed…there was a similar process when competition decreased in the US and profitability has become much better.' (FM8) 'Maybe you pick up two or three immaterial aspects but the combination raises a red flag or a green flag for that matter… And then you can go through your library of experiences.' (FM1)
Management assessment / corporate turnaround	'I have experience of seeing people over thirty years and I know, there is a certain pattern of people I trust and I would put my money with.' (FM9) '*How important is gut feel when it comes to people judgement*? It is important to me… *You think it is more important there than in the investments*? Probably.' (FM7) 'I like turnarounds, or, I like companies where things are changing… I have seen these things before and they can be very, very rewarding.'(FM9)
Change in macro backdrop	'Maybe the best example of a hardcore gut feeling was when we invested in Greek Government bonds after the referendum in Greece…this was a pattern recognition that this is IMF's role to step in… '(FM1) 'Basically the gut-feel trade was going very short the Yen when Trump got elected, aggressively, $1billion, a big trade… I immediately saw the potential there.'(FM10)

5.1.1 Share price move as a signal

It seems obvious that fund managers use share price moves as a cue for action. Share prices discount and represent all publicly available information and as such have an important signalling effect. In particular, it seemed clear that 'ominous' share price moves were important; a factor several FMs stressed. Many had previously experienced this to be a precursor for news to follow, hence FM1's comments about 'smelling a rat'. The UK financial market regulator, the FCA (2016), has highlighted the high level of suspicious and abnormal share price performance ahead of takeover announcements.

5.1.2 Valuation

15 of the 20 respondents also mentioned valuation as an important factor in triggering action: the use of various 'valuation screens' to identify potential investments is common. According to Kahneman and Klein (2009), the ability to recognise that a situation is anomalous is one of the manifestations of expertise. However, Kahneman (2011) claims that finance professionals may know a great deal about a particular company, and 'may have received ample feedback supporting their confidence in the performance of some tasks – typically those that deal with the short term – but the feedback they receive from the failures in the long-term judgement is delayed, sparse, and ambiguous.' (p. 523)

5.1.3 Contrarian positioning

Contrarian investments and situations often become the most profitable investment opportunities. Other investors will eventually have to change their minds about a company, and since it is the extra-marginal buyer or seller who impacts the share prices, to be right in a non-consensus way typically triggers the biggest financial gains. A high 'short interest' indicates how disliked a stock is, and most of the FMs considered this cue important.

5.1.4 Similarity of business model or situation

Investors often specialise in companies with one type of characteristic; whether growth, value or technology. FM quotes include phrases such as 'same characteristics' and 'other internet growth names'. Brunswick (1957) and Hertwig, Hoffrage, and Martingnon (1999), among others, have looked at ways that skilled judgements take advantage of environmental regularities. The validity aspect describes the casual and statistical relationship between cue and the outcome. Whilst there may be firm relationships between X and Y, there is no firm knowledge about how a share price will react to various cues. History does not necessarily exactly repeat itself, but for fund managers it clearly rhymes.

5.1.5 Change in company fundamentals

The expert decision-maker identifies environmental cues by viewing them as 'chunks' or 'patterns' in order to develop an awareness of the situation (Gobet & Simon, 1996). This particularly seems to be the case when it comes to pattern recognition of changes in company fundamentals. These changes often take place over time, each can be minute, and so they must be seen in combination. Clues could consist of deterioration in accounting quality, change in management explanations, worsening corporate results etc. As FM1 puts it: 'Maybe you pick up two or three immaterial aspects but the combination sort of raises a red flag – or green flag, for that matter'.

5.1.6 Management assessment / corporate turnarounds

The assessment of management and turnaround situations is another very important field where FMs use past experience. These investment situations will often be contrarian: when successful, the gains can be significant. Nearly all the respondents pointed to pattern recognition as very important and useful in this area. It could be argued that this is one of the most difficult areas within investments, with the highest degree of uncertainty.

Given that the average tenure of CEOs is now around four years, assessment of management will need to be done relatively frequently. This was the one area where respondents uniformly pointed to pattern recognition as being very important. It is not a very quantifiable science, and thus intuition is considered particularly useful.

This factor can also be seen from another point of view. As AKO Capital detailed in its Q32014 Investment Newsletter (pp. 2-3), where a management change happens in connection with the third profit warning, stocks typically go on to be good performers. Corporate performance data is regularly disregarded; in the turnaround phase, it does not seem to matter what profitability the company in question reports. It all seems to be about trust and 'gut feel' when it comes to assessing the probability that the turnaround will actually take place.

5.1.7 Change in macro backdrop

It is not straightforward to determine an environment's validity. In his study of long-term forecasting, Tetlock (2005) has trouble establishing superiority even amongst highly-educated and experienced forecasting experts. The reason for this may lie in the environment, which is too complex and changeable to forecast.

Shanteau (1992) reviews professions – among them astronomers, test pilots and accountants – in which expertise develops. He notes poor performance by professionals in a large swathe of occupations, based especially on the following factors: predictability of outcome, length of experience, and the availability of good feedback. In terms of the cues identified in the large macro-related currency trades mentioned above, both predictability and outcome certainties are low.

5.2 Reports of using intuitive decision-making

All participants had clearly thought very deeply about the use of 'pattern recognition' or gut feel; they all had a clear meta-cognition about intuition and were very conscious of their own use of it. As FM20 explains: 'I think that high-level practitioners experience it and are aware of it, but to some degree are reluctant to talk about it because it seems a bit woo.'

