A New Perspective?

Behavioural Insights and Nationally Determined Contributions

Alice Tierney
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Abstract: The Paris Agreement is the world's response to climate change. Nationally Determined Contributions, in which each country outlines their individual efforts to reduce national emissions and adapt to the impacts of climate change, are key to implementing the goals of the Paris Agreement. Incorporating behavioural insights into an analysis of Nationally Determined Contributions brings a fresh perspective to this discussion, which is typically dominated by a rational choice framework and issues of feasibility and implementation. This thesis selects key behavioural insights and incorporates them into an analysis of domestic policymakers developing and implementing policy to achieve goals contained within Nationally Determined Contributions. The application of behavioural insights yields several conjectures meriting further research. This approach faces complex challenges that can be addressed with a careful eye to methodology, unit of analysis and further research.

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I hereby declare and confirm that this thesis is entirely the result of my own work except where otherwise indicated. I acknowledge the supervision and guidance I have received from Professors Anne van Aaken and Eva van der Zee. This thesis is not used as part of any other examination and has not yet been published.

Alice Tierney,
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PART 1: INTRODUCTION

Climate change is a 'super wicked' problem facing humankind (Lazarus, 2009). On 12 December 2015, after years of struggle, the world reached historic consensus with adoption of the Paris Agreement (Klein et al., 2017). Key to implementing the goals of the Paris Agreement are Nationally Determined Contributions, in which each country outlines their individual efforts to reduce national emissions and adapt to the impacts of climate change (Paris Agreement, Art 4).

There has been a great deal written about the Paris Agreement and Nationally Determined Contributions. Most (economic) analysis utilises a rational choice framework, focuses on the feasibility and practical implementation of the Agreement and arrives at largely pessimistic conclusions (see *e.g.* Cramton et al., 2017). Discourse is also dominated by the roles of strategic influences and politics, a prominent example being the USA's withdrawal from the Agreement (Rajamani & Brunnée, 2017). As such, the behavioural or psychological effects of the Paris Agreement have been largely overlooked (Rowell & van Zeben, 2016). Little has been written on the behavioural effects of the Paris Agreement's overarching target, and to the author's knowledge, nothing yet addresses the behavioural effects of Nationally Determined Contributions. This thesis aims to address that gap and enrich our understanding of the world's response to the problem of climate change.

The research question guiding this thesis is: whether and to what extent can behavioural insights be applied to an analysis of Nationally Determined Contributions? The unit of analysis is the individual actor; policymakers at the

domestic level who have a role in developing and implementing domestic policies to achieve targets contained within Nationally Determined Contributions. Sub-research questions are therefore raised: are domestic policymakers affected by particular biases or heuristics when developing and implementing such policies? If so, what are possible consequences?

The research questions are approached theoretically, drawing on behavioural insights from psychological and behavioural economic research. Both fields contribute to our understanding of systematic deviations from behaviour predicted by rational choice theory (van Aaken, 2018, p. 69). An application of behavioural insights to policymakers when developing and implementing policy regarding Nationally Determined Contributions yields several conjectures. As will be made apparent, this thesis does not seek to displace standard economic analysis (or dismiss the role of other influences) in an analysis of Nationally Determined Contributions, but rather to strengthen an analysis by incorporating behavioural insights.

This paper proceeds as follows. Parts 2 – 5 build a theoretical framework. Part 2 outlines the Paris Agreement and Nationally Determined Contributions. Part 3 reviews the behavioural turn in economics, with a focus on select manifestations of bounded rationality. Part 4 ventures into the young area of behavioural insights internationally and the slim body of scholarship applying behavioural insights to climate change policy. Fruitful and relevant applications in the international sphere are highlighted. Part 5 addresses methodological challenges to this approach and ways forward, with a focus on the individual unit of analysis. Part 6 explicitly addresses the research questions, applies the concepts that have been developed and proposes

several conjectures. Limitations will be discussed and future areas of research will be suggested. Part 7 concludes.

PART 2: THE PARIS AGREEMENT AND NATIONALLY DETERMINED CONTRIBUTIONS

> The Paris Agreement cannot solve climate change on its own. However, it does unmistakably define the direction of travel towards limiting global average temperature rise to a range between 1.5 ° and below 2 °C, to avoid the worst impacts of climate change. There is much left to be achieved in order to make that vision a reality, but what is clear is that progress is by now unstoppable…we are not at our destination yet, but we are irreversibly on our way.
>
> Christiana Figueres, Executive Secretary, United Nations Framework Convention on Climate Change (2010–2016), in Klein et al., 2017, p. vi

This chapter sketches the framework of the Paris Agreement (hereafter 'the Agreement'), focusing on aspects of Nationally Determined Contributions (hereafter 'NDCs').

2.1 The Paris Agreement

The Agreement is the world's first universal, legally binding global climate change agreement, adopted at the Paris climate conference on 12 December 2015 (Klein et al., 2017). It has been variously described as a 'monumental triumph', 'the world's greatest diplomatic success' and a 'big, big deal' – not necessarily because the approach set out by the Agreement will resolve climate change, but because it is a huge achievement in multilateral diplomacy (Bodansky, 2017, p. 209). Of 197 nations Party to the Convention, 189 nations have ratified the Agreement (United Nations Framework Convention on Climate Change, 2020). The US announced their withdrawal from the Paris Agreement in 2017 and will formally withdraw later in 2020 under a Trump administration (Rajamani & Brunnée, 2017).

The Agreement was adopted in pursuit of the United Nations Framework Convention on Climate Change's (hereafter 'UNFCCC') objective to stabilise greenhouse gas emissions 'at a level that would prevent dangerous anthropogenic interference with the climate system' (UNFCCC, Art 2). The aim of the Agreement is to 'strengthen the global response to the threat of climate change', by holding the increase in global average temperature to 'well below 2 degrees' above pre-industrial levels, and to pursue efforts towards a 1.5 degree temperature limit (Paris Agreement, Art 2). The Agreement also aims to strengthen the ability of (developing and must vulnerable) countries to deal with the impacts of climate change, through providing for appropriate financial flows, a new technology framework and an enhanced capacity building framework (UNFCCC, 2020).

In comparison to its predecessor, the Kyoto Protocol, the Agreement is less ambitious, with a more modest and flexible approach (Bodansky, 2016, p. 289). The Agreement applies to both developed and developing countries, unlike the Kyoto Protocol's mitigation targets, which only applied to developed countries (Bodansky, 2016, p. 290). The Agreement was a shift away from obligations of result towards obligations of conduct. It takes a 'broad then deep' approach, emphasising participation and ambition, first focusing on the coverage of emissions reductions and then encouraging of deepening of those commitments (Bodansky et al., 2017, p 249).

The architecture of the Agreement is hybrid: bottom-up in that each country develops their own domestic policies to support and reflect international commitments, top-down with the inclusion of strong international rules to foster ambition (Bodansky, 2016, p. 300).

2.2 Nationally Determined Contributions

NDCs are the efforts of each nation to reduce national emissions and adapt to the impacts of climate change and are key to achieving the overarching aims of the Agreement. It is worth noting that at the time of writing, NDCs put forward by countries will limit temperature increase to 2.8 – 3 degrees Celsius and thus not achieve the Agreement's target (Climate Action Tracker, 2020).

2.2.1 Obligations of conduct, not result

Article 4.2 of the Agreement provides:

> Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

This Article places two obligations on each Party, both of which are legally binding, using unambiguously mandatory language: 'each Party shall'. The first sentence places a clear procedural obligation on each Party to the Agreement to 'prepare, communicate and maintain successive nationally determined contributions'. Each Party's contribution is determined domestically and subjectively: 'that it intends to achieve'. This phrase establishes a good faith expectation that Parties plan to deliver on their commitments, but are not obliged to do so (Rajamani & Brunnée, 2017). The second sentence is a blanket provision for all parties to the Agreement; all are required individually to pursue domestic measures aiming to achieve the objective of their NDC (Klein et al., 2017). The pursuit of domestic measures may include development of domestic laws, which could give NDCs domestic legal force, subject to the precise terms of those laws (Klein et al., 2017).

