

BEHAVIOURAL INSIGHTS

KEY CONCEPTS, APPLICATIONS AND
REGULATORY CONSIDERATIONS

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EXECUTIVE SUMMARY

There are numerous factors that influence the decisions that people make. Behavioural insights (BI) recognizes this and, through a combination of psychology, economic and more recently other behavioural research, examines how people are often neither deliberate nor rational in their decisions in the way that traditional models, strategies and policies assume.

In order to lay the foundation for enhancing the OSC's capacity and competency in the application of behavioural insights in securities regulation, the Investor Office undertook a year-long multifaceted research study that included reviews of literature, interviews with leading academics, and interviews with other regulators and governments that incorporate BI into their work.

This report describes key principles of behavioural insights and examines how leading practitioners are using these behavioural concepts to improve government policy and regulation. The report also includes a detailed review of how various regulators around the world are applying these concepts to address financial market issues and improve investor outcomes.

Having conducted the research outlined in this paper, the OSC will continue to build its capacity and understanding in the use and application of behavioural insights, as well as identify opportunities to apply behavioural insights in OSC policy development and operational processes. Over the coming year, the OSC will also conduct pilot projects for testing using a behavioural insights lens, and will use the report to build awareness, understanding and capacity in the use of behavioural insights both within the OSC and amongst stakeholders, with a view to identifying further practical applications of behavioural insights that will lead to better investor and market participant outcomes.

KEY FINDINGS AND CONCLUSIONS

Behavioural insights recognize how people actually behave versus traditional economic and market theory of people as rational actors.

People use rules of thumb in much of their decision-making, which are essential for routine tasks and decisions that are made every day. These mental shortcuts are often accurate, but they can lead to poor choices and mistakes, particularly for more challenging tasks.

Automatically using these mental shortcuts in our decision-making can create serious problems when people are faced with choices that involve complex calculations or have little impact in the near term but have significant long-term consequences. We often behave less rationally when we are given too much information, feel especially emotional or when social factors are a salient part of our decision-making context. Social factors hold sway in numerous situations, including when we rely on or are impelled to take action because of social norms and societal expectations or when we are exposed to social influences.

This report reviews how research and experience has shown how most choices are not made with careful deliberation. Rather, people are:

- **influenced by readily-available information, whether that information is novel or relevant, and whether it automatically generates good or bad feelings;**
- **making decisions in the moment, as many people prefer to continue with their current behaviour and often do not consider the future impact of their choices;**
- **poor predictors of future behaviour and are subject to people's distorted memories;**
- **affected by physiological conditions and emotional states;**
- **shaped by social norms and expectations (such as trust, reciprocity and fairness) and social emotions (such as shame or empathy), and are susceptible to social influences (such as peer pressure); and**
- **affected by social biases and mental models, such as stereotypes.**

The use of behavioural approaches in the public and non-profit sectors has increased significantly over the past decade.

Since 2008, BI's adoption around the world has grown remarkably. In 2011, only the UK Behavioural Insights Team and, in practice but without the formal BI designation, the US Office of Information and Regulatory Affairs existed. By 2016, the number of BI units worldwide had surged to the point where it is difficult to account for all of them without overcrowding a map.

Lessons from the behavioural insights activities of various jurisdictions around the world include:

The importance of distinguishing between strategy (the first mile) and tactics (the last mile)

Most governments and regulators focus time, resources and effort on strategy and much less on tactics. The last mile requires careful BI implementation because of the large variation in people's behaviour. This involves understanding specific touch points (such as how direct interaction occurs with consumers in person or electronically), how to disclose information in a behaviourally-informed manner and how to help consumers make better choices.

The effectiveness of using the EAST Framework when applying behavioural insights

Make it easy, make it attractive, make it social, and make it timely.

Testing and trialling, and instilling a culture of evidence-based approaches, is a key component of applying a behavioural lens

Among the most sophisticated of behavioural experiments are randomized controlled trials (RCTs). These trials are highly valuable as they test whether a causal relationship exists between one particular variable and an outcome.

Other securities regulators have increasingly applied behavioural insights in their work and have had practical success in improving outcomes.

This report reviews the behavioural insights activities and applications of various jurisdictions around the world, including the U.K. Financial Conduct Authority, the Australia Securities and Investments Commission, New Zealand Financial Market Authority (FMA), the European Commission (EC), the European Securities and Markets Authority (ESMA), the US Securities and Exchange Commission (SEC), the Financial Industry Regulatory Authority (FINRA), the Department of Labor (DoL), the Monetary Authority of Singapore (MAS) and Hong Kong's Investor Education Centre (IEC).

The use of behavioural insights in financial regulation has merit, though it is not a panacea.

It is clear that the use of behavioural insights in financial policy-making and regulation has benefits for investors and market participants alike. Understanding human behaviour enables regulators to better comprehend, diagnose and address ongoing market problems, in a more cost-effective way. Even when formal BI units are not present, the behavioural awareness and understanding that these insights bring to financial regulation complements a regulator's toolkit. Whether the activities are market or registrant regulation, or investor education and outreach, applying a behavioural lens to the OSC's work increases the likelihood of achieving better outcomes.

We would like to thank all those who contributed to the development of this report and welcome any feedback from stakeholders and interested parties.

Tyler Fleming

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INTRODUCTION AND REPORT OVERVIEW

A lot of our policy models traditionally are based on a rather naïve understanding of what drives behaviour. But if you have a more intelligent, nuanced account of how people make decisions, you can design policy that is more effective, less costly, and makes life easier for most citizens.

David Halpern, Director, U.K. Behavioural Insights Team¹

Introduction

The use of behavioural approaches in the public and non-profit sectors has increased significantly over the past decade. According to one 2014 report,² over 100 countries are using behavioural disciplines in some areas of public policy, while more than 50 nations have centrally-directed initiatives using these approaches. Policy makers and regulators around the world have been increasingly applying these disciplines through “nudges” and other behavioural initiatives that take a fundamentally different approach to consumer markets.

While these concepts have been used in the private sector for decades, informing everything from marketing campaigns to communications strategies and product placements, it was not until the global financial crisis of 2007-08 that behavioural insights began to take hold among the public sector. In particular, behaviourally-based regulation in financial markets has grown rapidly since 2013, beginning with the United Kingdom’s Financial Conduct Authority and expanding to regulators in Australia, Asia, Europe and the United States in subsequent years. Importantly, the digital era has opened up new frontiers to use the behavioural disciplines with the masses of data and advanced analytics available to the public, private and non-profit sectors.

By way of a brief overview, there is a great and wide-ranging number of factors that influence the decisions that people make. Behavioural insights recognizes this and, through a combination of psychology, economic and more recently other behavioural research, examines how people are often neither deliberate nor rational in their decisions in the way that traditional economic models and associated strategies and policies assume.

People use rules of thumb (otherwise known as heuristics) in much of their decision-making, which are essential for routine tasks and decisions that are made every day.³ These mental shortcuts are often accurate, but they can lead to poor choices and mistakes, particularly for more challenging tasks.⁴ Automatically using these mental shortcuts in our decision-making can create serious problems when people are faced with choices that involve complex calculations or have little impact in the near term but have significant long-term consequences. We often behave less rationally when we are given too much information, feel especially emotional or when social factors are a salient part of our decision-making context. Social factors hold sway in numerous situations,

including when we rely on or are impelled to take action because of social norms and societal expectations (such as trust, fairness or reciprocity) or when we are exposed to social influences (such as peer pressure).

Behavioural insights recognize that people's thinking is subject to insufficient expertise and often involves uncertainty when making choices that reflect the limits on their rationality and willpower⁵. Similarly, social expectations, identities, networks, norms and preferences influence their behaviour,⁶ and mental models frame the ways in which they perceive different concepts, identities and worldviews.⁷ Behavioural insights build upon these concepts and findings from the behavioural sciences and applies these to better understand how people actually behave and make decisions to improve the approaches of business, non-profit and public sector organizations. Behavioural economics applies behavioural insights to markets and their constituent parts (individuals, firms et al). Behavioural finance applies these behavioural insights to financial markets and offers potential advantages for consideration by the Ontario Securities Commission (OSC).

Understanding human behaviour enables governments and regulators to better comprehend and diagnose ongoing problems within consumer markets. This report by the OSC's Investor Office begins with how behavioural economics and finance, together with other behavioural disciplines, led to behavioural insights that are reshaping government policy and regulation in a growing number of financial markets. This report describes key principles of both behavioural economics and finance as the forerunners of behavioural insights, including their intersection with other behavioural sciences, and examines how leading practitioners are using these behavioural concepts to improve government policy and regulation. What follows is a detailed review of how various regulators around the world are applying these concepts to address financial market issues and improve investor outcomes.

In doing so, this report's literature review and its survey of behavioural practitioners will highlight the merits that behavioural insights have for government policy and regulation. It looks at how behavioural disciplines established the rationale and benefits of "nudges" to improve people's ability to make better decisions. Nudges have proven to be effective as instruments for changing automatic defaults, simplifying communication and reducing hassle costs for consumers.

Behavioural approaches also provide frameworks for assessing market developments and evaluating guidelines, regulations and rules, so as to address areas where much more than nudging is required.⁸ The role of behavioural insights includes streamlining the environments in which consumers make choices. Behavioural approaches have other essential uses including protecting consumers from behavioural exploitation by firms and enhancing how economic policies are designed and implemented.

This report will show that behavioural insights should be an essential component of any government's and regulator's toolkit. They are crucial to policy-makers and regulators' success in improving tactics (the so-called last mile) whereas the public sector's focus and resources have often exclusively focused on the first mile (policy and regulation).⁹ It includes a staunch commitment to testing and trialling policy initiatives and regulations as experiments are essential to determine whether and how much these interventions are working and where they can be improved.

In doing so, it is important to stress that behavioural insights are not a cure-all solution nor are they the only lens for policy and regulatory evaluation. Rather, behavioural disciplines complement and improve traditional economics and legal analysis to enhance policy and regulation. As one leading practitioner of behavioural economics and finance states, their benefits are greatest when combined with other behavioural disciplines, data sciences and technologies.¹⁰

Report overview

The first chapter is a literature review of the core elements of behavioural economics (BE) and finance (BF) and how these concepts and findings can be applied through nudges and other policy initiatives. It outlines the foundations and major academic advances of BE and BF to understand their growth and decades of academic and applied research that culminated in behavioural insights (BI) and their use by governments and regulators. It includes an in-depth look at why BE and BF displaced the dominant economic models based on rational individual choice, highlighting how traditional approaches have often failed to achieve their desired consumer outcomes.

The chapter examines the key principles and insights of these behavioural disciplines for consumer markets, especially finance. It explores many of BE and BF's essential concepts and findings for these markets, and looks at their overlap with other disciplines under the umbrella of behavioural science and BI. It looks at the success and challenges of nudges and other behavioural applications, noting their merits as well as their limits. The chapter also reviews the different behaviours of people online as compared to in-person, examining how technology is influencing their choices and thought processes. It concludes by summarizing BI lessons for regulated consumer markets, with a focus on BF's applications within financial markets that are prone to people's systematic errors in decision-making.

The second chapter is a summary of how behavioural units and networks have reshaped consumer policy implementation and other regulatory approaches across the globe since 2008. It focuses upon how three different organizational approaches are used for behavioural insights units (BI units) and behavioural sciences teams (BSTs). It explores how these practitioners have adapted behavioural principles from theory and research to use behavioural insights to better understand market problems and to more effectively tailor policy initiatives. It looks at what frameworks and approaches they have developed to effectively translate BI findings into practice in the last mile of tactics. It includes the crucial role of testing and trialling in applying behavioural research concepts and insights in practice both for market assessment and for policy implementation. It concludes with a summary regarding BI's successes and lessons for leading government practitioners, as well as other policy and strategic considerations of relevance to the OSC.

The third chapter is an in-depth review of BF's accelerating international adoption in leading markets such as the U.K., Australia, European Commission, Hong Kong, Singapore and through 2016 the US. It explores the policy approaches and regulatory initiatives of leading practitioners and highlights how these regulators have adopted behavioural frameworks and employed BI in regulatory implementation. It focuses on the leading regulators' use of BF to assess challenges with consumer behaviour – and in certain areas, professional behaviour – and to create behaviourally-informed solutions on their own and in tandem with other disciplines.

The conclusion identifies next steps being considered by the Ontario Securities Commission (OSC)

Approach and scope

The content of this report was developed through an extensive review of the behavioural academic literature, a survey of the published reports, speeches and studies of major BI units, BSTs and financial regulators, and a series of interviews with government practitioners, financial regulators, applied researchers and academics.

The literature review in this report is not exhaustive. The sheer scale and surge in behavioural studies and applications of BE, BF and BI make a detailed and comprehensive commentary on the complete range of research well beyond the intent and scope of the report.¹¹ Instead, this report focuses on the components of behavioural sciences that are most applicable to the OSC, concentrating on economic policies and financial market applications that offer insights, opportunities and other considerations for the OSC's regulation of securities and derivatives markets.

The report does not explore the behavioural aspects of financial firms and professionals beyond certain aspects of the advisor-retail client relationship. The additional research required is beyond its purpose and scope, but we would note that others are investigating intermediaries and professional behaviour.¹² It also does not look at how BI can be applied to policy makers and regulators. Readers interested in this topic can look to the recent World Bank report¹³ that explores how practitioners are also subject to selected biases and 'cognitive illusions.' Other financial regulators have also cited public sector challenges from the action bias¹⁴ which refers to the potential for intervention before the causes and nature of market problems are well understood.

Terminology

As outlined above, BE and BF intersect with cognitive psychology, social psychology, neuroscience and other disciplines in behavioural sciences,¹⁵ which has led academics, governments and other institutions to use the terms "behavioural insights" (BI) or "behavioural sciences."¹⁶ This report uses the term BI throughout given its usage by leading organizations such as European Commission, the Organisation for Economic Cooperation and Development (OECD) and the World Bank. BI is a core part of the first behavioural unit, the UK Cabinet Office Behavioural Insights Team (BIT) and most successful practitioner through early 2017 as the BIT transitioned to a multi-national entity since 2014.

The critical roles of BE and BF in establishing BI and their ongoing use by leading financial regulators such as the U.K.'s Financial Conduct Authority and Australia's Investment and Securities Commission mean that this report will also use all three of these terms as appropriate. The report also uses the terminology of behaviourally-informed initiatives and policies as it examines how governments, regulators and supranational organizations apply behavioural findings generally.

BEHAVIOURAL INSIGHTS

CHAPTER 1

CHAPTER 1: SETTING THE FOUNDATIONS – THE CORE CONCEPTS, PRINCIPLES AND SUCCESSES OF BEHAVIOURAL INSIGHTS

“Moving forward in behaviour change should be a mix of applying insights from literature and learning from application.”

Daniel Kahneman¹⁷

"Behavioural economics brings insights from psychology and other behavioural sciences into an economic framework to explain why consumers behave the way they do. Consumers may sometimes misjudge important facts or make choices that are predictably mistaken By using behavioural economics, we can understand how these decisions arise, why they persist, and what we can do to ameliorate them."

Stefan Hunt and Darragh Kelly, U.K. Financial Conduct Authority¹⁸

Governments and regulators have increasingly used behavioural economics (BE), finance (BF) and insights (BI) since the 2007-08 global financial crisis with a range of public sector authorities rapidly expanding their use of both disciplines in their policy work. The number of BI units, behavioural science teams and behavioural science professionals among governments and regulators across the world has also seen significant growth, adding to the success of BE and BF in the public sector.

This comes much later than the private sector's adoption of behavioural concepts, which have been employed by firms and professionals in advertising, product displays and other commercial activities for many decades. Corporations continue to accelerate their use of BE and BF in the way they design, test and implement technology in their business, combining massive amounts of data with BE and BF insights to generate a deeper understanding of human behaviour. Using data and analytics has enabled businesses to apply, test and redesign products using BI in ways that

were not possible in the pre-digital era. The growth of BI usage by corporations in the era of Big Data and Big Analytics bears emphasis with the latest evidence including the number of leading Fortune 500 companies that have created Chief Behavioural Officer positions in senior management.¹⁹

It is important to state that while the mandate of this report focuses on BI, its relationship to BE and BF and their intersection with behavioural science requires exploration. BE uses both economics and psychology to understand people's actual thinking and behaviour in a systematic and scientific manner. It attempts to identify the processes and influences that affect people's decisions. As noted above, behavioural sciences, however, are much broader and encompass neuroscience, anthropology and other scientific disciplines' research into people's thoughts and behaviour.

There are three major sections of this chapter's literature review. While we strongly recommend reading the entire chapter, these three sections are designed to either be read in full or as individual sections and sub-sections which focus on the foundations and key principles of BE and BF (section B) as the forerunners of BI or BF's specific applications (section C).

The three sections following the introduction to this literature survey chapter are:

A. Foundations, milestones and factors that drove the adoption of behavioural approaches – this section begins with an overview of the major developments and pioneer researchers of BE and BF. It then focuses in upon BE's and BF's move from academia and the private sector into the public sector, including a review of the heavy reliance that governments and regulators have on consumer market efficiency and rational choice for policy, the huge costs of inappropriate products being sold by financial firms and the rise of BE, BF and BI following the global financial crisis.

B. Key concepts, nudging and insights into online decision-making – this section explores the core principles of BE and BF, their intersection with behavioural science that led to BI and the merits and limits of nudging. It also examines how online devices affect the information and choices available to people, and how our use of this technology is changing our decisions, preferences and ways of thinking.

C. Financial market challenges and behavioural finance's applications – this section summarizes why financial decisions are difficult for many people and explores how biases in our preferences, beliefs and decision-making abilities affect our choices.

Why behavioural insights gained momentum in the public sector

Economic policy and regulation of consumer and other markets were dominated by models based upon market efficiency and rational behaviour for much of the post-World War II era. These models were rooted in people's "arch rationality," where authorities would rely on individuals' rational decision-making as a core part of efficient markets.²⁰ As a result, government and regulatory approaches were led by the principles of "self-stabilization, equilibrium and efficiency." Public sector authorities assumed that individuals and firms were rational, that markets were highly efficient and optimal for consumer outcomes, and that any imbalances were self-correcting and would not cause any large shocks or sustained problems.

However, financial markets (among others) have often failed to achieve the best outcomes for consumer costs and products in recent decades, especially in the past ten years.

Ongoing consumer market problems and periodic shocks have had very costly repercussions, particularly in the years following the global financial crisis. Traditional models' failure to predict the 2007-08 shocks²¹ and other consumer market failures²² led to reassessments of policy and regulation. The global financial crisis drove searches for better models and policies in financial markets, specifically around banking, securities and derivatives supervision, and monetary policy.

Behavioural approaches offered many of the answers sought by governments and regulators. These disciplines began to be incorporated into public policy as policy makers realized that BE research showed how many aspects of market failures and undesired outcomes were predictable and systematic, and had significant implications in the ways that markets work.²³

By combining the concepts and findings from psychology and economics, BE and BF provided frameworks for understanding people's decision-making and behaviour. BE and BF studies demonstrated that consumers were often not rational, especially when faced with complex decisions or decisions with long-term impacts but little effect in the near-term. They showed that people's biases and mistakes can be systematic, including making continually poor product choices that can result in consumer market failure. BE and BF offered a way to explain why as well as providing new and more effective ways to address them.²⁴

Behavioural approaches have now "captured the attention of policymakers and regulators across many sectors."²⁵ More and more governments and regulators are using BI to better understand markets and people's behaviour, as well as help improve policy initiatives and achieve better outcomes for consumers. Regulators and other authorities are using the insights provided by these disciplines to learn more about how:

- consumers make choices and how their decisions and behaviour affect retail market outcomes;
- financial professionals interact with retail customers, and the impact that their incentives, information and various other factors have on consumer behaviour; and
- regulations and policies have intended and unintended impacts on both of these groups.

This chapter's literature review summarizes research in both BE and BF, as well as in BI, that is applicable to the work of the OSC, including examining how these disciplines have successfully challenged the consumer market efficiency and rational choice models.

This review of behavioural research is intended to provide an extensive overview for a general audience of informed stakeholders and other interested readers. It is limited in its scope as an exhaustive examination of the complete array of academic and other research in these fields is well beyond the purpose of this report.

This chapter also does not examine the behaviour of financial intermediaries and their staff apart from the interaction of advisors with retail investors. In this regard, we would note the research on intermediary and professional staff behaviour undertaken by the Federal Reserve Bank of New York and the Netherlands' central bank, among others.²⁶ Pending research is also underway by the U.K.'s Financial Conduct Authority.²⁷

Section A: Foundations, milestones and the public sector adoption of behavioural economics and finance

I. Introduction to the foundations of behavioural economics and finance

What is behavioural economics?

Traditional (neo-classical) economic theory is based upon efficient markets and logical human behaviour as its core assumptions are efficiency and rationality. In contrast, BE combines psychology and economic research to generate insights into how and why consumers and other economic agents are frequently not rational and often make mistakes.²⁸ BE and BF explore the factors that affect and shape people's thinking and behaviour.

Alain Samson's 2014 summary framework for BE's core principles and insights²⁹ is a useful introduction to these disciplines, beginning with how BE and BF recognize that people's thinking lacks sufficient knowledge and feedback. Our choices often involve uncertainty, and our decisions are affected by the context in which they are made. We have attentional and cognitive limits on our processing capability.

Samson summarizes how most choices are not made with careful deliberation. Rather, people are:

- influenced by readily-available information, whether that information is novel or relevant, and whether it automatically generates good or bad feelings;
- making decisions in the moment, as many people prefer to continue with their current behaviour and often do not consider the future impact of their choices;
- poor predictors of future behaviour and are subject to people's distorted memories;
- affected by physiological conditions and emotional states;
- shaped by social norms and expectations (such as trust, reciprocity and fairness) and social emotions (such as shame or empathy), and are susceptible to social influences (such as peer pressure); and
- affected by social biases³⁰ and mental models,³¹ such as stereotypes.

BE's main principles and insights may appear simple, however their importance in policy-making and regulation results from the ways in which they have advanced how people's thinking and behaviour are understood. BE and BF have a wide number of applications for policy makers that go beyond behavioural observations. As the U.K.'s Financial Conduct Authority explains, BE offers systematic, evidence-driven frameworks for governments and regulators to understand where and how market failures occur and provides a lens to evaluate potential remedies.³²

Although it is not easy to precisely define BE – even the foremost theorists and other leading researchers do not agree upon an exact definition³³ – there are several core elements that, when combined, effectively capture BE's and BF's usefulness for assessing markets and behaviour, as well as for improving policy-making and regulation.

A general definition of BE starts with the way in which it applies psychological insights to economic problems.³⁴ This definition highlights BE's origins in psychology, particularly through repeated experiments and observations to derive principles of economic behaviour, which contrasts with traditional macroeconomics and efficient market theories, which are "top-down" in their assumptions about how people behave and market interactions occur.³⁵

Another helpful description is to define BE as the study of cognitive, emotional and social factors that affect people's observable economic behaviour.³⁶ Additionally, BE is also a "discipline at the intersection of psychology and economics"³⁷ with growing ties to neuroscience and other disciplines that fall within the scope of behavioural science.

Behavioural disciplines also hold a number of important advantages in their approach to empirical testing. Behavioural sciences make use of the experimental method, the gold standard of which is undertaking randomized controlled trials deployed in laboratory environments and/or through extensive field testing and (more recently) advanced data science to measure and describe people's behaviour. As a result, their BI frameworks can provide clear benefits for diagnosing policy and regulatory problems, designing appropriate responses and adapting policies and regulations from the evidence collected.

In spite of their precise definitional challenges,³⁸ BE, BF and other behavioural sciences offer many theoretical and practical advantages,³⁹ including a means to explain systematic influences on economic decision-making and to address regulators' abilities to influence behaviour by using "nudges" or rules to affect behaviour.

According to the Organisation for Economic Co-operation and Development (OECD), BI is "being used to enhance the effectiveness of government interventions."⁴⁰ The benefits of BI extend beyond nudges and other policy interventions as they provide important input into policy assessments and implementations.⁴¹ These insights offer significant advantages to governments and regulators by:

- playing an important role in assessing and defining certain problems (including market failure);
- being an influential complement to other traditional policy approaches; and
- being used to fine-tune and enhance current economic thinking.⁴²

An overview of behavioural economics' foundations and key milestones in its rise to prominence

Governments and regulators have increasingly adopted BE and BF insights into their work over the past decade. In 2008, Dan Ariely wrote that BE is an "emerging field."⁴³ In contrast, by 2015, Richard Thaler could write that BE "is no longer a fringe operation [as it] is going mainstream."⁴⁴

However, BE and BF's rise to prominence over the past decade in the public sector follows more than 40 years of research⁴⁵ showing how consumer choices and people's thinking regularly contradict rational choice and market efficiency models of post-World War II economics and policy.

The dominant post-World War II model of economists had two broadly assumptions, namely market efficiency and rational choice which were assumed and acted upon by policy makers and regulators.⁴⁶ Policy reflected a framework based upon the idea that people are generally rational and their thinking is generally sound, and that because they behave this way,

their decisions are also generally sound. Emotions such as affection, fear and hatred explained most of the occasions when people do not behave rationally.

These assumptions about people's rationality and market efficiency were held by most academics until the 1990s, and continued to prevail among policy makers and regulators into the early 21st century. Efficient consumer markets and rational choice proponents were led by the University of Chicago's Milton Friedman and Gary Becker, Nobel prizewinners who were highly influential in mainstream economics and other social science fields. Becker outlined a set of ideas in *The Economic Approach to Human Behaviour* that became the pillars of "rational choice" theory,⁴⁷ embracing the view that people have stable preferences and engage in behaviours that best serve their own interests by maximizing their own benefits. Accordingly, rational behaviour occurs in a wide array of policy areas, ranging from crime to marriage.

Friedman and Becker's impact was paralleled in academic studies regarding financial market efficiency. By 1970, the collective studies of Eugene Fama and other leading academics at the University of Chicago and the Massachusetts Institute of Technology provided strong support for financial market efficiency, including Fama positing the "efficient markets hypothesis."⁴⁸ Rational expectations models of markets and people's behaviour also became increasingly popular in the mid-1970s and onward, leading to new macro-economic models that displaced Keynesian economics.

The neo-classical model of rational agents and of rational expectations has four simplifying assumptions that merit a brief expansion to better understand how BE and BF challenged this traditional model of people's behaviour and thinking. This definition of rationality is fundamentally different from the popular and everyday notions of what is rational – it has four 'C's as summarized by BE expert Kelly Peters:⁴⁹

- **Completeness of information** – people look at and consider all outcomes and potential future events;
- **Fully logical Cognition** – people are almost robotic in assessing information as emotions, physiological conditions and social influences and norms do not affect our behaviour;
- **Computational Strengths** – people are capable of doing sophisticated mathematical and statistical analyses; and
- **Consistency of choice** – our choices are fully logical and transitive whereby if we prefer Choice A to Choice B, and Choice B to Choice C, by definition we must prefer option A to option C.

Other important aspects of the neo-classical rationality include completeness in knowing our preferences and that there is no end to our consumption (non-satiation).

For several decades, BE and BF have challenged these assumptions of consumer market efficiency and rational choice. BE and BF studies have shown that existing rational choice and rational expectations models had "excessive faith in the efficiency of markets and rational choices made by agents [economic actors] in their behaviour, and the ability of agents in financial markets in particular to make sound decisions."⁵⁰ BE and BF challenged the neo-classical approach by demonstrating that people systematically deviate from the rational model. As they showed, these deviations in our behaviour and thinking are large enough and predictable enough to show that BI is essential.

The pioneers: Tversky and Kahneman (1974, 1979)

While the modern roots of BI go back to Herbert Simon's pathbreaking work on the limits to our cognitive capabilities (bounded rationality),⁵¹ pioneering psychology articles by Amos Tversky and Daniel Kahneman in the 1970s were crucial in establishing the

intellectual and empirical foundations of clear limits on people’s rationality. These two academics played a founding role in developing the core principles of the cognitive behavioural approach and challenged the rational choice model of economics. Their pathbreaking “Judgement under Uncertainty” (1974) article explored how people’s use of shortcuts and simplifications have created some 20 biases in our decision-making. Tversky and Kahneman’s work demonstrated the ongoing use of mental “rules of thumb” (heuristics) in people’s judgement, the impact of which is evident in this research being cited over 7,000 times in academic papers, “an unbelievable rate for a psychology article.”⁵²

Tversky and Kahneman’s 1979 paper had an even greater impact, introducing prospect theory and identifying three elements to consider when assessing wealth opportunity outcomes.⁵³ The first is that people evaluate the potential outcomes of their choices from a mental reference point, which is used to weigh gains or losses. Our tastes are not fixed, but will vary with the reference point that each person uses when making choices. The second element is that people have diminishing sensitivity when evaluating change, especially when it comes to wealth. The third, and perhaps most important element, is the impact of loss aversion. People feel losses much more than they do gains, between 1.5 and 2.5 times more, and as a result there are asymmetries in people’s preferences and decision-making.

Loss aversion and people’s reliance upon mental reference points explain why losses appear much larger than gains in people’s decision-making, creating disproportionate responses in their preferences and choices. We favour smaller changes over larger ones (not including situations where the perceived gains are materially positive) and, accordingly, only make choices with a different potential result (relative to the *status quo*) when the perceived benefits exceed the perceived, over-weighted losses.

Taken together, Tversky and Kahneman’s 1974 and 1979 articles effectively demonstrated that there are systematic errors that occur in people’s thinking which result from human cognition, rather than being strictly a product of emotion as neoclassical economics assumed. Their findings also led to examining how people’s choices are influenced by the way in which they are perceived or framed. Among the many insights from their research is the notion that people’s willingness to take risks is influenced by how a choice is framed. Their decisions about risks are dependent upon the context in which a choice is presented – a person’s response to a choice changes based on whether it is framed as either a gain or a loss.