Table 2: Using intuitive decision-making	
Focus on naturalistic decision-making	' You cannot just do it by process, then computers could do it' (FM11) 'If it is only straightforward analytics then it's a commodity.' (FM19) 'Creativity is where the gut feel comes into it, but the creativity, you need to think outside the box, you need to think ahead of the curve.' (FM4)
Override with analysis	'I had gut feelings about situations that I overrode with rational analysis: it feels like the rational thing to do.' (FM5) 'I have trained myself to act less on intuition because my intuition has got me into trouble.' (FM12) 'You need to understand your own personality, and how many resulting behavioural biases you have, and try to calm them. Set rules for yourself and don't break them.' (FM12)
Process focus	'So I've got a pretty disciplined process and we try to make sure I follow the process rather than too much of the gut instinct.' (FM13) 'Everybody wants to talk about success, but on my gut feel I have made mistakes as well… *Do you think your gut feel has improved?* It has been suppressed… *Why is that?* Because the process doesn't allow too much gut feel.' (FM4) 'The purpose of the research is to avoid using gut feel… I have not demonstrated to myself that my gut feel adds any value… I feel that the best way to eliminate those behavioural biases is to put a process around decision-making.' (FM12) 'I get bullish when everyone else gets bullish as well, so really we use the framework to mitigate against that… I sort of ignore my feeling.' (FM3) 'The framework helps us to take out the emotion.' (FM3)

Combining System 1 and 2	'You have to do your general quantitative work, so know what your numbers are, know what your facts are, and then you have to make qualitative judgements…or gut feeling, if you will' (FM8) 'I don't make gut feel in longs or shorts if there isn't something intellectually which stacks up for me.' (FM7) 'Well I think intuition can be helped by process.' (FM7) 'I've made an investment and then further researched it and if there's something I've missed then that's where I overrule it, yeah. *Does that happen often?* Yeah, quite often.' (FM10)

5.2.1 Focus on naturalistic decision-making

Intuition may prove the most effective on tasks that are relatively non-decomposable (Hammond et al, 1987). It permits one to make a more 'holistic' judgement (Inbar et al, 2010) and thus permits decision-makers to allow for a number of cues concurrently. It was clear from the FMs' comments that the more complex a situation (macro-related, turnarounds etc), the more it was seen to be useful. It was also seen as useful when it resembled previously encountered situations.

5.2.2 Override with analysis

It is very interesting that several FMs 'override' gut feel with analytics. This is viewed as more 'conservative' and also more 'rational'. Kahneman (2011) describes circumstances in which System 2 takes over, 'overruling the freewheeling impulses and associations of System 1' (p. 21). He further discusses the 'workings of System 1 and the mutual influence between it and System 2' (p. 13). Gigerenzer and Brighton (2009) explain how the mathematician George Polya distinguished heuristics from analytical methods, in particular how 'heuristics are indispensable for finding a proof, whereas analytical work is necessary to check a proof's validity' (p. 198). Salas et al (2009) show that the role of System 2 analytical reasoning is primarily to generate post hoc rationalisations for specific judgements, but these rationalisations seldom result in a change in the initial judgement. Several of the FMs argue the opposite, saying that they indeed change their minds if the data does not support the intuitive conclusion.

5.2.3 Process focus

In the sample, five out of twenty FMs don't believe in the value of 'gut feel'. They talk about it in derogatory terms, clearly perceiving it as less 'clever' and not strictly valid. Some of them have had bad experiences from following gut feel and have adapted a strict process framework to try to prevent similar mistakes. Analytical decision-making has typically been seen as less susceptible to bias than intuition, and has long been promoted by decision-making researchers (e.g. Janis & Mann 1977).

5.2.4 Analysis paralysis

The FMs did not actually raise this in the interviews, but some academic research shows how analysis can compromise task performance, even though most of the work in this area has focused on motor skill tasks. Beilock et al (2004) show that expert golfers tend to putt worse when they analyse their putts. Similar effects have been shown in baseball (Gray, 2004) and soccer (Baylock et al, 2002). It seems that, at least for some experts, analytical decision-making disengages the intuitive operations which typically serve experts so well.

5.2.5 Combining System 1 and 2

Most of the FMs seem able to draw on both System 1 and System 2 and seem very skilful at oscillating between them. They draw on both resources: when useful data 'runs out', gut feel takes over. As we shall see later, various systems are used at different stages of the investment process. Their comments tally with most of the academic research. As Salas et al (2009) mention, 'decisions need not be based purely in intuition or purely in deliberation. Frequently, experts use a mixture of strategies.' (p.2)

Kahneman and Klein (2009) mention that:

> …the distinction between System 1 and 2 plays an important role in both the HB and NDM approaches. The performance of experts involves both an automatic process that brings promising solutions to mind and a deliberate activity, in which the execution of the candidate solution is mentally stimulated in process of progressive deepening. In the HB approach, system 2 is involved in the effortful performance of some reasoning and decision-making tasks as well as in the continuous monitoring of the quality of reasoning. When there are cues that an intuitive judgement could be wrong, System 2 can impose a different strategy, replacing intuition by careful reasoning.
>
> p. 519

5.3 Individual factors that shape intuitive decision-making

Most of the FMs believed that their intuition had improved over the years, and that experience was the main reason for this. Having seen how various 'swing factors' or 'processes' work, they have added to the 'library' and improved their ability to pattern-match. They also claim to have gained more faith in their own intuitive decision-making abilities. Lastly, they consider it less of a career risk to make decisions without too much analytical input.

Table 3: Individual factors	
Experience	'In your first five to ten years in the industry you do need to build up a very high level of knowledge before you have the confidence to invest, but with more experience you recognise much more quickly

	what are likely to be the key swing factors in making an investment work.' (FM10) 'You can go through your library of experiences and I think, the gut feeling probably develops over time because of all sorts of impressions you have had over your investment career.' (FM1) 'You hone it and that's because you get experience in what works and what doesn't…you hopefully improve your success ratio.' (FM10) 'Pattern recognition only works if it has been successful.' (FM14) 'Getting it right enough times…that teaches me a pattern.' (FM19) 'Having seen the same process work…I am pretty confident in the pattern-recognition process now.' (FM14)
Faith in own gut feel	'*Do you trust your pattern recognition now more than you did in the beginning or less or the same?* Oh, more. *Why do you think that is?* I think I have a firmer belief in my own ability to identify what is a good business…what valuation is appropriate to bet on for those sorts of business.' (FM14) 'We might make the position significantly larger because my gut feel tells me that there is more upside there for whatever reason.' (FM15) 'Sometimes, I tell them, I've seen this before, don't trust this guy!' (FM6) 'It is a codified experience to some degree, but then also informed by your emotions and your past experiences. In general I rely a lot on it so I believe in it very much.' (FM11) 'Evidence suggests I should be paying closer attention to these feelings.' (FM20)
Career risk	'*Do you think the fact that you have less career risk matters?*

	Absolutely. I think, year by year, you know the risk of a bad year or bad decision is lower, and it makes your risk assessment more symmetrical rather than asymmetrical. It's like a new fund, you can't have a bad month or bad quarter or bad year, you make a very different decision when you feel you can afford to.' (FM14).