However, the article does not contain obligations of result concerning the actual implementation and achievement of NDCs. In the lead up to the Agreement, Parties disagreed on whether NDCs should be obligations of result (the EU and small island states) or of conduct (the US, China, India) (Bodansky, 2016, p. 297). The end result is that Article 4 contains obligations of conduct only and Parties to the Agreement are not subject to legally binding obligations of result (Bodansky et al., 2017, p. 231).

2.2.2 Progression

Each nation is subject to a binding obligation to communicate a NDC every five years with the expectation of progression (Paris Agreement, Art 4.9). Article 4.3 of the Agreement provides:

> Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution, and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of differing national circumstances.

The use of 'will' signals an expectation, but not an obligation, that each Party will undertake increasingly ambitious actions over time (Bodansky, et al., 2017). The references for future NDCs are past NDCs (self-referential baselines), although the standard of progression and 'highest possible ambition' are arguably objective rather than self-judging (Bodansky et al., 2017 p.234).

There is no definition of what progression means or what form it should take. Each party is able to determine for itself what its NDC will be and therefore also its progression. Progression could take form in a number of ways, for example more stringent numerical commitments of the same form, such as a decrease in emissions intensity from a base year over a previous intensity target (Bodansky et al., 2017

p.234). Progression could also be reflected in the type of commitment, for example sectoral measures evolving to economy-wide emissions reduction targets (Bodansky et al., 2017 p.234). For developing countries, progression may also depend on the level of support given by developed countries (Klein et al., 2017).

The obligation to communicate a NDC every five years and the expectation of progression is combined with a 'global stocktake' (Art 14.1). The stocktake performs a collective assessment of whether NDCs add up to what is necessary to achieve the Agreement's goal of limiting temperature increase to well below 2 degrees (Art 14).

However, many countries have not updated their NDCs with an increase in ambition, in violation of the Agreement's expectations of progression and ambition (Climate Action Tracker, 2020).

2.2.3 Differentiation, flexibility and heterogeneity

NDCs are also governed by principles of differentiation and flexibility. This has resulted in NDCs being formed in a variety of ways.

Differentiation of individual NDCs is expressed by reference to 'common but differentiated responsibilities and respective capabilities, in light of different national circumstances' throughout the Agreement (Paris Agreement, Art 4.3). Article 4.4 addresses differentiation in the form of NDCs by developed and developing countries. It provides that developed countries should 'continue taking the lead by undertaking economy-wide absolute emission reduction targets' and developing countries should enhance mitigation efforts and are 'encouraged to move over time' towards emission reduction targets (Paris Agreement, Art 4.4).

Article 4.6 extends flexibility to least developed countries and small island states. These nations still retain individual mitigation obligations but may prepare and

communicate strategies, plans, and actions for low greenhouse gas emission development strategies, bearing in mind special circumstances. Each Party is required to communicate a contribution every five years (Paris Agreement, Art 4.9) and is required to provide the information necessary for clarity, transparency and understanding (Paris Agreement, Art 4.8). These are binding obligations of conduct (Bodansky et al., 2017). Additionally, Parties are permitted to adjust their NDCs 'at any time' with a view to enhancing the level of mitigation ambition (Paris Agreement, Art 4.11).

This significant latitude afforded in the formulation of NDCs has resulted significant variation among NDCs. They vary in length and content. Targets and timeframes also vary. For example, the US' NDC has an emissions reduction target of '26%-28% below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28%' (United States, 2015). The EU's NDC contains a 'binding target of an at least 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990' (European Commission, 2015). Furthermore, some NDCs are qualitative and contain goals to adopt climate friendly paths. For example, India's 38-page NDC contains, in addition to a quantitative emissions intensity targets, an objective to 'propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation' (India, 2016). In such a case, an obligation of result would not have lent itself to enforcement (Bodansky et al., 2017, p. 232). Due to the heterogeneous, qualitative and conditional nature of NDCs, it will be challenging to assess and compare progress on NDCs (Weikmans et al., 2020). This poses problems for the goals of transparency and accountability, as discussed below.

2.2.4: Transparency

As there are no binding obligations of result regarding the content of NDCs, the Agreement's transparency framework (Article 13) is the main mechanism encouraging accountability (Bodansky et al., 2017, p. 242) and ambition (Weikmans et al., 2020). Article 4.12 provides that NDCs are to be recorded in a public registry (which can be accessed easily online) and maintained by the UNFCCC secretariat. Parties' NDCs are publicly available and are therefore able to be measured against other NDCs and open to comment and critique by other Parties and civil society organisations (Bodansky et al., 2017, p. 234). This rests on the premise that peer and public pressure can be effective in influencing behaviour in the absence of any legal obligation (Bodansky et al., 2017). Greater clarity and transparency on a country's performance could directly incentivise a country to do more through several channels, such as: making the effectiveness of a country's policies more apparent to government officials and politicians to implement better policies, non-state actors could 'name and shame' worst performers or 'name and fame' best performers, and other countries could place pressure on worst performing countries (Weikmans et al., 2020). However, incomplete and incomparable information may be provided due to the flexibility afforded to developing countries and heterogeneous, qualitative and conditional nature of NDCs (Weikmans et al., 2020).

Whilst NDCs are not legally binding as such, the combination of binding procedural requirements and normative expectations of progression over time and highest possible ambition enshrined in the Agreement mean a Party would contravene the spirit of the Agreement if it were to downgrade an existing NDC (Rajamani & Brunnée, 2017). The terms of the Agreement operate ensemble; any weakening of the

normative expectations that frame the NDCs would weaken the very core of the Agreement (Rajamani & Brunnée, 2017, p. 539).

2.3 Conclusion

In conclusion, the architecture of the Agreement and NDCs is 'bottom-up', with binding obligations of conduct, not result. Accordingly, countries maintain a large degree of autonomy and sovereignty. However, this poses challenges for transparency and comparability due to the large degree of heterogeneity among NDCs. The Agreement's transparency framework, combined with the expectation of progression, is the main mechanism encouraging accountability and ambition. These features of NDCs are ripe for the application of behavioural insights.

PART 3: FROM RATIONAL CHOICE TO BEHAVIOURAL INSIGHTS

The previous chapter outlined the Agreement with a focus on key aspects of NDCs. This chapter will trace the development of behavioural insights into economic analysis of law, focusing on key manifestations of bounded rationality. This thesis uses the umbrella term 'behavioural insights' to refer to biases, heuristics and other behavioural phenomena.

3.1 'Traditional' Economic Analysis of Law

Traditional economic analysis of law is underpinned by classical theoretical economic assumptions of perfect human rationality. It is assumed that under resource scarcity, individuals act in a utility-maximising, self-interested manner, responding to incentives with a stable set of preferences (Becker, 1976). Economic analysis has proved itself to be immensely fruitful in legal scholarship: by focusing on incentives created by legal rules, viewing rules from ex ante and ex post perspectives and calling into question established legal truths through offering new points of view (Zamir & Teichman, 2018, p. 18).

3.1.2 'Traditional' Economic Analysis of Climate Change

A 'traditional' rational choice analysis is the predominant paradigm used to examine global action on climate change (van Aaken, 2018, p. 67). This yields a largely pessimistic outlook, but understandably so – climate change is a complex, diffuse and 'super wicked' problem requiring monumental international cooperation (Lazarus, 2009). Climate change is a classic collective action problem and implicates a 'tragedy of the commons' (Cramton et al., 2017; van Aaken, 2018). If each country

had its own climate, each self-interested country with means to do so would act sufficiently to curb emissions. However, due to the global nature of a shared climate, a country that reduces emissions bares the full cost of abatement, but only receives a small fraction of that benefit (Cramton et al., p. 2). The self-interested (and rational) response is to free ride, as countries rationally prefer others to undertake costly efforts instead (Cramton et al., 2017, p. 2). Rational choice predicts that the Agreement, with its limited enforcement mechanisms, will not have any meaningful impact on behaviour (e.g. Posner & Sykes, 2013).