Loss Aversion



The breakout to the public mainstream: *Nudge*, *Predictably Irrational* and *Irrational Exuberance*

Despite Tversky and Kahneman's pioneering work, it took time for academia to respond to their pathbreaking research. Even with BE's early beginnings with Richard Thaler's "Toward a Positive Theory of Consumer Choice" (1980)⁵⁴ article and Robert Shiller's critique of asset pricing theory (1981),⁵⁵ BE and BF still had a very narrow impact with economists. As Thaler notes, by the late 1980s only he and three other academics saw themselves as behavioural economists.⁵⁶

During the 1990s and early 21st century, however, other researchers built significantly upon Tversky and Kahneman's work. This research demonstrated how systematic errors can occur in people's decisions as a result of their biases.⁵⁷ Through numerous experiments and other evidence-based research, these studies showed how people's ability to undertake rational plans is constrained by:

- limits upon their self-control (bounded willpower);
- limits upon their mental capacity to assess complex issues, undertake complex mathematics and solve multi-part problems (bounded rationality);⁵⁸ and
- limits upon their self-focused behaviour from their concerns for fairness, reciprocity, trust and other social values (bounded self-interest).

Behavioural insights into the cognitive biases, emotional factors and social influences that affect people's thinking are also consistent with the notion that heuristics are essential to most of people's daily or routine decisions. Mental shortcuts often help people prioritize and keep from over-analyzing their choices. As well, people's adherence to social norms rather than only market norms is often in their own interest. Most people live according to societal codes and expectations, which encourage favourable social actions such as cooperation.

BE and BF provide better frameworks for understanding how and why people's biases lead to decisions that are not in their best interests. These mistakes often occur when consumers are confronted with complex choices or when they are faced with decisions that do not have immediate impacts, but hold longer-term consequences that may be difficult to anticipate or predict. People often make mistakes when a choice causes significant emotions. Decades of research from these behavioural disciplines also shows the importance of people's social expectations, preferences and other norms that are at odds with market norms.

Given the strengths demonstrated by BE and BF research and their increasing intersection with other behavioural sciences, these disciplines grew to be much more accepted in academic circles by the late 1990s and the early 21st century.

In marked contrast, the public sector was much slower to acknowledge Tversky and Kahneman's findings and to use BI for government and regulatory purposes. Consumer market regulation and other policy from the 1980s to the early 21st century embraced the efficient markets, rational choice and rational expectations models. However, there was a shift in BE and BF's acceptance among the public sector during and after 2008.

The popular works of several authors were critical factors in leading the public sector's awareness of these disciplines. Richard Thaler and Cass Sunstein's book *Nudge* (2008)⁵⁹ led the rise in BE and BF's profile. *Nudge* highlighted the shortcomings of policies and regulations that are based

upon economic idealization rather than actual human behaviour, and provided experts and non-experts alike with a framework for better assessing markets and people's behaviour as well as a clear rationale for applying BE to government policy and regulation.

Thaler and Sunstein focused on how traditional economic approaches sought to address market weaknesses by maximizing the number (and variety) of choices based on efficient markets and rational choice models. They explained how these models fail to recognize that almost all people, almost all of the time, do not make choices in their best interest or that are better than choices made by others. Nudge also explored bounded rationality's principle of limited knowledge or information, and showed how people require experience, good information and prompt feedback in order to make good decisions.

While Thaler and Sunstein drew extensively upon psychology research that select others, such as Robert Cialdini, had helped popularize (see Cialdini's work on persuasion and marketing⁶⁰), they transformed the public recognition and understanding of BE in three crucial ways.⁶¹ As non-psychologists, they applied cognitive insights to challenges faced by economists, governments and regulators. They also built upon existing academic literature by combining it with concepts from BE. Additionally, they were extensively engaged in policy, beginning with the 2008 Obama campaign and later the White House and U.K. Cabinet Office.

Nudge had a decisive impact upon governments and regulators. The term "nudging" entered the public lexicon to describe initiatives designed to improve default choices, simplify communications and reduce consumer hassles at low cost. The extensive use of nudges for these and other purposes was the most visible impact of BE and BF in policy initiatives for various governments and regulators.⁶²

***Nudge* explored how bounded willpower, bounded rationality and present bias combined with money illusion resulted in inadequate retirement savings for many people. Thaler and Sunstein highlighted Thaler and Benartzi's (2004) "Save More Tomorrow" work, which identified multiple barriers to people having sufficient future savings or participating in retirement plans. These included that:**

- many participants desire and plan to save more, but never follow through;
- limits on willpower make it difficult for participants to follow through on their intentions;
- people dislike having their paycheques decrease (loss aversion) for hard-to-assess future benefits (present bias);
- losses are felt in nominal dollars, not percentages (money illusion); and
- inertia plays a significant role in inhibiting desired behaviour.

Dan Ariely's 2008 book, *Predictably Irrational*,⁶³ was also important in generating awareness of BE. Ariely effectively summarized a wide range of behavioural concepts through real life examples, clear descriptions of research experiments and other illustrations drawn from academic research as well as his own experience. He explored how people's irrational behaviour is neither random nor senseless, but rather systematic and predictable. *Predictably Irrational* highlighted how people's decisions are influenced by their immediate environment, their emotions and their prioritizing of the present over the future. Ariely's book also effectively illustrated how people's bounded rational choices reflected the limits upon their thinking processes.

Predictably Irrational also explored the impacts that social norms have in people's everyday lives. Social norms like fairness, honesty, reciprocity and trust differ from market norms as they reflect society's

acceptable behaviours and have a decisive influence on people's choices. The presence of these social norms can lead to choices that are not driven by price and other financial considerations. Examples of this include family interactions (parents do not expect to be paid for cooking or performing other household duties that benefit their children) and many aspects of volunteer work. (In an instructive U.S. example, lawyers had little interest in doing work for seniors at much lower rates, but were happy to do work for free as a public service.⁶⁴)

As a *New York Times* bestseller, *Predictably Irrational* significantly broadened public sector awareness of behaviours that frequently fail to conform to the models of efficient markets and rational choice. Ariely showed that people's cognitive biases and limitations, emotional states and social influences mean that their choices are often not rational in the traditional economic sense. He strongly favoured using BE, given its insights regarding how people think and act. "Economics would make a lot more sense if it were based upon how people actually behave, instead of how they should behave."⁶⁵

The asset market, macro dimensions and insights of BE and BF

The third member of the crucial popularizers of BE and BF is Robert Shiller. While much of Shiller's work is outside of the scope of this report, his financial market and macro-economic research on asset markets,⁶⁶ as well as his books and insights, have been influential in the rise of BE and BF among governments and regulators.

Beginning in the early 1980s, Shiller combined BE and BF with research into asset price formation (stock prices and real estate) to show that emotions, social influences and other irrational factors can be decisive influences. He explained how periodic bursts of irrational exuberance can create major systemic risks in financial and housing markets, which were missed by most policy makers in the years prior to 2000-02 and again in the years before 2007-08.

Shiller's work on the causes of market excesses and his predictions of major market risks helped to popularize BF and, from 2008 onward, influence policy. His book, *Irrational Exuberance* (2000),⁶⁷ along with his market forecasts and comments in the media, were significant during this time; he discussed the potential for large stock market declines ahead of both market drops in 2000-02 and 2007-08. He also predicted the bubble in U.S. real estate prices well in advance of its 2007-09 collapse.⁶⁸

Shiller's work provided measures to gauge asset bubbles and advanced macroeconomic policy models and regulatory initiatives, helping lay the groundwork for monetary and other macro policy changes after 2007-08. His BF work included a methodology derived from long-run stock market valuations since 1881 using current price-to-long-term earnings ratios. His model was incorporated into numerous leading market analyses of equity market valuations and investment outlooks in the wake of the 2000-02 stock market declines and is still in widespread use today. The Case-Shiller home price index for housing markets has also achieved a substantial following and has been used by a number of policy makers and regulators since 2007-08.

II. Market failures and systemic shocks spur the adoption of behavioural economics and finance

Serious flaws in traditional market efficiency and rational choice models become clear

The popularity of Thaler and Sunstein's *Nudge* and Ariely's *Predictably Irrational* – as well as the public recognition of Shiller's insights and frameworks – came about during a period of major consumer market failures and structural problems with existing financial market policy models. These problems stemmed from traditional consumer protection policies⁶⁹ that were designed with assumptions that the average person is rational and that more information leads to better choices, which in turn increases consumer benefits.

The traditional approach suffered from several flaws, beginning with the assumption that people are willing and sufficiently competent enough to effectively deal with the information provided to them. It also incorrectly assumed that consumers usually make informed and rational decisions and take advantage of their "information-based rights."⁷⁰ The events of 2007-08 combined with these leading authors' popularity to create a fertile environment to showcase the merits of BE and BF research as these disciplines clearly demonstrated fundamental issues with traditional policies and regulations.

The financial crisis revealed that relying upon de-regulation and extensive disclosure to achieve better consumer outcomes was a flawed approach. Among the most important government and regulatory mistakes were the failures to prevent costly housing market bubbles in the U.S. and various European and Asian countries, too-easy credit conditions, inadequate regulation of banks' and investment dealers' derivatives and new products, and a lack of oversight of high-cost retail products being inappropriately sold to consumers.

This crisis spurred a re-evaluation of a range of other traditional approaches to policy and regulation. Various studies showed that dense, legalistic and lengthy disclosure was ineffective,⁷¹ as many people struggle to understand such information given their literacy or language challenges. 'Innumeracy' is an even larger challenge, as many people cannot answer basic statistics questions. Lengthy disclosure and large amounts of fine print result in 'overload' and 'accumulation' problems for many people. Overload arises when disclosure is too extensive and too complex, while accumulation problems refer to the ongoing daily, weekly, monthly and yearly receipt of so many disclosures that people cannot keep up with nor understand.

Despite extensive efforts to assist people with understanding disclosure materials, behavioural research has revealed that reliance upon conflict of interest disclosure of advisors is often inadequate and can produce results that were the opposite of its intended effects.⁷² These studies have shown how many psychological factors limit the effectiveness of advisors' disclosure⁷³ for consumers and advisors, including consumers having biased probability judgements and limited understanding of the disclosure. People also demonstrated an aversion to disclosure that made them uncomfortable or that did not support the choices that they had already made. Subsequently, they would often feel increased pressure to follow an advisor's advice due to the panhandler effect (consumers did not want to be ungrateful after the advisor's interest was disclosed) and insinuation anxiety (people had a fear of showing distrust post-disclosure). For advisors, the effectiveness of disclosure was reduced if "moral licencing" occurred, whereby the advisor feels less responsibility to give unbiased advice after disclosure.⁷⁴

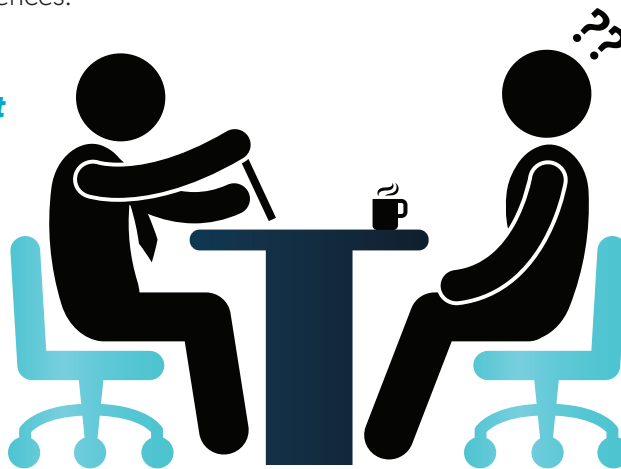
Other traditional policy models and regulatory approaches also were questioned following the financial crisis. Certain governments and regulators came to recognize that markets with a large number of firms were not necessarily more competitive. For example, despite the presence of numerous banks in Italy, its banking sector has had substantial inefficiency⁷⁵ as well as systemic risks.

Regulators began to understand that it is essential to distinguish between nominal competition, as shown by the number of firms, and effective competition as determined by price, quality and service.

There is also growing evidence to suggest that even when regulators enforced compliance upon advisors that were found to have broken rules, these advisors' behaviour did not change in the ways expected or intended, as an individual's compliance tends to worsen after he or she has been required to pay fines and taxes.⁷⁶

BE and BF studies have demonstrated that a number of traditional policy approaches were either inadequate or failed to solve the poor choices often being made by consumers. Even when traditional regulation successfully identified a problem, the research suggests that it frequently used ineffective measures (such as very detailed disclosure to correct these market flaws) to address them. Authorities had the "right problem, wrong solution."⁷⁷ Traditional policy and regulatory measures came to be seen frequently as ineffective, and often also as causing unintended consequences.⁷⁸

Conflict of Interest Disclosure



Inappropriate products: Huge costs of weak policy frameworks and ineffective regulation

By 2007-08, there were many factors precipitating the need for new regulatory frameworks and approaches to address structural market problems, especially in consumer markets. High-profile, poorly-understood products were creating losses for a significant numbers of individuals and, in the case of the U.S., were generating systemic risks that spread globally. There were major cases of products being mis-sold to consumers during the 1990s and early 21st century which benefitted the firms selling such products but were unsuitable for many purchasers. Most buyers only came to understand these products' opaque and excessive costs long after their purchase. (Sub-prime lending in the U.S., the U.K. Payment Protection Insurance and Hong Kong mini-bonds are all major examples of poorly-designed but successfully-marketed products that met the needs of firms rather than consumers.⁷⁹)

These high-profile cases underscored serious weaknesses in traditional government and regulatory approaches to consumer financial markets. The traditional models were especially problematic in how they failed to address serious issues and gaps in financial policy for consumers and in the regulation of banking and investment firms.

The 2007-08 global crisis leads to fundamental rethinking of financial market policy and regulation

The global financial crisis, and the “Great Recession” that followed in many countries, was pivotal in shifting the policy and regulatory approaches to financial markets. Although the 1987 and 2000-02 equity market declines had challenged the economic models of efficient markets and rational individuals, the nature and severity of the 2007-08 crisis showed the flaws in these models can be acute and costly.⁸⁰ Reliance on market forces and assumptions of rational behaviour did not prevent the 2007-08 global financial crisis and subsequent recessions in most countries, the worst since the 1930s.

By 2009, governments and regulators in North America, Europe and Asia had seen how key parts of their approaches to monetary policy, banking and financial markets had failed. Among the repercussions for policy makers and the public were:

- considerable government exposure generated by bailing out financial intermediaries in the US and Europe;
- large declines in housing market prices, which continued to be depressed in the U.S. and several European countries for years;
- unemployment rising to levels not seen by a number of countries, particularly in Europe, in several decades; and
- a prolonged stock market decline.

These and other consequences, created an urgent need for academics, governments and regulators to revisit their understanding of markets and behaviours.

The resulting crisis in the economics discipline itself⁸¹ led to a fundamental policy and regulatory overhaul.⁸² This spurred the use of zero interest rate policies, forward guidance and quantitative easing, as well as a search for new macro models.⁸³ Monetary policy also shifted toward an increased focus on financial stability, as well as systemic and firm risks.

In banking oversight, authorities became less reliant on pure market forces and self-regulation, instead introducing a range of changes that included increased and higher-quality capital buffers⁸⁴ and tougher stress tests for intermediaries. In regulated consumer markets, especially securities, new entities like the Consumer Financial Protection Bureau in the U.S. and the Financial Conduct Authority in the U.K. were created.

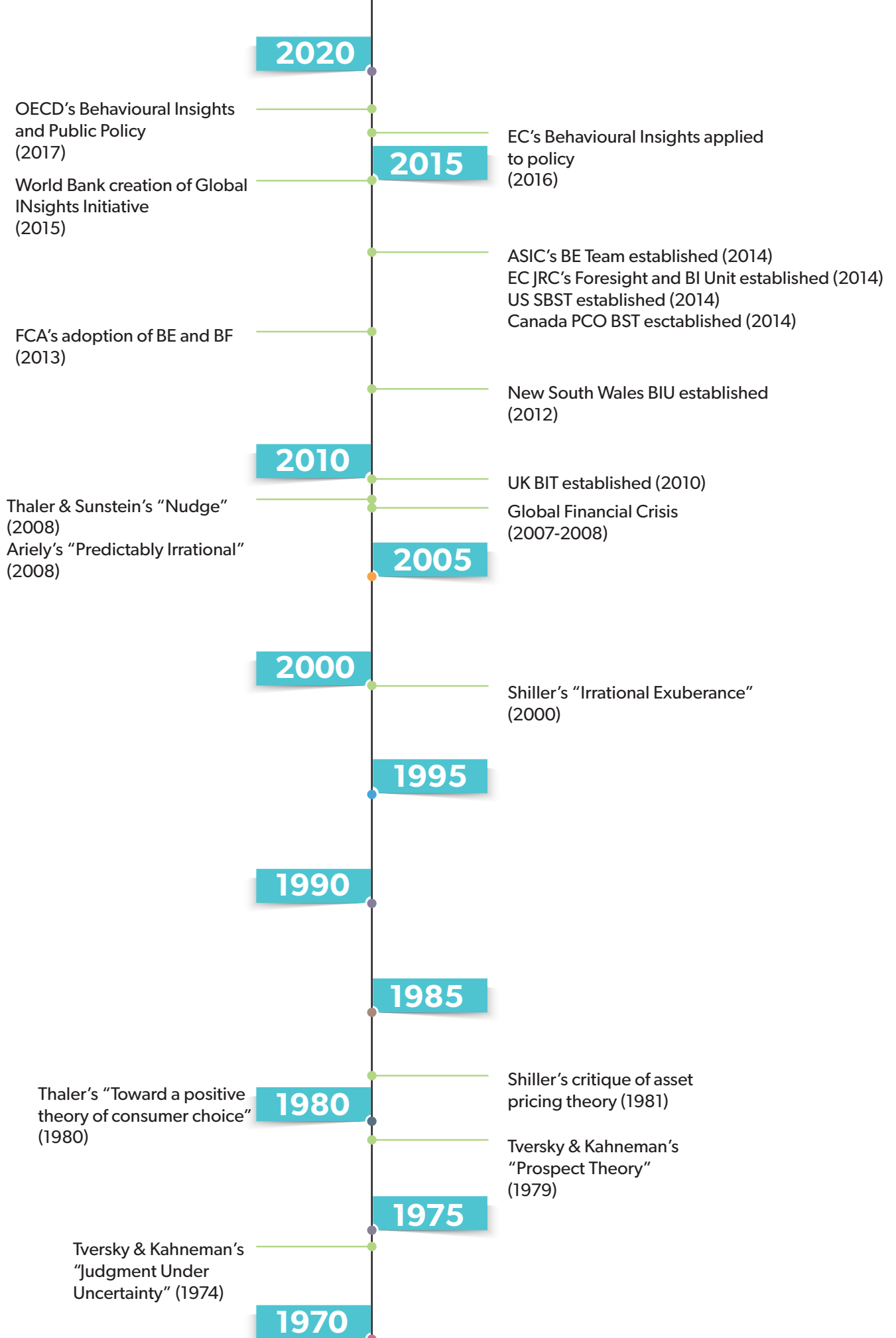
A new path: Behavioural economics and finance's rise to prominence

The disruption of traditional economic models and search for alternatives, especially in regulated markets, created fertile ground for BE and BF's use by governments and regulators.

It had been approximately three decades since the 1974 and 1979 articles by Tversky and Kahneman, but as Pete Lunn wrote in 2014, "from the position of a sometimes marginalized sub-discipline, BE has been swept into the mainstream with surprising speed" since 2009.⁸⁵ Some notable examples of the impact of BE and BF in the public sector include:

- Richard Thaler's and Cass Sunstein's roles in Barack Obama's 2008 presidential campaign;
- Sunstein being appointed Director, U.S. Office of Information and Regulatory Affairs, in 2009;
- the U.K.'s creation of the Cabinet Office Behavioural Insights Team (UK BIT) with Thaler as an advisor (2010), its renewed mandate (2012), and its expanded domestic and foreign role (2014)⁸⁶ when it was moved and restructured to be a stand-alone entity outside of government;
- the U.K. Institute for Government publishing a discussion paper, *Mindspace* (2010),⁸⁷ which relied extensively upon nudging principles and enjoyed a broad public sector audience;
- the U.K. Financial Conduct Authority's adoption of BE and BF in 2013 and its active pursuit of policy and regulation informed by these disciplines since then;
- the creation of the White House Social and Behavioural Sciences Team in 2014 and its significant impact on U.S. Federal government programs through 2016;
- the World Bank's creation of the Global INsights Initiative in 2015, with a mission of assisting governments in incorporating behavioural and social insights into project design and implementation, and evaluating the impact of these policy interventions;⁸⁸
- the European Commission's framework for behavioural consumer research, with its notable insights in banking fees, food labels and online gambling;⁸⁹
- Canada's establishment of a 3-person Behavioural Sciences Team as part of the Privy Council's Innovation Hub in 2014.⁹⁰ Ontario followed in 2015 in creating a BI unit; and
- OECD's major study of BI use globally and 150+ case studies was released on March 1st, 2017⁹¹

The extensive influence that BE has had on the economics discipline over the years following the financial crisis is also worth noting. Tversky and Kahneman's Prospect Theory article, which had very limited citations in the initial years after being published in 1979, became the second most cited paper in all of economics by 2010.⁹² The impact of their research overall was significant – "by 2016, every tenth paper published in economics would have a behavioural angle to it."⁹³



Section B: Behavioural disciplines' key concepts

III. Behavioural economics and finance's core concepts, insights, intersection with behavioural science and nudging

Understanding the merits of BE and BF and the reasons for their widespread adoption requires exploring some of their core principles and the ways in which they overlap with behavioural science as BI. It is important to examine the duality of people's systems of thinking, as these provide the foundation for BI's frameworks.

Essential BE Concepts and Principles

The dual-system theory was built upon Keith Stanovich and Richard West's study, "Individual Differences in Reasoning: Implications for the Rationality Debate," as well as the subsequent work of Tversky and Kahneman and numerous other cognitive psychology studies.⁹⁴ This theory posits that "the complexity of human thought and action can be understood by envisioning two systems operating simultaneously in the brain," and refers to two systems of thought:⁹⁵ automatic (fast and non-conscious thinking) and reflective (slow and conscious thinking).⁹⁶

The dual-system theory is a highly useful framework to explain how the brain works, and subsequently how humans think and feel. Many leading researchers have found the theory to be a helpful model for framing people's approach to decision-making, while still recognizing that there is debate around the ways in which these systems interact and how people make choices within this framework.⁹⁷

Under the dual-system theory, automatic thinking is people's default way of processing information and responding. This system results in thought processes that are rapid, intuitive and experience-based. These quick responses are necessary for human survival, as they generate low effort responses to choices and situational demands. This system works quickly to try and simplify challenges, and while it is often accurate, it is not necessarily rational. Automatic thinking makes use of heuristics and is responsible for the ongoing biases (systematic errors) in people's decision-making.⁹⁸ The automatic system also harnesses basic emotions, such as anger, fear, happiness and sadness.

Reflective thinking is the alternative way for people to process information and to respond to the world around them. This system is more thoughtful and sophisticated, as well as slower, analytical and deliberate. Reflective thinking makes use of more sophisticated strategies for solving problems, resulting in decisions that may be more accurate, appropriate and/or effective than those produced through automatic thinking. The reflective system is also emotional, but it includes more complex and often social emotions (such as empathy, guilt or shame).

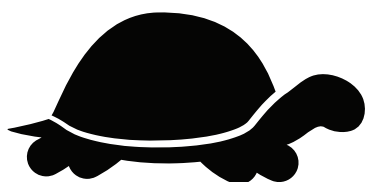
TABLE 1

Dual System of Thinking⁹⁹

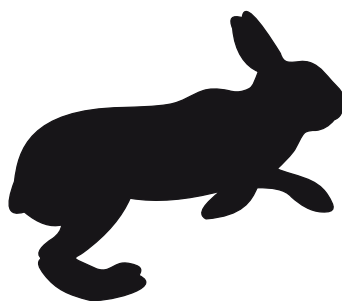
Automatic System	Reflective System
Applies what rapidly comes to mind (narrow frame)	Considers a broad set of relevant factors (wide frame)
Effortless	Effortful
Associative	Based on reasoning
Intuitive	Deliberative
Affected by Basic Emotions (e.g., fear, happiness, sadness)	Influenced by Complex Emotions (e.g., regret)

Our Brains Like Efficiency. Mental and Time Constraints Matter.

Dual System of Thinking



Reflective



Automatic

While cognitive psychologists generally agree dual-system theory is a highly useful framework, as noted above, there is some debate about how these systems interact.¹⁰⁰ (It is also important to reiterate that our automatic thinking is essential for many routine tasks and to avoid the cognitive depletion that increasingly occurs when reflective thinking is used extensively.)¹⁰¹

Kahneman and numerous cognitive psychologists describe the interaction as one in which the rapid and intuitive responses generated by the automatic system usually overwhelm the reflective system's more careful and objective thoughts. As a result, people's decisions are more likely to reflect their predictable biases than their rational choices, even when automatic thinking has produced a default choice that is inappropriate, inaccurate or that does not fit the circumstances in which it is made.

People's automatic use of heuristics is increased by a number of factors, as shown by numerous studies.¹⁰² Automatic thinking is most likely to be used for choices that involve emotional topics or by people who are feeling extreme emotions. Automatic thinking is also employed when people have strong preconceived attitudes or beliefs or when they receive information from a source believed to be credible and trustworthy. Similarly, this system predominates when people feel it would be challenging to evaluate the information provided (for example, in situations where they feel distracted or hurried, or where there is an overload of information).

In contrast, reflective thinking is likely to take prominence when a choice is seen to have an important outcome, greater relevance or involves accountability to others.¹⁰³

There are numerous challenges that arise from the shortcuts and heuristics that are applied when people make automatic decisions, particularly in the number of biases that influence their decision-making.¹⁰⁴ These cognitive biases include:

- **Anchoring.** This refers to people's initial exposure to a piece of information (such as a number) that becomes an unintended reference point which influences subsequent value judgements. For example, anchoring can occur when a prospective homebuyer judges the value of new homes based on the price of the first house he or she viewed.
- **Zero price effect.** This describes the emotional response that people have to a product priced for free, leading them to make choices that are not in their best interests. This effect is a notable source of irrational excitement as people perceive a product's intrinsic value to be higher when its price is reduced to zero, so much so that it overwhelms many people's capacity to conduct a traditional cost-benefit analysis. Examples range from taking a free item such as a fast food sample because you want it, but do not need it or should not own or consume it to accepting free timeshare accommodation or offers of portfolio appraisals without considering the strong investment sales pitch that all-too-often accompanies these zero-priced products.
- **Availability.** This describes the probability of an event occurring being perceived as higher because it is easy to think of examples of when this event had previously occurred (it is readily-available in a person's memory). An example of this would be a situation in which investors judge the quality of a stock based on information that was recently featured in the media, ignoring other relevant data and facts.
- **Affect.** These are good or bad feelings that are automatically generated when thinking about a given topic. When making a decision, people may take a quick mental short-cut by using such "affect as information," and judging what feels good as 'right and desirable', and what feels bad as 'wrong and to be avoided'.¹⁰⁵ These choices are based on past experiences and memories that are triggered before (and potentially to the exclusion of) reflective thinking. As with other biases, the role of affect in decision-making is more pronounced when people's time or resources are insufficient.

However, an affect bias does not always lead to poor outcomes, as various studies have demonstrated.¹⁰⁶ Emotions can help people with creating priorities and motivate problem-solving behaviours. Negative emotions can help us complete detail-oriented tasks, and often encourage greater systematic evaluation; positive emotions can encourage creative thinking. It is when there is too much emotion present that decision-making typically begins to suffer.

- **Overreliance on Salience.** This occurs when information stands out, is novel or seems relevant and therefore attracts more attention than what may be merited. Much like using "affect as information," people use the rule of thumb that "salience signals importance". This bias includes people's preference for brand names and their perception of quality based the brand's profile, its distinguishing aspects or its personal importance to the decision-maker. People tend to base their decisions on salient elements as opposed to considering all of the elements of their environment. Examples include focusing their attention on information displayed in vibrant colours, large formats or prominent locations on a computer or mobile device screen.
- **Status quo and inertia.** These biases refer to people's aversion to change. These biases often involve habits based on repetition and associative learning. People will frequently not change their habitual behaviours without a strong incentive. Examples of this include people's unwillingness to change banks or insurance policies, even when there is readily-available evidence of similar products offering better savings rates or lower costs.

Status quo and inertia biases are reinforced by two others: confirmation bias and belief bias. What people believe influences the information that they look for and how thoroughly they analyze it. Confirmation bias means that we automatically look for information that supports our prior beliefs¹⁰⁷ because we seek affirmation for our views. Belief bias means that we are more likely to dismiss or find fault in information that challenges our beliefs and accept information that affirms them. In some instances, belief bias leads people to thoroughly analyze information that is inconsistent with their beliefs, and similarly discourages evaluating information that matches their views.

“Temporal dimensions”¹⁰⁸ are also very important. These include the ways in which time factors into people’s decision-making, as well as the difficulty that we have when trying to predict our future behaviour, experiences or perceptions of value.

Psychology research has demonstrated that people’s decisions change depending on whether they consider them for the long-term (“high distance”) or the near-future (“low distance”).¹⁰⁹ The dimension of distance leads to significant differences in people’s evaluations and preferences. Low distance choices lead us to focus on concrete and specific details, as well as feasibility and cost, while high distance choices cause us to consider the abstract and general aspects, plus desirability and benefits.