5.3.1 Experience

Kahneman and Klein (2009) show that a necessary condition for the development of pattern recognition is an adequate opportunity to learn the relevant cues. Kahneman (2011) further argues that the accurate intuitions of experts are better explained by the effects of prolonged practice than by heuristics. Chase and Simon (1973), for instance, estimate that chess masters must invest 10,000 hours to acquire their skills.

Ericsson, Charness, Hoffman and Feltovich (2006) list several factors that influence skill development, such as the type of practice, motivation, level of engagement and the self-regulatory process. Even though fund managers do not operate in a high-validity environment, given the constant supply of cues and outcomes, with companies typically reporting quarterly and fund managers in some instances being measured daily, they certainly have ample opportunity to learn the rules of the trade.

5.3.2 Faith in own gut feel

It is also clear that the use of intuition or gut feel in decision-making varies with seniority. Fund managers with more experience and higher up in the hierarchy were believed to be more intuitive than those lower down. Sitkin and Weingart (1995) mention that outcome history has a significant impact on risk behaviour at the individual level, and this element also surfaced in several of the interviews. Expertise, seniority and experience appear to give participants decision-making internal credibility in their respective organisations, giving FMs the 'permission' to exercise 'gut feel' judgement. The importance of past behaviour in shaping current risk perceptions should not be underestimated, both at the individual level and, as we shall see, at the organisational level.

5.4 Situational factors that increase the importance of intuitive decision making.

FMs considered gut feeling to be most useful where there is a high level of uncertainty, little previous precedent, available information is inconclusive and time is limited. This tallies with the findings of Orasanu and Connolly (1993), as well as Klein's (1999).

Table 4: Situational Factors	
Lack of information	'Because I didn't have all the data to back it up.' (FM9) 'This was a political gut feeling, you could say, that Europe will not lose this and IMF has too much at stake too, so therefore, we took a position, we bought bonds after the referendum, but it was not predicated on strict financial analysis…you could just feel it from the gut.' (FM1) 'We made a conscious decision that we were not fully on top of all the information, and we made the initial investment' (FM4) 'With no more data and under time pressure…' (FM19). *When things go wrong:* 'When you are wrong…your obvious intellectual reasons are essentially wrong and…it leaves something else, and that something else is…what gut feeling is describing.' (FM5)

	'For me it has been particularly important at the moment where something is going wrong and that's where, there is an internal feeling that…starts to drive the decision-making.' (FM5)
Complexity	'We came to the conclusion that this looks very attractive, it had a lot of complexity, it became more a decision based on gut feeling.' (FM11) 'Particularly when something is changing because it is not always easy to analyse it, so it's the gut feel there.' (FM9) 'There have been one or two…standard deviation events where I feel my prior experience might actually help me to understand the situation a little better than the average investor…I don't know whether it is gut feel or intelligence, I saw the solution and traded accordingly.' (FM12)
Time pressure	<u>*Change*</u> 'It's extremely important because I think time is a critical factor in investing….' (FM10) 'You have to rely to some extent on your gut feel…when you don't have infinite amounts of time, you have to make a decision on the insufficient data you have to hand.' (FM1) 'Well that one was a very quick decision, that was basically the day of the referendum.' (FM1) <u>*Time of general due diligence*</u> 'Some of our managers spend too much time trying to get secure around a stock.' (FM10) 'If someone says:"I saw this company, I don't know a lot about it

	but I really like it. I can tell you the following based on an hour's meeting and I think we should buy it and do some work", well we'll buy it and do some work pretty quickly.' (FM7) 'There are not enough hours in the day if you want to keep on reading and looking at things.' (FM9) *Short covering* 'I think gut feel is more important in exiting shorts rather than on the long.' (FM2) 'So the decision to start covering was very quick.' (FM2) 'I think you have to act much faster, and by the time that people come around to seeing whether the underlying fundamentals have changed or not the stock can move 50% or so.' (FM2)
Riskiness	'When you are on the front foot…you can chance around a tiny bit more, you can trust your instinct more.' (FM7) 'To go into a Spanish bankruptcy process and acquiring it with a Spanish partner who you haven't worked with before is probably not for the faint-hearted.' (FM11)

5.4.1 Lack of information

Much of the research within the 'intuition' literature underscores that it is particularly useful when there is a lack of information available (Dane et al, 2012; Salas et al, 2010); this is also clear from most of the interviews.

Wubben and Wangenheim (2008) compare the accuracy of the 'one-reason decision-making' process, namely the hiatus heuristic, with models which integrate more information. It seems these models are more successful when the environment is less known and there is more uncertainty. Interestingly, several FMs also point to the importance of intuition when System 2 analysis has been proven wrong. In these instances, information is often lacking and the complexity and the urgency of the situation has increased.

5.4.2. Complexity

Hammond et al (1987) show that tasks which can be broken down and approached sequentially tend to be conducive to analytical decision-making, whereas tasks that are relatively non-decomposable are more suitable to intuition.

Kahneman and Klein (2009) explain that 'evaluating the likely quality of an intuitive judgement requires an assessment of the predictability of the environment in which the judgement is made' (p. 515). Several participants mentioned complexity, periods of change or unusual situations as situations in which intuition was being used. Clearly, the predictability of the environment is minimal in these situations.

5.4.3. Time pressure

The FMs interviewed seem to think about intuition and speed in two different ways. In many cases, events 'force' decision-makers to act fast. Time pressure increases reliance on intuition because decision-makers simply do not have time to use an analytical model for decision-making. But they also think about intuition as a way to shortcut the due diligence process to save time.
Jeff Bezos (2016), the CEO of Amazon.com, introduces a concept called 'High-velocity Decision-making', arguing that: 'Most decisions should probably be made with somewhere around 70% of the information you wish you had. If you wait for 90%, in most cases, you're probably being slow.' (p. 3)

Interestingly, some other studies, such as Bain (2013), claim that organisations which make fast decisions also make better decisions: speed is a sign of the organisation's quality.
In terms of decision points, the time of a short cover is mentioned by many as a time where intuition is more important than analysis. This may be because at these potential inflection points, share prices can be moved more by sentiment than fact. This often coincides with management change, subsequent to which development is uncertain.