When incorporating the importance of reciprocity and co-operation, analysis is also pessimistic: 'there is no hope that, without a reciprocal, common commitment, pledge-and-review will succeed' (Cramton, et al., 2017, p. 34). Criticism has been levelled at the Agreement for containing collective goals rather than common commitments, and that the Agreement's lack of reciprocity renders it impotent (Cramton et al., 2017). It is argued a top-down approach is necessary to ensure co-operation (Cramton et al., 2017).

This thesis does not explicitly disagree with this prognosis – it is acknowledged that countries may never achieve the targets set out in NDCs, and even if achieved, NDCs as they currently stand are insufficient to achieve the overarching temperature goals of the Agreement. Furthermore, the roles of strategic interests, underlying incentive structures and other rationalist foundations absolutely cannot be replaced (van Aaken, 2018, p. 69). However, an incorporation of behavioural insights and a focus on domestic policymakers adds a new perspective to this discussion.

3.2 A Behavioural Approach

A behavioural approach does not seek to discard the established theoretical framework, but rather to strengthen it by incorporating insights from behavioural

insights (Zamir & Teichman, 2018, p. 18). It strives to develop economic models on more realistic micro foundations, reflecting how people actually behave (Dunoff & Pollack, 2018, p. 1332). Behavioural economics does not seek to completely displace the perfectly rational decision maker with a rationally imperfect one (Broude, 2015, p. 1114). Rather, through drawing upon insights from the real decision-making process of individuals in a variety of circumstances, existing scholarship can be developed and enriched (Broude, 2015, p. 1114). In that same spirit, this thesis is motivated to strengthen, enrich and develop existing analysis rather than to jettison.

A growing body of experimental and empirical research has demonstrated systematic deviations from assumptions of economic rationality, challenging rational choice theory (Zamir & Teichman, 2018, p. 1). These deviations from rational choice assumptions of self-interest utility maximisation are commonly placed into three categories: bounded rationality, bounded self-interest and bounded willpower (van Aaken, 2014, p. 427). Bounded rationality recognises that human cognitive capabilities are imperfect and finite and that the human brain employs shortcuts in judgment and decision-making (Broude, 2015, p.1114). Experimental research and neurological findings demonstrate that behavioural patterns observed by behavioural scholars are not 'anomalies' or random mistakes, but rather 'part of our neurological inheritance' (Gowdy, 2008, p. 636).

The remainder of this chapter will outline key behavioural insights derived from cognitive psychological and behavioural economic research. These insights will then be developed in an international context in chapter 4 and utilised in an analysis of NDCs in chapter 6.

3.2.1 Dual-process Cognition and Climate Change

A robust body of evidence supports a finding that human cognition operates along two co-existing systems: "System One", a fast, emotional processing system that allows people to process information intuitively and quickly and "System Two", a more deliberate, slower system allowing for reflective and ordered processing of information (Kahneman, 2011). System One deploys heuristics: 'rules of thumb' that can be applied quickly and easily but may also lead to error (Kahneman, 2011). The effects of climate change are diffuse, slow and complex, whereas System One cognitive processes developed to address concentrated, immediate and straightforward problems (Rowell, 2019, p. 8). The problems faced by our ancestors when System One processes were developed (for example, hunting for food and avoiding predators) are very different to issues faced today when managing environment quality (Rowell, 2019, p. 8). An individual's intuition about how they should act when faced with a problem will often be inappropriate for latent and complex issues (Rowell, 2019, p. 8). It is therefore important to understand the dynamics underpinning the human response to complex problems such as climate change and incorporate behavioural research into environmental policymaking and policy analysis (Rowell, 2019).

3.2.2 Prospect Theory and Reference Points

Kahneman & Tversky's (1979) Prospect Theory deviates from the tenets of expected utility theory and dictates that people ordinarily perceive outcomes as gains and losses, rather than final states of wealth or welfare. Gains and losses are defined in relation to a reference point, and not in absolute terms. Usually, the status quo is taken as the reference point. Reference points can change in dynamic situations; research

suggests that reference points are adjusted quickly after making gains but are not so quickly adjusted after incurring losses (Kahneman et al., 1990).

3.2.3 Loss Aversion

Loss aversion ('losses loom larger than gains') is a key notion associated with prospect theory (Kahneman & Tversky, 1979). Studies have established that negative experiences have a greater impact than positive ones, pointing to the existence of a 'negativity bias' (Baumeister et al., 2001). Loss aversion manifests in physiological arousal; indicators such as pupil dilation and increased heart rate demonstrate that negative events or outcomes result in greater arousal than positive ones (Hochman & Yechiam, 2011). The neural basis of loss aversion has also been confirmed (Gowdy, 2007, referring to Tom et al., 2007). Neuroimaging studies have established that brain regions responsible for evaluating potential gains and losses are more sensitive to losses (Tom et al., 2007).

3.2.4 Status Quo Bias

One implication of loss aversion is that individuals have a tendency to remain with the current state of affairs (their perceived status quo) rather than opting for an alternative, because the disadvantages of diverging from the current status quo loom larger than the advantages (Kahneman et al., 1991, p. 197). The status quo bias is linked to the 'omission bias', which is a tendency to prefer omission to commission; moving from the status quo requires an action, while remaining with the status quo does not (Zamir & Teichman, 2018, p. 48). One natural experiment providing empirical support for the existence of the status quo/omission bias is the impact of the default on the rate of employee participation in a retirement savings plan (Madrian & Shea, 2001; Thaler & Bernartzi, 2004). Participation in the retirement savings plan

was greatly increased when employees were automatically enrolled than when employees were required to affirmatively elect to participate (Madrian & Shea, 2001; Thaler & Bernartzi, 2004). Similar support for the status quo bias/omission bias is found in studies of organ donation within the European Union. In 'presumed-consent' countries, the donation rate is close to 100 per cent whereas in 'explicit-consent' countries, where a donor must actively register to donate, the donation rate ranges from 4 to 27 per cent (Johnson & Goldstein, 2003).

Individuals adjust their behaviour to conform to a perceived status quo (Kahneman, Knetsch and Thaler, 1991). Individuals also tend to rationalise a maintenance of the status quo through an 'existence bias': people tend to assume the goodness or correctness of the current state of affairs, and existence itself is evidence of positive qualities (Eidelman & Crandall, 2012). This is related to 'system justification', whereby people tend to 'support, defend and bolster the status quo simply because it exists' (Napier et al., 2006, p. 60).

3.2.5 The Endowment Effect

The endowment effect is a 'phenomenon whereby individuals tend to place a higher value on objects and entitlements they already have, compared with objects and entitlements they do not' (Zamir & Teichman, 2018, p. 50). Research has established the existence of a Willing to Accept – Willing to Pay disparity, whereby people 'demand much more to give up an object than they would be willing to pay to acquire it' (Kahneman et al., 1991, p. 194; Zamir & Teichman, 2018, p. 51). The endowment effect has been found not only in relation to tangible goods, but also in relation to intangible entitlements such as working hours, exposures to health risks and contractual rights (Zamir & Teichman, 2018, p. 51). The source and circumstances of the endowment have been found to influence the strength of the effect. Experimental

research has found that people value objects more highly when they obtain those objects due to exemplary performance than by gaining the object by chance or through poor performance (Lowenstein & Issacharoff, 1994). A higher endowment effect has also been found when an object is received as a gift from a friend rather than a stranger (Jefferson & Taplin, 2011). (Although this higher endowment effect was entirely due to responses provided by female participants, signalling the need for further research (Jefferson & Taplin, 2011)). A 'creativity effect' has also been demonstrated, whereby creators of work value their creations significantly more than mere owners or potential purchasers of the creations (Buccafusco & Sprigman, 2011).