People are poor predictors of their future behaviour and place greater weight on the present. This reflects the “present bias” previously noted, as people often discount the future compared to the present. In one notable U.K. experiment, people preferred receiving a lesser amount of money immediately rather than receiving a greater amount one month later.¹¹⁰

An important temporal dimension also stems from the ways in which forecasting and memory work. Both often have biases that reflect our mental shortcuts¹¹¹ such as the “planning fallacy” in which people underestimate how long a task will take by ignoring past experience. Similarly, memory is subject to the “peak-end rule” as people selectively evaluate the things that they remember as pleasurable or problematic. Our memories typically reflect either the most or least favourable elements rather than an average of the total experience.

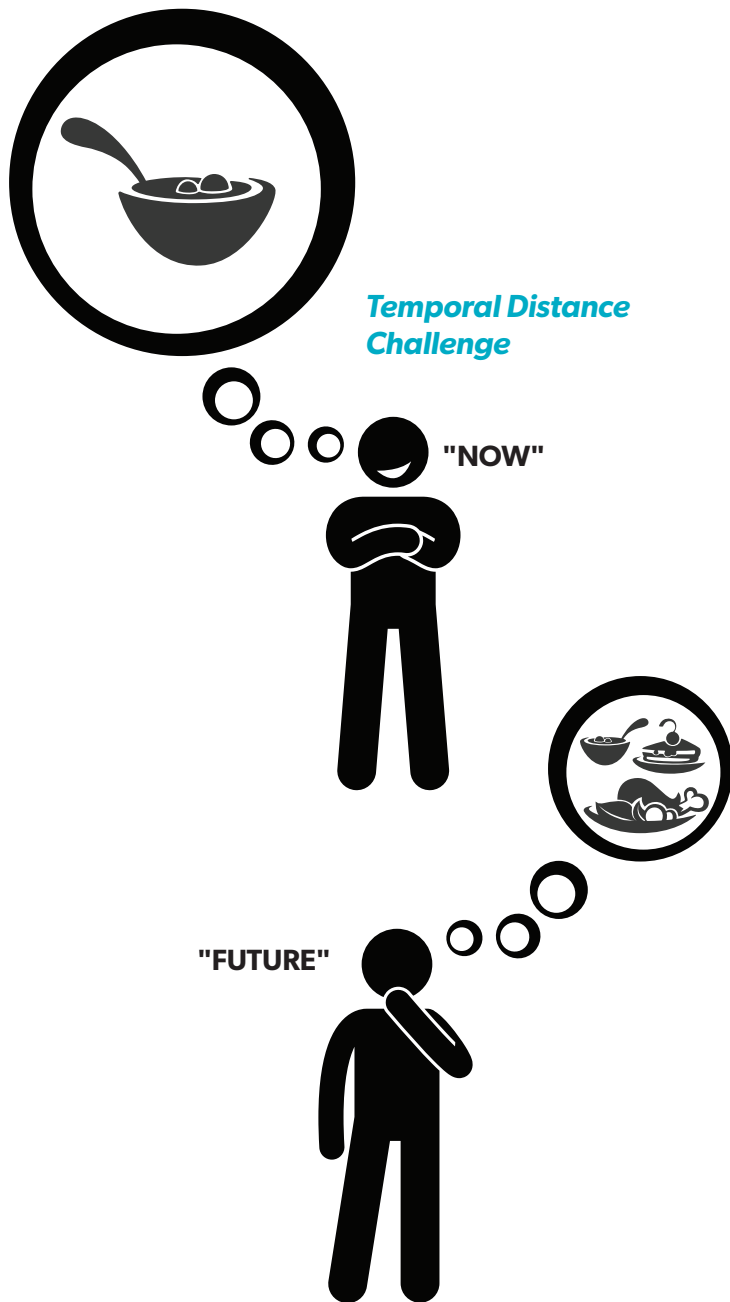


Anchoring Bias
(e.g., Home buyer's bias)

Affect Heuristic

The “fresh start” effect¹¹² is another notable temporal bias that sees people set new goals at milestone times or events such as Mondays, the start of a new year, or on birthdays and anniversaries. People are more likely to take actions toward medium and longer-term goals at these times, and the fresh start effect can be used to change people’s behaviour for savings, financial planning or other desirable actions.

Motivational factors affect the extent to which people engage in reflective thinking and rational analysis.¹¹³ For example, although the reasoning skills of two people may be on par with each other, one person may be more motivated than another to apply these skills during problem-solving. Research suggests that people vary in terms of their willingness and motivation to dip into their ‘logical toolbox’ and think rationally and reflectively.



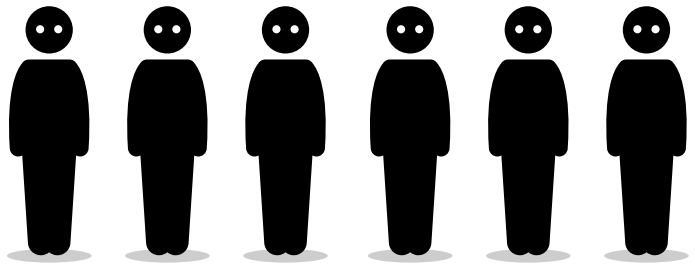
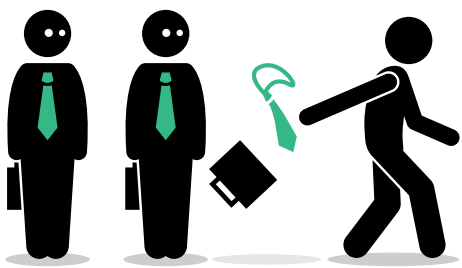
As well, physiological circumstances have major impacts upon people’s decision-making. This type of influence, known as the “hot-cold” or empathy gap, has been studied extensively by George Loewenstein, a founder of BE. During hot states, visceral factors (such as pain), emotions (anger, fear) and drives (thirst) foster poor decisions.¹¹⁴ People experiencing hot states make poorer decisions regarding prevention, protection and other behaviours that are in their long-term interests.¹¹⁵

The social dimensions of people’s decision-making are also important.¹¹⁶ Their decisions are shaped by and embedded in their social environment. Their choices are influenced by social norms, not just market considerations. Social norms are powerful informal guidelines that affect people’s decision-making, and the norms of trust, fairness and reciprocity are significant in shaping people’s behaviour. Research has shown that “humans are hard wired to develop and adhere to norms; imitation is one of the key ways humans learn strategies for interacting in the world.”¹¹⁷ The “propensity to develop norms is so strong that norms emerge for almost every behaviour.”¹¹⁸ The effects of social dimensions include the tendency to engage in “groupthink,” the susceptibility to peer pressure and the increased effect of others’ views, thoughts and actions through social media.

When people make decisions that are at odds with social norms, they will often rationalize their choice after the fact in an attempt to deal with any cognitive dissonance. This can create commitment issues for important, long-term objectives. Repercussions from this rationalization may include making the challenge more difficult of meeting health, pension or other ongoing goals.

For example, cognitive dissonance can lead an investor to buy a stock and then hold onto it despite encountering new information that would suggest it was a poor investment. To resolve the discomfort caused by this new information, the investor may distort or otherwise manipulate the information, or search for positive news and views to support her/his original decision. This may lead the investor to hold onto her/his bad stock, which may challenge them in meeting their investment goals.

Herding



As the World Bank's *Mind, Society and Behaviour* report explains, "when people think, they generally do not draw upon concepts that they have invented themselves. Instead, people use concepts, categories, identities, prototypes, stereotypes, causal narratives, and worldviews drawn from their communities. These are all examples of mental models. Mental models affect what individuals perceive and how they interpret what they perceive."¹¹⁹

While mental models are relevant for many policy issues outside of the scope of this report – such as those used for thinking about climate change and disease – it is important to note that not all models are useful. As the World Bank's report states, "understanding the role that mental models play in individual decision-making opens up the possibility of new levers for policy while at the same time highlighting potential problems in design and implementation".¹²⁰ For the purpose of this report, mental models are applicable in the ways that they affect financial decision-making. They appear in people's automatic thinking which provide existing frameworks that enable better financial choices.

Before turning to the expanding intersection of BE and BF through other behavioural sciences as BI, the behavioural concept of choice overload merits a brief exploration here. Choice overload occurs when people are faced with too many options for purchase, and refers to either an excessive number of choice attributes or alternatives. It has multiple effects.¹²¹ The greater the choice overload through either too many options or too much complexity, the more consumers use mental shortcuts such as choosing the default option or deferring their selection. Choice overload can also cause decision fatigue and/or lead to choice paralysis. Ways to counter choice overload include simplifying the choice attributes or reducing the number of available options.¹²² Elimination of redundant or too-similar options combined with using plain language, decreasing the amount of text and providing more readable summaries of complex rules can also be effective in reducing choice and information overload.

Overlaps and intersection with behavioural science

BE and BF's overlap and intersection with certain elements of behavioural science are also significant, particularly as they spurred the use of the broader range of behavioural disciplines as BI. BE and BF have benefited from economic psychology, cognitive psychology, decision science, neuroeconomics, marketing science and other behavioural science disciplines.¹²³ BE and BF can be seen as "situated within the larger landscape of social and behavioural sciences" with both disciplines benefiting from a better understanding of the human brain.¹²⁴

These overlaps and intersections with behavioural science are also reflected in the public's often-confused views about BE and BF research and practitioners. Psychology has often incorrectly been identified as behavioural economics. In his 2013 keynote address on BE and investor protection, Daniel Kahneman complained that Thaler and Sunstein's book **Nudge** was really about social psychology. However, because Thaler is a behavioural economist, a large chunk of social psychology has been called BE following the publication of *Nudge*. "It is a mistake actually; it should be called behavioural science because it is not economics at all."¹²⁵

Thaler has also pointed out that the work of U.K. BIT has been overstated as BE.¹²⁶ As he wrote, "the work has primarily come from psychology and other behavioural sciences ...the whole point of forming U.K. BIT is to utilize the findings of other social sciences to augment the usual advice being provided by economists." David Halpern, head of U.K. BIT, highlights that its work and his book are "about the application of psychology to the challenges we face in the world today."¹²⁷ This confusion about the broad range of disciplines that comprise BI is among the reasons why leading experts and practitioners refer to behavioural applications in business, the non-profit and public sectors as BI approaches.

Nudges

Even with the debate and, at times, confusion over the classification and precise definition of BE, the success of Nudge and its authors is reflected in how nudges have been used in a broad range of initiatives around the world. Since 2008, nudges have entered the public policy lexicon and been increasingly used by many countries and multilateral institutions, such as the World Bank and OECD, in a number of different areas of policy implementation and regulation.

The foundation for using BI and nudges in public policy stems from two papers published in 2003:¹²⁸ one by Thaler and Sunstein and the other by Colin Camerer and his co-authors. Thaler and Sunstein's paper advocated for "libertarian paternalism," while Camerer et al recommended "asymmetric paternalism." Both papers supported a policy-making approach "intended to benefit individuals not acting in their own self-interest, but which imposed minimal burdens on those already acting rationally."¹²⁹ This specific type of policy was popularized by *Nudge* and has seen widespread use since its publication.

There are clear merits¹³⁰ to distinguishing the frameworks provided by BI from nudges. It is important that behavioural approaches are recognized for their scientific methods of research and analysis, which use experiments to test hypotheses, while nudges refer to how behavioural disciplines' findings are applied to government policy and regulation.

Thaler and Sunstein state that a nudge is "any aspect of choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives ... to be a nudge, the intervention must be cheap and easy to avoid. Nudges are not mandated, prescribed or proscribed behaviour."¹³¹ Nudges are intended to improve people's choices given their challenges of insufficient attention, inadequate information, limited cognitive abilities and lack of complete self-control.

Using Lunn's framework,¹³² nudges are employed in areas where an authority has a governing, policy or regulatory responsibility over economic actors that are making problematic choices. A nudge has two defining features in setting its "choice architecture" to encourage better consumer decisions and improve the outcomes for individuals and governments. One is that the authority preserves personal freedom of choice by not preventing the selection of problematic options. The other is that BE results are used to change the decision context for people in a way that makes better outcomes more likely.

A useful example to illustrate nudging's benefits is the impact of the small change of people signing a self-reporting information document at the beginning in comparison to signing at the end. Signing upfront rather than at the last stage makes ethics salient and has surprisingly powerful effects on the honesty of the information provided and its quality.¹³³ Signing at the beginning makes morality salient at the outset "right before it is needed most, so that it can remain active during the most tempting moments".¹³⁴ It is a gentle nudge that is a very effective intervention -- it does not restrict people's freedom of choice, it significantly improves ethical and economic behaviour and its cost is minimal as most self-reports already require individuals to sign a pledge of honesty, but they do so in a much less beneficial location.¹³⁵ Among the advantageous ways to use this nudge is with disclosure documents for retail investors in their initial and update meetings with their investment advisor in person or onscreen with online advisors (as well as with health forms for insurers etc.)

Nudges offer numerous advantages for governments and regulators. These include addressing evidence of inferior consumer choices in regulated sectors such as energy, finance, health (among others) that result in higher costs and lower benefits for both consumers and governments. The low cost to implement nudges also makes them appealing, especially relative to traditional regulations, subsidies and taxes. Other advantages include the increasing number of opportunities to use nudges given the rapidly expanding range of choices for consumers, the surge in information sources available and the technological advances for policy and program delivery.

While nudges have proven to be effective for many different sectors and tasks, it is important to recognize their limits. Thaler and Sunstein¹³⁶ point out that nudging has its limits and cannot solve every market failure, noting that some bans and mandates are inevitable as no society can exist without rules and regulations.

Other researchers have cited the challenges that authorities face in determining their preferred outcomes for a nudge. Codagnone *et al*¹³⁷ wrote there is no universal criterion for determining preferred outcomes. The authors stress that policy makers, regulators and, at times, courts must make this assessment. They also point out how nudges are better suited to address simpler, more straightforward situations rather than complex ones. For example, their research for the European Union and other studies have shown that nudges are necessary, but far from sufficient enough to persuade consumers to buy eco-friendly cars or to change the impulses of online gamblers.

In response to nudge critics, Thaler updated his and Sunstein's framework in a 2015 article,¹³⁸ writing that nudges should be guided by three principles, namely that:

- nudges should be transparent and never misleading;
- nudges should be easy for participants to opt out of, "preferably with as little as one mouse click;" and
- their use should reflect a "good reason to believe that the behaviour being encouraged will improve the welfare of those being nudged."

It is important to recognize the strong merits of nudges as policy measures to address problems with choice architecture and selected heuristics and biases in people's automatic thinking. As important, BE and BF have extensive applications beyond nudging. Bhargava and Loewenstein summarized the advantages of nudging but also highlighted the benefits of using behavioural disciplines for much more than nudging in government policies and regulations.¹³⁹ They noted that nudging has clearly improved our decision-making architecture by such measures as better default options in forms and on screens, shorter and simpler disclosure and reduced hassle factors for consumer choices.

However, Bhargava and Loewenstein state the need for and potential of much broader applications of BE and set out three principles in this regard.¹⁴⁰ They begin with BE and BF also providing a platform to improve the decision-making environment for consumers and to simplify the products and incentives affecting these choices. These authors point to BI as a way to protect consumers from "behavioural exploitation" by firms taking advantage of people's biases through marketing tactics and complex products. They also contend that behavioural disciplines can improve the design and implementation of policies based on traditional economic approaches by enhancing the impact of conventional economic incentives.

In 2016, the European Commission's Joint Research Committee set out a framework for categorizing behavioural policy implementations.¹⁴¹ This serves as a useful introduction to a number of BI applications, including specific examples of nudges and more extensive BI interventions. Its framework has three categories for behavioural initiatives:

- **Behaviourally-tested initiatives.**

These are interventions being tested or scaled up after initial *ad hoc* experiments. Examples include testing different options for nudging by changing the way that information in tax payment letters is framed to encourage compliance.

- **Behaviourally-informed initiatives.** These are interventions designed after a review of available behavioural evidence but without any experiments. Examples include interventions to avoid firms' exploitation of consumer biases such as banning pre-checked boxes.

- **Behaviourally-aligned initiatives.**

These are interventions that do not rely on any behavioural evidence from either literature or *ad hoc* experiments. Examples include the use of penalty points for driving licences to use motorists' loss aversion to encourage compliance with driving rules.

IV. Behavioural insights into online decision-making and preferences

With the use of internet-connected devices continuing to climb, BI is able to help provide a better understanding of the ways in which digitization and the online world are changing people's decisions and preferences.

Research regarding people's use of technology goes back several decades, including studying the decisive factors and influences that determine how, when and which technology people decide to adopt. Research by Fred Davis in the 1980s focused on how perceived usefulness and perceived ease of use were important factors in determining people's acceptance of technology.¹⁴² Perceived usefulness refers to the degree to which a person views a particular product as enhancing her or his activities. Perceived ease of use refers to the degree to which a person believes that using the product would be effortless. Short-term usage is more likely to be predicted by the perception of a product's usefulness. Long-term use is determined more by the product's user-friendliness.

More recently, researchers have investigated whether people have associated technology with success, and whether there is a technology bias in their decision-making. In 2016, Bruce Clark and his colleagues found that the abstract notions of technology and their link to success have become so powerful that they create an underlying bias in judgement and decision-making.¹⁴³ In their words, "frequent exposure to examples of technological successes gradually 'bakes in' a cognitive association between technology and success." Their work demonstrated the "technology effect:" a tendency toward excessive optimism in decision-making where the effects of technology are clear. The results of their studies showed that people were more optimistic about technology-related stocks over those that were not, even though the information supplied in the laboratory-controlled study clearly showed that both types of stocks had the same performance.

Peter Kell, Deputy Chair of Australia's Securities and Investment Commission, has highlighted the emerging literature on consumers' behaviour in a digital environment, including how some biases appear to be magnified on screen.¹⁴⁴ Studies by Shlomo Benartzi in 2015¹⁴⁵ and Dilip Soman

and his colleagues in 2016¹⁴⁶ provide useful insights into online behaviour relative to people's decisions and preferences in the physical world. Their respective research examines the ways in which computer screens affect how people process information and make choices compared to an offline environment.

Online technology changes behaviour

Benartzi explores a broad range of research to demonstrate how "technology is shifting people's brains in many subtle ways." These shifts can often anticipate how people will react online and how they will respond to policy and regulatory interventions.¹⁴⁷

Soman and his colleagues reached a similar conclusion about the impact of technology, proposing that the process of people's decision-making online may be fundamentally different.¹⁴⁸ Noting extensive research by Barber and Odean and by Goldfarb *et al*, they emphasize that patterns of behaviour are significantly different online relative to the physical world.¹⁴⁹

As Herbert Simon concluded back in 1971, an information-rich environment consumes the attention of its recipients. As attention is relatively inelastic, "a wealth of information creates a poverty of attention."¹⁵⁰ Simon's research reflected the pre-internet world, when the amount of data and available information was a fraction of what it is today.

Benartzi shows that device screens amplify this scarcity of attention. "In an age of information, we are less able than ever before to process information since our attention is all used up."¹⁵¹ He emphasizes that at a certain point the amount of information actually makes it harder to deploy any attention that people have left. This is compounded by the ease of access to information that technology enables, as an increase in the volume of information can result in less information processing. A screen filled with excessive information will actually decrease a person's ability to process it.

There is also a growing amount of indirect evidence that suggests screens are changing the way people think by making them more impulsive and reactive, and shortening their attention span as they engage with multiple types of electronic communications (such as emails, texts, websites, social media). For example, a Chartbeat study¹⁵² showed that 55 per cent of all visitors to a website spend less than 15 seconds reading it. As Benartzi highlights, the average website visitor is not carefully assessing content, but rather reacting to his or her first impression, making a quick decision to engage or look away. This is a major challenge for text-heavy sites given the time needed to process information. In Benartzi's words, "we have traded away depth for speed."¹⁵³

Studies have highlighted the role of the digital technology used by people as different devices may have different effects. Information is processed at a different pace on mobile phones than it is on larger computers.¹⁵⁴ Other research has highlighted how smartphones are changing the way that many people think. Recent experiments¹⁵⁵ show that people who typically rely on automatic thinking – those who use fast and easy mental shortcuts – may allow their smartphones to do more of their thinking for them. Not only are these people more likely to use their smartphones for more information in their daily lives, but Barr and colleagues' study suggests that they may be offloading some of their thought processes to technology, which raises issues about how cognition occurs in the online era.

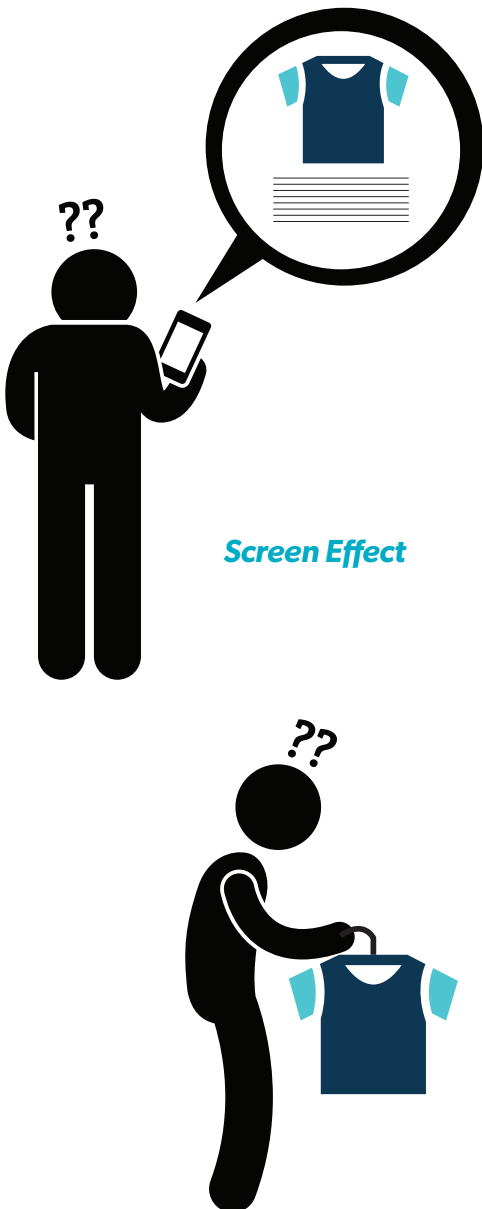
The online screen impact

The research of Benartzi and of Soman and his colleagues also highlights how screen display is a potentially decisive factor in people's decision-making. According to Benartzi, people's unconscious preferences for a visual system – where they look and how a screen looks – may significantly shape their preferences, making the display onscreen important.¹⁵⁶ Screen display can influence attention through simple design given by attracting our eyes' focus. Our patterns of eye fixations have a large influence on the choices of subjects. Scientists refer to this as "display-induced decision bias." It also means that design tweaks can have significant impacts.

Screen design can also affect people's decision-making¹⁵⁷ by manipulating how easy it is for people to see their options. Changes to the brightness of a screen or the amount of time an item is shown on screen will affect the choice a person makes.

Soman and his colleagues highlight the screen effect as one of three factors that distinguish online decision-making from the offline environment. The screen effect can be an important influence on the way that people process information, especially given that there is often a visual bias impact upon their decision-making. Many studies¹⁵⁸ have shown that several judgements and behaviours are rooted in automatic, non-deliberative processing with a large part of people's automatic processing being visual; their first impressions are usually the ones that are retained, unless there is strong motivation to change. Research also shows that people usually rate information (specifically websites) with greater visual appeal as being the most useable or trustworthy. The screen effect also reflects the advantages that information display has for showing information more effectively. Screens allow people to easily compare information side-by-side and evaluate an array of products by their variety, quality ratings and costs. They can evaluate items by specific characteristics or attributes, changing the way in which they assess their options and make choices. In an attribute-based mode,¹⁵⁹ options are evaluated based on how they compare to the alternatives. However, some research suggests that side-by-side comparisons may cause certain attributes of an item to become over-weighted during the process of making choices.

In addition to the screen effect, Soman and his colleagues also emphasize two other factors as being decisive in people's online behaviours. One is the connectivity effect,¹⁶⁰ which is the result of people having instant access to an unprecedented amount of product alternatives and information via the internet, allowing them to easily find and compare a vast range of products. This connectivity also gives people access to their peers' choices, offering them unprecedented access to the market preferences of others. Connectivity makes it easier for people to use that information to inform their choices. As previously noted, research by psychologists (as well as Ariely and other behavioural scientists) has shown people tend to model their behaviour based on the behaviour of their peers. Soman and his colleagues highlight how the connected world can reinforce the human tendency to conform to our peers' behaviour.



The other decisive online factor for Soman and his colleagues is the choice engine effect.¹⁶¹ Technology provides “choice engines” to allow decision-making to be more manageable for people, given the challenge of dealing with the massive amounts of information and huge range of production options that are available online. One group of choice engines, called recommendation agents, creates personalized options for people, allowing them to focus on their interests. Examples of these recommendation agents include Amazon’s suggested products, Apple Music’s recommended playlists, and Facebook’s curated newsfeeds.

In sum, Benartzi identifies three key sources of onscreen impacts: information architecture; choice architecture and thinking architecture.¹⁶² Information architecture refers to the ways that the format of information changes how people process it. Choice architecture shows that the design and layout of alternatives on screens can affect decisions. Thinking architecture is about helping people think smarter – it is a checklist for their thoughts to avoid narrow framing, loss aversion and *status quo* bias when they are online.

For their part, Soman and his colleagues set out five key elements of online behaviour differences¹⁶³ as people onscreen have:

- an increased tendency and willingness to be honest;¹⁶⁴
- a greater ability to make direct comparisons, resulting in the reduced role of appraisal and the greater role of trade-off analyses among displayed attributes online;
- greater access to information about others’ choices, resulting in a greater likelihood of being influenced by others;
- access to an abundance of alternatives and an overload of information, resulting in a search for simpler decision strategies; and
- access to decision-making tools and choice engines, reducing the effects of cognitive burden.



Choice Engine Effect

Section C: Behavioural finance's merits and notable applications

BF's frameworks and insights are especially valuable in the financial sector. Many people face a number of substantial challenges in financial markets,¹⁶⁵ including:

- making financial decisions that have long-term impacts (such as saving for retirement) without the benefits of experience and feedback from previous decisions;
- needing significant knowledge and cognitive capacity to evaluate complex products (such as mutual funds, exchange-traded funds or preferred share securities);
- needing the ability to forecast future spending needs;
- assessing the value of "credence goods" as many investment products and services' ultimate worth may not be known for many years (even decades) after they are purchased;
- making decisions involving substantial sums of money; and
- possessing strong willpower (for example, to restrain spending using credit cards in order to stay within their capacity to pay off the cards' balances).

BF also offers governments and regulators a framework and approach to using data science to diagnose, test and learn about consumers' responses to policy initiatives. Securities, derivatives and banking markets in particular generate huge amounts of data which can be used for evidence-based analysis, empirical testing and evaluations of consumer responses to BE and BF approaches.

Why financial markets are so challenging for consumers

BF's application within financial markets has been well summarized by the U.K.'s FCA in its rationale for adopting a behavioural approach set out in its 2013 Occasional Paper #1.¹⁶⁶ This paper explores how the interaction of multiple different factors results in consumers being more prone to making errors in financial markets as compared to most other markets. It provides useful insight into how different biases, our dual system of thinking, social factors and temporal dimensions that affect people's decision-making cause major structural issues in consumer financial markets.

As outlined, most consumers have difficulty understanding financial products. Making financial decisions is often challenging, time-intensive and unsettling. Making good choices often involves an effort to be educated and knowledgeable, and many markets and products can be confusing for people without financial backgrounds.

However, people already face massive amounts of information and choices in financial markets that are exacerbated by the volume of information available online, as demonstrated by Benartzi, Soman and colleagues as well as other leading researchers. They are confronted with a vast array of information and 'expert' analyses about economic developments, market trends and product evaluations. The abundance of information and choice can often overwhelm and confuse many people.

The complexity of financial markets and products also makes it harder for people to evaluate their choices, even when taking additional time and effort, and despite (or because of) the required

product disclosure. For example, dense, legalistic and lengthy security prospectuses that need specific expertise hinder a consumer's ability to make a choice, and complex products with often opaque fee structures also complicate the process of working with an advisor.

As we have seen, these problems are compounded by many people's lack of interest or limited literacy and numeracy. Some people face challenges related to functional illiteracy, and struggle with reading basic documents or legal statements. Many have serious difficulties with complex math in finance and statistics, weaknesses which are not always reflected in policy design and implementation. For example, Canadian¹⁶⁷ and international¹⁶⁸ research consistently reveals large segments of the public that lack either the interest or capacity to understand basic aspects of securities, such as how bond prices change with interest rates or the impact of compound interest rates.

Many financial decisions include evaluating risk and uncertainty. As Kahneman, Thaler and others have demonstrated in their research, people are generally poor intuitive mathematicians and may make systematic errors in their choices. Evaluating risk and uncertainty inspires negative emotions, which makes it more likely that people will use mental shortcuts through automatic thinking rather than spend time deliberating.

Yet securities markets, as well as insurance products and many other financial instruments, inherently require people to make complex assessments about cost, return and risk. The difficulty of these tasks combined with the limits on our amount of resources and time involved bear re-emphasis. They can lead investors to make conservative investment choices given their lower perceived risk, despite having a financial need for higher returns and somewhat higher risks. In these cases, their initial decision to choose low-risk securities makes them (incorrectly) feel more secure.