5.4.4 Riskiness

Is there such a thing as a 'winning streak'? Some FMs think so. I will not discuss this in detail here as it is more linked with risk appetite and tolerance. Suffice it to say that FM7's view – 'when you are on the front foot, you can chance around a tiny bit more' – is shared by several respondents.

5.5 Social factors that shape whether an intuitive decision can be made

It is clear from the interviews that intuition is applied particularly at two stages of the investment process: the first 'spotlight' period (initial decision to research and first small investment); and during the 'sizing' decision (how much to invest). In between, most FMs fill in the gaps with quantitative work, channel checks, management meetings and so on. This analytical work arises, at least partly, for social reasons. Fund managers generally don't trust other people's 'gut feel' but do trust senior colleagues' 'judgement'.

Table 5: Social Factors	
Need for backing up the decision	*Idea generation / initial position* 'It's something that clicks in our head without initially knowing what it is and you want to act on that. Then subsequently you try

	and figure out why a given decision was the right one.' (FM2) 'Once the position is in we do our homework and basically validate the thesis and we eventually scale it up.' (FM6) 'Gut feel alone is good to generate an idea but then you need to put meat on the bone because the gut feel per-se I think is not enough' (FM6) *'Did you have a company meeting, or…?* Yeah, we went over there, but that was after the investment was made.' (FM4) 'I think just on a gut feel I would feel nervous on that. I would want to see the numbers and the history.'(FM16) 'You need to back it up.' (FM14) 'I think there is always data that you can use to back up what you think, but ultimately that's probably what you're doing.' (FM15) *<u>Sizing / scaling of position</u>* 'Almost any time we buy something we buy a bit, then do more work, then buy some more, you know. It's rare that we go full-scale in one instance.' (FM8) 'We could still be doing a number of weeks' work after we had put the position on but then it's all about sizing.' (FM3) 'I think that is the problem also for me acting wholly on gut feeling because if I can't really back it up with data or triangulation then I can't really size up the position that nicely.' (FM1)
Trust others' gut feel	*<u>Experience</u>*

	'*And the people whose opinion you trust, what do they have in common?* They are very experienced, so they have seen a lot of situations… *Does the length of the relationship with you matter?* Yes I think it does, absolutely.' (FM1) 'Do you trust your analysts' gut feel? Not a whole lot, but I trust my senior guy's gut feel.' (FM1) *Track record* '*What would it take for you to trust somebody's gut feeling?* A track record.' (FM6) '*What does it take for you to trust somebody's gut feel? Is it the length of which you have known them, or their success?* It is their numbers. So for me that means the 'Sharpe-ratio', the level of alpha created over a significant length of time.' (FM10) '*And do you trust other people's gut feel?* Some people, yes. Quite a few. *What would they have in common?* They will be successful (laughs). It's pretty straightforward actually.' (FM11) *Judgement versus gut feel* 'You can't trust fully somebody else's gut feel because it's not yours…but I trust his judgement, which is almost but not quite the same thing.' (FM8) ' To be fair, trusting other people and trusting the gut feel of other people are two slightly different questions…I have certainly never acted on somebody else's gut feel.' (FM5)

	<u>*Limitations*</u> ‘It would still need to be my gut feel if I was to back that. (FM15) ‘He is taking a leap of faith on the work of his analysts, which he is not prepared to do unless he does that journey himself as well.’ (FM14) ‘*Do you trust your analysts’ gut feel?* Probably not.’ (FM15)
Others trusting your gut feel	‘*Do people in the organisation trust your gut feel?* They would never say that they trust my gut feeling, but they would value my experience, yes.’ (FM1) ‘ (name) knows how my gut feel is…whereas normally we would have our own processes in place and follow it, he would just say “skip it”.’ (FM4) ‘So if the question is if he is prepared to act on the basis of my pattern recognition without filtering it himself, then I think no.’ (FM14)

5.5.1 Need to back up the decision

Despite using it, FMs still see intuition and gut feel as somewhat invalid reasons for making a full investment decision and so they oscillate between System 1 and 2. Participants were acutely aware of organisational conventions and the constraints that were imposed on personal NDM. Leonard and Sensiper (1998) observe that in many organisations there is a need for ‘hard data’ to back up factors that can help innovation and idea generation. The problem pointed out by participants is that there is sometimes an attempt to try to evidence the decision after it has been made. Given client focus on understanding process and replicability of results, FMs feel a particular pressure to provide tangible proof and justification for their intuition. This is linked to the trust one can have in others’ gut feel, both person to person, but also from the viewpoint of external capital providers.

5.5.2 Trusting others' gut feel

The FMs interviewed, with only a couple of exceptions, did not trust other people's 'gut feel'. They trusted other people's 'judgement', making a clear distinction between this and intuition; this was a function of how long they had worked together, as well as track record as measured by 'batting average', Sharpe-ratio or being 'successful'.

As previously discussed, the importance of past behaviour and experiences to shaping current risk perceptions, both at the individual and at the organisational level, should not be underestimated. Sitkin and Weingart (1995) explain that outcome history has a significant impact on risk-taking behaviour at both individual and group levels.

Peterson, Owens, Tetlock, Fan and Martorama (1998) find that successful decision-making groups had strong leaders, who were more likely than leaders of unsuccessful groups to try to persuade others of their views (p. 273). Generally, the more 'power' a group member has (in terms of position, expertise and personality), the more influence they will have over other group members' opinions (Raven, 1992). So it seems natural that a more senior person with more authority has better opportunities to follow their intuition, as also seen from the interviews.

5.6 Organisational factors that shape whether an intuitive decision can be made

Most of the respondents, even those who are strong believers in pattern recognition, are reluctant to admit applying it and strive to build an analytical and process-driven organisation. It seems that this is partly client-driven. Just as the FMs don't trust other people's gut feel, they don't believe clients trust their gut feel either.