Loss aversion is offered as a primary explanation for the endowment effect (Zamir & Teichman, 2018, p. 51). Another explanation draws on the association and relationship between the owner and the item: 'when owning an object becomes part of one's self-definition, a self-serving bias (i.e., people's desire to see themselves in a favourable light) likely results in an increased valuation of the object – the so-called mere ownership effect' (Zamir & Teichman, 2018, p. 51).

This constellation of behavioural effects (status quo bias, endowment effect, loss aversion) underlies many recent 'nudges' in domestic policy. Nudges are broadly defined as 'low-cost, choice-preserving, behaviourally informed approaches to regulatory problems' (Sunstein, 2014, p. 719). Nudges have been studied in a domestic context for some years but they have only recently been examined in an international context (Teichman & Zamir, 2019). The status quo bias, loss aversion and endowment effect strongly govern demand for, and responses to, environmental regulation generally (Kuenzler & Kysar, 2014, p. 767). Kuenzler & Kysar (2014)

suggest these behavioural phenomena militate against a desire for more stringent regulation with reference to the status quo.

3.2.6 Goals as reference points

Reference points can be consciously created by setting a goal or a target (Zamir & Teichman, 2018, p. 46) or set by laws that allocate entitlements or expectations (van Aaken, 2014, p. 429). The perception of a goal as a reference point is instrumental to achieving it; once set, the goal divides the space of outcomes into either success or failure (Zamir & Teichman, 2018, p. 46). Outcomes that are perceived as worse than the goal result in a greater impact and this in turn provides a greater motivation to achieve it (Larrick and Wu, 1999). Goals have been shown to improve outcomes in areas such as health treatments, dieting and work productivity (Zamir & Teichman, 2019, p. 1270).

Goals can be framed in a positive frame, where attention is focused on the potential to provide a benefit or gain, or in a negative frame, where attention is focused on the potential to prevent or avoid a loss (Levin et al., 1998, p. 168). Levin posits that due to loss aversion, negative wording focusing on a loss may be more impactful than positive wording (Levin et al., 1998, p. 179). Regarding goal framing and climate change targets, research demonstrates people are more drawn to climate change solutions that have manageable, concrete steps and an overall, effective roadmap (Manning et al., 2009). In a survey study of 300 adults, participants responded more positively to ‘carbon emissions cuts of 2 per cent per year until the year 2050’ than ‘carbon emissions cuts of 80 per cent by the year 2050’ (Manning et al., 2009). Research demonstrates the importance of carefully framing concrete, challenging but attainable goals (Manning et al., 2009).

3.2.7 Rankings and Social Comparison

Social comparison is a strong motivating force in human behaviour (Teichman & Zamir, 2019, p. 1274). People judge their own position in reference to the positions of others; a desire to be above others or not be below can be a powerful influence on human behaviour, independent of payoffs associated with the task itself (Teichman & Zamir, 2019, p.1275). This phenomenon has been demonstrated in various settings, such as academic performance and work productivity, and through a range of methodologies (Teichman & Zamir, 2019, p.1275, citing Azmat & Iriberri, 2010; Herbst & Mas, 2015). For example, numerous field experiments have established that households can reduce energy consumption if informed how their energy efficiency compares to that of neighbours (e.g. Ayres, Raseman and Shih, 2013). This will be examined in an international context in the next chapter.

3.3 Conclusion

This chapter has outlined key behavioural insights developed through psychological and behavioural economic research. These insights have potential to enrich an understanding of the behaviour of policymakers both domestically and internationally. The next chapter develops these insights in an international context.

PART 4: BEHAVIOURAL INSIGHTS IN INTERNATIONAL LAW AND CLIMATE CHANGE POLICY

> Why is there such reticence, to say the least, to apply behavioural theory to international law? The reasons themselves may be behavioural, but that is beside the point.
>
> Broude, 2015, p.1120.

The previous chapter examined select behavioural insights. The implications of those insights have been applied to domestic legal issues and domestic policy development for some time, but are yet to be systematically applied in an international context (Zamir & Teichman, 2018, p. 423). This chapter will examine these behavioural insights in an international context before considering the slim body of literature that has applied behavioural analysis to climate change policy.

4.1 Application of Behavioural Insights Internationally

The application of behavioural insights to international law is in its 'infancy', despite the use of behavioural insights by international-relations scholars for some time (Zamir & Teichman, 2018, p. 423). The rise of experimental methods in international law scholarship reflects a 'theoretical shift from neo-classical rational choice assumptions towards a behavioural analysis based on empirical findings from cognitive psychology and behavioural economics' (Dunoff and Pollack, 2018, p. 1318). Such an approach can investigate and raise novel hypotheses for problems in international law and then provide frameworks for experimental and empirical testing, resulting in explanatory and normative implications (Broude, 2015, p. 1103).

The infrastructure for behavioural analysis of international law is provided by behavioural studies in other legal fields and international relations (Zamir & Teichman, 2018, p. 430). This thesis largely draws on behavioural insights documented in other contexts, due to the dearth of experiments involving policymakers. A significant portion of the literature on behavioural analysis of international law is dedicated to the challenges facing it, and so this thesis dedicates the next chapter to these issues. Despite challenges, there already exist several fruitful applications of behavioural insights to international law, discussed below.

4.1.1 Examples of Behavioural Insights Internationally

Despite its relative youth, there already exist several interesting applications of behavioural insights in an international context. Galbraith's research (2013) on the framing of treaty options supports the existence of the default effect (linked to the status quo bias) in opt-in or opt-out arrangements in multilateral treaties.

The treatment of asylum seekers has also been analysed from a behavioural perspective. Loss aversion has been offered as a (partial) explanation for the difference in the treatment of asylum seekers by host countries once they have entered a country's territory compared to those that are still seeking entry. Removing an unwanted person from the country is perceived as a gain in relation to the status quo, whereas allowing entry is perceived as a loss (Zamir & Teichman, 2018, p. 429). This implicates loss aversion and loss-averse policymakers may be more reluctant to allow entry to an asylum seeker than to expel (Zamir & Teichman, 2018, p. 429). There has also been an attempt to apply the endowment effect in the context of asylum seekers and international burden sharing (Cook, 2004). Cook (2004) posits the endowment effect may be present when a country is assigned an entitlement – the right not to

receive more asylum seekers – and the endowment effect could manifest in an undermining of a market-based quota system of burden-sharing.

4.1.2 International Nudges

The role of nudges ('low-cost, choice-preserving, behaviourally informed approaches to regulatory problems') in international law has been recently examined (Teichman & Zamir, 2019). Nudges can occur *inter alia* within a country, when one actor influences the decision-making of another (e.g. a diplomat negotiating a treaty 'nudges' the politicians who ratify the treaty towards a certain decision), or when one country influences another (e.g. via a treaty, when countries agree to 'nudge' each other via a regime of non-binding goals) (Teichman & Zamir, 2019, p. 1266). Indeed, the regime architecture of the Paris Agreement, which spurs countries to action without restricting autonomy or sovereignty, is also a nudge (Teichman & Zamir, 2019, p. 1271).

Nudges can influence state behaviour by 'directly changing the decision-making environment of individuals vested with political power' e.g. through framing options as gains or losses or making certain policies more salient, which alters the decision-making process of politicians (Teichman & Zamir, 2019, p. 1266). Nudges can also indirectly influence state behaviour through influencing the public at large, placing pressure on politicians seeking to cater to those views (Teichman & Zamir, 2019, p. 1267). International nudges can also tilt policies in certain directions, e.g. a local environmental agency can use increased salience of environmental policies created by an international nudge to promote its agenda locally (Teichman & Zamir, 2019, p. 1267). However, causal claims cannot be made regarding the effect of nudges that are not introduced randomly into the decision-making environment, reflecting a general

methodological challenge facing behavioural analysis of international law (Teichman & Zamir, 2019, p. 1268).