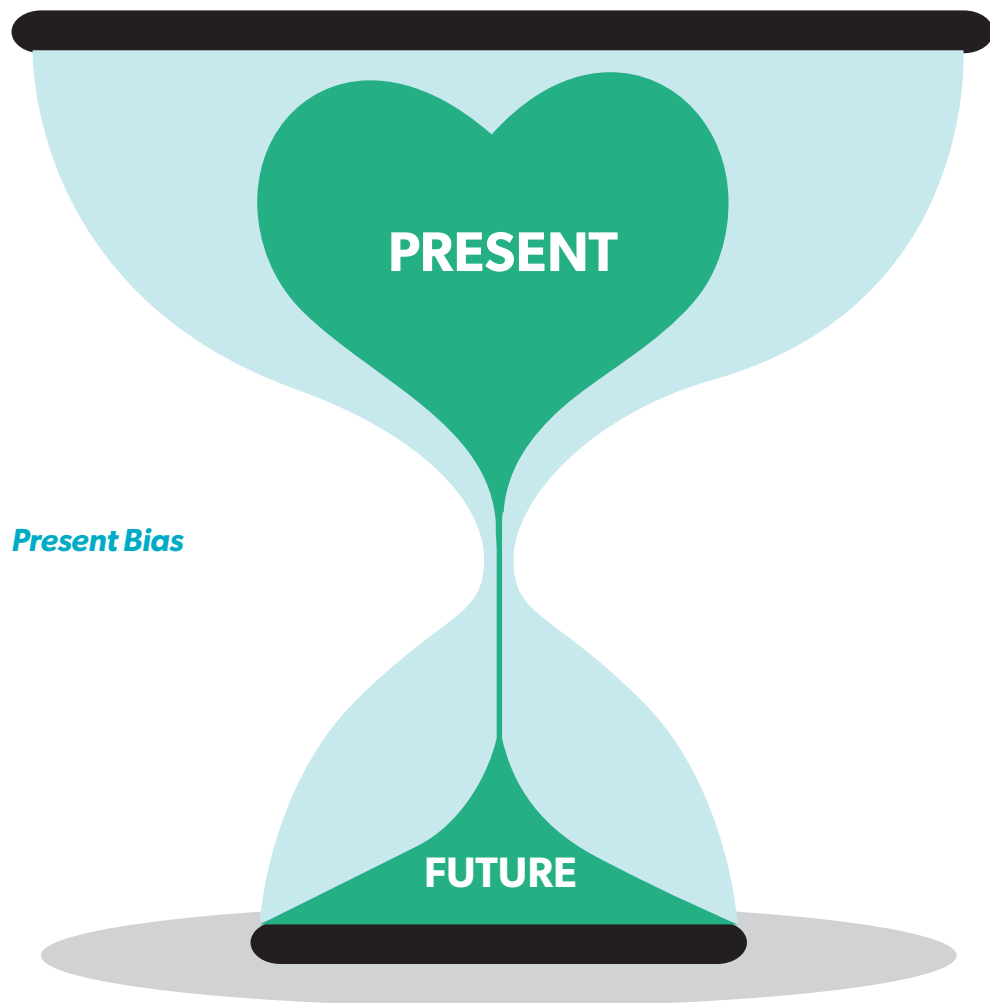
Making financial choices may require making trade-offs between the present and the future. As explored earlier, making decisions about saving and borrowing often challenges people's willpower, which can result in procrastination, impulsivity and/or other undesirable results. Many people borrow excessively on their credit cards, use too much home equity and have excessive mortgages without the discipline to make payments from future income. The powerful rewards that come from consuming income in the present (derived from the *status quo* bias and present bias) and the challenges that we have in appropriately valuing future relative to current consumption (high versus low-distance preferences) complicate many people's abilities to control their debt and save for the future. These problems are magnified online¹⁶⁹ as the volume of information and choice enables procrastination. The internet also encourages people to be impulsive with their money due the ease of making purchases, withdrawing from a bank account or selling securities and derivatives.

Decision-making can be emotional. A wide range of behavioural research has shown how negative emotions, such as stress, anxiety, regret and fear of loss can determine people's choices. Similarly, positive emotions like happiness and joy can have strong effects (such as leading them to spend excessively) that may prevent them from carefully assessing the actual costs and benefits of their decisions. In financial markets, anxiety and fear can lead people to purchase excessive life, product or travel insurance relative to their risks and costs. For many investors, periods of severe volatility and sharp stock market declines are particularly stressful and can prompt panic selling after a large loss. Conversely, when investors are highly optimistic, their excessive positive emotions can limit their careful assessment of stock purchases, which can lead to undue trading activity and portfolio turnover.

It is challenging for people to learn about financial products when their financial decisions are made infrequently, lack feedback or involve credence goods. Some of the most significant financial choices that people make, such as decisions about a mortgage or pension, are only seldom made, and their true benefits and costs are only evident over a long period of time. Other decisions are affected by macroeconomic conditions, which consumers do not have a chance to learn about. Thaler¹⁷⁰ describes how people need to learn from experience and require frequent practice and immediate feedback. We do well with frequent small purchases like coffee, groceries and lunch, but encounter problems with infrequent larger choices such as selecting the right pension plan or investment advisor. Benartzi's research¹⁷¹ shows that the internet is also creating problems for people through the excessive amounts of information and feedback available through screens. The abundance of information can result in investors making decisions based upon short-term portfolio losses rather than a long-term plan, and their time horizons can shrink based on how often they receive feedback.

Talking about money is also taboo in some cultures and among older individuals, which is a consequence of social norms and mental models. While surveys have revealed that some people rely on their friends and family to be a primary or secondary source of financial advice,¹⁷² others do not enjoy discussing their money, even with their spouses or partners.¹⁷³ Their reluctance reflects the impact of social norms and mental models, whereby people may feel that talking about their finances is off-limits as they prefer to manage their money without the advice of family or friends. In these cases, especially for middle aged and older people, one spouse defers all or most financial decisions to the other.

Viewing financial discussions as off-limits creates a number of problems, including keeping people from seeking financial advice, isolating them when they are experiencing financial difficulties and discouraging them from evaluating their financial decisions relative to those made by others. Similarly, when one spouse or partner defers financial matters to the other, he or she is left vulnerable and in-need of financial advice if the couple separates, or if mental cognition issues arise for the partner responsible for the finances, or if that partner dies.



Specific biases, other challenges and examples of behavioural issues for financial markets

The behavioural concepts and research described above are relevant to the systematic problems for people’s financial choices. Biases and systematic errors in people’s financial decision-making are also outlined further by the FCA in its 2013 Occasional Paper #1.¹⁷⁴

Preference biases are the first type of systematic error, beginning with present bias. As shown by Ariely and other researchers, people can excessively prefer immediate gratification, which causes them to overvalue the present. In addition to causing future regret, the present bias can also challenge self-control and willpower, leading to impulsivity or procrastination. Examples of behavioural financial errors from the present bias include consumers overpaying for financial products at the point of purchase by underestimating their future use, failing to search for the best products available, or stopping their search too soon. Other present bias-related mistakes include not cancelling products that they intend to cancel as well as not investing money for the long term. For many people, even if savings goals exist, they are for concrete and material things (like a new car or vacation) as opposed to long-term outcomes (like a child’s education or their own retirement).

Reference dependence and loss aversion – Tversky and Kahneman’s research showed that consumers may not assess problems objectively, but rather evaluate their gains and losses relative to an arbitrary reference point. Since people feel losses at roughly twice that of gains, consumers will over-weight losses and under-weight gains. As well, their choices can shift depending upon the reference point selected, which can have adverse impacts.¹⁷⁵ Loss aversion can make investors less willing to sell stocks that have declined in value, yet the pain of losing can also increase risk-taking with other stocks.

People’s dependence upon mental reference points can also affect asset markets. For example, the purchase price of a house or stock can become a person’s reference point for that house or stock’s future sale, even if market prices or demand have declined.

**Reference Dependence Effect
(e.g., Home seller's bias)**



An important aspect of the reference point and loss aversion impacts is the “endowment effect,”¹⁷⁶ as Thaler demonstrated. People value things more if they own them, and this effect increases their tendency to stick with what they have. This effect can create disparity between the price that a person is willing to sell an asset for and the price that he or she is willing to purchase it. With investing, this effect can distort and delay people’s willingness to sell securities when losses occur, even if the merits of holding these assets have changed. There are even ‘instant’ endowment effects which can occur soon after owning or imagining owning an item.

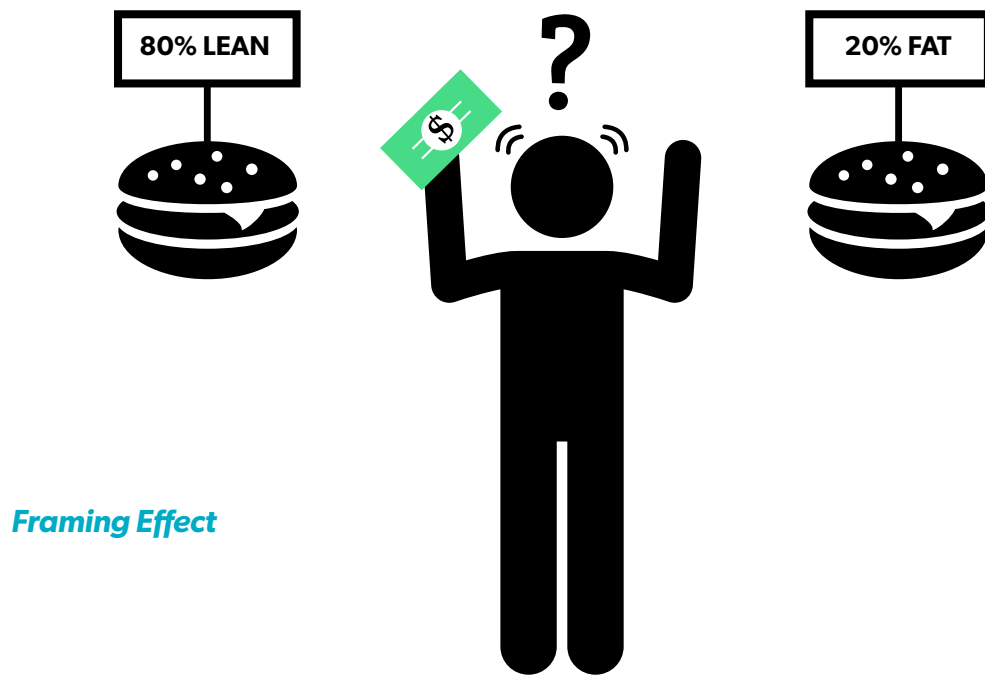
Negative emotions – people may also be influenced by stress, the unpleasant feelings associated with uncertainty and negative emotions such as fear or anger. Consumer errors from these negative emotions include failing to solve debt problems or avoiding the purchase of financial products. These types of errors often cause people to pay a premium to purchase products that deal with such problems.

Belief biases – people are often overconfident about good events occurring (staying healthy) and avoiding bad events (not being injured). Investors who are overconfident in their own ability (to pick lucrative stocks, for example) can experience other biases, such as believing that all events that happened can be explained in hindsight, which leads to excessive confidence about their ability to predict future events. People’s overconfidence biases also include the tendency to attribute their success to their own ability and blame failure on external factors such as bad luck (this is also known as the self-serving bias).¹⁷⁷ Investing overconfidence can lead people to purchase unnecessarily risky investments and overestimate the accuracy of information about a product as well as underestimate the uncertainty of excessive trading of securities.

Overextrapolation – people often over-extrapolate and make predictions based on only a few observations that do not fully consider the scope of a situation, such as only considering short or favourable timeframes when making an investing decision. Consumer errors from over-extrapolation include overvaluing a product’s benefits and underestimating its costs or risks, leading people to become willing to overpay. For retail investors, this bias can appear in “momentum” trading based on how a security’s price has moved recently rather than assessing its fundamental merits, risks and longer-term price performance.

Projection bias – people can make errors when they over- or underestimate their future wants and needs, leading them to do things like tie up funds or make unnecessary commitments in long-term contracts. People also make projection bias mistakes in situations where they make impulsive credit card purchases or fail to adequately save for their needs (such as healthcare in retirement).

Decision-making biases – people engaging in **mental accounting** and **narrow bracketing** can make major mistakes. As Thaler’s research shows¹⁷⁸, mental accounting describes how people treat money allocated for different purposes differently (such as “holiday savings”) rather than recognizing that all money is the same. For example, many consumers borrow and save at the same time, and therefore lose money due to the higher costs of borrowing compared to the lower return on their savings. Narrow bracketing refers to the way in which people consider their choices in isolation, rather than integrating them into other decisions. Errors from this bias include people making investment decisions asset by asset rather than considering the return and risk of their overall portfolio.



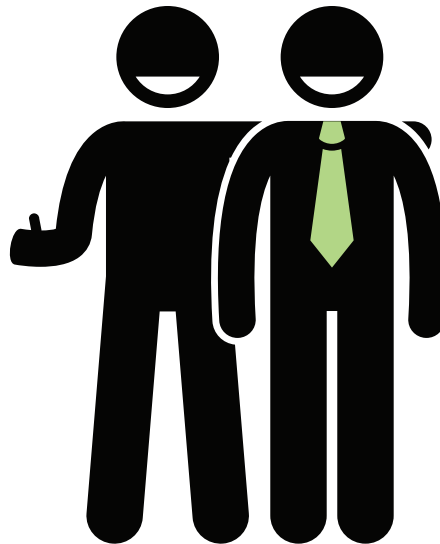
Framing Effect

Framing, salience and limited attention – people have limits in their attention and cognition, meaning that the way they frame information and prioritize information determines the factors that they use in their decision-making. People may make different choices depending on how it is framed and what elements draw each person’s attention. Particularly salient aspects of a situation will draw their attention the most, which can have a significant impact on their decision. People’s challenges with framing and salience include their perceptions of advisor fees or mutual fund fees that are expressed in percentages rather than dollar amounts (percentages are perceived as lower costs), or when people make purchases based solely on headline prices or advertised benefits rather than considering whether the product actually meets their needs or wants.

Decision-making rules of thumb – several decades of behavioural research have demonstrated that people simplify complex decision problems by adopting specific rules of thumb that are most often used through their automatic systems of thinking. As a result, when selecting from a wide range of options, we may choose the most familiar one and avoid what is uncertain, or we may simply pick the first option on a list. When estimating unknown quantities, people use some (relevant or irrelevant) figure as a basis for adjustment. Consumer risks from the automatic use of heuristics include people only searching for brand name products, or only looking at the largest product providers without seeking products with lower costs or more applications to a person’s needs. For example, on websites that aggregate financial, travel or other products, consumers often choose the first or cheapest option without considering all of the relevant details.

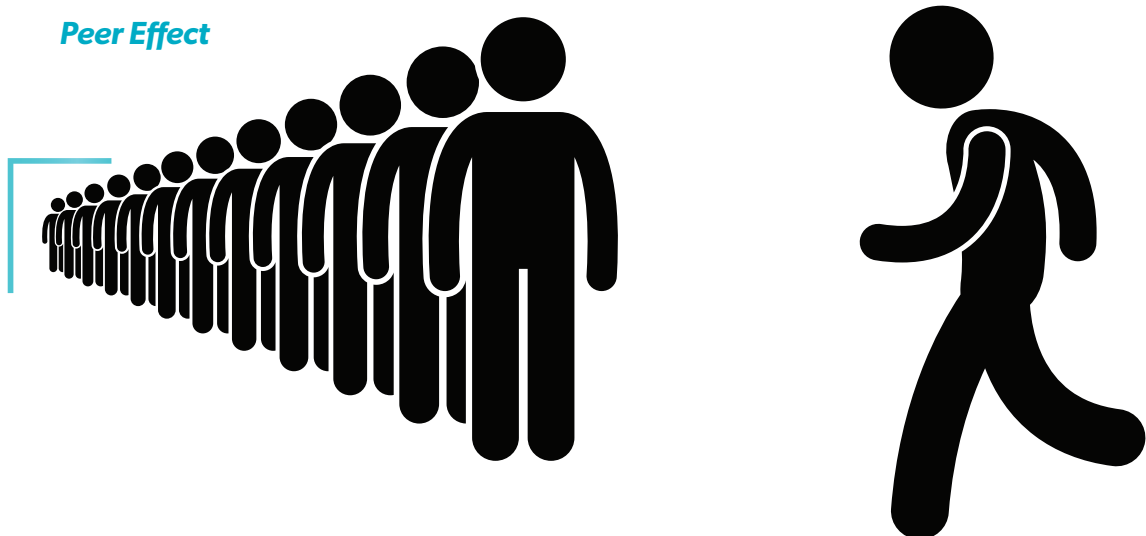
Persuasion – people may also allow themselves to be persuaded by ‘likeable’ salespeople who are therefore perceived as trustworthy. Persuasion and social influence create consumer risks in people following financial advice and succumbing to sales pressure based on how likeable an advisor seems, rather than his or her demonstrated knowledge. Other errors include people not taking into account the incentives of an advisor, and making decisions based on emotion instead of the merits of a product being offered.

Persuasion Effect



Peer effects – a broad array of research since the mid-1950s has shown how people’s behaviour is influenced by others around them. These effects are the “conformity impact” of decision-making.¹⁷⁹ Shiller’s studies on the housing and stock markets have demonstrated how this can cause herd behaviour in financial markets, and various other studies have shown that investors who are more attuned to other investors’ behaviour are more likely to invest in speculative bubbles.¹⁸⁰ This is a potential concern as other research has shown that bubbles may be accelerated by excessive online feedback that, in turn, harms investors’ decision-making abilities and creates a greater risk of irrational enthusiasm in markets.¹⁸¹

Peer Effect



BEHAVIOURAL INSIGHTS

CHAPTER 2

CHAPTER 2: GLOBAL ADOPTION OF BEHAVIOURAL INSIGHTS BY GOVERNMENT PRACTITIONERS

■ The application of behavioural insights to public policies starts with the recognition that the world is complicated and policy makers should recognise that sometimes they don't know and should find out. The use of behavioural insights to date is about supporting people to make better choices, such as, but not only, through nudges. Behavioural insights are also playing an important role in gathering intelligence and informing the problem definition by governments and regulators, before any interventions are considered.

OECD International Seminar (2015)¹⁸²

INTRODUCTION

The previous chapter of this report explored how behavioural disciplines can offer improved frameworks and insights for understanding people's behaviour and decision-making abilities. The literature review examined how decades of behavioural studies have demonstrated the value that behavioural research and principles holds for governments and regulators.

This chapter turns its focus to government practitioners, applied researchers and financial regulators that have used the insights provided by the various behavioural disciplines. They look at the ways in which behavioural insights (BI) – especially behavioural economics (BE) and finance (BF) – have been put into practice as:

- lenses to understand and assess market and consumer behaviour;
- frameworks to design policy and regulatory interventions; and
- templates for enhanced policy and regulatory implementation.

This chapter surveys relevant practitioners' adoption of BI. It is based upon their publications and OSC interviews with more than 20 government behavioural insights units, applied researchers and financial regulators. It looks at how BI is being used in various jurisdictions around the world to enhance policy and regulatory initiatives, and explores the importance of applying the 'Test, Learn, Adapt' model to their implementations.

There are three sections to this chapter:

- A. Organizational design typology and overview of behavioural insights capabilities and approaches** – this section looks at the many and varied BI approaches taken by governments, regulators and other agencies around the world. It begins with a look at the early adopters in Europe, Asia and in North America as well as multilateral institutions (such as the World Bank and the Organisation for Economic Co-operation and Development) and sub-central governments.
- B. Applying behavioural insights in practice** – this section examines how behavioural research has been adapted and used in strategy and tactics, beginning with the lessons and insights from the U.K. Behavioural Insights Team. It includes an in-depth overview of using BI to enhance tactics and implementation. It also explores the importance of impact analysis and testing actual behaviour through experimentation and trialling.
- C. Themes from behavioural insights units, applied researchers and academic practitioners** – this section summarizes the major lessons and insights from leading government behavioural units, applied researchers and most active regulators for the OSC.

Section A: Organizational design typology and overview of BI capabilities and approaches

I. Organizational design options for BI capabilities

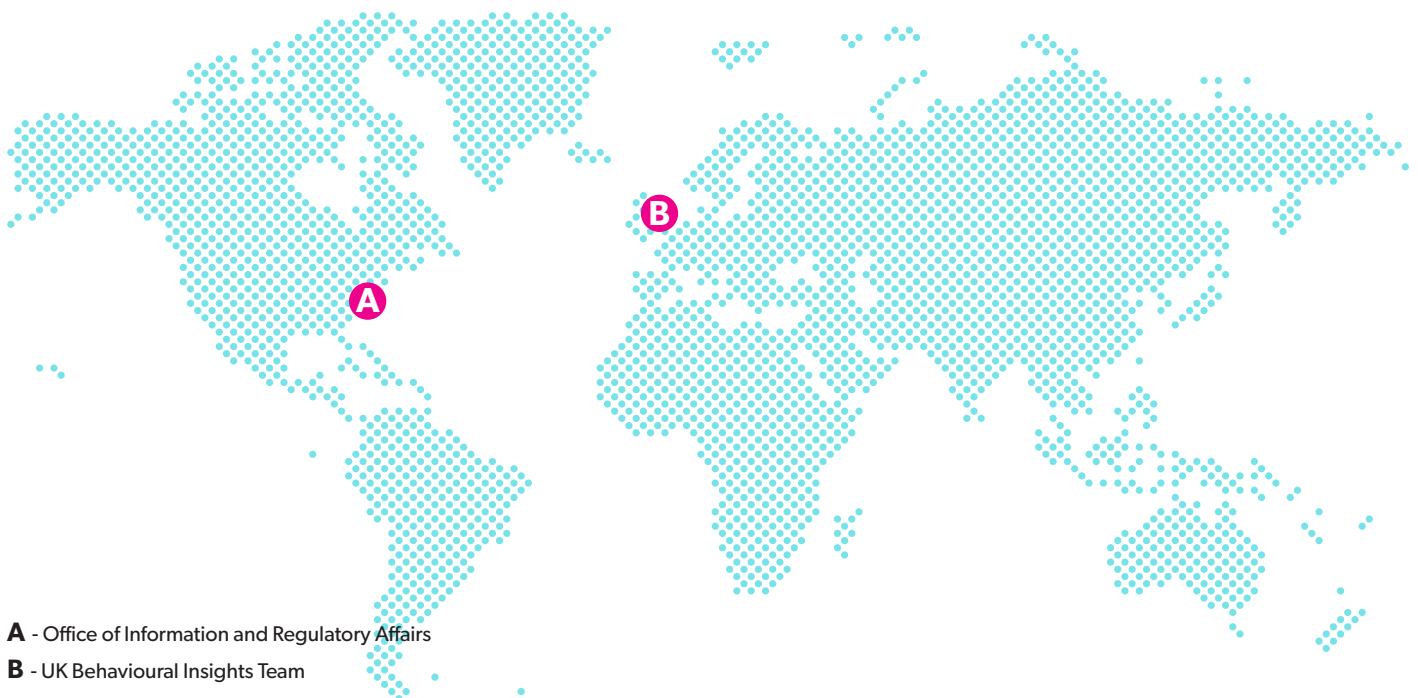
As chapter 1 noted, the Economic and Social Research Council in 2014 found that 136 countries had incorporated behavioural sciences in some aspects of public policy, with 51 of those nations having centrally-directed policy initiatives influenced by behavioural sciences. While this was initially led by the U.K., U.S., Singapore and Australia, the momentum has since grown to the point where a 2017 OECD report examines 159 case studies of behavioural initiatives across the globe from 23 countries and two multilateral institutions.¹⁸³

Organizational Design options for BI capabilities

Governments employ three different models to incorporate behavioural approaches¹⁸⁴, none of which are mutually exclusive. These models often co-exist and evolve over time, with differing degrees of diffusion of capabilities and central coordination.¹⁸⁵

- **Specialized units within the centre of government** – the foremost example of this model was the Cabinet Office Behavioural Insights Team (U.K. BIT) established by the U.K. government in 2010. The U.K. BIT's success during its formative years, together with the growth in BI usage across government, led to its transition into an autonomous entity outside of government in 2014. The U.K. BIT still provides support to U.K. government agencies and departments, some of which have gone on to create their own BI units or specialized capabilities.¹⁸⁶

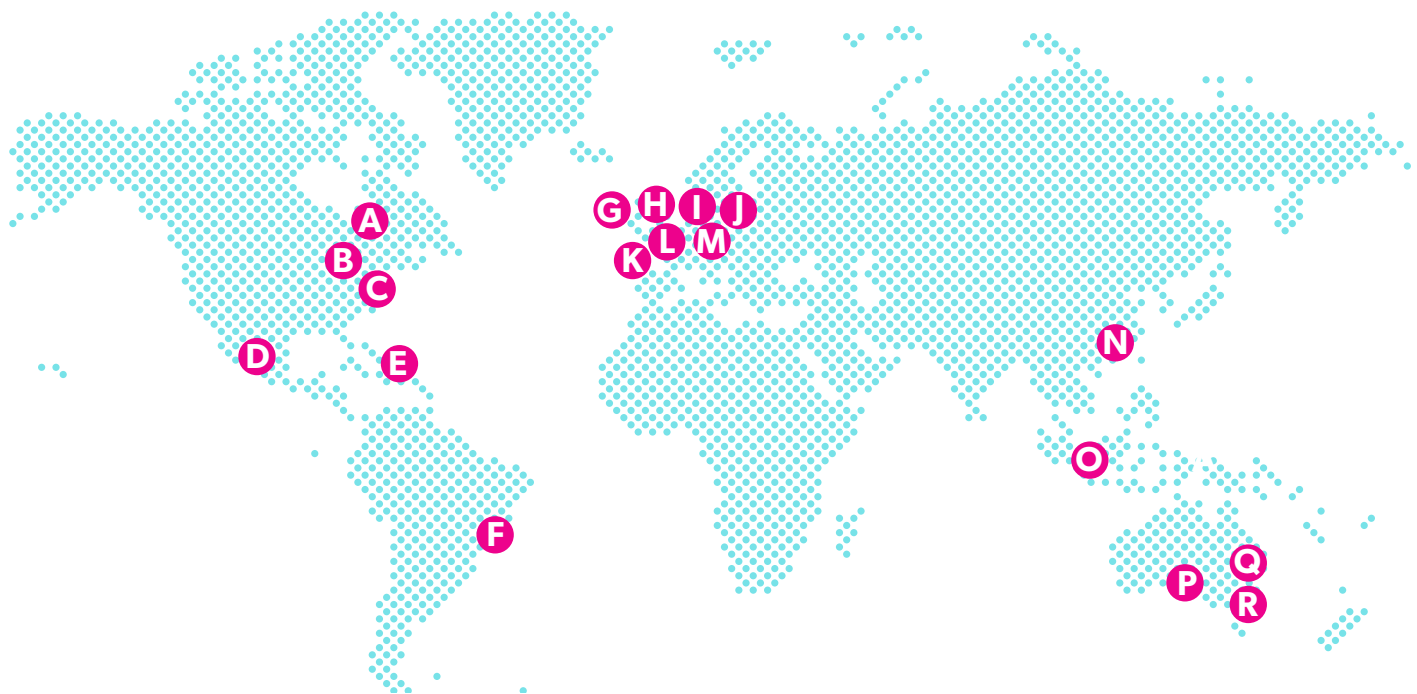
Map Depicting Early Adopters of BI in 2011



In the U.S., the BI initiative was first led by the White House Office of Information and Regulatory Affairs (OIRA). While not formally a BI unit or team, OIRA used a series of executive orders, memoranda and overarching policy instruments in its BI approach from 2009 onward. In 2014, the White House Social and Behavioural Sciences Team (SBST) was created to help provide policy guidance and advice to a broad range of federal departments and agencies through 2016.

- **Networks of teams across ministries and agencies** – this diffused model of BI units and teams across separate ministries or agencies can involve academic institutions, the private sector and not-for-profit organizations. For example, the Netherlands' BI team in the Ministry of Infrastructure and Environment was created in 2012 to collaborate with other ministries and institutes in a BI network¹⁸⁷.
- **Ad hoc approaches for specific projects and initiatives** – also referred to as the Project Model.¹⁸⁸ Examples include the U.S. Financial Industry Regulatory Authority (FINRA), which has been active with BI over the years through investor testing to enhance consumer information and disclosure. The FINRA Investor Education Foundation (IEF) has also funded research on BE topics. Neither FINRA nor its IEF has a formal BI unit or group of BI specialists, but both are behaviourally aware, have behaviourally-aligned policies and use external expertise to assist their BI efforts.

Map Depicting Select BI units and Networks in 2016



- A** - Canada's PCO Behavioural Sciences Team
- B** - Government of Ontario Behavioural Insights Unit
- C** - White House Social and Behavioural Sciences Team
U.S. Securities and Exchange Commission
World Bank Global INsights Initiative (GINI)
- D** - President's Office, Mexico
- E** - Finance Ministry, Jamaica
- F** - Mayor's Office, Rio de Janeiro
- G** - The Economic and Social Research Institute

- H** - UK Behavioural Insights Team
UK Financial Conduct Authority
- I** - Netherlands Ministry of Infrastructure and Environment
- J** - Danish Nudging Network
- K** - Organisation for Economic Co-operation and Development
France SGMAP
- L** - European Commission's Joint Research Council

- M** - Chancellor's Office, Germany
- N** - Hong Kong SFC, ISC
- O** - Monetary Authority of Singapore
- P** - Victorian Behavioural Insights Unit
- Q** - Australian Behavioural Economics Team
Australian Securities and Investments Commission
- R** - New South Wales Behavioural Insights Unit

Since 2008, BI's adoption around the world has grown remarkably. In 2011, only the U.K. Behavioural Insights Team and, in practice but without the formal BI designation, the US Office of Information and Regulatory Affairs existed. By 2016, the number of BI units worldwide had surged to the point where it is difficult to account for all of them without overcrowding the map.