Table 6. Organisational factors

Procedural organisational culture	'I really don't want my analysts to work on gut feel to be honest.' (FM1) 'I think that it is very hard for an institution to buy into a portfolio manager's gut feel, which is why they want everything around process.' (FM2) 'There is a very strong research culture in the team …I think people would be extremely uncomfortable being in an environment where most decisions were made intuitively.' (FM12) 'Certainly the structure within (name of the company) precludes me from being very impulsive.'(FM14) 'It's going to be very difficult to justify internally if things go wrong, say I lost a lot of money, I dropped 150 basis points performance on my gut feeling.' (FM1) *Opposite view* 'So I think the danger sometimes with having too many systems in place is not allowing yourself certain freedoms, you miss out.' (FM4) 'How do you create an environment in which people feel happy to act on intuition? That's a good question because we have an environment of very high accountability for portfolio decisions. If I had someone looking over my shoulder every three weeks it might inhibit me…' (FM10)
Consistency with external capital providers	'*So when you look at the firm, do you feel it's easier to relate to fund managers who are more process-driven when they go through under-performance?* Well, I suppose it's maybe a bit more

	comprehensible.' (FM17) 'So if I do an investment case, you know, technical, technical, technical, and then it goes wrong you can hold up a piece of an investment case and say well look at all the work we did. If you say well I made this decision based on a gut feel; that just feels less solid. So that's personal risk management.' (FM5) 'Sometimes I think he feels that there are some ways to make money that are…slightly bad, he's not making money in clever enough ways.' (FM14) 'Can you tell investors it was gut feel, the investment? (Laughs.) No.' (FM9) 'I would not define it like that; gut feel is like, a little bit too much like shooting from the hip, no?' (FM9) '*Do you feel it would be problematic inside the firm if you acted more without having data?* I don't think it would be problematic inside the firm, no. I think it would be problematic with our investors probably.' (FM15)

5.6.1 Procedural organisational culture

Hensman and Sadler-Smith (2011) observe that organisational context is vitally important in determining the extent to which intuition is perceived as valid. Barney (1986) defines corporate culture as 'a complex set of values, beliefs, assumptions, and symbols that define the way in which an organization conducts its business' (p. 65). So what are the cultural factors mentioned in the interviews that shape attitudes to the use of intuition? I examine this in terms of leadership, structure and corporate climate.

Bennis (1997) points out that the most important function of leaders in high-performing groups which take risks is to ‘keep hope alive in the face of setbacks and stress’, in other words when risk-taking goes wrong (p. 200). This type of leader operates like a benevolent guardian, not like a traditional boss. The quality of leader-member exchange between an individual and their supervisor is positively related to the individual’s innovative behaviour and risk-taking. Scott and Bruce (1994) show that ‘subordinates who reported having relationships with their supervisors characterized by high levels of support, trust and autonomy also reported the organization to be supportive of innovation.’ (p. 600)

The way teams are structured can also impact on risk-taking. Amabile and Gryskiewicz (1987) note that collaborative effort among peers can be key to creativity and risk-taking. The best employees want a safe environment where they can make mistakes. Rogers (1954) shows that the cohesiveness of a group determines to what extent individuals feel that they can introduce ideas without personal censure. Catmull (2014) concurs. At Pixar, management’s job is not to prevent risk but actually to build the capability to recover when people make mistakes and fail.

In the study of what motivates and enables individual risk-taking behaviour, including the use of gut feel, organisational climate is thus critical. Abbey (1983) identifies that innovative R&D organisations are characterised first by a reward system that recognises and rewards excellent performance; and second, by a willingness to take risks and experiment with innovative ideas. The same seems to apply to fund management organisations.

Amabile, Conti, Coon, Lazenby and Heron (1996) find that people are most creative when intrinsically motivated by the satisfaction and challenge of the work itself. This feeling can be undermined if they feel externally controlled in their work. So what happens to idea generation when the process becomes very strict?

O'Reilly and Chatman (1996) have shown how norms and values for creativity and decision-making may not be enough to break through the inertia that can emerge in strong culture firms. The negative side of strong social control is that people can be disempowered through excessive conformity and systems, which can stifle idea generation. They further suggest that strong culture firms could kill off potentially viable investment ideas sooner in the idea-generation phase than companies with stronger values for intuition (p 191). In his latest letter to shareholders, Bezos (2017) says: 'But if you're not watchful, the process can become the thing… The process becomes the proxy for the result you want. You stop looking at outcomes and just make sure you're doing the process right. Gulp.' (p. 1)

5.7 Limitations

As previously mentioned, all participants personally knew the researcher. Where established relationships exist between interviewer and interviewees, people's informal ways of relating to each other can influence their responses (Bailar et al, 1977). The research object may also say what he thinks the interviewer wants to hear. Given that among some FMs, intuition is considered a worse approach to investing, interviewees may feel that there is only one 'right' answer. Also, questions could potentially have been leading (Legard et al 2013).

The participant sample was based on the researcher's subjective assessment of the pre-eminent fund managers in the industry. Although there was a purposive sampling, in that the researcher handpicked the best FMs, participants were generally on friendly terms with the researcher and thus also 'accessible' subjects (Marshall, 1996). It would be fair to assume that some interviewees did not feel they had a real choice as to whether or not they wanted to participate. The flipside of this is that without the personal relationships, it is doubtful whether this group of secretive (and probably slightly paranoid!) people would have agreed to participate.

The sample size was relatively homogeneous, with little ethnic and cultural diversity. The author is middle-class and white, as were most of the subjects. Only one of the FMs was female, reflecting a sad fact of the industry. According to Financial Times (1st May 2017), only 10% of UK fund managers are female, while in the US only 184 of 7000 mutual funds (2.6%) are run by women. Finucane et al (2000) find that white males perceive risk as being lower than women and non-white men. If this study were repeated on a larger scale, one would seek to incorporate more female FMs and as many representatives for different ethnic groups as possible.

Lastly, the research thus does not reveal the extent to which the framework may be generalised to other organisations, or whether the sample is unique to the organisations studied.

6.0 Conclusion

The present study offers highly valuable contributions to existing research on intuitive decision-making, giving three broad perspectives on this. One is that gut feelings reflect bias (e.g. our preferences), and that they are indeed very good. The second is that gut feelings are actually data-driven decisions (NDM), whereby we focus and pattern-match on bits of data to reach critical decisions; one's ability to do this grows with experience and seniority. The third is that heuristics and biases can be quite bad, and elite decision-makers find ways of overcoming these.