4.1.3 Goals in an International Context

As demonstrated in the previous chapter, goals, even without incentive mechanisms, such as penalties or bonuses, (i.e. non-binding goals) have the capacity to change human behaviour (Teichman & Zamir, 2019, p. 1270). The United Nations Millennium Development Goals (hereafter 'MDGs'), published in 2000, provided a range of specific goals for the international community in areas such as poverty reduction, education and gender equality (The Millennium Global Development Goals Report, 2015). Many of these goals were achieved by the target date, for example, the number of people living in 'extreme poverty' declined by half (The Millennium Global Development Goals Report, 2015, p. 4). Of course a casual relationship between the targets established by the MDGs and the improvement of goals cannot necessarily be inferred – improvement may have been made regardless of the MDGs (Teichman & Zamir, 2019, p. 1270, citing Friedman, 2013). Nonetheless, the possible impact of non-binding goals in the international sphere should not be overlooked.

4.1.4 Rankings and Social Comparison

As demonstrated in the previous chapter, social comparison is a strong motivating force in human behaviour. There are difficulties extrapolating findings from individuals or households to the state or international level, however Teichman & Zamir (2019) opine comparative data may still serve as a motivational tool at the international level via credible publications of international rankings. A country's performance in international rankings can impact the self-esteem of elite-decision

makers, spurring them to action. 'Given its simplicity and salience, a country's ranking can also serve as a focal point of media coverage, NGO activity and public discourse, thereby creating demand for reform from the bottom up. Consequently, elite decision-makers might care about their country's performance even when they view the ranking as meritless, simply in order to get re-elected' (Teichman & Zamir, 2019, p. 1275).

The World Bank's Doing Business Report (DBR) is such an example, ranking the friendliness of regulatory environments for small and medium sized businesses (World Bank, 2018). The DBR has proven to be influential in policy changes, with countries around the world devoting resources to improving their position in the rankings (Teichman & Zamir, 2019, p. 1277). A positive association has been documented between DBR rankings and foreign direct investment (Corcoran & Gillanders, 2015). However, this is largely explained by the ease of trading across borders, with other components of the DBR having little to no effect, and the effect is not present for the world's poorest countries or the OECD (Corcoran & Gillanders, 2015). Furthermore, even in the absence of the DBR's ranking system, countries would still have strong incentives to adopt business-friendly regulation to attract foreign investment (Corcoran & Gillanders, 2015). As such, the precise causal mechanism underlying the impact of these rankings may not be empirically established (Teichman & Zamir, 2019, p. 1277).

Rankings provided comparison with a prominent rival or neighbouring country will have a greater impact on a country's status and may therefore be more effective (Teichman & Zamir, 2019, p. 1278, citing experimental data showing Indians were more motivated to act on DBR rankings when presented with comparative data on

China). However, there is also evidence suggesting that on occasion, social comparison can be counterproductive and lead to worsened performance, due to a demoralising effect (Teichman & Zamir, 2019, p. 1278).

4.2 Behavioural Insights and the International Response to Climate Change

> Behavioural science offers a more far-reaching and realistic approach to designing policies that might get us through this impending crisis.
>
> Gowdy, 2009, p. 642.

Behavioural insights have been deployed to climate change policy in an attempt to provide a more realistic description of observed human behaviour than a standard economic approach (Osberghaus, 2017; Gowdy, 2008). Osberghaus (2017) applies prospect theory to climate change mitigation and adaptation policies with the caveat that prospect theory cannot fully explain climate policy decisions, only contribute to our understanding:

> There is no denying that factors like vulnerability, discounting, political and economic costs of action, and individual influences like beliefs, attitudes and emotions each play an important role. Climate policy often implies collective decision and affects future generations, so aspects like free-riding and altruism are definitely important for the analysis of climate change. Nevertheless, in addition to these factors, prospect theory may offer relevant insights which are overlooked so far (Osberghaus, 2017, p. 910).

Osberghaus (2017) notes there are factors militating against the application of prospect theory to climate change policies. Prospect theory was developed for the description of *individual* decisions under risk. Experiments conducted by Kahneman & Tversky did not involve collective action problems and the decision problems were presented to isolated individuals (Osberghaus, 2017). This differs markedly from climate change decisions in reality; large mitigation strategies are not developed

individually in isolation (Osberghaus, 2017). Presumably, elite decision-makers involved in climate policy make decisions after a careful review of long-term consequences and alternatives, not spontaneously (Osberghaus, 2017). Climate change policies also involve considerations and decision processes which differ markedly from a personal evaluation of risky outcomes at the individual level (Osberghaus, 2017). Aggregation effects and political economy-related considerations also speak against the possibility that collective and institutional decisions are influenced by prospect theory (Osberghaus, 2017). However, empirical evidence suggests collective action is sometimes better described by prospect theory than expected utility theory (Osberghaus, 2017, p. 913). For example, due to the existence of probability weighting and loss aversion, prospect theory has been found to better describe human behaviour than expected utility theory in the context of environmental goods (Bartczak et al., 2015).

Rachlinski (2000) applies various psychological phenomena to climate change and concludes society may not respond effectively to this 'social trap' (p. 300). Individuals become attached to the status quo and may be unwilling to sacrifice benefits they already possess to obtain other benefits (Rachlinski, 2000, p. 307, referring to Tversky & Kahneman, 1991). Due to a preference for the status quo, people will be unwilling to incur major economic losses possibly needed to avert climate change (Rachlinski, 2000, p. 308). Losses (in the form of economic losses needed to reduce fossil fuels) loom larger than gains (potential environmental benefits) (Rachlinski, 2000). Hypothetically, if society were choosing to begin using fossil fuels to make itself wealthier, at the cost of incurring environmental damage through climate change, it would not do so (Rachlinski, 2000, p. 308). However,

society is choosing whether to incur a loss from the present status quo, not to forego a potential future gain (Rachlinski, 2000, p. 308). Loss aversion may provide an explanation for many countries' willingness to make small reductions to fossil fuel consumption with reference to past levels, but be unwilling to commit to significant reductions (Rachlinski, 2000, p. 308). Loss aversion can impede negotiations and a resolution of disputes, particularly when combined with a sense of entitlement (or endowment). Climate change negotiations 'will require overcoming the enhanced loss aversion that comes with entitlement…this will make it difficult for countries to tolerate loss, and many countries might downplay the impact of carbon emissions rather than incur the certain loss of economic activity' (Rachlinski, 2000, p. 310).

Recent literature specifically focuses on the Paris Agreement. Rowell & van Zeben (2016) argue that a focus on the feasibility and implementation of mitigation overshadows what could be one of the most important long-term impacts of the Agreement: the psychological impact of the Agreement's 1.5 – 2 degree target and the new status quo this creates.

The mechanism of status quo is offered as an alternative to the theories of self-interest and social norms that are predominantly used to explain compliance with international law in the absence of enforcement (Rowell & van Zeben, 2016, p. 51). Where international law creates a perceived status quo, psychological phenomena come into play to create significant 'stickiness' to that perceived baseline or reference point, even in the absence of enforcement mechanisms (Rowell & van Zeben, 2016, p. 51).

This implicates a normative approach to compliance with international law (in which state behaviour is judged against normative standards of appropriate conduct and socially constructed reference points (Tingley & Tomz, 2019 p. 2, referring to

Simmons, 2010). Digging beneath the norm-setting function of international law, the behavioural effects underneath the surface may be responsible for compliance.

The new status quo created by the Agreement's 1.5 – 2 degree temperature target identifies an 'endowment baseline' against which to measure future gains or losses (Rowell & van Zeben, 2016, p. 51). Failure to meet the new status quo (achieve the target) implicates loss aversion (Rowell & van Zeben, 2016, p. 52).