The early BI adopters: U.S., U.K. and Australia

The **United States** was first to implement BI concepts, with U.S. BI roots in Richard Thaler's and Cass Sunstein's roles as advisors in Barack Obama's 2008 presidential campaign. The first milestone in BI use was Sunstein's appointment as the head of OIRA in 2009. OIRA sought to instill BI principles in policy and regulation,¹⁸⁹ and its efforts included simplifying disclosure (including distinguishing between summary and full disclosure) and making the presentation of information clearer and shorter. OIRA's other noteworthy BI efforts included setting beneficial default options on screen or in letters and forms to aid good decision-making and encourage the use of behavioural approaches to manage regulatory stock.¹⁹⁰

While OIRA faced significant challenges from partisan political divisions in Washington¹⁹¹, its work had important impacts through the use of BI in health care, financial reform, energy efficiency and consumer protection from 2009 to 2013.¹⁹²

The creation of the SBST in 2014, "a cross-agency group of applied behavioural scientists, program officials and policymakers,"¹⁹³ was the next milestone in BI use. In its first year, the SBST embedded 12 behaviourally-informed, evidence-based tests of federal programs.¹⁹⁴ A 2015 presidential

executive order directed federal agencies to apply BI to the design of policies and programs¹⁹⁵, charging the SBST with providing policy guidance and advice to assist in achieving this directive.¹⁹⁶ Through 2016, the SBST had an important role in terms of its profile, but its separate activity working with various government departments and agencies as part of the General Services Administration (GSA) was also significant. As of early 2017, the role of the SBST is not yet clear under the new administration, but its GSA work continues.

In 2010, the **United Kingdom** created the Behavioural Insights Team (U.K. BIT), building upon the U.K. government's previous receptiveness to BI.¹⁹⁷ The U.K. BIT was initially set up as a "tiny sister unit to a much bigger PM's Strategy Unit," with access to Prime Minister David Cameron and Deputy Prime Minister Nick Clegg through a special steering board chaired by the cabinet secretary.¹⁹⁸ The U.K. BIT's seven-person staff included experts in various behavioural disciplines and the testing of policy options. It also included members with a strong understanding of the political and administrative environment. The U.K. BIT functioned like an internal public sector consultancy,¹⁹⁹ working with government departments, agencies and private sector to collaboratively facilitate policy trials at the local level.

Tough conditions were set during the creation of the U.K. BIT.²⁰⁰ The U.K. government established three challenging objectives for the team to achieve within two years: transform at least two areas of policy; spread understanding of behavioural approaches across U.K. government; and achieve at least a tenfold return on the costs of the BIT. If these objectives were not achieved, the BIT would be shut down.

At its two-year review by the U.K. government in 2012, the U.K. BIT was able to demonstrate clear success with nudges. Modest interventions in four areas had achieved significantly higher collection rates of outstanding taxes, increased energy savings from more insulated homes and achieved higher rates of payment for outstanding court and traffic fines.²⁰¹

By 2014, the U.K. BIT was moved from a central government office into an autonomous entity with three-way ownership among the U.K. government, the Nesta innovation foundation and BIT's own employees. As of early 2017, the BIT continues to assist U.K. ministries and agencies, but has grown to be a global BI entity with five offices on three continents. The U.K. government has significantly increased the BI capacity across a number of ministries to further enhance its use of BI.

In **Australia**, the BI approach built upon reports from 2008 to 2010 from its Productivity Commission regarding the application of behavioural thinking to public policy, as well as a 2012 report from its former Department of Finance and Deregulation on the insights of behavioural economics and the potential to apply BI.²⁰² The New South Wales government was the first to create a BI unit in 2012, bringing in the U.K. BIT's Rory Gallagher to help establish this new unit. As of early 2017, Gallagher remains an advisor to this BI unit's 10 staff members.²⁰³

On the national level, the Australian government's approach grew to bring the decentralized applications of BI in various departments together under a centrally-steered model.²⁰⁴ The national government declared its intention to create a central unit in late 2015, and established the Behavioural Economics Team (BETA) in early 2016 as a joint initiative across the government and in partnership with a number of agencies.²⁰⁵ The Victoria government followed closely by establishing its own unit in the Department of the Premier and Cabinet in early 2016, but also sought to build BI capacity across state government in partnership with several agencies working on a portfolio of projects.²⁰⁶

European and Asian government BI approaches

The **European Commission** (EC) has been applying BI to its policy-making since 2009 and expanding its range of initiatives in building its BI capacity.²⁰⁷ Its first behavioural study looked at consumer decision-making in retail investment services, including how product choices are made and the impact of financial advice²⁰⁸ and BI use in policy assessment and implementation have been hallmarks since then.

In 2014, the EC created a Foresight and Behavioural Insights Unit within its Joint Research Centre (JRC) and a Policy Lab in 2015 creating significant additional BI capacity within the EC.²⁰⁹ In 2016 the JRC also released its major report, Behavioural Insights Applied to Policy, which focused on behavioural sciences and their benefits and challenges for policy-making. It detailed behavioural policy interventions in nine policy areas and examined the various behavioural policy-making approaches adopted across Europe.

The application of BI to policy-making has expanded considerably across many European countries.²¹⁰ While the U.K. BIT remains the largest and most active entity, four other countries have followed suit. These different BI units range from centralized structures in Germany to those where ministries have taken the lead, such as in the Netherlands and Denmark. As of early 2017, both Finland and Austria have also looked at introducing BI capabilities, albeit in different ways.

The **Netherlands** was the second European country to create a BI team within the government, taking a decentralized approach with different BI units and experts spread across different ministries. The Dutch Ministry of Infrastructure and Environment was the first to establish a small BI unit in 2012. Its council also created a Behavioural Analysis Framework to facilitate a systematic consideration of human behaviour in selecting policy instruments. In 2014, a Behavioural Insights Network was set up to share knowledge and to promote collaboration among 11 different ministries and regulatory bodies.

Germany was the third country in Europe to build BI capacity, establishing a behavioural team in the Policy Planning Unit within the Federal Chancellery in 2015. This unit is a small team with a range of expertise including behavioural and empirical social sciences, trialling, design, law and design thinking, and its role includes acting as a service unit for federal ministries. Among its objectives are improving policy impacts through user-led design of processes and projects as well as testing proposed solutions.

France started using BI in government reports in 2010, beginning with the former Centre for Strategic Analysis research on behavioural impacts for environment and public health. BI approaches were later developed by the Secretariat-General for Government Modernization (SGMAP), an inter-ministerial agency located in the Prime Minister's office. The SGMAP promotes nudges as a complementary approach to the traditional uses of law, taxes and information as a way to meet policy objectives. Given the constraints on human resources and internal expertise, SGMAP also relies on private partners.²¹¹

While **Denmark** does not have a specialized BI unit within its government, some Danish authorities have formed (or are in the process of forming) their own units. Denmark does have the unique "iNudgeYou" not-for-profit organization that grew from a blog in 2010 to an active research network dedicated to improving decisions in public service and other areas by using BI.²¹² Its efforts include collaboration with academics, local governments, private sector organizations and citizen groups.

With regard to Asia, many BI practitioners, applied researchers and other experts have pointed to Singapore's approach as less reliant on BI units, focusing instead on placing knowledgeable people in key places and increasing the general familiarity of all divisions with behavioural science.²¹³ While Singapore has not made much of its BI approach publicly available, a wide range of commentators have cited its work exploring advanced applications of data and digital technologies through BI for public services.²¹⁴

Supranational institutions' BI approaches

As discussed in the literature review, the World Bank's 2015 *Mind, Society and Behaviour* report was a milestone in its examination of BI policy applications, opportunities and challenges. The Global INsights Initiative (GINI)²¹⁵ was launched in later in 2015 to put this report's findings and recommendations into practice. GINI works with World Bank teams to design interventions using BI and to evaluate their impacts. It assists the World Bank's government clients in their own policies and projects using BI, and develops BI networks among academia, corporations and policy professionals. GINI is of the view that ongoing testing, evaluation and adaptation of interventions is essential and that traditional economic intervention can be complementary to BI use.

While the OECD has not created a formal BI unit to date, it has engaged in extensive work in the area, including its January 2015 symposium with leading practitioners, applied researchers and academics from several continents. This symposium produced a very useful summary of main findings to help guide BI's public sector use.²¹⁶ The OECD's 2017 in-depth study summarizes its review of BI approaches within and outside of its member countries and includes 159 case studies of BI policy applications across world.²¹⁷

Canadian government BI approaches

The 2017 OECD report on BI applications cites Canada's BI approach as one that combines a diffused model with *ad hoc* initiatives at both national and provincial levels.²¹⁸ Nationally, the three-person Behavioural Sciences Team (BST) is part of the Privy Council Office's Central Innovation Hub and is currently engaged in more than 15 projects.²¹⁹ The BST's links to design capability within the Central Innovation Hub enables qualitative design thinking to test the results of proposed designs as well as having access to an advisory committee of academics and practitioners that assist with design and implementation matters.

Ontario created its BI unit in 2015 to design interventions to assess programs and provide low-cost alternatives to improve consumer outcomes. Ontario's BI unit has no policy objectives of its own, but rather is entirely focused on advancing the goals of government ministries, crown agencies and other public sector entities. This partnership-driven unit is housed within the Treasury Board Secretariat's office, and consists of five people working together with representatives from other public sector organizations, including the Government of Canada on projects that have shared benefits for both Ontario and Canada.

BI approaches of other sub-sovereign governments

While the spread of BI units and other teams in state, regional and local governments is too extensive to summarize, one particularly notable approach comes from the U.S. District of Columbia. Its adoption of BI is led by The Lab @ DC, a scientific team in the Executive Office of the Mayor of the District of Columbia. While not exclusively a BI unit,²²⁰ The Lab @ DC engages

in extensive BI work, including the implementation of nudges and other BI trials and tests. Its 'hub and spoke' structure allows its team to work with a network of dispersed government researchers. The Lab@DC is able to apply BI across a wide range of policy areas, initiatives and issues through its structure and role.

II. Frameworks for setting up a BI unit

After looking at the range of government BI approaches around the world, it is appropriate to turn to the question of what makes a BI unit successful. For this purpose, the U.K. BIT, OECD and EC have each developed instructive frameworks to create a successful BI unit, based upon their respective experience and expertise.

David Halpern, Chief Executive Officer of the U.K. BIT since its 2010 inception has set out six criteria that are central components of BI units' success.²²¹ These measures, which are also recommended by the OECD²²², are summarized as 'APPLES,' an acronym for:

- **Administrative support** – ensuring that a BI unit has senior level 'buy-in' and strong support from inside government. This is an important signal to the rest of government and offers key leverage when needed.
- **Political support** – recognizing that BI units must fit with a government's narrative and instincts.
- **People** – assembling a team with the right mix of skills and expertise BI and other related disciplines. Successful BI units also need people with experience in government and large organizations.
- **Location** – maximizing a BI unit's position within a government structure to gain the support of politicians, managers and other decision-makers.
- **Experimentation** – embracing empirical methods and experimental approaches to demonstrate how a BI approach can work and quantify its impact.
- **Scholarship** – having BI unit members that know behavioural literature and the challenges the unit may face when putting BI into practice. BI units require members who can keep pace with emerging BI thinking and results.

Multiple factors led to the U.K. BIT's success during its formative years (2010 to 2014). Using the APPLES framework, it is instructive to look briefly at how the UK BIT's success was achieved as a small, start-up unit with a core mass of resources²²³ before it became a multinational social purpose organization.

The U.K. BIT had the administrative support of Gus O'Donnell, then-Head of the Home Civil Service, to ensure support from within the U.K. civil service, which was pivotal for securing the buy-in of a number of line ministries and agencies. Political support for the unit was led by then-Prime Minister David Cameron and then-Deputy Prime Minister Nicholas Clegg. Its location was also vital given its position in Cabinet Office, providing it access to Cameron, Clegg, the rest of Cabinet and the heads of ministries and agencies.

The people and scholarship factors of the U.K. BIT were evident in its staff members drawn from academia and government. Halpern's strong academic background in psychology and visible position as director of the U.K.'s Institute of Government when he was appointed CEO of the unit 2010 was also key. He built a team well-versed in behavioural literature that was capable of deploying robust methods to determine what worked.

The U.K. BIT's staff demonstrated their skills and knowledge with papers like Test, Learn, Adapt (2012) and EAST (2014). As the results of its work from 2010 to 2012 demonstrated (and documented in Test, Learn, Adapt), the U.K. BIT also had a strong commitment to experimentation through rigorous test and trials.

The EC's JRC examined both the U.K. BIT and the work of other European countries to create its framework for BI units success. Its 2016 Behavioural Insights Applied to Policy report described the six key features of an effective BI unit through the PRECIS acronym,²²⁴ which considers:

- **Political support** – the level of engagement from senior political representatives. Proximity to a political cabinet and a clear official mandate are important aspects of this criterion.
- **Resources** – the number of people comprising the unit's staff.
- **Expertise** – the dimensions of experience and seniority of the team across different disciplines. This includes trials, articles and reports developed by the unit, as well as the creation and support of an advisory panel or other means of input from academic experts.
- **Coverage** – the scope of the unit's work. Broader responsibilities mean a higher level of coverage.
- **Integration** – the unit's position within government and the extent to which it is integrated within the civil service.
- **Structure** – the model of BI approach, be it centralized or diffused over a number of ministries and agencies. This criterion uses a scale that assumes a centralized team working closely with line departments is the most effective method. In contrast, a centralized unit with weak links to policy ministries or distributed capabilities without common guidance is seen as less effective.

TABLE 1
PRECIS framework
for five leading
European
Countries

	UK	NL	DE	FR	DK
Political support	■	■	■	■	■
Resources	■	■	■	■	■
Expertise	■	■	■	■	■
Coverage	■	■	■	■	■
Integration	■	■	■	■	■
Structure	■	■	■	■	■

■ High ■ Good ■ Sufficient ■ Low

Section B: Applying behavioural insights in practice

III. Findings and frameworks from leading academic practitioners and applied researchers

Among the many benefits of BI are their advantages for improving business, policy and regulatory results. Leading academic practitioners and applied researchers merit exploration as they have translated BI from theory into practice. Their combination of extensive research with practitioner, advisory and applied experience offers useful perspectives on how to use BI in the public sector.

In particular, the insights of professor Dilip Soman regarding the “last mile”²²⁵ warrant exploration. As Soman states, “policy as well as governance schools distinguish between strategy (first mile) and tactics (last mile).” Yet most governments and regulators spend a disproportionate amount of time, resources and effort on strategy and much less on tactics.

Making policies and regulations is a matter of strategy, while delivering policies and regulations is a tactical matter. The last mile problem is one of understanding human psychology and using the insights it provides. It is not about technology, product or program design.

Soman explains that the last mile requires careful implementation of BI because of the large variation in people’s behaviour. In his view, organizations should focus on three sets of activities: translation, application and intervention.²²⁶

- Translation refers to the need to monitor academic research in behavioural sciences and translate findings into practical insights and guidelines. This is essential to create a framework for behaviour change and choice architecture.
- Application refers to the need to understand specific touch points (such as how direct interaction occurs with consumers in person or electronically) in the last mile, how to disclose information in a behaviourally-informed manner and how to help consumers make better choices.
- Intervention refers to changing the context for people’s decisions and measuring the impacts using controlled trials.

Soman’s framework contains four strategies available to the public sector in order to change consumer behaviour: legal changes, economic incentives, information and persuasion, and nudges and choice architecture.²²⁷

TABLE 2

The Last Mile Activities

Translation	Auditing	Intervention
Translating academic research into insights	Monitoring efficiency of processes	Designing nudging interventions
Coming up with prescriptive advice	Identifying bottlenecks and areas for improvement	Piloting interventions, running controlled trials and monitoring success
Considering areas of application	Using tools from psychology to identify opportunities	Iterating and identifying long term success factors

TABLE 3
Public Sector
Toolkit for
Behaviour

Legal - Bans,
compliance rules,
mandates

Useful when	<ul style="list-style-type: none"> • Behaviour has consequences that are a high risk to society, take advantage of others (intentional fraud) or violate society's ethics or values (discrimination) • Third-party effects are present and the consequences of behaviour are not entirely absorbed by the individual or corporation • Standards are established to enhance standard of living or protect individuals • Enforcement is feasible and cost-effective
Avoid when	<ul style="list-style-type: none"> • Regulation is perceived as overly restrictive or intrusive • Individuals would likely respond with defiance or by undermining regulation
When choice architecture can help	<ul style="list-style-type: none"> • Enforcement is in place but may not be working effectively • Choice architecture may help increase compliance

Economic
incentives –
Taxes, penalties,
grants, subsidies

Useful when	<ul style="list-style-type: none"> • Behaviour is motivated by costs and benefits, and hyperbolic discounting does not take effect (impact is felt up front; losses are painful) • Incentives are salient to the consumer • The market is in line with incentives and does not work against them
Avoid when	<ul style="list-style-type: none"> • Behaviour is motivated by fairness, altruism or social norms
When choice architecture can help	<ul style="list-style-type: none"> • Behaviour is affected by cognitive influences (such as loss aversion or the <i>status quo</i>) • Choice architecture can help highlight incentives or reduce barriers to accessing them

Information and
persuasion –
Advertising,
disclosures,
promotion materials

Useful when	<ul style="list-style-type: none"> • Combined with other policy tools • Encourages learning and can improve decision-making skills over time
Avoid when	<ul style="list-style-type: none"> • Information is presented in a complex manner • Messages conflict with what is being presented in the media or by other influencers (such as peers)
When choice architecture can help	<ul style="list-style-type: none"> • When information is overly complex; can help improve information processing using nudge techniques such as salience and simplification

Nudges and choice architecture – Defaults, simplifications, opt-in vs. opt out

<p>Useful when</p>	<ul style="list-style-type: none"> • Freedom of choice is important and individual preferences vary • Economic incentives or penalties are not appropriate • Behaviour is affected by cognitive influences and individuals struggle with turning intentions into action • Aligned with current regulations or incentives
<p>Avoid when</p>	<ul style="list-style-type: none"> • Context can be changed by businesses or other institutions in the marketplace • Additional regulation may be needed to set boundaries for market behaviour. Or, incentives may need to be changed to improve alignment with policy goals • Intended outcome of nudge may go against individual intentions

Other academic practitioners have focused on specific BI applications and refined their use to better guide public sector interventions. Among these is Cass Sunstein’s update of his and Richard Thaler’s earlier Nudge work on applying nudges effectively and practically. Sunstein offers applications and tactical opportunities in the last mile in a recent work, "A Catalogue of Ten Important Nudges".²²⁸

1. Default rules – such as automatic enrolment in savings plans

- May be the most effective nudges
- If people are automatically enrolled in retirement plans, their savings can rise substantially

2. Simplification – such as making enrolment forms less complex

- Complexity is a serious problem because of the confusion it can create, the potential for increased expense and the barrier to participation it causes
- Benefits of significant programs (such as in finance) are often greatly reduced because of undue complexity

3. Social norms – such as emphasizing what most people do

- One of the most effective nudges is to inform people that most others are engaged in a particular behaviour

4. Ease and convenience – such as making low cost options more visible or accessible

- To encourage certain behaviour, reducing various barriers (including the time that it takes to enroll) is often helpful

5. Disclosure (if information is simple) – such as disclosing the full cost of credit cards

- Simplicity is crucial for consumers. Disclosure policies can be highly effective if, at minimum, the information is understandable and straightforward to access

6. Warnings – such as large fonts and bold letters in text and graphic pictures

- Warnings can help counteract the natural tendency of people toward unrealistic optimism
- They can also materially increase the probability that people will focus on the long term

7. Pre-commitment – such as committing to certain future actions

- Often people have specific goals (like saving money) but their actions fall short of meeting them
- Committing to a specific action at a specific future moment better motivates action and decreases procrastination

8. Reminders – such as emails or text messages to counter the adverse effects of inertia, procrastination, competing priorities and forgetfulness

- Reminders can have major impacts provided that they are timely
- Need to ensure that people can act immediately on the information

9. Implementation intentions – such as eliciting questions about future behaviour

- People are more likely to undertake a desired activity if they are engaged with the way that they are going to participate the activity

10. Past choices – such as informing people about the effects of previous behaviour

- As people often lack information about the costs of previous choices, providing this information can change behaviour, saving consumers money and improving the ways in which markets work

Lessons from the U.K. BIT’s success

Halpern’s book exploring both the work of the U.K. BIT through early 2015 and the broader applications of psychology to public policy provides a detailed review of putting BI into practice. The U.K. BIT initially used “MINDSPACE” for its internal education and engagement regarding BI use and its external efforts. (MINDSPACE: Influencing behaviour through public policy was published by the U.K. Cabinet Office and the Institute for Government in 2010.)²²⁹ MINDSPACE is the acronym used to summarize nine influences on human behaviour that policy makers should be aware of and employ where appropriate. It is designed to provide a simple framework and a memorable mnemonic to help policy makers consider what might influence people’s behaviour in a given context. The summary table below sets out the nine effects comprising MINDSPACE.²³⁰

TABLE 4
MINDSPACE

Messenger	People are heavily influenced by who communicates information
Incentives	People’s responses to incentives are shaped by predictable mental shortcuts, such as strongly avoiding losses
Norms	People are strongly influenced by what others do
Defaults	People ‘go with the flow’ of pre-set options
Saliency	People’s attention is drawn to what is novel and seems relevant to them
Priming	People’s acts are often influenced by sub-conscious cues
Affect	People’s emotional associations can shape their actions
Commitments	People seek to be consistent with their public promises and reciprocate acts
Ego	People act in ways that make them feel better about themselves

The MINDSPACE framework was initially useful for guiding the U.K. BIT's early work and was effective in the unit's seminars and workshops to educate and build capability among the government. However, after the first year the U.K. BIT found that MINDSPACE held some challenges for non-academic practitioners given its nine components to consider on top of the significant time constraints and other important factors constraining practitioners focus and understanding.

The U.K. BIT then developed a simpler and more streamlined approach for its BI initiatives with the acronym **EAST**: easy, attractive, social, timely.²³¹ Team members used the EAST framework to guide their work in BI application, particularly in testing and adapting policy initiatives.

EAST proved to be very useful as a checklist to highlight people's mental shortcuts and recall these components when developing policy interventions. It helped accelerate the testing of some straightforward ideas and also provided politicians, policy makers and other civil servants with a simple, memorable framework to think about effective behavioural approaches. Based on its own work and other academic literature, the U.K. BIT published "EAST: Four simple ways to apply behavioural insights"²³² in 2014. EAST's four principles are:²³³

- **Make it easy** – Harness the power of defaults, simplify messages and reduce the 'hassle factor' of using a service
- **Make it attractive** – Attract attention and design rewards or sanctions for maximum effect
- **Make it social** – Show that most people perform the desired behaviour, use the power of networks and encourage people to make a commitment to others
- **Make it timely** – Prompt people when they are likely to be most receptive, consider the immediate costs (and benefits) and help people plan their response to events

Halpern expanded upon the components of EAST in a helpful table setting out aspects to consider and some examples of their use:²³⁴

TABLE 5
EAST
Framework

EAST	Things to think about	Examples
Easy	<ul style="list-style-type: none"> • Simplify • Friction: remove, or add to inhibit • Defaults: set the easy path as the healthiest, safest option 	<ul style="list-style-type: none"> • Pensions: millions more saving as a result of auto-enrolment • University entry: 25% more underprivileged students go when forms are pre-filled
Attract	<ul style="list-style-type: none"> • Personalise: use recipient's name; make information relevant • Salience: make key point stand out • Messenger: experts and named individuals work better than anonymous or distrusted sources • Lotteries: make incentives more attractive • Emotion: as important as reason 	<ul style="list-style-type: none"> • Tax: 10 times more doctors declared income with salient letter • Giving: 2 times more donations to emergency appeals with story of one child compared to statistics of mortality • Courts: 3 times more likely to pay fines with a personalized text

EAST	Things to think about	Examples
Social	<ul style="list-style-type: none"> • Norms: what are others actually doing • Networks: a friend or colleague recommends • Reciprocity and active commitments: promises • Reminders of others: eyes and faces (emotional cues to suggest how people should feel and react) 	<ul style="list-style-type: none"> • Tax: 16% more likely to pay if informed that most people “pay on time” • Giving: 7 times more likely to give when learning that a colleague already gave
Timely	<ul style="list-style-type: none"> • Habits: intervene before they become established • Key moments: when behaviour is disrupted • Priming and anchoring: the power of what just came before • Time inconsistency: discounting of the future 	<ul style="list-style-type: none"> • Tax: twice as much less likely to respond to nudge if late paying the previous year • Health: 3 times more workers choose healthy option a week ahead than on day of eating

Early wins

With many practitioners and publications stressing the importance of early and demonstrable success for a BI unit, other aspects of the U.K. BIT’s approach during its formative years are also instructive. Given its two-year window to demonstrate its value with concrete results, it was imperative that the U.K. BIT demonstrate clear success in rapid order. In Halpern’s words, the U.K. BIT needed several clear “wins” to illustrate the benefits of nudging.²³⁵

Its four early nudges warrant brief elaboration for their successes and returns given the slight alterations they implemented. The unit’s use of nudges took advantage of social norms, lessened hassle for people, personalized communication and enhanced the timing of communication in a number of ways:²³⁶

- For tax payments owing, communicating a simple message like “most people pay their tax on time” boosted repayment rates by “several percentage points”. This resulted in “tens of millions of pounds” in additional outstanding taxes being paid.
- To encourage people to insulate their lofts or attics, offering an attic clearing service achieved three times the take-up of the U.K. government-offered discount on insulation. This was an example that clearly demonstrated where removing hassle could be more effective changing consumer behaviour than bigger price discounts.
- For traffic fines owing, adding the image of owner’s car, captured by roadside camera, made the owner more likely to pay unpaid tax.
- For outstanding court fines, sending a text that bailiffs were “due to collect in ten days” led to a more than double rise in payment rates.

How EAST and nudging can work in practice

The U.K. BIT's success in nudging and other BI applications occurred in a broad range of areas. Briefly exploring one of these key principles and practices – simplification – visibly demonstrates its benefits. It is also informative given regulation's traditional heavy reliance upon disclosure to change behaviour.

As Halpern wrote,²³⁷ many agencies and governments stumble at the “make it easy” component of EAST, specifically with regard to communication. The most fundamental application of “make it easy” is to ensure that information, messages or requests are clear and simple to understand. Neither governments nor regulators should expect much impact if the information is so dense and complex that it is not clear what is being asked of the recipient. As a range of research studies have shown, an easy-to-read message is not only more likely to be understood, it is also more likely to be believed.²³⁸

The U.K. BIT tested the effects of simplifying official communications that “looked like they had been written by a committee of lawyers or technical administrators.”²³⁹ The results of this test demonstrated that:

- tax letters written in plain English with a clear, simple request at the beginning could generate a 200 to 300 per cent improvement relative to the originals; and
- click-through rates by businesses in response to government emails could be increased by 40 to 60 per cent by reducing the text in the email. Sign-ups on websites increased when website landing pages were simplified and reduced clutter.

The U.K. BIT's work taught its staff about the importance of being “almost obsessive” about reducing hassles.²⁴⁰ Even slight amounts of extra hassle can have a significant impact in behaviour. For example, having a single click can increase the completion of tax forms by 22 per cent, underscoring the opportunity for pre-filling forms. (In the U.K. BIT's view, “much of what tax authorities consider fraud and evasion are actually more a result of the hassle and other frictions of wading through complex tax forms”).²⁴¹

BI uses beyond nudging

It is important to reiterate Halpern's view that BI approaches should be used “as a tool or lens through which to view all interventions, including tax and incentive design.”²⁴² The U.K. BIT spent significant time designing regulations, and became very involved in the form and detail of communications, information and transparency across a broad range of U.K. government activity.

IV. Experimenting and testing BI applications

Using BI effectively requires “systematic experimentation and trialling. The combination, mixed with design flair, can be very effective” as Halpern states.²⁴³

Behavioural experiments offer numerous advantages.²⁴⁴ BI units and applied researchers can undertake experiments that test the direction and magnitude of nudge impacts and other, more extensive interventions. Experiments can also study the size of different phenomena; for example, how large is the effect of framing a bonus as a loss versus a gain? Experiments can test and reconcile conflicting predictions from BI compared to other behavioural theories. Trials can also document behavioural phenomena and help develop theories to explain them.

Soman has extensively explored the merits, nature and types of experimentation and trials, and his summary is helpful for understanding their role.²⁴⁵ As he explains, the word “experiment” conjures up images of people in lab coats at work with scientific equipment. Compared to the physical sciences, behavioural theories can make predictions that are often accompanied by somewhat more uncertainty. Fundamental difference arises from the significantly greater variability in human behaviour.

Yet behavioural experiments are similar to hard sciences in other ways. Among the most sophisticated of these are randomized controlled trials (RCTs). These trials are highly valuable as they test whether a causal relationship exists between one particular variable and an important outcome. Simple and decisive advantages of this type of experimentation include that, if done properly, RCTs isolate all of the other factors affecting people’s perceptions, thinking or behaviour from the condition, initiative or other intervention being tested.

As the U.K. BIT’s paper on RCTs explains, RCTs are the best way of determining whether a policy is working.²⁴⁶ RCTs have been used for over 60 years to compare the effectiveness of new medicines. They are also utilized extensively by companies testing website layouts to generate more sales. What makes RCTs different from other types of evaluation is the introduction of a randomly assigned control group. RCTs enable governments and regulators to compare the effectiveness of a new intervention against what would have happened if nothing had been changed. Introducing a control group eliminates a host of biases that normally complicate the evaluation process.