The dissertation contributes to existing research on NDM and in particular gives important new insights into the use of intuition in asset management. The data identified the most important cues which trigger pattern recognition amongst fund managers. The study then focused on the use of intuitive decision-making and it appears that most of the FMs move between System 1 and 2 depending on the decision backdrop and where they are in the investment process. A minority have put procedural systems in place in order to hold their own intuitive judgement 'in check'. It is clear that pattern recognition increases with experience as people gradually add to their library of data points, but perhaps more importantly, see how real-life situations actually play out relative to what their intuition was 'a priori'. A senior management position makes it easier to act on gut feel, given a lesser requirement to 'document your workings' to colleagues.

As predicted by the NDM literature, situational factors included lack of information, complexity and time pressure. Among the social factors, FMs felt a great need to reinforce decisions with analysis after they were made. Interestingly, they generally did not trust other people's gut feel. Lastly, within organisational factors, most FMs were not keen to foster an environment that encouraged intuition; rather, despite being intuitive decision-makers themselves, they encouraged and nurtured a more ‘analytical’ framework in their investment firms. This was partly because they did not feel that capital providers had faith in their intuition.

The qualitative data obtained in the study thus provides extensive answers to both research questions and furthermore gives a rich, in-depth account of pattern recognition in some extremely high ‘value-at-risk’ decisions. These ‘super decision-makers’ are able to make intuitive judgements about the future that not only tend to be correct (and based on gut-feelings, past experiences, assumptions, rapid data processing), but buck the trend in terms of wider markets. Indeed, in a world where decision-making is increasingly based on analytics and formulas, ‘super decision-makers’ rely on expert knowledge to stay one step ahead of the pack, with biases and experiences providing them competitive advantage. An interesting hypothetical question is whether, if decision-makers were to write their insights into a book (a manual so to speak), it could be followed. This study suggests not.

Further investigation

This study offers a starting point in a very under-researched area; namely Naturalistic Decision-making in the Fund Management industry. The study thus serves as a tentative starting point for a more evidence-based approach.

Importantly, the sample in the current study represents an elite and successful group who are making high impact decisions. It would have been interesting to see how that would differ with a non-elite or unsuccessful group. It would also be interesting, had the sample size been bigger, to see if and when analytical vs intuition approaches differ or give a different outcome. We know that humans are good at noticing patterns but that computers are getting even better. Are the best of our species still better than the machines?

The study has mainly explored the buying and position building parts of the investment process. Inalytics (2011) points out how the buying process for the industry contribute 47 basis points p.a. to performance, but that selling negatively impacts returns on average by 94 basis points per year. This is explained by the 'Disposition effect' (that fund managers tend to sell their winners, albeit after negative performance the prior month). It would have been interesting to base a study on the selling decisions/position reduction only in order to look for differences in decision-making. The hypothesis is that something with the process must be different given the much worse selling outcome.
There are many other areas within NDM which need more research. At the individual level, how does personal wealth and financial security impact decision-making? It has been shown that tertiary education has a negative effect on the use of intuitive, or heuristic, decision-making. This has important implications for organisation–person fit and the ideal educational attainment for recruitment into risk-taking roles.

Given that risk-taking generally differs between the genders (Finucane et al 2000), this researcher's 'gut feel' is that the use of NDM will also be higher amongst men, but this remains to be researched. Is NDM more accepted in less hierarchical organisations? Is there a difference from country to country? Lastly, given that intuitive decision-making leaves less of an 'audit trail', what are the implications for organisational learning?

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8.0 Appendices

Appendix A

Topic Guide / Interview protocol

Do good decision-makers in the Fund Management Industry show a consistent pattern of behaviour?

Fund Managers: Specialist Interview Schedule

a. brief the participant on the purpose of the project and interview
b. Describe the nature of the interview (i.e., that it is recorded) and discuss confidentiality.
c. Describe the format of the questions. They will refer to when it happened, the incident, the emotions and the outcome.
d. Clarify the participant's view on the importance of gut feel.

Question Set 1. Background

Please recall and describe a typical day in the office, focusing on the key decisions that are made.

Interviewer prompts:

a. What is your role?
b. How are investment ideas generated?
c. How does the decision-making process work?
d. How does the analyst team work?
e. Do analysts make investment decisions?
f. What expectations do you have for how analysts will interact with the Fund manager?

Question Set 2. Incident

Please describe an investment decision that went very well, and where you had a 'gut feeling' that a course of action was right or wrong without really knowing why. By gut feeling I mean knowing, without knowing why or how you know.

Interviewer prompts:

a. Who were the parties involved? Internally within the Fund management company and external information provider?

b. What was the relationship between the parties?

c. Was it the first time you had this kind of situation / type of trade?

d. Did the share price action play a role in your decision?

e. Was this a contrarian decision?

f. How long did the whole decision process last from encountering the issue to initial conclusion?

g. What action did you take?

h. What was the input on which you based your decision? Analysts / other?

i. Did you try to find out more about the incident to confirm you initial feeling? How?

Question Set 3. Emotions / Outcome

a. How do you feel about the incident? Do you feel comfortable saying it was a gut feel? Why?

b. What was the outcome of the incident?

c. How does this outcome affect how you feel about using your gut feel?

d. Would you have changed the actions you took in retrospect?

e. What factors tend to stop you from acting on your gut feel?

f. Do you trust other people's gut feel? If so, why?

g. Do you think investors trust your gut feel?

h. What skills and behaviours do you think are key in order to be a good investor?

i. What do you think are the behaviours which lead to less good investment outcome?

Appendix B

CONSENT FORM

Do good decision-makers in the Fund Management Industry show a consistent pattern of behaviour?