The authors posit that these psychological effects will apply to anyone who believes the norm has effectively established a new status quo (Rowell & van Zeben, 2016, p. 52). The more binding the norm appears, the more effective it may be at establishing a status quo. The authors proffer several reasons in support of why the Agreement's 1.5 – 2 degree target sets a new status quo. First, the international community's unanimous adoption of the Agreement indicates an international willingness to establish a powerful norm. This is supported by psychological research suggesting that unanimity is one of the major factors affecting an individual's tendency to conform to communal-set norms (Rowell & van Zeben, 2016, p. 52, referring to Aronson, 2011). Second, the selection by negotiators of a quantified goal (1.5 - 2 degrees) creates as a stronger psychological focal point than a qualitative goal (e.g. to avoid 'dangerous anthropogenic change'). The salience of the quantified goal is more likely to shift baseline expectations for international action than a qualitative goal (Rowell & van Zeben, 2016, p. 51). Third, the selection of a two-tiered goal, in which keeping temperature increase to 1.5 degrees is a 'success', a temperature increase of more than 2 degrees is a 'failure' is a stark delineation that may be more likely to trigger loss aversion (Rowell & van Zeben, 2016).

Additionally, this 0.5 degree difference between ‘success’ and ‘failure’ helps creates a baseline with which to measure the quantity of any future deviation from the 1.5 - 2 degree goal (Rowell & van Zeben, 2016).

The authors do not explicitly justify the application of cognitive phenomena to the international plane but note that states are constructed by individuals (negotiators and citizens) subject to biases, which may influence the state as it determines its response to international obligations (Rowell & van Zeben, 2016, p. 50). The hypothesis that the target will have a ‘significant impact’ has been critiqued for not making explicit that the psychological effects at an individual level are present when political or policy decisions are made (Bergkamp, 2016). Ultimately the author’s hypothesis may fail when tested against the ‘Realpolitik’ of climate change policy-making (Bergkamp, 2016).

4.3 Conclusion

In conclusion, despite its relative youth, behavioural findings have already proved useful in analysis of international and climate change issues. Analysis derived from prospect theory and behavioural findings may provide insight to behavioural patterns relevant to climate policy decisions, proving valuable for a prescriptive analysis and possible policy recommendations (Osberghaus, 2017, p. 914). This chapter has explored the application of behavioural insights in the international realm, with a focus on previous application of behavioural insights to climate change policy.

PART 5: CHALLENGES TO APPLYING BEHAVIOURAL INSIGHTS AND INTERNATIONAL LAW

The previous chapter explored the infant area of international behavioural economics and the very slim body of literature on behavioural economics of climate change. Through chapters 3 and 4, challenges and limitations of these approaches were alluded to. This chapter explores these limitations more rigorously and maps paths forward despite these challenges. A separate chapter is necessary to explore these constraints given the depth of challenges and that previous literature on behavioural insights and international law also does so (see for example van Aaken, 2014; Broude, 2015; Zamir & Teichman, 2018). Recent relevant experiments performed at the COP21 Paris UN Climate Change summit will be drawn upon to demonstrate challenges and ways forward.

5.1 Unit of analysis and 'elite decision-makers'

Precision is required with regard to the unit of analysis and 'pathway of influence' when incorporating behavioural insights into an international law analysis (Teichman & Zamir, 2019, p. 1266). A multitude of players act in international law at all levels of decision-making, individually and collectively, domestically and internationally. Much of the effectuation of international law takes place at a national level by domestic policymakers (van Aaken & Broude, 2019).

This paper breaks up the 'black box' of the State to examine the possible biases and heuristics of individual policymakers on the domestic plane. Such policymakers yield

significant influence on how their respective governments develop and implement policies concerning NDCs and are active at senior levels in government departments and organisations. Hafner-Burton et al. (2013) define an elite as part of a 'small number of decision makers who occupy the top positions in social and political structures', and exercise significant authority and influence in a wide range of areas and functions, including as elected officials and bureaucrats (Hafner-Burton et al., 2013, p. 369). Elites tend to have a greater amount of context-specific experience that impacts their decision-making (Hafner-Burton et al., 2013, p. 369).

As most of the experimental research cited in this thesis is also performed at the individual level, there is 'no major problem' transposing these findings to individual government policymakers whose acts are attributed to the State (van Aaken & Broude, 2019, p. 1234).

5.2 External Validity

However, even with the individual unit of analysis, external validity remains a significant challenge. Most of the research on individuals' preferences and decision-making comes from experimental works on easily available, low-cost university students, in contrast to real-world elite decision-makers who are difficult to obtain as subjects for clear reasons (limited availability, may be unwilling to reveal their own decision-making processes and choices) (Hafner-Burton et al., 2013). Extrapolating from convenience samples (students or Internet survey subjects) to other populations (such as elite decision-makers) creates a problem of 'unrepresentative subject pools', and a 'disjuncture between the population to which a theory is meant to apply and the pool of subjects from which the experimental sample is drawn' (Dunoff & Pollack,

2018, p. 1325).

Studies attempting to address problems of external validity have compared responses in inexperienced subjects (e.g. students) to experienced subjects (e.g. elite decision-makers) and found experienced elites respond to stimuli in systematically different ways from convenience samples (see for example Mint et al., 2006). Experiments have also found that students and judges differ systematically in their application of legal norms (see for example Kahan et al., 2016). Experienced elites act differently from students in key ways: they may be more likely to exhibit attributes of rational-decision making, more skilled in strategic bargaining but more likely to suffer overconfidence (Hafner-Burton et al., 2013). However, other research has demonstrated that policy elites and students may behave similarly. A 2014 experimental study with a university student sample group of 509 students and a sample of 92 US policy 'elites' revealed similar patterns between the subject groups on the impact of behavioural traits on preferences regarding negotiating and joining international treaties (Hafner-Burton et al., 2014).

Thus, wherever possible, elite subjects should be used in experimental studies rather than convenience samples. However, due to pragmatic considerations, convenience samples will still continue to be used in research. When convenience samples are used, established differences between the groups should be accounted for when extrapolating findings (Hafner-Burton et al., 2013). Attempts must be made to understand the preferences and behavioural traits of the elite who actually make policies rather than blindly extrapolating findings from convenience samples (Berger & Bosetti, 2019).

Furthermore, the low-stakes experimental settings for subjects can be contrasted with the high pressured and high-stakes settings of real world international decision-making (Dunoff and Pollack 2018). Research suggests individuals rely on 'simple heuristics' in ordinary, low-stakes decision-making but engage in more attentive and careful thinking in real-world, high-stakes situations. Therefore the behaviour of subjects in low-stakes experimental settings may differ systematically from the behaviour of actors in real-world high-pressure settings (Dunoff & Pollack, 2018; Hafner-Burton, 2013).

5.3 COP21 Field Experiments

Findings from field experiments (Bosetti et al, 2017; Berger and Bosetti, 2019) conducted at the Paris Conference of the Parties (COP21) are instructive. Both experiments were performed on delegates attending COP21 and a distinction was drawn between active negotiators (who 'sit at the table' and officially represent their government in negotiations) and other delegates (who are not actively involved in negotiations but are still part of their countries' delegation). These non-negotiating delegates may be senior policymakers in their respective governments. This is illustrated by a published list of COP21 attendees that details their positions in their respective delegations – many are policy officers in domestic government departments (UNFCCC, 2015). The experiments sought to answer questions related to the ambiguity preferences of individuals making policy decisions (Berger & Bosetti, 2019) and the processing and weighting of information on prior beliefs (Bosetti et al, 2017). The experiments did not specifically deal with the core behavioural insights examined in this thesis, but are nonetheless instructive as they focus on manifestations

of bounded rationality in elite decision-makers (including policymakers active domestically) dealing with climate change policy.