RCTs: A more detailed look

Two key aspects of RCTs are the “background variables” and the “randomization.”²⁴⁷

A **background variable** is any set of factors that are held constant and not manipulated. It is important to ensure that any such variables – such as location, gender, ethnicity or age – are kept constant for the trial.

Randomization is the act of allocating participants to different conditions in an unplanned and undirected approach. This is important in order to minimize selection and allocation biases, as a BI unit would want to isolate variables so that the sample selection does not distort results. The U.K. BIT identified nine separate steps required to set up any RCT²⁴⁸ in its 2012 paper that defined its “test, learn, adapt” methodology.

Test

1. Identify two or more policy interventions to compare (such as old and new policies).
2. Determine the outcome the policy is intended to influence and how it will be measured in the trial.
3. Decide on the randomisation unit: whether to randomise to intervention and control groups at the level of individuals, institutions (like schools) or geographical areas (like local authorities).
4. Determine how many units (people, institutions or areas) are required for robust results.
5. Assign each unit to one of the policy interventions, using a robust randomisation method.
6. Introduce the policy interventions to the assigned groups.

Learn

7. Measure the results and determine the impact of the policy interventions.

Adapt

8. Adapt your policy intervention to reflect your findings.
9. Return to Step 1 to continually improve your understanding of what works.

Typology of behavioural experiments


The spectrum of behavioural trials and tests ranges from fairly complex RCTs with many variables that are manipulated with large data sets to simple lab experiments where people make hypothetical choices. Soman’s categorization of this range as three different sets of experiments,²⁴⁹ (see table below) as well Alain Samson’s summary differentiating these types of experiments,²⁵⁰ are both helpful and informative.

Lab experiments can test either hypothetical choices or real choices with consequences. These experiments conduct research in a controlled environment with standardized procedures. Natural experiments are observational studies that do not assign subjects to treatment or control conditions.

Natural experiments can be done using archived or archivable data. The former refers to activities or choices where some kind of archive of data already exists which researcher needs to access. The latter refers to natural conditions where the researcher may need to ask people questions or observe behaviour to document the effect of intervention on choices and actions.

There are two types of field experiments, which differ in scale. In the first type, the researcher goes into a real-world setting and comes up with an intervention. In the latter, the researcher conducts RCTs on a large scale, usually with thousands of participants.

TABLE 6
Soman's Typology
of Experiments

 <p>Control</p> <p>Realism</p>	<ul style="list-style-type: none"> • Laboratory experiment – hypothetical choices
	<ul style="list-style-type: none"> • Laboratory experiment – real choices
	<ul style="list-style-type: none"> • Natural experiment – archived or archivable data
	<ul style="list-style-type: none"> • Natural experiment – generates data from existing conditions
	<ul style="list-style-type: none"> • Field experiments – real world situation with new intervention or variable, data generated on relatively smaller scale
	<ul style="list-style-type: none"> • Large scale randomized controlled trials (RCTs) – running condition tests simultaneously

Test, learn, adapt

“We need to recognize our dangerous tendency to overconfidence and our presumption that what we do know is ‘right’... we need to embrace doubt. We need to test, learn and adapt.”

David Halpern²⁵¹

The U.K. BIT viewed RCTs as essential to its success as it needed to show solid evidence of BI’s impacts.²⁵² In order to achieve the benefits of BI on a large scale, it saw the need to demonstrate its applications both inside and outside of government. The U.K. BIT made an early choice to seek

out areas that are well-suited to low cost RCTs that could be done quickly. The results of those early trials showed that BI can be effective and that experiments can be quickly completed and at a low cost. With the recent rise of digital government, the merits of testing have been reinforced, and the U.K. BIT began to seek out digital interventions within the public sector to test multiple variations of projects, such as alternative forms of webpages.²⁵³

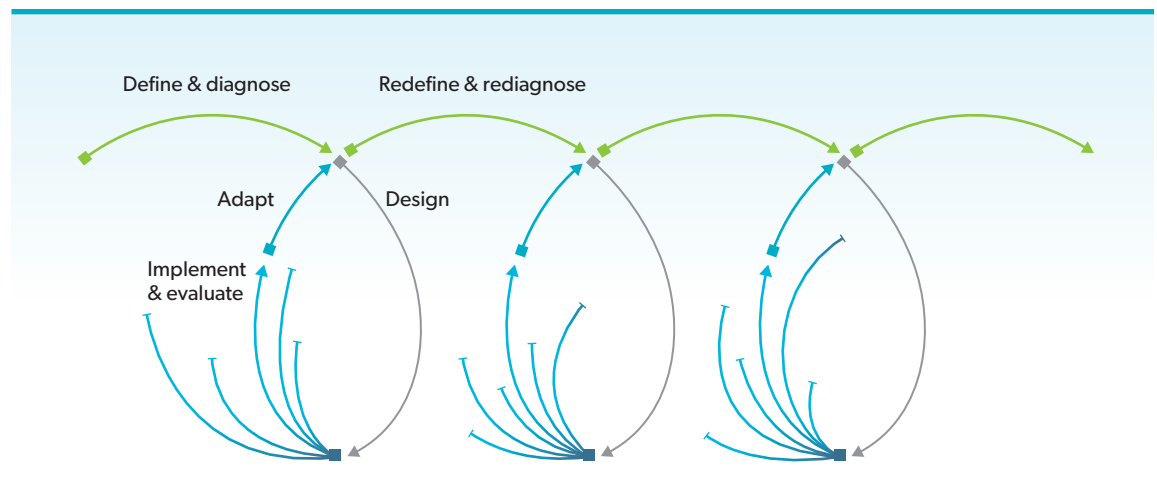
In the U.K. BIT's words, "the 'test, learn, adapt' approach has the potential to be used in almost all aspects of public policy."²⁵⁴ Testing an intervention means ensuring that robust measures are in place to evaluate the effectiveness of an intervention. Learning is about analyzing the outcome of the intervention so that working components can be identified and the magnitude of its effect can be determined. Adapting refers to the use of this learning to modify the intervention as required so that there is no continual refinement to the policy that is designed and implemented.

The World Bank puts a similar priority on experimentation. It has highlighted how an experimental approach that incorporates testing during the implementation phase can help identify more cost-effective interventions.²⁵⁵ As it states, "the process of delivering products matters as much as the product that is being delivered, and it can be difficult to predict what will matter in which context and for which population." Problem assessment by the World Bank, as well as its policy design and implementation, look very different under this new framework.

In the World Bank's more recent approach, understanding behaviour and identifying effective interventions involve more complex and iterative processes throughout the project cycle.²⁵⁶ This includes greater resources being devoted to defining and assessing problems, as well as to designing interventions. It also requires that several options be tested during the implementation period, with each reflecting different assumptions about decision-making and behaviour. One of the tests is adapted to reflect the trial results and then goes through a new round of "definition, diagnosis, design, implementation and testing."²⁵⁷ This process then is ongoing after the intervention is scaled up for broader application to a larger segment of the population.

FIGURE 7

Understanding behaviour and identifying effective interventions are complex and iterative processes



Source: WDR 2015 Report

Section C: Themes from behavioural insights units, applied researchers and academic practitioners

V. Major lessons and insights relevant to the OSC

This chapter has explored the nature of leading government BI units, their insights plus those of applied researchers and academic practitioners into using BI and the crucial importance of tests and trials. The Investor Office supplemented this research with in-depth interviews of 15 government BI units, academic practitioners and applied researchers to refine the themes of BI application. Seven such themes are summarized below.

Seven financial regulators were also interviewed as part of this study and their feedback helped to inform Chapter 3.

As Chapters 1 and 2 have shown, BI offers a lens for understanding market problems and consumer challenges. Financial decision-making and retirement saving issues were cited numerous times as major problems in this regard. There is also extensive BI use in policy implementation to design choice architecture for government and regulatory initiatives (like changing default choices, simplifying disclosure and other such nudges). However, there has been much less BI use in policy design to date. This is due to a number of issues, including being less able to measure success effectively and the ethical issues that can be raised.

The adoption and use of BI is about nudging and about more extensive behavioural-led initiatives.

Nudges have demonstrated the compelling advantages they hold for governments and regulators. They can be implemented at a low cost and hold the potential for quick wins. Nudging typically faces fewer political and legal barriers given the limited nature of changes they introduce. Behavioural disciplines can also identify when nudges are insufficient for broader initiatives where regulations, rules, subsidies or taxes may be needed to effect a desired change.

BI are essential to the testing and evaluation of these traditional policy tools, as well as adapting and re-designing such interventions to make them more effective. As important is the way in which BI can highlight and provide solutions to help prevent commercial exploitation of consumer biases and other cognitive errors in people's decision-making.

Incorporating BI is essential to achieving a policy culture of testing and learning.

Making assumptions about behaviour in the design and implementation of policy can lead to major errors. The need to use BI and to test, learn and adapt interventions was repeatedly stressed by practitioners and applied researchers alike. Many experts identified the need to begin with accurate description and diagnosis of a problem before designing interventions and testing, learning and adapting their implementation. They emphasized how governments and regulators must have humility and a commitment to testing in order to minimize errors. A culture of trialling, whether through lab experiments, field tests (including RCTs) or data science, is as important as the willingness to admit and learn from mistakes.

The successful use of BI involves multi-disciplinary and multi-functional approaches.

Staffing a BI unit requires behavioural sciences expertise (in areas like economics, cognitive psychology, social psychology), but also other specialists. Successful BI units need to be integrated with policy, legal and other expertise for practical applications. Effectively adopting BI involves using multiple methods to test policy initiatives, including design thinking, lab and natural experiments, field-based RCTs and other collection and sophisticated analysis through advanced data science. The experts interviewed also highlighted the effectiveness of combining BI with traditional economic approaches.

There is no single BI unit model that meets all governments' and regulators' needs.

Choosing a structure, staff, mandate and goals for a BI unit depends on the context, resources (including funding and data support), organizational and political culture and the authority's governing style. While the success of the U.K. BIT and White House SBST (through 2016) are widely recognized, these teams have (or had) large staffs and a national (or international, in the case of the U.K. BIT) scale for their work.

Denmark's approach, with its much smaller scale and extensive networking, was cited by many of the experts interviewed. Others stressed the importance of a hub and spoke system - a central unit or capacity combined with line department or ministry capabilities - to build capacity beyond a central unit in important operational and policy areas.

Academic and other expert collaboration is essential for BI units.

Numerous practitioners and applied researchers stressed the benefits of collaborating to leverage government and regulator resources in diagnosis, design and testing. They also recognized the opportunities to combine academic rigour with public sector knowledge of legal, policy and political constraints.

Staying current with behavioural literature and the rapidly-expanding public sector use of BI is a major challenge. Academics emphasized that they cannot keep up with the growing number of BI units or increasing behavioural capabilities within national and local governments. For their part, the practitioners interviewed made it clear that they could not stay current with the volume of new and potentially relevant research.

External and internal communications and engagement are important.

Most practitioners and applied researchers made mention of how important open engagement and ongoing communication of findings with staff and politicians can be. They also underscored the opportunities and benefits of using occasional papers, symposiums and public consultation to educate and engage external stakeholders (though there was a mix of views about communicating through academic publications).

BI is an essential part of governments and regulators' policy toolkits, but it is not a panacea.

The use of behavioural findings, applied BI research and behavioural frameworks is a major step forward in the public sector's understanding of people's actions, choices and thinking. However, it is just one part of the array of analytical and implementation strengths of an effective policy-making or regulatory organization. It is complementary to, and works best when combined with, traditional cost-benefit, scarcity and other economic analysis, as well as expertise in policy, legal, design, data and other areas.

BEHAVIOURAL INSIGHTS

CHAPTER 3

CHAPTER 3 - THE INCREASING USE OF BEHAVIOURAL APPROACHES IN FINANCIAL REGULATION

“Using insights from behavioural economics, together with more traditional analysis of competition and market failures, can help the FCA assess problems in financial markets better, choose more appropriate remedies and be a more effective regulator as a result.”

Martin Wheatley, former Financial Conduct Authority CEO²⁵⁸

Since the U.K. established the Financial Conduct Authority (FCA) in 2013, financial behavioural regulation has become an increasingly significant part of the regulatory landscape in major markets.²⁵⁹ The FCA's Occasional Paper #1 set out well the merits and applications of behavioural economics in financial markets.

Numerous financial regulators and supervisors around the world are now expanding their initiatives and analysis in both their jurisdictional reach and the scope of approaches. Conduct risk, which is a subset of behavioural risk, is appearing more often as a specific focus for policy makers and regulators. In addition to the U.K.'s FCA, notable behavioural initiatives and interventions have been announced in Australia, the U.S., the European Union, Hong Kong, Singapore and New Zealand. The use of behavioural approaches elsewhere by securities regulators and other agencies is increasingly accelerating.

This chapter continues the Investor Office's survey of relevant practitioners' adoption of BI, particularly at the integrated behavioural initiatives and major behavioural economics (BE), behavioural finance (BF) or BI units in major jurisdictions relevant to the OSC. It begins with the FCA and its use of BI, as well as the range of studies and initiatives developed by Australia's Securities and Investment Commission (ASIC) and New Zealand's Financial Markets Authority (FMA). The extensive BI work of the European Commission (EC) in financial policy-making is also examined, followed by a review of other substantial and relevant work produced by agencies in the U.S. and Asia that have engaged in BI-informed initiatives.

I. Taking the lead: the U.K.'s Financial Conduct Authority (FCA)

“While it is common sense that people make mistakes, behavioural economics takes us beyond intuition and helps us be precise in detecting, understanding, and remedying problems that arise from consumer mistakes.”

FCA Occasional Paper #1²⁶⁰

The FCA, the world's first behavioural financial regulator, has led the application and tactics of behavioural principles.²⁶¹ From the outset, the FCA has articulated the principles and insights of BE and BF,²⁶² including aspects such as:

- consumers make predictable mistakes when choosing financial products;
- firms respond to these mistakes;
- behavioural biases can lead firms to compete in ways that are not in consumers' interest; and
- focusing on how BE can, and should, be used in the regulation of financial conduct.

The FCA led the use of BE for policy and regulatory initiatives across a broad spectrum of financial services from 2013 onward.²⁶³ The FCA's strategy of combining behavioural science, data and technology “has turned economics into such an important feature of conduct regulation.”²⁶⁴ The FCA has embraced BE as an essential tool to assess markets and potential interventions to support better financial outcomes and improve ethics, crisis prevention and consumer protection.

In a series of speeches given throughout 2014 and 2015, Martin Wheatley, the FCA's first CEO, summarized the rationale and merits that BE held for the FCA. In late 2014, he stated that the FCA was “enhancing traditional economic analysis by integrating it with behavioural techniques. Considering the demand-side as well as the supply-side of competition – how real people interact with markets.”²⁶⁵ In his words, the FCA was “designing policy based on how people engage with financial products. For policy-makers and regulators, this is important for two reasons. First, because it has the potential to materially improve consumer outcomes. Second, because it can potentially increase competitive pressure on incumbents by reducing barriers to contestability like complexity, consumer inertia and so on.” (Contestability refers to both the ability of new suppliers to enter markets and to offer effective competition on price or products that causes existing suppliers to respond to consumers' benefit.)

In Wheatley's view, “sophisticated field-testing, trials and big data analysis is now dominating so much of the FCA's work across key areas ... In other words, instead of relying on intuition and guesswork, we combine trials, behavioural economics and competition analysis, to work out what's going on in each market – real markets, not just theoretical constructs.”²⁶⁶

The FCA has pursued a comprehensive strategy that uses in-depth publications and engagement with intermediaries and investors to support its other regulatory roles. The FCA has led the way in publishing its research and initiatives, especially through the 25 occasional papers that it published between 2013 and 2016. As set out in its Occasional Paper #1, Applying Behavioural Economics at the FCA, “the FCA is committed to encouraging debate among academics, practitioners and policymakers in all aspects of financial regulation. To facilitate this, it publishes a series of

occasional papers in financial regulation extending across economics and other disciplines ... Since their main purpose is to stimulate interest and debate, the FCA welcomes the opportunity to publish controversial and challenging material ... The FCA encourages contributions from external authors as well as from its own staff. In either case, the papers will express the views of the author(s) and not those of the FCA.”²⁶⁷

The FCA’s framework for using BE in financial markets

Occasional Paper #1 included an in-depth literature review that looked at people’s behavioural biases and the impacts those biases had in consumer financial markets. It set out an extensive number of BE applications for many FCA activities, including:

- “policy – i.e., creating our rules and guidance;
- analysing firms’ business models, behaviour and products when authorizing or supervising firms;
- building evidence for enforcement cases; and
- shaping FCA and firm communications with customers.”²⁶⁸

The FCA sees BE as essential to all steps of the regulatory process. Occasional Paper #1 detailed its key questions for applying behavioural analysis and its approach to address the risks, problems and interventions.²⁶⁹

Applying behavioural analysis: Questions addressed by Occasional Paper #1

TABLE 1

<p>Step 1: Identify and prioritize risks to consumers</p>	<ul style="list-style-type: none"> • How can we spot risks of consumer detriment caused by biases? • How can we prioritize these risks?
<p>Step 2: Understand root causes of problems</p>	<ul style="list-style-type: none"> • Could consumers be choosing reasonably? • If consumers are biased, what do they truly want and need? • How should we analyze firm-specific issues? • How should we analyze market-wide issues?
<p>Step 3: Design effective interventions</p>	<ul style="list-style-type: none"> • What interventions are available to protect consumers? • Should we intervene and, if so, how? • How can we assess the impact of interventions?

Identifying and prioritizing issues – given that biases are usually tough to directly observe, the FCA proposed a series of indicators to identify where consumer detriment from mistakes can be significant. Its BE approach also prioritized problems based upon their size, including the distributional effects when less sophisticated consumers pay more than more sophisticated consumers.

Understanding root causes of problems – it is important to develop possible explanations for the root causes of market problems and build evidence, including investigating whether consumers are making mistakes and, if so, which biases may be causing the problems. The process of building evidence includes examining how consumers make decisions under different circumstances, their awareness of important product information and their self-declared needs and objectives. The FCA described how BI can help assess firm-specific and market-wide problems, including using consumer research, lab or field experiments to analyze markets.

Designing effective interventions – BE offers new perspectives on potential interventions to address behavioural and other financial market problems. The FCA described four ways in which it can solve behavioural problems, ranked from least to most interventionist:

- **Provide information** – require firms to provide information in a specific way or prohibit specific marketing materials or practices.
- **Change the choice environment** – Adjust how choices are presented to consumers.
- **Control product distribution** – Require products to be promoted or sold only through particular channels or only to certain types of clients.
- **Control products** – Ban specific product features or whole products that appear designed to exploit, or require products to contain specific features.²⁷⁰

The FCA noted the potential to expand this four-way toolkit by using more nudges in regulation. These small prompts, if designed well, have low costs and can result in better consumer decisions without restricting people's choices. Occasional Paper #1 also points out that effective interventions require a determination of whether to intervene, and if so, where the limits to consumer responsibility should be. Effective interventions should consider the implications of less interventionist options like nudges compared to more interventionist ones, such as bans.

Testing eligible consumer take-up of redress

The FCA was at the forefront of tests and trials that assessed consumer problems and potential regulatory interventions in financial markets. This included undertaking the first-ever large-scale RCT by a U.K. regulator in 2013, and then an innovative lab experiment regarding online retail behaviour, which are described in depth in Occasional Paper #2 and Occasional Paper #3, respectively.

Occasional Paper #2, Encouraging consumers to claim redress: evidence from a field trial,²⁷¹ is both relevant and instructive for financial regulators. Pursuing the appropriate amount of redress and maximizing consumer take-up of applicable redress supported consumer protection, one of the FCA's three operational objectives. To that end, this paper looked at how the FCA could encourage more eligible consumers to claim their money back with simple changes to the letters they received.

Among the changes that the FCA tested were simplifying some of the text, making key information (such as the telephone number to make a claim) more prominent, and telling people how long it would take to claim.

From the FCA's perspective, the BI literature offered a variety of ways to attract consumer attention and compel them to seek redress that could be tested as hypotheses.²⁷² The envelope sent to

customers needed to be appropriately distinctive in order to be opened given the volume of regular mail that people still receive. The key messages in the redress letter needed to be as salient and immediate as possible, with the firm offering redress also needing to reduce excess text as much as possible. Firms also needed to remind consumers to respond.

The FCA developed changes (“treatments”) to seven features of the firm’s communication to consumers eligible for redress to test their hypotheses.²⁷³ One treatment changed the envelope, five changed language in the firm’s letter, and one established a reminder for consumers to respond. The RCT’s control group received the original envelope and letter from the firm with no reminder.

TABLE 2
FCA Changes
To Firm's
Communication
With Consumers

Envelope	<ul style="list-style-type: none"> • Adds a message to ‘act quickly’ to a plain envelope
FSA logo	<ul style="list-style-type: none"> • Uses the Financial Services Authority (FSA) logo in the letterhead [Note FSA was the FCA’s predecessor, and the regulator overseeing the firm that engaged in mis-selling]
Salient bullets	<ul style="list-style-type: none"> • Replaces the two bullet points at the top of the letter with more salient bullet points
Simplified	<ul style="list-style-type: none"> • Makes the body of the letter simpler and more concise by reducing text by 40%
Claims process	<ul style="list-style-type: none"> • Includes a sentence in bold explaining that the claims process would only take five minutes
CEO signature	<ul style="list-style-type: none"> • Uses the firm CEO’s signature to sign the letter, instead of generic ‘Customer Team’
Reminder	<ul style="list-style-type: none"> • Sends a second letter three to six weeks after the first letter

*The FSA preceded the FCA and oversaw overseeing the firm that engaged in mis-selling.

CHART 3: Specific changes in communications with eligible consumers

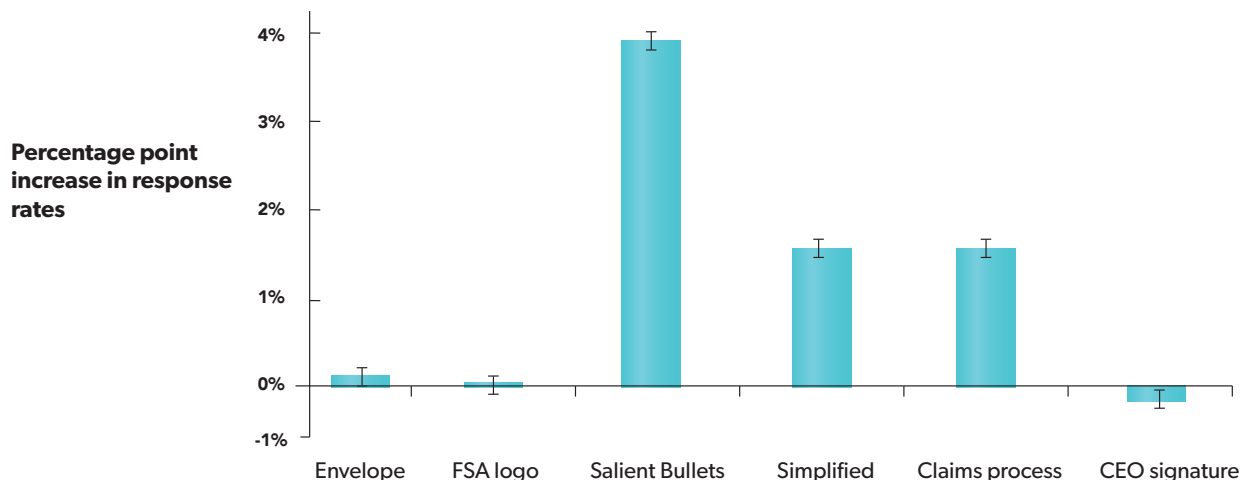


CHART 4: Effect of changes in communications (including combined changes)



The results of these treatments, both individually and together, were considerable, particularly given that the firm’s original letter (used as the control) was clear.²⁷⁴ The firm’s original letter received a 1.5 per cent response rate. In contrast, the ‘salient bullets’ treatment had the largest single effect, increasing responses by 3.8 percentage points, just over 2.5 times relative to the original letter. The ‘simplified and “claims process’ treatments had the next largest impact, almost doubling the response rate. The ‘CEO signature’ treatment’ had a noticeably and statistically significant negative impact, albeit a small one.

Measuring the interaction of these treatments showed that the best combination had a very significant impact. A combination of the ‘salient bullets’, simplifying the text, explaining the claims process and ‘reminder’ treatments boosted response rates to almost 12% from the control group’s 1.5%, equivalent to an additional 20,000 people claiming redress.

As the FCA noted, there were a number of surprises in the RCT’s results.²⁷⁵ Most important was that small improvements to what was an already clear letter had major impacts. From the FCA’s perspective, these effects were much larger than anticipated. Additionally, the overall distribution of impacts was different than the pre-RCT expectations, and the FCA had not anticipated any negative impacts at all. These findings underscore the importance of both the precise design of communications and the generation of solid evidence from real settings, which this RCT did effectively.

Online lab experiment

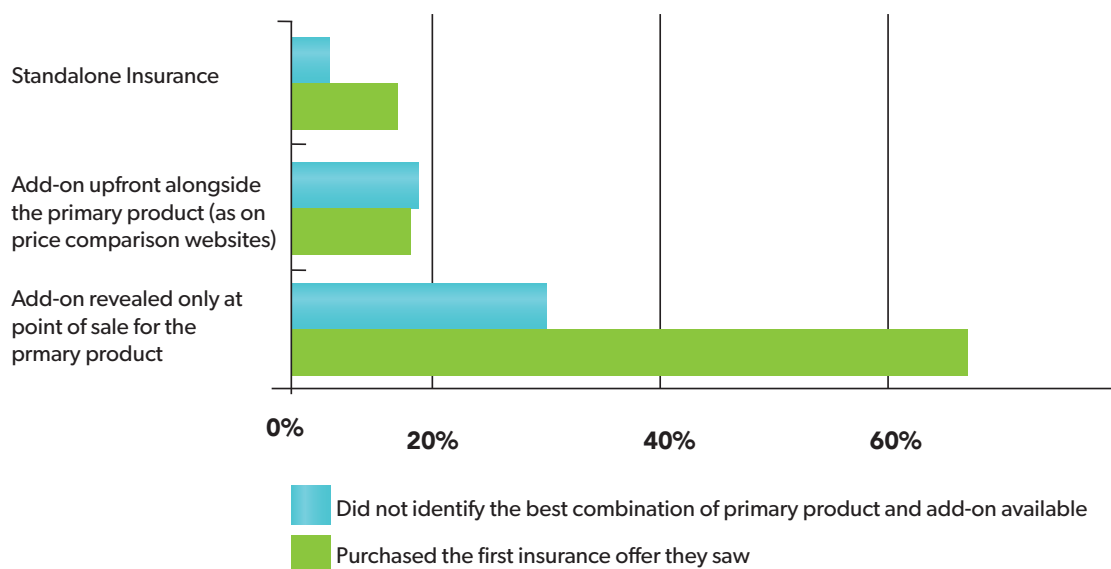
In contrast to field experiments that test behaviour in real-world situations, lab experiments test decision-making in stylized and more controlled environments that can capture key aspects of the choice being made. Occasional Paper #3, “How does selling insurance as an add-on affect consumer decisions? A practical application of behavioural experiments in financial regulation” described the FCA’s first online lab experiment and analyzed its results.²⁷⁶

This paper also set out the advantages of lab experiments,²⁷⁷ beginning with helping researchers identify causes and effects more precisely (by removing irrelevant environmental influences) and investigating general problems affecting people’s decision-making in a range of contexts (in this case, the markets for different insurance products). Other important benefits of lab experiments include the potential to observe the impacts on people’s behaviour (and not just changes in outcomes) and the ability to investigate general principles of consumer behaviour. This paper also reviewed how the experiment was designed to be a simplified online experience of shopping around and ‘purchasing’ a primary product and an optional insurance product. The shopping around task was done five times with five different primary products.

The online lab experiment showed that the transaction context for consumers had significant effects.²⁷⁸ The impact of being allocated to one of the three most common ways of selling insurance – “stand alone; transparently advertised alongside the primary product; or drip-fed during the purchase of the primary product” – had a large impact on consumers’ willingness to check other options and prices, as well as their ability to choose the best option. The Standalone transaction is seen as the benchmark, and the Alongside and Drip Fed transaction types get progressively worse outcomes for consumers. In this case, the firms’ Drip Fed approach is not designed to reduce information overload, but to reduce the willingness of consumers to shop around for the secondary product because they have already started along the purchase journey for the primary product.

One important finding was that when add-on insurance was revealed only at the point of sale of the primary product (the drip-fed approach) it significantly worsened outcomes given the lower transparency for consumers. The adverse impacts of this point of sale disclosure were higher prices paid, less shopping around and fewer customer decisions that met their actual product needs.