Please tick the appropriate boxes	**Yes**	**No**
Taking Part		
I confirm that I have been given the opportunity to ask questions about the project.	□	□
I have agreed to take part in this research project. Taking part in the project will include being interviewed and recorded (audio only).	□	□
I understand that my taking part is voluntary; I can withdraw from the study at any time and I do not have to give any reasons for why I no longer want to take part.	□	□
Use of the information I provide for this project only		
I understand that under no circumstances will my personal details such as name and phone number be revealed to people outside the research project.	□	□
I understand that my mention of company names, locations, or any other personal details in my answers will be altered or omitted completely in any publication.	□	□
I understand that my words can be quoted in publications, reports, web pages, and other research outputs but they will not be attributed to me.	□	□

Use of the information I provide beyond this project

I agree for the data I provide to be archived in the academic archive of the researcher and protected in line with the Data Protection Act (DPA). Furthermore, I understand that for the personal protection of the interview subjects and all its content the data will not be stored in cloud storage or other online storage. ◻ ◻

I understand that other genuine researchers will have access to this data only if they agree to preserve the confidentiality of the information requested in this form. ◻ ◻

I understand that other genuine researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form. ◻ ◻

So we can use the information you provide legally can you please sign below

I agree to assign the copyright I hold in any materials related to this project to the researcher. ◻ ◻

______________________________ ______________________ _____________

Name of participant [printed] Signature

Appendix C

Interview with Fund Manager 15 (FM15) – 18th April 2017

Interviewer: So X, just before we start, it would be good to have your general view on what you think about gut feel or pattern recognition and so on in Asset Management.

FM: If somebody, particularly outside the industry, ever asks I always say look, it's a combination, it's not a science or an art. I think there is always data that you can use to back up what you think, but ultimately that's probably what you're doing, so to me it's always been a combination of the two. When I think about it from an investment perspective, I would say a lot of my, there are significant portions that I rely on really, I mean you are making a series of judgements at the end of the day. I mean data can only tell you, data can't tell you what happens next, very rarely right for sure, so you are always making judgement calls on that anyway. I don't know how I would use the term 'gut feel' necessarily because that to me sounds a little bit more sort of random than how I would describe using art to apply to the scientific base that you are starting with, if that makes sense?

I: Do you think your view of this has changed during your career?

FM: No, I don't think it has. One thing that's, clearly what you are surrounded with today is a lot more data and stuff, so I think whereas one used to have to rely on that more, there probably, there is a lot more data out there and the science has evolved materially, and particularly in the last 20 years, right. And I think that if you think about all the stuff that is tracked today, all the data, all the stuff that you can do online, I think the science part has evolved but it hasn't taken that other piece away I don't think. To some extent it has become more important because you know if you think back to when we were at X, you know there was so little data that you had to rely on that stuff more than you would have to today, but because there's so much data and so many people following it, in a way the signs, by being so much more of it, it has become less important to your ability to make better investment decisions I would say.

I: You have a team of analysts working with you, so how do you work together?

FM: So it's a pretty sort of directed process. It's a concentrated fund as you know so in our top 10 stocks would be about 65% of NAV and that's been consistent over the life of the fund as well. So I want to be the analyst on each of those stocks, so each company has an analyst that's responsible for it but I want to be the analyst on it as well, so I want to be doing all the research meetings that we are doing, they will typically be, they will actually build the model but we will sit down and go through what I want the model to look like, what variables we want to capture in that etc, and then any kind of research that we, any company meetings we have obviously, but I will try and be on as many, if we are doing network expert calls and stuff like that with the analysts they will be in charge of coordinating all that and putting it together, but I definitely want to be the analyst on those stocks as well.

I: So you're also on the industry specialist calls?

FM: Yeah, I mean not all, I'm probably on 9 out of 10 though, I think. I would say that as a team we spend, and I'm sure you do as well, 70-80% of our time on the positions within the portfolio just constantly checking that we think is right and that our thesis is still correct basically. Obviously it changes a bit over time but that's kind of how we spend most of our days.

I: Are you the only one pulling the trigger?

FM: Yeah.

I: How much do you trust your own gut feel?

FM: Yeah, reasonably, I think. I suppose I like to, I don't think I would ever want a large investment to be based on that, whereby whether it was fail or success that was going to be the key thing that was going to make it a success or fail. Where I think it comes into play more with us is, you know, we'll have a thesis which we can kind of back up with data, but we might make the position significantly larger because my gut feel tells me that there is more upside there for whatever reason, right. Does that make sense?

I: Yep. Do you trust your analysts' gut feel?

FM: Probably not.

I: Are there anybody else's gut feeling that you trust? I mean not many people trust other people's gut feel, okay, unless you work with them for a very long period of time. Is there anybody you would trust from that point of view?

FM: I don't think so, because you know, you have to, no I don't think so. I think if someone I respect said to me 'I think this', I would definitely take a closer look than I normally would, but it would still need to be my gut feel if I was to back that. Because often people's gut feel – there is some evidence base around it right, it's not like it's totally a random thing. If someone said to me 'look, I've known this guy for such a long time, I'm sure he can do better than what he's saying he can do', I would probably take that into account but I would probably be calling that my own gut feel right, at that point.

I: But to which extent do you feel you can act on a, on something that is not backed up by data? What would hold you back from acting on a pattern recognition that you were seeing, or gut feel you were seeing?

FM: I'm not saying especially that I would. I guess it's a sizing question as well right? I think the more that it was based on that, the less willing I would be to have a significant position size in it. What I would want for a really big position is all of the boxes ticked, right, and that's why we don't end up with very many of those.

I: Do you feel it would be problematic inside the firm if you acted more without having data?

FM: I don't think it would be problematic inside the firm, no. I think it would be problematic with our investors probably. But inside the firm it wouldn't, no.

I: Okay, now moving onto one particular instance where you feel you based a decision on not 100% data backup.