Berger and Bosetti's (2019) field experiment sample comprised of 80 elite decision-makers, from 49 countries, all involved in the climate negotiations ('elite bureaucrats who have a substantial influence over what their respective governments ultimately agree on'). The experiment found *inter alia* that the elite-decision makers are generally ambiguity averse, but this is not necessarily related to a form of irrational cautiousness but rather intrinsic preferences over unknown probabilities (Berger & Bosetti, 2019). The main results in the field experiments with the elite-decision maker sample were also found in the student sample (after controlling for specific characteristics). Within the elite decision-making group, both sub-samples (active negotiators and non-negotiators) exhibited similar levels of ambiguity neutrality. However, non-negotiators were much more likely to reduce compound risk than negotiators and in this respect there was more of a similarity between non-negotiator delegates and students than the active negotiators (Berger & Bosetti, 2019, p. 349). Furthermore, the impact of heterogeneity within the elite decision-maker sample must be acknowledged. Elite decision-makers from OECD countries, or those who exhibited a higher degree of quantitative sophistication, shared similar patterns of ambiguity preferences with the student sample group (Berger & Bosetti, 2019, p. 334).

Bosetti et al.'s (2017) framed field experiment was centred on the impact of climate scientific uncertainty and the way it is presented on the previously held beliefs of elite decision-makers. The elite-decision maker sample was composed of 217 attendees of

COP21, across 100 countries. 104 of the delegates were active negotiators, the rest were 'non-negotiator policymakers'. The student sample group was composed of 140 European MBA students, trained to take part in a climate negotiation simulation. The findings of the experiment revealed *inter alia* 'striking behavioural phenomena': the anchoring effect of prior beliefs was much more pronounced for the elite-decision making group than the student sample (Bosetti et al., 2017). Of note, the non-negotiators updated their beliefs in accordance with the provided information more than the active negotiators.

The findings from these COP21 field experiments demonstrate that elite decision-makers and policymakers active at the domestic level developing and implementing climate change policy act in ways divergent from the rational actor model. Thus, behavioural insights can inform an analysis of how policymakers develop and implement policy regarding NDCs.

These findings also demonstrate varying similarities and differences between negotiators, non-negotiators and students. The issue of external validity does not stop at the extrapolation of findings from student convenience samples to elite decision-makers, but given results vary between negotiators and policymakers, is also an active problem *within* the group of decision-makers. This indicates a need for further tailor-made experiments involving not only elite decision-makers, but also further research within the group of elite decision-makers. A response to external validity problems is to replicate and extend experiments – it should not be a choice between experiments and other methods but rather to incorporate experiments as a complement to other scholarly methods (Pollack & Dunoff, 2018, p. 1326). Further experimental research

should be complemented with further field studies and other empirical research (van Aaken & Broude, 2019).

5.4 Complexity of International Settings

Transposing findings from the psychology of individuals onto the decision-making of entities when most players in the international arena (states, international organisations) comprise many people poses problems (Zamir & Teichman, 2018, p. 424). Within themselves, entities vary and contain subgroups with conflicting interests and perspectives (Zamir & Teichman, 2018, p. 424). Interactions between groups of individuals and institutions are complex but are crucial to understand the behaviour of state organs and their representatives (Zamir & Teichman, 2018, 424). Isolating the impact of international law on behaviour from social norms, practices, beliefs and other authority (such as political figures) also poses complex issues (van Aaken & Broude, 2019, p. 1234). However, these problems, important as they are to acknowledge and examine, are not unique to a behavioural perspective. A rational choice analysis of international law and international relations is also challenged by whether to treat a state as a 'black box' or take into account the complexities of decision-making occurring within (Zamir & Teichman, 2018, p. 424).

5.5 Conclusion

In conclusion, incorporating behavioural insights into an analysis of international law faces methodological and other challenges but these do not outweigh the great potential to shed new light on many important issues faced by society (Zamir & Teichman, 2018, p. 430). Incorporating behavioural insights adds complexity but may also provide a more realistic and accurate account of international law than a pure

rationalist approach (van Aaken & Broude, 2019). This is confirmed by experiments demonstrating that climate change policymakers behave in ways divergent from the rational actor model (Bosetti et al, 2017; Berger and Bosetti, 2019). Further experimental and empirical support is needed given the importance of context in the study of human judgment and decision-making (Zamir & Teichman, 2018, p. 430). Moving forward, tailor-made experiments involving elite decision-makers and domestic policymakers as subjects would be instructive.

PART 6: ANALYSIS

This chapter explicitly addresses the research question(s), focusing on key concepts of bounded rationality on individual policymakers involved in developing and implementing policies concerning NDCs. The research question asked at the outset of this paper was: whether and to what extent can behavioural insights be applied to an analysis of NDCs? Related questions are therefore raised: are domestic policymakers affected by particular biases or heuristics when developing and implementing such policies? If so, what are possible consequences?

Firstly, the body of research developed in this thesis has demonstrated robust findings that individuals are indeed subject to systematic deviations from assumptions of economic rationality. Specific insights that can be fruitfully applied include loss aversion, reference points, status quo bias and the endowment effect. The influence of goals, comparative rankings and social comparison are also instructive.

The unit of analysis in this thesis is the individual policymaker active domestically. There is 'no major problem' applying experimental insights to individual decision makers whose acts are attributed to the State, as the unit of analysis remains the same: the individual (van Aaken & Broude, 2019, p. 1234). As demonstrated by the findings from COP21 field experiments (Bosetti et al, 2017; Berger & Bosetti, 2019), policymakers involved in developing and implementing climate change mitigation behave in 'irrational' ways in line with bounded rationality. Accordingly, not only can these insights be feasibly applied to domestic policymakers, but *should* be applied if we want to achieve a more realistic understanding of human behaviour, decision-

making and ultimately policy development and implementation. Therefore the main research question is answered in part: yes, behavioural insights can be applied to an analysis of NDCs.

Secondly, to what extent can behavioural insights be utilised? The answer is that behavioural insights can be utilised, but with caveats. It is acknowledged that there are challenges to this approach; broader issues related to the extrapolation of findings from experimental research cannot be ignored. Those challenges and ways forward were mapped in the previous chapter and are further discussed below in 'limitations'.

Then, putting aside to the moment those challenges, if we accept that domestic policymakers are affected by particular biases and heuristics, what are possible consequences? This is illustrated by an ambitious and adventurous application of behavioural insights to domestic policymakers in the following section.

6.1 Specific Applications and Conjectures

6.1.1 Targets within NDCs Create Reference Points

The first conjecture stems Rowell & van Zeben's (2016) argument that the overarching temperature target of the Agreement creates a psychologically powerful baseline against which future performance will be measured.

This can be transferred to targets within NDCs. Once a target within an NDC has been pledged, it creates a new reference point with which to judge a nation's performance on climate change. Once set, the target divides the space of outcomes into either success or failure (Rowell & van Zeben, 2016). Quantitative (or other) targets contained within NDCs, once submitted, explicitly signal that country's goal

for emissions reduction. Future efforts falling below this new baseline expectation will be perceived as 'losses'. Due to loss aversion, outcomes that are perceived as worse than the goal could have a greater impact. Loss-averse policymakers may want to avoid such losses, resulting in and exhortation of effort and an increased propensity to reach the targets through development and implementation of relevant policy. This is not to discount the 'rational' behaviour of a policymaker wanting to achieve a goal, but rather to say that there may be other psychological phenomena involved.

6.1.2 Goals

Related to the above conjecture is the power of non-binding goals. As demonstrated in chapter 3, non-binding goals have the capacity to change human behaviour and improve outcomes in various subject areas. Parallels between NDCs and the United Nations Millennium Development Goals can be drawn. MDGs created a range of specific goals, many of which were achieved by the target date (Corcoran & Gillanders, 2015). A casual relationship between the targets established by the MDGs and the improvement of goals cannot necessarily be inferred – improvement may have been made regardless of the MDGs – but the possible impact of goal setting cannot be overlooked.

Transferring this insight to NDCs, it is possible that the goals created by individual NDCs make it more likely they will be achieved. Thus goals contained in NDCs can have the capacity to make policymakers more likely to develop and implement domestic policy to achieve those goals. On the other hand, research demonstrates that individuals respond more positively to goals that are framed in a concrete, challenging but attainable way (e.g. 2 per cent per year) than distant, overly challenging goals

(e.g. 80 per cent reduction by 2050) (Manning et al, 2009, p. 336). Targets contained in NDCs are framed in long-term and highly challenging terms (necessarily so, given the nature of long-term emissions reductions) but this may suggest policymakers will be less likely to develop and implement policy to achieve distant and challenging targets.