CHART 3: The effects of the common insurance sales formats on consumer behaviour



BI used in the FCA’s Economics for Effective regulation

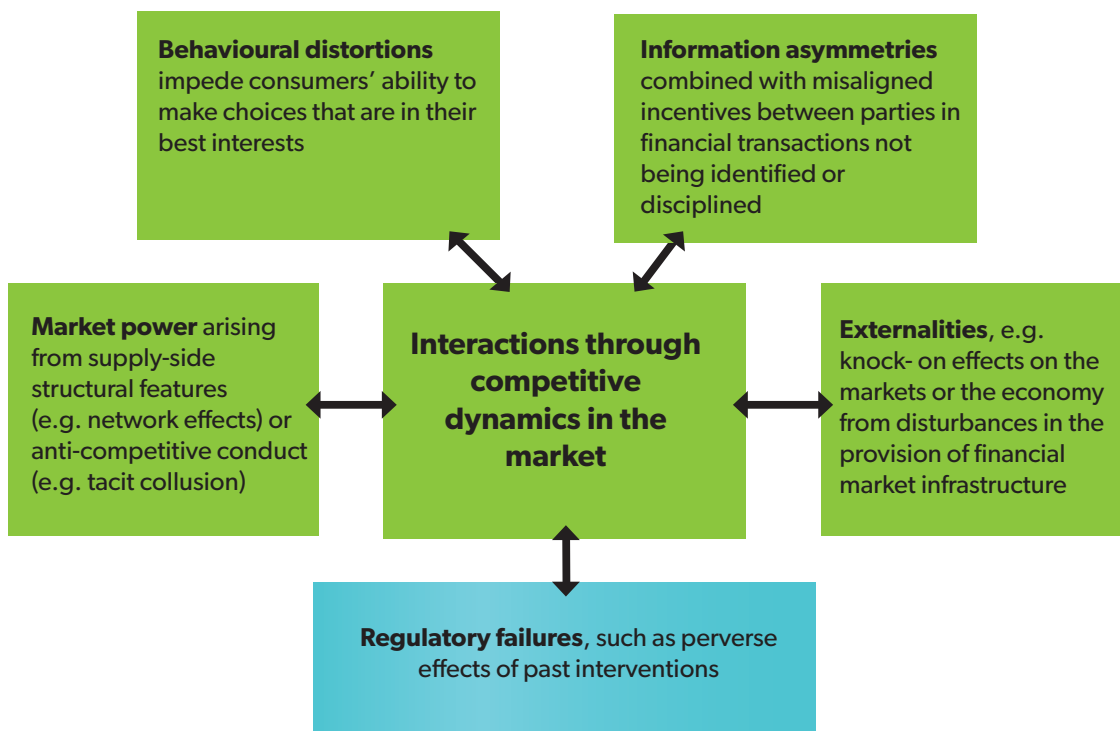
To meet its strategic objective to “make the relevant markets work well,”²⁷⁹ the FCA often requires in-depth assessments of market outcomes, including the causes of poor outcomes and what can be done to rectify them. The FCA is obligated to achieve higher standards than its predecessor, the Financial Services Authority, in assessing the effects of interventions to meet its competition

obligations and its given legal requirements to publish cost-benefit analyses when consulting on new policy options.

Occasional Paper #13, Economics for Effective Regulation saw the FCA set out a new and detailed framework for a market-based approach to regulation: Economics for Effective Regulation (EFER).²⁸⁰ EFER has three stages: problem diagnosis, intervention design and impact assessment. It draws extensively upon recent academic literature and regulatory best practices to build upon standard approaches to economic analysis by regulators. Among EFER's enhancements are incorporating a "more explicit and structured consideration of behavioural biases and competition problems" as well as "recognizing that severe cases of poor outcomes in markets frequently arise because of the interactions of multiple underlying problems" that need to be assessed and responded to through a combined approach.²⁸¹

In describing EFER's rationale, the FCA identified a combination of factors that can generate poor market outcomes that need to be analyzed and addressed together.²⁸² For example, consumers may not take advantage of better pricing or products from other providers for a number of reasons, including information asymmetries (such as when the current cost of use is not provided to people) and behavioural considerations (procrastination in choosing alternative products despite a clear benefit for doing so). There may also be structural factors (including network effects where people want to use the same firm as others) and regulatory failures that increase the hassle factor for consumers (older regulation may require time-consuming checks or paperwork to switch).

CHART 4: Interactions between market imperfections



The FCA's EFER methodology is careful in incorporating assessments of behavioural distortions given that these problems typically affect market results through their interactions with other issues.²⁸³ As the FCA states, the fact that behavioural biases are a reality in how people think is not in itself a reason for intervention. EFER's approach seeks to identify and respond to situations where biases create systematic barriers to market participants acting in their interests and not just the presence of biases themselves. Occasional Paper #13 noted that underlying biases cannot typically be remedied by regulation, but it may be possible for regulatory interventions to address the market imperfections that such biases create.

The EFER framework also delineates the two ways in which regulation can achieve improved outcomes: remedying the underlying market imperfections and directly mitigating them.²⁸⁴ With the former, properly-designed regulation can address market imperfections. However, when these imperfections are structural features of the ways in the market works, regulation alone might not fully remedy the problems. These fundamental aspects of markets can also reflect behavioural considerations, such as when a product's complexity is too much for most people to comprehend without assistance. For problems where consumers' cognitive and expertise limitations create risks, the role of regulation is to mitigate the harm through interventions such as price caps or banning retail purchases of the complex products without advice.

Other FCA occasional and discussion papers

While the considerable number of occasional papers in the FCA's series means that this report cannot consider the full scope of related work, three other papers are particularly indicative and informative regarding their identification and testing of BI-based problems and solutions. They serve as indicators of the FCA's approach:²⁸⁵

- **Occasional Paper #7**, "Stimulating interest: reminding savers to act when rates decrease"
- **Occasional Paper #10**, "The impact of annual summaries, text alerts and mobile apps on consumer banking behaviour"
- **Occasional Paper #19**, "Attention, search and switching: Evidence on mandated disclosure from the savings market"

The foreword in the FCA's 2015 Smarter Consumer Communications discussion paper also illustrates its BI approach: "We recognize, however, that information itself does not necessarily empower the consumer. Our work on behavioural economics has clearly shown it can overwhelm, confuse, distract or even deter people from making effective choices if presented in a way people struggle to engage with."²⁸⁶ These include the adverse effects upon consumers' choices, such as "behavioural biases, low levels of financial literacy and the complexity of some financial services and products" and that "firms tend to use financial and legal jargon which can make the materials they produce lengthy and impenetrable for the consumer."

This discussion paper states that the FCA expects firms to understand the importance of communicating effectively with consumers and that information about their products and services should reflect "at least as much behaviourally informed creativity as is applied to business

development, marketing and financial promotions.”²⁸⁷ It also states the FCA’s support for firms that are already “writing for the consumer first and then ensuring communications are compliant, rather than the other way round” as well as “moving away from a box-ticking approach to communication design.”

The FCA’s inclusion of specific examples of firms that, in its words, “demonstrate possible approaches to developing smarter communications”²⁸⁸ is also significant. The FCA does not expect other firms to replicate these approaches, but it hopes that “these inspire firms to think differently about how they communicate with consumers.”

The FCA’s behavioural unit and behavioural priorities in its mission

The Behavioural Economics and Data Science unit at the FCA is notable for its staff quality and size. As of early 2017, it had 10 permanent staff and 4 temporary research staff. The unit works on a broad range of internal projects in addition to its numerous external publications. Its ongoing importance to the FCA’s work is evident in the priorities set out in the FCA’s mission document from October 2016.²⁸⁹ Among the FCA’s priorities in transparency and disclosure is how BE is adapting its regulatory response.²⁹⁰ “We believe we can play a greater role in helping consumers by influencing how they make decisions. This can include changing the way firms present choices to consumers (known as ‘choice architecture’). It can also include ‘nudging’ (encouraging change in small stages) passive consumers by giving them easy options to switch provider or ‘default’ them into simpler, cheaper products instead of expensive and complex ones.”

II. Australia and New Zealand

Australia Securities and Investments Commission (ASIC)

While ASIC formally set up a BE team in 2014, it first began incorporating behavioural findings and behaviourally-informed approaches as much as 15 years earlier through extensive consumer research. Significant examples are described in its 2011 Financial literacy and behavioural change report,²⁹¹ which was originally compiled in 2008 and updated in 2010. This report described how behavioural economists see people as ‘normal’ and subject to a range of behavioural biases rather than as rational agents of traditional economic theory.²⁹² ASIC highlighted common barriers to good decision-making such as information and choice overload, complexity and uncertainty, time effects and pressures, over (and under) confidence, self-control and framing. Its paper referenced a range of research from 2002 to 2010, exploring the effects of these behavioural barriers on various aspects of people’s financial decision-making.

In a 2016 address, Deputy Chair Peter Kell provided a comprehensive overview of ASIC’s adoption, rationale and use of BE.²⁹³ As Kell explained, Australia’s regulatory regime for most retail financial markets had been based upon disclosure, including for risky and complex products. In his words, “anything goes, as long as you disclose.” Reliance on this disclosure left consumers bearing much of the responsibility of avoiding harm. However, this structure did not prevent persistent and systemically adverse market outcomes in such areas as financial planning and investments in debentures.

In Kell's words, ASIC was "wasting money and resources – including the resources of industry participants, who were producing large amounts of disclosure documents – while failing to fix market problems."²⁹⁴ As he stated, disclosure seemed to be the answer before a question had even been asked or a problem was identified by the regulator. While disclosure was clearly a key component of well-functioning markets, especially in financial services, too much weight was being put on formal disclosure requirements to fix any and every market problem.

The global financial crisis was pivotal in changing ASIC's approach. The crisis made it clear that different ways of thinking about problems and solutions in financial markets was required. Turning to BE helped explain why some of ASIC's traditional regulatory interventions were failing. Kell stated, "I don't want to suggest that BE has all the answers – it doesn't. However, BE helped us to understand the problem more effectively. BE helped to underline that we needed a more diverse regulatory toolkit. In fact, you could say that it is now included as one of the tools in the toolkit."²⁹⁵

ASIC has taken a staged approach to applying BE. It uses BE to better understand the nature of problems, which also helps it avoid action bias. "Our instinct – as regulators and policy makers – can be to race to a solution before assessing. An understanding of how people actually behave and make – and sometimes avoid – decisions or actions is essential to tailoring regulatory regimes."²⁹⁶

ASIC uses BE to identify product architecture or sales methods that might adversely influence people's biases and lead to poor consumer outcomes. For example, the way information is framed can make a significant difference to how a consumer interprets and responds to it, as can the device with which people review that information. In Kell's and ASIC's view, "timing matters. The messenger matters. Context matters."²⁹⁷

ASIC is also developing its own thinking about how BE can help it respond to problems with new tools like nudges. As part of this process, ASIC asks questions such as "when is a behavioural intervention, such as a nudge, the right response to a problem? When do we need to look to other tools in our regulatory toolkit? Important questions – a nudge is not a new panacea to all regulatory problems or consumer harms."²⁹⁸

A BE team was set up by ASIC in 2014. Originally staffed by four people, not all of whom were full-time in their BE role, the team now has a five-person staff with expertise in economics, psychology, decision science and legal matters. The BE unit, as well as ASIC itself, is committed to evidence-based research, which ranges from field RCTs through lab experiments, focus groups and other consumer research.

In addition to ASIC's use of BE as described by Kell, it is also important to note the support of the ASIC Chair, Greg Medcraft. Examples include his November 2016 speech *Driving better consumer outcomes in the era of big data and artificial intelligence*, where he stated that ASIC was "expanding [its behavioural insights] team," helping them with "tools for understanding and influencing human behaviour and complements [their] other regulatory tools, such as education and enforcement."²⁹⁹

Among ASIC's notable publications are two lab experiments and reports it commissioned from the Queensland Behavioural Economics Group. One of these was a pilot study to identify the behavioural biases that impact people's allocation of hybrid securities within their investment portfolios and their assessment of the perceived risk of hybrid securities relative to equities and bonds.³⁰⁰ This study found that the allocation to hybrid securities increased by nearly 14 per

cent for participants with control bias, which occurs when people believe that they can affect the outcome over events that they can neither control nor influence. The allocation of hybrid securities was greater by 10 per cent for participants with overconfidence bias, which occurs when people have an excessive belief in their cognitive capacity, intuition and judgement.

The other lab experiment involved research assessing the impacts of changing letters sent to directors of firms in involuntary liquidation.³⁰¹ The study shows that targeted nudges can enhance compliance by directors.³⁰² This included directors “who would like to comply but lack business management skills.” It also offered suggestions regarding how to nudge directors who were deliberately not complying into doing so. Basic nudges such as reversing the order of the information in the letter from ASIC to directors significantly improved directors’ recall of information. The study found that cognitive ease can increase compliance, and led its authors to recommend a randomized controlled trial (RCT) to better assess the potential to enhance the effectiveness of communications with directors of failed firms.

ASIC also commissioned qualitative consumer research that examined people’s experience when they purchased add-on insurance products as part of the process for buying a car through a dealer. This research demonstrated how decision fatigue, information overload and price-framing led consumers to purchase products of minimal or even negative value.³⁰³ ASIC also conducted a literature review of people’s biases that may affect their decision-making around financial advice. This review was used to educate other ASIC staff about these challenges for consumers. The agency has also undertaken exploratory qualitative testing of various forms of online disclosure in areas such as ‘key fact statements’ for investment products with industry partners.³⁰⁴

Looking ahead, ASIC sees the behavioural field increasingly drawing on social science experts beyond economics and psychology and into, for example, anthropology and data science. Kell stated that in order to be a modern behavioural regulator ASIC must work out what sort of research is needed and is feasible. One of the key lessons that resonated with ASIC came from the U.K. BIT’s David Halpern regarding humility: “We won’t always know in advance what interventions will work, and at times some policy actions may have perverse outcomes. Also, regulators seeking to apply behavioural sciences need to be willing to test, learn and adapt interventions (policies, programs) iteratively, over time.”³⁰⁵

New Zealand’s Financial Markets Authority (FMA)

New Zealand’s FMA views its role as a “conduct regulator” in working to achieve the FMA’s “main objective of promoting and facilitating the development of fair, efficient and transparent financial markets.”³⁰⁶ The FMA’s “Strategic Risk Outlook 2017” expanded upon its conduct regulation approach, including its intelligence and information gathering which “entails making greater use of consumer behavioural insights to inform our supervisory focus” and referring to its “Using Behavioural Insights to improve Financial Capability” white paper.³⁰⁷

The FMA’s 2016 BI white paper is instructive in its framing of people’s financial capability challenge for governments and regulators alike, which is based upon previous analysis by the U.K.’s FSA. The FSA’s analysis was developed further by World Bank research that identified four dimensions of financial capability:

- day-to-day money management;
- planning for future needs;
- choosing and using appropriate products; and
- being informed and getting help.

Most people can undertake day-to-day money management quite well, but are less capable in the other three areas. As the white paper explains, “evidence tells us that improving capability in planning, choosing and being informed, in particular, requires more innovative and behaviourally-based approaches. Social marketing, simplifying products, default mechanisms, and more proactive consumer protection regulation are approaches that have been shown to help deal with low levels of capability.”³⁰⁸

The white paper advocates using the U.K. BIT’s TEST approach to apply BI to influence desired behaviour.³⁰⁹ TEST is a straightforward practical framework of (T) targeting and defining the outcome, (E) exploring the context, building an intervention (S) solution and (T) testing, learning and adapting once developed. The FMA also highlighted the merits of RCTs as well as using the U.K. BIT’s EAST framework.

The FMA’s BI efforts have taken place or are underway in a wide range of areas, including a 2015 initiative to leverage the social media channels of high-profile personalities to increase the reach of financial capability messages.³¹⁰ The FMA is trialling the use of Google AdWords to promote investor information on foreign exchange trading whereby a message appears when a consumer searches for information about currencies.

The white paper outlines a number of future BI opportunities.³¹¹ For example, the FMA and the Commission for Financial Capability are exploring the potential to run RCTs with financial service providers as the first step in publishing local examples of what is and is not effective for better consumer outcomes. The FMA notes that the U.K.’s FCA has identified that governments and regulators can use consumer understanding to solve behavioural issues in several ways. As outlined earlier in the FCA overview, these include requiring firms to improve the ways that information is provided and enhancing the choice architecture offered to consumers. Regulators can also limit the distribution of products of concern to certain select types of customers. In the most problematic cases, they can “ban specific product features or whole products that appear designed to exploit, or require products to contain specific features.”³¹²

For the FMA, approaches that are less interventionist are preferable given that they avoid limiting consumer choices. The white paper also clearly states the FMA’s preference for innovation to help build people’s financial capability and provides a useful checklist for using the EAST framework in practice.

A checklist for understanding the context of financial decisions from the FMA³¹³

Easy

- Will the individual be making an active or an automatic choice?
- How many options are available? What is the default option if an individual decides to do nothing?
- What knowledge or expertise is needed to make a decision?
- Does the decision require exertion of willpower or self-control (such as saving or paying down debt)?
- Is there an application process and is it difficult to navigate?

Attractive

- Is the decision important to the individual or does it receive little attention?
- What are the incentives? Which ones are most prominent? Which ones are less prominent?
- What are the associated costs (financial, social, and psychological)?

Social

- Are peers a major source of information?
- Is the decision made in isolation or in a social environment?
- Is the decision influenced by what is presented in the media or by expert opinions?

Timing

- What moments or events motivate an individual to act on the decision?
- Is feedback available and is it received immediately?
- How is information or knowledge communicated to the individual (visually, verbally, in text)?
- Are the benefits of making a good decision delayed or experienced immediately?
- Is the decision usually made when the individual is in an emotional state?
- Does the information flow sequentially? What information is presented first? Presented last?

III. The European Commission (EC) and the European Securities and Markets Authority (ESMA)

The European Commission's adoption of BI

The EC's adoption of BI extends to many different policy areas.³¹⁴ The formal application of BI dates back to a 2008 investigation into Microsoft's practice of tying its web browser to its Windows operating system. The EC used behavioural evidence on the material impact of defaults on consumers' choices that resulted in the change to a choice screen being offered by Microsoft to users, prompting them to make an active decision and offset the default effect.³¹⁵

According to the EC's 2016 JRC summary of BI applications to policies within the European Union, 20 EC behavioural studies have been conducted since 2010.³¹⁶ The first, "Consumer Decision-making in Retail Investment Services: A Behavioural Economics Perspective", included two online RCTs and a lab RCT to understand consumer choice in retail investor products.³¹⁷ These experiments tested consumers' ability to make appropriate decisions about investment products in the absence of advice, the effects of advisors disclosing conflicts, and how direct interaction with advisors affects investors' choices. The findings showed the significant problems consumers face in making optimal investment decisions. The authors of the study concluded that simplifying and standardizing key investment parameters would likely improve consumers' decision-making considerably. These findings were among the key inputs into the recent design of Packaged Retail and Insurance-based Investment Products (PRIIP) consultation and proposed technical legislation.³¹⁸

Other important EC initiatives in BI applications include the 2012 Report on Consumer Policy, which set out that policy options would be supported by consumer behavioural studies.³¹⁹ The 2014 update to the report stated that “findings from consumer scoreboards, market studies and behavioural research have influenced EU policy in various areas of interest for consumers.”³²⁰ The EC’s JRC produced a report in 2013 regarding applying behavioural sciences to EU policy-making, followed by a research guide in 2015 for policy officers that are planning to outsource behavioural research studies.³²¹ In 2016, an extensive report on consumer vulnerability across key EU markets included behavioural experiments in three markets, including finance, where a high incidence of people at risk of negative outcomes from their choices in the market was found.³²² The EC website also summarizes how behavioural research is informing EU policy design.³²³

The EC’s Better Regulation approach

The EC, under the presidency of Jean-Claude Juncker, “has made a strong commitment to the principles of Better Regulation as a way to ensure that policy measures are based on the best available evidence and decisions are prepared in a transparent and anticipatory way.”³²⁴ Better Regulation applies to the whole policy cycle as it covers the process from policy design and implementation through to evaluation and revision.

The Better Regulation approach uses BI extensively.³²⁵ From the EC’s perspective, BI complements traditional policy approaches and offers a compelling means to deliver more precise and efficient solutions at all stages of the policy process. BI can enhance the analysis of policy problems to identify whether there are behavioural aspects involved and design policy options that reflect people’s decision-making processes and biases, and assist attempts to improve the evaluation of policy effects. The Better Regulation agenda also sets out the importance of regular policy impact studies and fitness checks for existing policies that may no longer be fit for their original purpose.

The EC’s BI capacity

The EC’s BI capabilities are both extensive and significant.³²⁶ In 2014, the EC created a Foresight and Behavioural Insights Unit within the JRC and in 2015 created the EU Policy Lab to support policies with evidence from BI, foresight and design thinking. The EU Policy Lab uses a multidisciplinary approach to identify the behavioural elements of a given policy or policy option to “communicate (and apply) available evidence, and embed behavioural solutions into the design of policy interventions.”³²⁷

The Foresight and Behavioural Insights Unit, combined with the JRC’s other resources, creates significant “expertise and capacity to support EC services with behavioural advice and/or conduct behavioural studies internally or externally (with the support of a framework contract for the provision of behavioural studies).”³²⁸ These studies may be undertaken from an exploratory perspective to use BI to research a particular issue or implementation considerations, such as testing specific interventions or refining policy measures. The use of BI is a major component for EU policy-makers to ensure “that realistic assumptions about people’s behaviour are taken into account when designing and testing policy options.”³²⁹

European Securities and Markets Authority

In the area of BI, the European Securities and Markets Authority (ESMA) relies on the EC, national authorities and academic research, for the development of its policy work.³³⁰ In making the distinction between internal BI capabilities and its approach, it is important to note that a number of ESMA's events, public statements and technical standards are behaviourally-informed. Examples include the ESMA Chair's 2013 comments on BE's impact in changing its model for regulation, which also noted some of the challenges in determining appropriate limits in its implications for financial regulatory supervision.³³¹ ESMA's Joint Consumer Protection Day in 2014 featured a session on how behavioural evidence can be used to improve policy making for consumers and the use of BF as a regulatory tool.³³²

ESMA's calls for more transparency and standards for investors also reflect its focus on consumer protection, which are behaviourally-aware, as are its regulatory standards for the presentation, content, review and provision of information documents for consumers. These standards also address the methodologies used for the risk, reward and cost information in the templates for information documents, risk indicators, performance scenarios and the presentation of costs.³³³

IV. The United States of America

Through early 2017, several U.S. regulators had notable BE and BF-informed initiatives. Regarding securities regulation, the Securities and Exchange Commission (SEC) has significant BE and BF capabilities. With respect to retirement accounts, the Department of Labor (DoL) used behavioural principles in designing its proposal to extend the fiduciary obligation to all providers, which was first proposed in 2015 and originally scheduled to take effect in April 2017.³³⁴ Following the change of administration in the U.S., implementation of this rule has been delayed pending a review of its effects on access to retirement information and financial advice, as well as an economic and legal analysis of the rule's "likely impact."³³⁵ The impact that these changes hold for U.S. financial authorities is still unfolding as of early 2017.

Separately, the Financial Industry Regulatory Authority (FINRA), which regulates brokerage firms doing business with the public in the United States and is overseen by the SEC, is important for its BE and BF awareness, alignment and research funding. For example, FINRA has used BI in developing regulations that focus on achieving more effective disclosure through simpler and more timely presentation of information to consumers.

The Securities and Exchange Commission (SEC)

Although the U.S. SEC does not yet have a formal BI component in its role or strategy, President Obama's 2015 executive order (see Chapter 2) led the SEC to begin building a BF unit to incorporate behavioural science into its policy-making. The SEC's Division of Economic and Risk Analysis created this unit in early 2016 to bring behavioural research into economic analysis for rule-making.

The SEC also created its Office of the Investor Advocate in 2014. As of early 2017, its staff included a principal economic advisor and senior economist, whose credentials included expertise in household finance, BE and evidence-based approaches to policy design using BI.³³⁶

Prior to creating its BF unit, the SEC's behavioural initiatives were focused upon several reports and certain specific policy initiatives. The SEC had the Library of Congress develop a report on behavioural patterns and pitfalls of U.S. investors in 2010 that included the foundations and research of many behavioural finance concepts.³³⁷ Two other papers prepared by its staff were published by the SEC in 2014 and 2015, the first being a white paper on computing tools to promote sound investment decisions and the second looking at the impacts of regulating hidden add-on costs for investors.³³⁸

In terms of policies and rules, the SEC's use of BI includes a 2011 staff recommendation that the SEC specify a uniform fiduciary standard that would apply to broker-dealers and investment advisors when they provide personalized securities advice to retail investors.³³⁹ Other examples include statements by commissioners and the Investor Advocate about improving the presentation of information and enhanced disclosure to be more accessible and address the problem of information overload.³⁴⁰ Other SEC behavioural efforts occurred in proxy voting, including a 2015 roundtable to look at opportunities to use technology and improve disclosure formats for retail investors.³⁴¹

Looking ahead, one project that SEC staff is considering is the potential to provide investors with financial calculators online.³⁴² The SEC BF unit is exploring how such tools can convey information about risk and uncertainty in investments (especially in retirement investments).

The Financial Industry Regulatory Authority (FINRA)

Understanding of behavioural principles at FINRA and potential applications go back at least a decade. For example, at a 2007 symposium the then-Chair and CEO of FINRA's predecessor organization (NASD) mentioned that "the more we understand about human psychology – and trust the research – the better we will be able to create tools, resources, and proactive programs that meet the needs of the public."³⁴² Remarks by senior executives in 2015 highlighted the BE concept of empowerment through simpler disclosure and "cooling off periods," where investors had to wait before executing on an investment idea.³⁴³

While FINRA has engaged behavioural economists in various ways, it does not have a formal BI unit.³⁴⁴ Instead, it takes a more *ad hoc* approach to testing disclosure for investors and the tools that it releases.³⁴⁵

For example, FINRA recently engaged in investor testing as an aid in developing a new disclosure document for consumers who are considering transferring their assets to another firm. The educational communication is one component of a new FINRA rule, which the SEC approved in November 2016, that establishes an obligation on firms to deliver the communication under the circumstances set forth in the rule.³⁴⁶

Separately, the FINRA Investor Education Foundation (IEF) has funded research that uses elements of BF to examine behavioural approaches to problem-solving and identify how different nudges can change behaviour related to financial consumption. FINRA and its IEF are both interested in exploring the extent to which BF can be used to improve investor education, affect the risks that investors face and improve disclosure, which is the foundation of U.S. securities regulation.³⁴⁷

While the IEF is a wholly-owned subsidiary of FINRA, it is governed separately and has funded its own behavioural research. The IEF consistently seeks ways to improve the financial capability of U.S. consumers, which involves researching investor needs and ways of encouraging more investors to participate in the market.³⁴⁸ Since 2010, the IEF has funded projects that include BE-driven field experiments to facilitate debt reduction³⁴⁹ and evaluate interventions to increase savings.³⁵⁰

The U.S. Department of Labor (DoL)

Although the DoL does not have an explicit or formal policy regarding BE and BF, behaviourally-informed principles have factored into significant portions of its work and organizational structure. The fiduciary rule for retirement accounts was clearly informed by the behavioural literature, as the DoL's regulatory impact analysis for the final rule demonstrated.³⁵¹ (As noted above implementation of this rule has been delayed in early 2017 pending further analysis and review).

The impact analysis stated that "investors often lack investment expertise and must rely on experts – but are unable to assess the quality of the expert's advice or guard against its conflicts of interest. Most have no idea how advisers are compensated for selling them products. Many are bewildered by complex choices that require substantial financial expertise and welcome advice that appears to be free, without knowing that the adviser is compensated through indirect third-party payments creating conflicts of interest or that hidden fees that go to the adviser over the life of the investment will reduce their returns."³⁵²

It also explicitly referred to "economic theory on the dangers posed by conflicts of interest and by the asymmetries of information and expertise that characterize interactions between ordinary retirement investors and conflicted advisers."³⁵³

The DoL's evidence-based approach to BI and its applications is also notable. It established the Clearinghouse for Labor Evaluation and Research (CLEAR), which was charged with making "research on labor topics more accessible to practitioners, policymakers, researchers, and the public more broadly ... CLEAR identifies and summarizes many types of research, including descriptive, implementation, and impact studies. In addition, CLEAR assesses the quality of research that looks at the effectiveness of particular policies and programs."³⁵⁴

CLEAR looks in-depth at a range of topics related to the DoL's responsibilities and work. It reviews applicable BF research regarding retirement, as well as BI relevant to the DoL's labour-related programs, assessing causal evidence while also highlighting gaps in literature and suggesting where further research is required.³⁵⁵

V. Asia

Singapore

Although the Monetary Authority of Singapore (MAS) has not yet published a formal policy on applying BI to financial market regulation or established a formal BI unit, it has been increasingly incorporating BI in various areas of its work.³⁵⁶ MAS is conducting consumer testing using surveys and focus groups to better understand investors' decision-making processes and their understanding of investment products. It hopes to apply its findings to its proposed implementation of ratings for the complexity and risk of investment products that are disclosed to investors.

MAS is also increasingly using data analytics in its policy design and the supervision of the financial industry, which is aligned with approaches taken by other government agencies in Singapore.

Most of MAS' current projects are related to consumer issues, and the staff involved has a solid background in addressing retail issues, though will tap external resources or expertise for support where appropriate.³⁵⁷ External experts were used in a recent study related to the implementation of complexity and risk disclosures of investment products. For this project, MAS engaged an external consultant to advise on the design of surveys and focus group discussions, among other aspects.

Hong Kong

The Investor Education Centre (IEC), a subsidiary of Hong Kong's Securities and Futures Commission (SFC), takes a distinct approach to investor education that is instructive from a behavioural perspective. All four of Hong Kong's financial regulators and the Education Bureau support the IEC, which is charged with engaging the public and providing consumers with greater education and skills for managing their personal finances.³⁵⁸

The IEC's behaviourally-informed approach is based upon eight components,³⁵⁹ with a high priority on using a social marketing model to deliver financial education to key segments of Hong Kong's population. Other components are to "advance and measure financial behaviour change [and] drive behaviour change through life events."³⁶⁰

While the IEC's social marketing campaign does not explicitly use BI, the approach reflects a number of foundational BI elements. Its education efforts are timely as they are built around 'life events' and focus on opportunities to educate people at various life stages.