FM: Yeah, I looked at the question this morning and I suppose the best example I could come up with was when we, we'd actually started doing quite a lot of work on (company name) and this was back in sort of 2015, spring of 2015. I don't know if you remember they did this big acquisition of (company name) , and the headlines didn't look great, it was actually a pretty high price and they had a, they put out a synergy target which quite frankly didn't make the deal look that compelling. So a couple of issues, obviously one is what are these guys like at allocating capital which obviously is a big one, but I remember looking at it, and again I think I had some kind of anecdotal support for it, but my strong gut feel was that there is just no way that synergies can only be that much, right, and there was lots of explanations always given, you can't do benchmarking that easily because one country is different from another, so yes Italy looked very inefficient but you know they've got different regulations, different age of cement plants etc etc. So my strong gut feel was that this was actually going to turn out to be, because you know, I had met the CEO a few times as well, I didn't think he was someone to waste capital, at all, and the incentivisation structures were alright for him to not to do that as well. So again, is that really just gut feel, or is it piecing together bits that you can't totally circle, but give you a strong indication of what it could be? So, you know, we invested pretty heavily after that, and the stock was weak post the announcement of the transaction because people thought they had overpaid, I think the initial synergy number they came up with was like $200million or something like that, and over the course of time, that has been raised 3 times now, significantly, and it turns out that (company name) was very inefficient and there were a lot more synergies. But I think when we initially invested, and again I would say we didn't need that synergy number to be materially higher for the investment to be okay, but that was probably what was going to make it work very well, if you like. And so, let's say rather than having say a 4 or 5% position, we sort of make it 7 or 8% position because I just knew that, if you have seen these things a few times, we also knew that they hadn't got properly into the books at this point too, right, and you just knew they were conservative when they said $200 million, I just knew that, I had a strong feeling that was going to be upped significantly, and it did and it turned out well.

I: Had you seen these types of situation before?

FM: Yeah, a few times, yeah.

I: Such as?

FM: Oh, what's going to be another good example of that? (company name).Do you remember (company name)? That was probably a very significant example of that. I guess we see it, you see it all the time don't you, and you would hope your good companies, when they came out, often it's not in the same magnitude though, but you'd hope that when they came out to say definitely we can do this, you're hoping that at least they have their own ambition to do significantly better than that right.

I: Is it an assessment of management do you think?

FM: Yeah, I think it's partly that isn't it. As also, again there were some quite interesting anecdotes in that example as well, (company name)'s head office they had apparently 100 people earning over €1 million in salary, right, I mean things like that... You knew it had been a family company, run for the family. Yes they paid a dividend but probably hadn't been scrutinised that closely in terms of costs and stuff.

I: In terms of triggers in this situation, how important was the share price weakness

FM: I think it was, in itself it wasn't important because it didn't really change the intrinsic value calculation that we were doing, but I think it helped in the sense that you, it kind of gave you the sense that you had a slightly differentiated view as well. And it's helpful to know that over the coming two years, if I was right and people were going to come around to that idea, rather than penalising them with an, I don't know whatever, 10% discount for being poor capital allocators, the real bull case is that they come out of it and actually say 'these guys are really good by the way' and rather than having a 2 point P/E discount you end up with a 2 point P/E premium, right. So I think the fact that the share price was doing that and, you know I clearly had a different view made me more interested and more excited, for sure.

I: Being contrarian, how important is that, generally, for you?

FM: Not very, actually.

I: How long did the whole investment process take do you think?

FM: Well, so we probably spent, we probably spent a couple of months on it before the deal was announced actually, and then it probably took us another [month], because we wanted to get to CEO meeting and stuff like that, so it's not like you can phone up the CEO of (company name) and say I'm coming tomorrow morning obviously, right. You know the reason our investment process is long is generally that it just takes time to put those meetings in place, right. I mean, doing the physical research we can do in a couple of weeks, or three weeks, but by the time you've got your meetings in place, you know what it's like with the expert network, half of them you talk to are totally useless anyway, it takes time to find a few of the good ones that really understand what you want to know, and again, you might have to wait six weeks for a CEO meeting as well. I'd say it probably took us four months in that case. You know, it's not like we've got one guy working just on that for four months, just doing number-crunching and stuff right.

I: And from when the deal happened to when you started to build that position?

FM: Pretty quick, two or three weeks or something.

I: Right. And the analyst, was he important in this?

FM: Yeah, I would say he was actually. It was quite an interesting example because he was actually the newest analyst we had, he had only been here for probably six months at that time, but he was, he worked at (company name), and he had literally spent a year doing (company name) so he really knew a lot of stuff that most people wouldn't have done, so in that case it was actually very important actually.

I: Good. And what's been the outcome of this particular investment?

FM: It's been good, sorry I don't remember the numbers exactly, but we probably invested at something like €X/share and it's now sort of, it got to sort of €X or something like that, partly as the synergy guidance went from $/X to $X to $X or something like that over the course of 18 months.

I: Would you have changed anything you did in this process?

FM: No, I mean it's a god example clearly, but I think it went well.

I: Now you mentioned that gut feel is important in terms of sizing and really seeing what could be, in a way it seemed like what could potentially be a story right? So what are the important things in that decision generally?

FM: Holistically in the investment decision? Other than gut feel you mean?

I: So for you to, I mean something you can have a position in 5% and sometimes its 7%, and it may not be the fact, but the fact that you can predict whether this is going to be a story, going forward, what do you think will be the important factors there?

FM: Well I think you need to know why, what? I always like to hear the other side, why are people negative and can you see that getting resolved in some way, so you know if people were really worried about some issue, whether it's a corporate governance issue or a business issue or political issue or whatever it might be. I think it's always important to understand what that is and if you can see that getting resolved, that's much better than it being kind of like one of these long-term things which you're never really going to get an answer to until it's too late. So I always like it at least when you have that, you know when you can say 'I know what the bear case is and I can see how that gets resolved either way', sometimes it even gets resolved, and either way it can be a good thing because it removes the uncertainty of that issue. So what we really like is obviously if you can have a fundamental case which is not really going to get changed by that, you can see that the story is going to get helped by that even if the outcome is not exactly as you would want. Obviously you wouldn't invest in something where that is a binary event which really changes our view of what the fundamental value is, but it may be that if it goes wrong, let's say it knocks 5% or 10% off your fundamental case, fine, but you know if the upside is 40% you can live with that, right, and that just being removed is not going to be very helpful.

I: How important is the calculation of the downside scenario?

FM: Oh, very, yeah we spend a lot of time on that. So the way that, so for all of our investments we do a low-, mid- and high-case and we always want for our big positions that the intrinsic value at least isn't, in our low-case scenario at least isn't below the sort of price that we are paying, we want our mid-case to give us a good upside, but we want to feel at least our low-case – and if it's a cyclical industry we will take a more cautious view on the volumes or whatever it might be – but we always want to know that at least in that base-case scenario we're not going to get totally wiped out, right.

I: Okay, thank you very much.