6.1.3 The Status Quo Bias

The application of the status quo bias is also instructive. One implication of loss aversion is that individuals have a tendency to remain with the current state of affairs (the status quo) rather than opting for an alternative, because the disadvantages of diverging from the current status quo loom larger than the advantages (Kahneman et al., 1991, p. 197). This operates in tandem with the 'existence bias': people tend to assume the goodness or correctness of the current state of affairs and 'support, defend and bolster the status quo simply because it exists' (Napier et al, 2006, p. 60). This is related to Rowell & van Zeben's (2016) argument that the overarching temperature goals of the Agreement create a new status quo and that behavioural phenomena create 'stickiness' to this new status quo.

An integral part of the Paris Agreement and NDCs is the expectation of progression and ratcheting of NDCs over time (Paris Agreement, Art 4.3). Progression is to be determined by each country individually.

In this case, the status quo bias could actually impede progression, as countries may prefer to remain with their current NDC (and the current domestic policies that aim to achieve the target) rather than opting for a more challenging target (and therefore new, more challenging policies in response). Countries and domestic policymakers may justify their current NDCs and policies as sufficient simply because they exist as the status quo. There may be some empirical support for this as several countries have

not submitted more ambitious NDCs in 2020, arguably contrary to obligations under Article 4.3 of the Agreement (Climate Action Tracker, 2020). Accordingly, the hopes of 'broad then deep' for progression o NDCs (Bodansky et al., 2017) may never be realised.

6.1.4 Comparative Rankings

Comparative rankings evaluating a country's performance may trigger behavioural phenomena and spur that country's elite decision-makers to action (Teichman & Zamir, 2019). People judge their own position in reference to the positions of others; a desire to be above others or not be below can be a powerful influence on human behaviour, independent of payoffs associated with the task itself (Teichman & Zamir, 2019, p.1275).

This is worth examining in the case of NDCs. In lieu of enforcement and binding obligations of result, the Agreement's transparency framework requires countries to provide information necessary to track progress in the implementation and achievement of NDCs, and Article 4(12) of the Agreement provides NDCs must be recorded in a public registry. Independent organisations then publish easily accessible comparative assessments and rankings on NDCs. (See for example the Climate Action Tracker (2020) or the Climate Change Performance Index (2020).

For example, in 2019 Australia received an overall 'very low' rating by the Climate Change Performance Index. The poor ranking and the government's response were widely reported in the media (Martin, 2019). As a desire to be not below others can be a powerful influence, this very poor ranking could spur domestic policymakers to action.

Based on survey experiments performed on US citizens, Tingley & Tomz (2019) demonstrate that 'naming and shaming' (receiving a low rank being a form of shaming) can impact support among citizens for government policy reducing emissions. Of course, this opens up further questions, as whether or not the naming and shaming impacts government action depends on various conditions *inter alia* who is doing the naming and shaming (another country? a strategic partner? an independent organisation?) and the accuracy of the naming and shaming (Tingley & Tomz, 2019). This point also references the impact of naming and shaming on civilians who then pressure politicians or policymakers to action, implicating further units of analysis and raising complex issues outside the scope of this thesis.

6.1.5 The Endowment Effect and Loss Aversion

NDCs (and targets within) are effectively promises given to other nations. Those other nations are composed of various individuals involved climate change policy, including domestic policymakers. In submitting a NDC, a nation gives an entitlement or endowment over that NDC. The endowment effect and loss aversion could be implicated by another nation downgrading an existing NDC or removing an NDC via exiting the Agreement.

Furthermore, research has demonstrated the endowment effect is stronger when the entitlement is gained through exemplary performance at a task or when given by a friend (Lowenstein & Issacharoff, 1994; Jefferson & Taplin, 2011). Thus an NDC endowed by an ally country, or a NDC won through hard-fought negotiations, may be even more valued.

For example, the US' announced withdrawal from the Agreement was followed by emphatic re-affirmation of commitment to the Agreement by the EU (Boffey & Neslen, 2017). Due to this loss, the proposed withdrawal could weigh heavily on

policymakers in other countries (even heavier if we consider the US to be a friendly country of the EU), spurring those policymakers to further action to achieve their own targets within NDCs. However, the interrelatedness of politics and other strategic interests adds complexity to this conjecture. Nonetheless, it still merits consideration.

6.1.6 Conclusion to Conjectures

In each of these conjectures, it is not meant there are not strategic interests or other forces at play, or that these actors are not acting 'rationally' by wanting to achieve targets within NDCs. Instead, it is argued that there may be other psychological phenomena underlying this behaviour worth examination. As seen above, the application of behavioural insights can substantiate rationalist assumptions or challenge them by providing counterintuitive results (van Aaken, 2018, p. 69). These conjectures are offered as a display of the possible behavioural effects of NDCs and policymakers, and in the spirit of this research agenda's youth, are necessarily ambitious and adventurous. It is acknowledged additional research and consideration is necessary to further develop these ideas.

6.2 Limitations and Implications for Future Research

The challenges faced by a behavioural analysis of policymakers on the domestic sphere implementing international law are many and great - indeed, this thesis could have been dedicated entirely to those challenges. The interrelatedness of policymakers, negotiators, citizens and all other parties who act in international law also poses a challenge to isolating the behavioural effect on one actor only. Policymakers do not act in a vacuum; they respond and interact to other actors and other influences. However, these challenges are not insurmountable, and there are ways to nevertheless progress.

A main limitation of this thesis is lack of empirical research on domestic policymakers. Calls to salvage economic analysis of international law via developing a more rigorous empirical dimension are not new (see for example Broude, 2015). Tailor-made empirical and experimental research and further observational studies on state-decision making are needed to strengthen this area of scholarship (van Aaken, 2018; Zamir & Teichman, 2019).

Future research could include further experiments (designed with care for external validity) examining the impact of the behavioural effects highlighted in this thesis, using domestic policymakers as subjects. A first step could be experiments using university subjects. One country could be focused on alone, and the actions of that country in respect of NDCs could be examined for potential behavioural effects. Further steps could include an international dimension: comparing the results from subjects of different countries with their respective NDC targets and domestic policies. This is ambitious, but not outside the realm of possibility, noting previous experiments conducted at COP21 (Bosetti et al., 2017; Berger and Bosetti, 2019).

Furthermore, there are many threads of behavioural economic and psychological research that could potentially be incorporated in an analysis of policymakers. This thesis was necessarily limited to an examination of only a few, and further research could examine others.

PART 7: CONCLUSION

Ultimately, the Paris Agreement and NDCs alone will not solve climate change. The most effective way to combat climate change may be a global carbon pricing system (see generally Cramton et al., 2017) or other binding and fully enforceable command-and-control regime (Teichman & Zamir, 2019). Domestic politics and technological change will play key roles in the success or failure of combating climate change (Bodansky et al., p 250). As expressed by Christiana Figueres, past Executive Secretary of the UNFCCC and one of the chief architects of the Agreement: 'we are not at our destination yet, but we are irreversibly on our way' (Figueres, in Klein et al, 2017, p. iv). Nonetheless, any attempt to understand (and possibly predict) the world's response to climate change should not stop at a standard economic analysis. Key aspects of the Agreement's architecture and construct of NDCs may trigger powerful behavioural effects that should not be overlooked.

In conclusion, this thesis is not a call to dismiss the rational actor model or 'traditional' economic analysis when examining policymakers and NDCs. Legal doctrinal analysis and the role of politics, power and other cultural or social influences cannot be displaced in any analysis. Rather, it is a call to draw upon behavioural insights to enrich and expand our understanding of how policymakers may actually behave when developing or implementing policy to achieve targets within NDCs. A behaviourally informed analysis certainly has merit in understanding the world's response to the 'super wicked' problem of climate change.

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