"The Chin family" is central to IEC's financial education³⁶¹ This marketing avatar is easy to access and it depicts a family whose members represent the priority demographics of working adults, retirees, tertiary students and school-aged children. The IEC's communication and education strategy with Chin family is also attractive in its design goals of being fun, lively and practical in its real-life implications.³⁶² It is social, as the Chin family members reflect the cultural importance of family and familial obligations.

The IEC's decision to create the Chin family reflected the SFC's and IEC's past experience (limitations of the IEC name as IEC provides much wider education than investing) and consumer feedback. The IEC has previously communicated its financial education information as either the SFC or IEC. The public's reaction was that this "sounded very regulatory" and was perceived as "pushing the responsibility back on the public saying 'you need to be careful.'"³⁶³



Since introducing the Chin family, the IEC as an organization has held a fairly low profile in Hong Kong. To most of the public, this subsidiary of the SFC barely exists, other than as the website for the Chin Family.³⁶⁴ The IEC has been active in assessing the campaign's results in order to meet its strategic objective to measure behavioural change. It seeks external feedback through consumer research and advisory groups for each priority demographic and the population overall.³⁶⁵

BEHAVIOURAL INSIGHTS

CONCLUSION

■ CONCLUSION

It is clear that the use of behavioural insights in financial policy-making and regulation has merit. Even when formal BI units are not present, the behavioural awareness and understanding that these insights bring to financial regulation complements a regulator's toolkit. Whether the activities are market or registrant regulation, or investor education and outreach, applying a behavioural lens to our work increases the likelihood of achieving better outcomes. While not a panacea, understanding human behaviour enables the OSC to better comprehend, diagnose and address ongoing problems. To repeat what David Halpern, Director, U.K. Behavioural Insights Team said: "A lot of our policy models traditionally are based on a rather naïve understanding of what drives behaviour. But if you have a more intelligent, nuanced account of how people make decisions, you can design policy that is more effective, less costly, and makes life easier for most citizens."

Having conducted the research outlined in this paper, the OSC will continue to build its capacity and understanding in the use and application of behavioural insights, as well as identify opportunities to apply behavioural insights in OSC policy development and operational processes. Over the coming year, the OSC will also conduct pilot projects for testing using a behavioural insights lens, and will use the report to build awareness, understanding and capacity in the use of behavioural insights both within the OSC and amongst stakeholders, with a view to identifying further practical applications of behavioural insights that will lead to better investor and market participant outcomes.

END NOTES

¹Cited in Brigitte Madrian, “Applying Insights from Behavioural Economics to Policy Design”, Working Paper 20318, NBER (July 2014) p. 3

²Economic and Social Research Council study published in 2014, cited in Richard Thaler, *Misbehaving: the Making of Behavioural Economics*, 2015, p. 344

³World Bank 2015 Development Report, *Mind, Society and Behaviour*, p. 30

⁴Dan Ariely, *Predictably Irrational: The Hidden Forces That Shape Our Decisions*, (originally published in 2008, revised edition 2009)

⁵Alain Samson, “An Introduction to Behavioural Economics” in *The Behavioural Economics Guide 2014*; and Costa et al, “Applying behavioural insights to regulated markets”, Behavioural Insights Team (May 2016), pp. 5, 9

⁶World Bank 2015, *Mind, Society and Behaviour*, p. 6

⁷Ibid.

⁸Saurabh Bhargava and George Loewenstein, “Behavioural Economics and Public Policy 102: Beyond Nudging”, *American Economic Review*, 2015, 105(5) pp. 397-8

⁹Dilip Soman, *The Last Mile: Creating Social and Economic Value from Behavioural Insights*, (UoFT Rotman Press: 2015), pp. 10-12

¹⁰See Martin Wheatley, “Beesley lecture: Economics, technology, data – Redefining the future of conduct regulation”, published November 14th 2014, p 2. In Wheatley’s words, “it’s the specific combination of behavioural science, data and technology that has turned economics into such an important feature of conduct regulation.”

¹¹It is a difficult challenge to explore even just crucial parts of BE and BF without lengthy commentary and/or summaries given the number of leading behavioural concepts and the extensive literature of these disciplines. As Alain Samson writes in “Behavioural Science: Theory and Practice” (2015) in *The Behavioural Economics Guide 2015*, pp. 9-11, even the “theory and practice of nudging has become too vast to be discussed in detail” in his wide-ranging survey. He states that “readers of the behavioural science literature who wish to apply ideas from economics and psychology are faced with the challenge of engaging with material that is quite vast and complex.”

¹²See for example, the Federal Reserve Board of New York, “Special Issue: Behavioural Risk Management in the Financial Services Industry – The Role of Culture, Governance, and Financial Reporting” *Economic Policy Review* August 2016, Vol. 22, no. 1; and De Nederlandsche Bank, *Supervision of Behaviour and Culture: Foundations, practice & future developments*, 2015

¹³This World Bank report notes that “experts, policy makers, and [other] professionals, like everyone else, are themselves subject to the biases and mistakes that can arise from thinking automatically, thinking socially, and using mental models”. See World Bank 2015, *Mind, Society and Behaviour*, p. 18. Varun Gauri, head of the World Bank’s Global Insights Initiative (GINI) states that practitioners and professionals are subject to confirmation and sunk cost biases and “other cognitive illusions”. See his interview in *The Behavioural Economics Guide 2016*, p. 28

¹⁴Peter Kell, “ASIC and behavioural economics: Regulating for real people”, Speech, The Impacts of Behavioural Economics on Financial Markets Regulations Symposium, (Brisbane, October 18th, 2016) p. 4

¹⁵See, for example, Pete Lunn’s comments about the huge amount and broad range of behavioural economics research already and its ongoing major expansion in Lunn, *Regulatory Policy and Behavioural Economics* (OECD, 2014) and in Alain Samson’s in-depth overviews, “An Introduction to Behavioural Economics” in *The Behavioural Economics Guide 2014* and “Behavioural Science: Theory and Practice” in *The Behavioural Economics Guide 2015* and, most recently, in “Behavioural Economics in Perspective” in *The Behavioural Economics Guide 2016*. See Samson’s “Selected Behavioural Science Concepts” in the *Behavioural Economics Guide 2016* where his survey briefly explores over 90 concepts and their key research, yet requires 25 pages of text and 6 pages of references.

¹⁶In Daniel Kahneman’s view, “we need a common label for our shared activities. ‘Behavioural economics’ is not a good label, simply because psychologists are not economists and are not trained to think about markets. ‘Social psychology’ would cause similar difficulties to the economists A descriptively correct label is ‘applied behavioural science.’” Cited in E. Shafir, *The Behavioural Foundations of Public Policy*, Princeton, 2013, p. IX

¹⁷Cited in Hollingworth & Barker, “How to Apply Behavioural Science with Success: Learning from Application around the World”, *Behavioural Economics Guide 2016*, p. 30

¹⁸Stefan Hunt and Darragh Kelly, “Behavioural economics and financial market regulation: practical policy, rigorous methods”, *Agenda*, Oxera July 2015 p. 1

¹⁹Nancy Albinson, Andrew Blau and Yang Chu, “The future of risk: New game, new rules”, (Deloitte, 2016) <https://www2.deloitte.com/us/en/pages/risk/articles/future-of-risk-ten-trends.html> p. 6

²⁰Martin Wheatley, “Beesley lecture: Economics, technology and data – Redefining the future of conduct regulation” Speech at The Institute of Directors (November, 2014)

²¹Lynne Hamel and Nigel Gilbert, *Agent-Based Modelling in Economics* (2016: Wiley & Sons), p. 3. See also European Central Bank President Jean-Claude Trichet’s remarks in 2010 on the need for new approaches to explain crises and economic behaviour (Trichet, 2010) as well as the review conducted for the Bank of England that concluded in 2012, “The financial crisis exposed virtually all major macro models as being woefully ill-equipped to understand the implications of this type of event” (Stockton, 2012) cited in *ibid*.

²²Notably, Trichet’s reflections in 2010 included stating that “We need to entertain alternative motivations for economic choices. Behavioural economics draws on psychology to explain decisions made in crisis circumstances.” cited in *ibid*.

- ²³Erta et al, "Applying behavioural economics at the Financial Conduct Authority", Occasional Paper No. 1, Financial Conduct Authority (2013), p. 12
- ²⁴Costa et al, "Applying behavioural insights to regulated markets", Behavioural Insights Team (May 2016), pp. 3, 5
- ²⁵OXERA, "Behavioural Insights into Australian retail energy markets", AEMC (2016), p. 5
- ²⁶Federal Reserve Board of New York, "Special Issue: Behavioural Risk Management in the Financial Services Industry (2016)"; and De Nederlandsche Bank, Supervision of Behaviour and Culture: Foundations, practice & future developments, 2015 noted above
- ²⁷See Peter Andrews, "Culture in U.K. banking: regulatory priorities", Speech (London: October 18th, 2016)
- ²⁸Dan Ariely, *Predictably Irrational*, (2009), pp. 317-319
- ²⁹Alain Samson, "An Introduction to Behavioural Economics" in *The Behavioural Economics Guide 2014*, pp. 9-10
- ³⁰There is a broad range of literature on social biases, including group attribution error, in-group bias and moral luck. See, for example, Allison, S.T. & Messick, D.M. (1985) "The group attribution error" *Journal of Experimental Social Psychology*, 21(6), 563-579; Aronson, E. et al (2010). *Social Psychology*. 7th edition. Upper Saddle River: Prentice Hall; and Williams, B. (1981). *Moral Luck*. Cambridge: Cambridge University Press.
- ³¹See World Bank 2015, *Mind, Society and Behaviour*, Chapter 3.
- ³²Erta et al, "Applying behavioural economics at the Financial Conduct Authority", p. 12
- ³³See, for example, the different definitions posed by Richard Thaler (Thaler and Mullainathan, 2000) and Robert Shiller (2005), two of the most accomplished and leading experts in behavioural economics and finance cited in Pete Lunn, "Regulatory Policy and Behavioural Economics" (OECD, 2014), p. 19.
- ³⁴Ibid.
- ³⁵As Pete Lunn further explains, BE is the application of the inductive scientific method to the study of economic activity. It involves empirical studies of decision-making, *ibid*. BE and BF empirical studies can be grouped within three types of approaches: i) laboratory experiments; ii) random-controlled trials and field experiments; and, more recently, data science. See *Ibid*, pp. 13, 19
- ³⁶Alain Samson, "An Introduction to Behavioural Economics" in *The Behavioural Economics Guide 2014* and "Behavioural Science: Theory and Practice" in *The Behavioural Economics Guide 2015*.
- ³⁷Note See Lunn (OECD, 2014) p. 9 as well as Samson, "An Introduction to Behavioural Economics" (2014) p. 9 and "Behavioural Science: Theory and Practice" (2015), p. 1
- ³⁸Daniel Kahneman's and Richard Thaler's comments highlight some of the confusion of labelling of what is psychology and other non-economists' work as BE. Cited in Samson, "Behavioural Science: Theory and Practice" (2015), p. 2. Note also Tim Harford's (2014) comment that too many view BE as a catch-all phrase, applying it without practical or academic rigour. Cited in Samson, "An Introduction to Behavioural Economics" (2014), p. 11
- ³⁹Lunn, (2014) p. 19
- ⁴⁰OECD, (2015) "Behavioural insights and new approaches to policy design: The views from the field", Summary of an International Seminar, p. 6
- ⁴¹Joana Sousa Lourenco et al, "Behavioural Insights Applied to Policy: European Report 2016" (European Commission Joint Research Centre, 2016) p. 10
- ⁴²OECD, (2015) "Behavioural insights and new approaches to policy design: The views from the field", pp. 6, 9 and 13.
- ⁴³Ariely, *Predictably Irrational*, p. 317
- ⁴⁴Thaler, *Misbehaving*, p. 347 Indeed, by 2015, the LinkedIn network, The Behavioural Economics Group, had over 25,000 members. See Samson, "Behavioural Economics in Perspective" in *The Behavioural Economics Guide 2016*, p. 1.
- ⁴⁵In terms of BE's origins, some highlight Bernoulli (1738, reproduced in 1954) who first wrote that people are generally averse to risk, and that their risk aversion decreases with increasing wealth. See also Thaler, *Misbehaving* (2015), pp. 88-89, who notes the significant behavioural elements in the published works of Adam Smith, William Jevons, Arthur Pigou and Irving Fisher. Other experts cite Kenneth Boulding (1958) who predicted the integration of traditional economics with other social sciences like psychology and anthropology, calling this potential new area of research "behavioural economics". Others look to Herbert Simon's bounded rationality studies in the 1950s and his subsequent work that explored how people's decisions were not always optimal due to restrictions on human processing, limits to knowledge (and information) and computational capabilities (Simon, *Models of Bounded Rationality*, 1982), Samson, "Selected Behavioural Science Concepts" (2016), p.102
- ⁴⁶Kahneman, *Thinking Fast and Slow*, 2011, p. 8
- ⁴⁷Cited in Lunn, (2014), p. 17
- ⁴⁸Eugene F. Fama, "Two Pillars of Asset Pricing", Nobel Prize Lecture (December 8th, 2013) https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2013/fama-lecture.pdf p. 365
- ⁴⁹Kelly Peters presentation, UofT Rotman, January 30th, 2017
- ⁵⁰Cited in Lunn, (2014), p. 17
- ⁵¹(Simon, *Models of Bounded Rationality*, 1982) cited in Samson, "Selected Behavioural Science Concepts" (2016), p.102
- ⁵²Amos Tversky and Daniel Kahneman, "Judgement under Uncertainty: Heuristics and Biases", *Science*, vol. 185, (1974) pp. 1124-1131. The source for this research being cited over 7,000 times in academic papers, "an unbelievable rate for a psychology article", is Klaus Fielder and Momme von Sydow, "Heuristics and biases: Beyond Tversky and Kahneman's (1974) judgment under

uncertainty" (University of Heidelberg, Germany), p.146

⁵³Daniel Kahneman and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk", *Econometrica* 47, (1979), pp. 507-521. Of the three elements introduced by this article, loss aversion is particularly notable in Noble Prize winner Daniel Kahneman's view, loss aversion is the most significant contribution of psychology to BE from *Thinking Fast and Slow*, 2011, p.300

⁵⁴Thaler, "Toward a Positive Theory of Consumer Choice" (1980)

⁵⁵Shiller, "Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends" (1981) cited in Thaler, *Misbehaving*, pp. 230-232

⁵⁶Ibid

⁵⁷Martin Wheatley, "Making competition king – the rise of behavioural economics at the FCA", Speech to ASIC, (March 2014) and Thaler, *Misbehaving*, pp. 177-184

⁵⁸See Herbert Simon, *Models of bounded rationality* (1982)

⁵⁹Richard Thaler and Cass Sunstein, *Nudge: Improving Decisions about Health, Wealth and Happiness* (2008)

⁶⁰See for example, Robert Cialdini, *Influence: The Psychology of Persuasion* (2006)

⁶¹David Halpern, *Inside the Nudge Unit: How Small Changes Can Make a Big Difference* (Random House, 2015) p. 39

⁶²Ibid, pp. 8-9 and 38-58

⁶³Dan Ariely, *Predictably Irrational*, (2009)

⁶⁴Ibid, p. 79

⁶⁵Ibid, p. 317

⁶⁶For a thorough summary of his work as well as a comprehensive survey of other important BF research, see Robert J. Shiller, "Speculative Asset Prices", 2013 Nobel Prize Lecture revised February 2014, https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2013/shiller-lecture.pdf pp 459-501. Thaler (*Misbehaving*) and a range of other leading academics and experts highlight Shiller's contributions and the foresight of his research.

⁶⁷Robert J. Shiller, *Irrational Exuberance* (2000)

⁶⁸While Shiller's framework for gauging financial market excesses and his prescience in forecasting both the 2000-02 and 2007-08 stock market declines and 2007-09 housing sector bubble merit highlighting, the timing and magnitude of such excesses make these very difficult to measure precisely in advance. For a different view of Shiller's forecasts and the defense of efficient markets, see Fama, "Two Pillars of Asset Pricing", pp. 376-77

⁶⁹Codagnone et al, "Nudging in the World of International Policymaking" in *The Behavioural Economics Guide* 2014, p. 11

⁷⁰Ibid.

⁷¹Omri Ben-Shahar and Carl E. Schyneider, *More Than You Wanted to Know: The Failure of Mandatory Disclosure*, (2014) chapter 1

⁷²Cain et al, "The Dirt on Coming Clean: Perverse Effects of Disclosing Conflicts of Interest" (2005) online; Sah et al, *The Burden of Disclosure: Increased Compliance with Distrusted Advice* (2012) online; and Loewenstein et al, "Disclosure: Psychology changes everything" (2014) online

⁷³Cited in Samson, "Behavioural Science: Theory and Practice" (2015), p. 15

⁷⁴Ibid.

⁷⁵Martin Wheatley, "Regulation – supporting vibrant markets", Speech at Future of Financial Services event (2015)

⁷⁶OECD (2015), p. 11.

⁷⁷Wheatley, "Making competition king", (March 2014)

⁷⁸Wheatley, "Economics, technology and data" (November 2014)

⁷⁹Wheatley, "Making competition king", (2014)

⁸⁰Richard Thaler, *Misbehaving*, (2015) and his remarks at the University of Toronto, May 18th 2016 – the Great Recession was the "final nail in the coffin". "The global financial crisis added urgency to the quest for more effective regulation", and was reflected in the marked shift in the OECD's recommended principles in 2012 for better regulation to address key traditional policy and regulatory failures in Lunn (2014), p. 17. See also Peter Kell, "ASIC and behavioural economics: Regulating for real people", p. 3, and Halpern, *Inside the Nudge Unit*, p. 45

⁸¹Hamill and Gilbert, *Agent-Base Modelling in Economics* (2016), p. 3

⁸²Halpern, *Inside the Nudge Unit*, p. 45

⁸³The failure of traditional macro-economic models to capture the risks and severity of the 2008-09 recession and their ongoing overestimations of economic growth during 2010-16YTD also spurred efforts to find new macro models based on real behaviour. For example, the Canadian Centre for Economic Analysis (CANCEA) has developed an agent-based modelling and systems approach to achieve more accurate forecasts of the economy and its major components based on the actual behaviour of people, corporations et al. See www.cancea.ca for a variety of CANCEA's studies.

⁸⁴By 2011, the Basle Committee on Banking Supervision (BCBS) required that all regulatory bank capital issuance in the near future include conversion to equity in the event of the issuing bank's prospective insolvency. As a BCBS member, Canada changed

its bank capital regulations in 2013 to increase the: thresholds and quality of capital buffers for Canadian banks; and investors' exposure to the future viability of banks. More recently, tougher banking oversight in Canada was reflected in the further increases in the scrutiny of banks' exposure to residential mortgages and the capital required for this lending has been raised in 2015-16.

⁸⁵Lunn (2014) p. 12

⁸⁶The U.K. BIT's international expansion reflected both its demonstrated success and the need to adjust its strategy to reflect the pending end to full funding by the U.K. government.

⁸⁷Paul Dolan et al, "MindSpace: Influencing Behaviour Through Public Policy", U.K. Institute for Government, 2010

⁸⁸The World Bank, Global Insights Initiative (2016) online

⁸⁹Samson, "Behavioural Economics in Perspective", (2016), p. 8. Samson also notes that in 2016, the EC's Joint Research Centre in 2016 published an account of European behavioural initiatives with recommendations for its future while a new round of EC-funded partnerships including a consortium led by the London School of Economics also began this year.

⁹⁰See the Innovation Hub's First Annual Report March 2016, available at <http://www.pco-bcp.gc.ca/index.asp?lang=eng&page=innovation&doc=rpt3/index-eng.htm>

⁹¹See OECD, "Behavioural insights and new approaches to policy design"; and OECD, "Behavioural Insights and Public Policy: Lessons from Around the World," OECD Publishing, 2017

⁹²Michael Lewis, *The Undoing Project: A Friendship that Changed Our Minds* (2016) p. 342

⁹³Ibid

⁹⁴See Keith Stanovich and Richard West, "Individual Differences in Reasoning: Implications for the Rationality Debate", *Behavioural and Brain Science* 23 (2000) cited in Kahneman, *Thinking Fast and Slow* (2011), pp. 48-49 and in Benartzi, *The Smarter Screen* p. 59 as well as other leading investigators' research also cited in Kahneman (2011), pp. 19-58

⁹⁵Michael J. Kaufman, "Behavioural Economics and Investor Protection" (2013) pp. 1324-5; and Samson, "An Introduction to Behavioural Economics" (2014) p. 4

⁹⁶<https://www.behaviouraleconomics.com/mini-encyclopedia-of-be/dual-system-theory/>

⁹⁷See Kruglanski, A. W., & Gigerenzer, G. (2011). "Intuitive and deliberative judgements are based on common principles". *Psychological Review*, 118, pp. 97-109. Note that these authors cite some compelling evidence in support of their critique, but a detailed review of their views and the responses of dual systems' proponents is beyond the scope of this Report.

⁹⁸Samson, "Selected Behavioural Science Concepts", (2016), p.16

⁹⁹Adapted from World Bank 2015, *Mind, Society and Behaviour*, p. 6 – note that we have used reflective rather than deliberative to describe System 2 and added emotions to the World Bank table content

¹⁰⁰Some researchers, Kahneman included, believe that the automatic (System 1) appraises situations in advance of the reflective (System 2), and is the more powerful system. Other researchers believe that the systems run in parallel, and that System 2 can suppress System 1 at times, thereby preventing biased thinking from winning out. Sources: Goel, V. and Dolan, R.J. (2003). Explaining modulation of reasoning by belief. *Cognition*, 87, B11-B22; Kahneman, D. (2011). *Thinking, fast and slow*; Shynkaruk, J.M. and Thompson, V.A. (2006); Confidence and accuracy in deductive reasoning. *Memory & Cognition*, 34(3), 619-632; Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin*, 119, 3-22; Stuppel, E.J.N. and Ball L.J. (2008). Belief-logic conflict resolution in syllogistic reasoning: Inspection-time evidence for a parallel-process model. *Thinking & Reasoning*, 14(2), 168-181.

¹⁰¹From Samson, *BE Guide 2016*, p. 107 "Fast and frugal decision-making refers to the application of ecologically rational heuristics, such as the recognition heuristic, which are rooted in the psychological capacities that we have evolved as human animals (e.g. memory and perceptual systems). They are 'fast and frugal' because they are effective under conditions of bounded rationality—when knowledge, time, and computational power are limited (Goldstein & Gigerenzer, 2002)."

¹⁰²This point is from Michelle Hilscher who cites the following sources for these research findings: Blanchette, I. and Leese, J. (2011). The effect of negative emotion on deductive reasoning. Examining the contribution of physiological arousal. *Experimental Psychology*, 58(3), 235-246. Blanchette, I. and Richards, A. (2004). Reasoning about emotional and neutral materials: Is logic affected by emotion? *Psychological Science*, 15(11), 745-752. Copeland, D.E., Gunawan, K. and Bies-Hernandez, N.J. (2011). Source credibility and syllogistic reasoning. *Memory and Cognition*, 39, 117-127. Feather, N. (1964). Acceptance and rejection of arguments in relation to attitude strength, critical ability, and intolerance of inconsistency. *Journal of Abnormal and Social Psychology*, 69, 127-136. Markovits, H. and Nantel, G. (1989). The belief-bias effect in the production and evaluation of logical conclusions. *Memory & Cognition*, 17(1), 11-17. Oaksford, M., Morris, F., Grainger, B. & Williams, J.M.G. (1996). Mood, reasoning, and central executive processes. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 22(2), 476-492. Pennycook, G., Cheyne, J. A., Koehler, D. J., and Fugelsang, J. A. (2013). Belief bias during reasoning among religious believers and skeptics. *Psychonomic Bulletin & Review*, 20, 806-811.

¹⁰³Samson and Voyer "Two minds, three ways", (2012) and "Emergency purchasing situations", (2014) cited in Samson, "Selected Behavioural Science Concepts", (2016)

¹⁰⁴Samson, "An Introduction to Behavioural Economics" (2014) pp. 1-12, and "Selected Behavioural Science Concepts" in *The Behavioural Economics Guide 2015*, pp. 28-53.

¹⁰⁵Clore, G. L., Gasper, K., & Garvin, E. (2001). Affect as information. In J. P. Forgas, (Ed.). *Handbook of Affect and Social Cognition* (pp. 121-144). Mahwah, NJ.: Lawrence Erlbaum Associates.

¹⁰⁶See Blanchette, I. and Richards, A. (2010). The influence of affect on higher level cognition: A review of research on interpretation, judgement, decision-making and reasoning. *Cognition and Emotion*, 24(4), 561-595. Forgas, J.P. (1995). Mood and judgment:

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¹⁰⁷See Dawson, Gilovich, and Regan (2002) cited in *World Bank, Mind, Society and Behaviour*, p. 27

¹⁰⁸Samson, (2014), pp. 6-7

¹⁰⁹See Trope & Liberman (2003); Trope et al (2007); Fiedler 2007; and Liberman & Trope (2008) cited in *World Bank, Mind, Society and Behaviour*, p. 115

¹¹⁰Cited in Samson, (2014), p. 6

¹¹¹See Buehler, Griffin & Ross (1994) "Exploring the 'planning fallacy': Why people underestimate their task completion times, *Journal of Personality and Social Psychology*, 67(3), 366-81 cited in Samson, "Selected Behavioural Science Concepts" (2016), p. 113; and Kahneman & Tversky (1999) "Evaluation by moments: Past and future" in D. Kahneman & Tversky (eds), *Choices values and frames*, pp. 2-23 cited in *ibid*, p. 114

¹¹²Dai, H. et al, "The fresh start effect: Temporal landmarks motivate aspirational behaviour" *Management Science*, (2014), pp. 1-20

¹¹³Cosmides, L. and Tooby, J. (1996). A logical design for the mind? *PsychCRITIQUES*, 41(5), 448- 450. Evans, J.S.B.T. (2006). Dual system theories of cognition. Some issues. In *Proceedings of the 28th Annual Meeting of the Cognitive Science Society* (pp. 202-207).

¹¹⁴Cited in Samson (2014), p. 7

¹¹⁵Cited in *Ibid*, p. 7

¹¹⁶Ariely, *Predictably Irrational* (2009), pp. 75-102 ; Samson (2014), pp. 7-9; and World Bank 2015, *Mind, Society and Behaviour*, p. 51

¹¹⁷Cited in *World Bank, Mind, Society and Behaviour*, p. 51

¹¹⁸Cited in *Ibid*

¹¹⁹*Ibid*, pp. 11 and 62-3

¹²⁰*Ibid*.

¹²¹Samson, "Selected Behavioural Science Concepts", in *BE Guide 2016*, pp. 102-103

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- ²⁰⁷This EC section draws extensively upon Lourenco et al, "Behavioural Insights Applied to Policy" p. 37
- ²⁰⁸Lunn, "Regulatory Policy and Behavioural Economics", p. 33
- ²⁰⁹Lourenco et al, "Behavioural Insights Applied to Policy" p. 37
- ²¹⁰This European country section generally and the material for the Netherlands, Germany, France and Denmark draws extensively upon Ibid, pp. 34-36
- ²¹¹Ibid, p. 35
- ²¹²See iNudgeYou – the Danish Nudge Unit at <http://inudgeyou.com/en/about-us-2;> and Lunn, "Regulatory Policy and Behavioural Economics", p. 35
- ²¹³The information about Singapore's approach in this paragraph is based upon feedback from numerous interviews undertaken by the OSC's Investor Office and unsolicited commentary from a variety of private experts.

- ²¹⁴Many of the experts interviewed regarding BI's adoption and use globally cited Singapore as either a leader and/or unique in its approach. Source: over 20 interviews by the OSC.
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- ²²³Thaler, Foreword in Halpern, *Inside the Nudge Unit*, p. XI
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- ²⁴⁰*Ibid*, p. 74
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- ²⁴²*Ibid*, p. 318
- ²⁴³*Ibid*, p. 338
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- ³⁴⁹Innovations for Poverty Action. Project Evaluation: Borrow Less Tomorrow. Available at: <http://www.finrafoundation.org/web/groups/foundation/@foundation/documents/foundation/p126765.pdf>
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- ³⁵¹See Department of Labor, "REGULATING ADVICE MARKETS DEFINITION OF THE TERM "FIDUCIARY" CONFLICTS OF INTEREST - RETIREMENT INVESTMENT ADVICE REGULATORY IMPACT ANALYSIS FOR FINAL RULE AND EXEMPTIONS", APRIL 2016 Available at <https://www.dol.gov/sites/default/files/ebsa/laws-and-regulations/rules-and-regulations/completed-rulemaking/1210-AB32-2/conflict-of-interest-ria.pdf>
- ³⁵²Ibid, p. 3
- ³⁵³Ibid, p. 9
- ³⁵⁴See Department of Labor homepage for CLEAR at <http://clear.dol.gov/>
- ³⁵⁵See behavioural finance: retirement and behavioural insights topic areas at Ibid
- ³⁵⁶Source: Private interview for this information and other MAS activities in this paragraph and the next.
- ³⁵⁷Ibid
- ³⁵⁸See <https://www.thechinfamily.hk/web/iec/en/about-iec.html>
- ³⁵⁹See <https://www.thechinfamily.hk/web/iec/en/strategy.html>
- ³⁶⁰Ibid

³⁶¹See <http://www.thechinfamily.hk/web/tc/>

³⁶²Interview, Damien Yip, Head of Marketing and Programmes, Investor Education Centre

³⁶³Ibid

³⁶⁴Ibid

³⁶⁵See <https://www.thechinfamily.hk/web/iec/en/about-iec.html>