The International Appeal of Behavioural Public Policy: Is Nudge an

Anglo-American Phenomenon?[1]

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Abstract

Since the publication of *Nudge* by Thaler and Sunstein (2008) behavioural public policies and nudge units have been widely adopted right across the world, which has resulted in many improvements to the delivery of public policies, such as better tax collection, increased access of young people to education opportunities, and more charitable giving. This paper asks what explains the adoption of nudge units and related initiatives. In particular, are Anglo-American or West European countries the focus for adoption? Are these interventions more likely to appear under left, right, or centre-dominated governments? Ascertaining the origins of nudge can adjudicate the extent to which nudge is partial project, based on the dominance of liberal economies and the preferred programme for centre governments and/or right political ideologies, or whether it has more universal appeal. Using data from OECD and OECD-partner countries, event history models reveal Anglo-American countries to be the drivers, with nudge not favoured by left-controlled governments. Nonetheless, with the interest and level of policy transfer not abating, in future years nudge is likely to appear in a wide variety of contexts, including China.

Since 2008, there has been a massive interest in the use of behavioural insights or nudges to improve the quality of public administration and the delivery of public policies, which is highlighted in the work of the UK's nudge unit, the Behavioural Insights Team (BIT), the emergence of other nudge units across the world, and in the uses of behavioural science by governments at all levels as well as by international organisations [2]. In many ways, this development can be seen as the result of a natural pattern of diffusion whereby innovations that work well tend to transfer across national jurisdictions, dependent on an asymmetry in innovation practices between early adopters and later imitators. But what if the pattern were path dependent, based on differences in the use of intellectual ideas between Anglo-American democracies and their relevance in other jurisdictions where ideas from economics do not have such hegemony? Ideas from behavioural economics may not have such traction and policy-makers might see them too focused on individual behaviour rather than reflecting institutional principles and addressing the structural causes of public problems. Institutions and policy-making systems have different traditions based on legal regulation and patterns of decentralisation of decision-making across ministries and states that may favour or limit the use of behavioural insights. Countries may have political parties and bureaucracies that are not so engaged with policies to change individual behaviour top-down. As behavioural insights are adopted across the world in a wide range of jurisdictions and regimes, it is important to know whether the energy behind these reforms is limited to certain kinds of democracy or whether other kinds of polity, such as China, might be part of the diffusion process.

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[2] Jones, Pykett, and Whitehead, *Changing Behaviours*; OECD, 'Behavioural Insights and Public Policy - Lessons from Around the World - En - OECD'; Balzo, *Nudging in the UK, in the USA, in Denmark, in Italy*; Feitsma, 'Brokering Behaviour Change'; John, *How Far to Nudge?*; Thaler, *Misbehaving*.

This paper begins with a review of this debate by reference to the expansion and use of behavioural public policies in the period since 2008. It seeks to understand why nudge policies became more acceptable to international organisations and appeared in Anglo-American democracies. The paper explores the history of the evolution of key ideas through critical theoretical work on neo-liberalism, arguing that a more promising route is to examine the role of entrepreneurs and the influence of the contexts that might promote transfer, which are the claims in the literature on policy transfer. The evidence is assessed using event history statistical models (survival analysis), which can estimate the probability of a policy being adopted and which variables predict it, using OECD countries and partners as the sample.

Nudge and behavioural public policy

Nudge originates—at least in popular parlance—from the 2008 popular book of that name, authored by Thaler and Sunstein [3]. *Nudge* is a classic 'trade' book, which academics can write when they become famous and have the backing of a leading publisher; but this kind of book also depends on the time being right and for a considerable amount of previous knowledge to be established beforehand so that the influence of its ideas can occur, which can then facilitate their translation into practice and policy [4]. Over a period of twenty-five years, behavioural economics had already gathered considerable momentum making nudge possible. Academic economists and psychologists had successfully introduced more realistic psychological traits to modify rational-actor based economic theories, which amounted to a new approach in the discipline and had far-reaching implications for how economics is

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[3] *Nudge*.
[4] John, *How Far to Nudge?*

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studied [5]. Behavioural economists and other social scientists then applied these insights to real-world situations with policy relevance [6].

Even though policy-makers used behavioural insights before the publication of *Nudge*—for example the Labour governments in the UK elected in 1997 had promoted this agenda when Tony Blair's Strategy Unit was in operation [7]—the book put the topic on policy-makers' radar. It is no coincidence that the coalition government elected in the UK in 2010, led by Prime Minister David Cameron, set up the world's first nudge unit[8], and that Cass Sunstein, one of the co-authors of *Nudge*, was appointed by President Obama as Administrator of the Office of Information and Regulatory Affairs, effectively taking on a nudge coordination position within the US federal administration [9]. Right from the start, this interest appeared in the US and UK rather than elsewhere in terms of media interest and commentary, partly because the bulk of early work was being done academically in these two countries.[10] The interest from the quality press and think thanks then diffused to policy-makers. As a result, the vast bulk of interventions come from the UK and US, as shown in a recent compendium published by OECD [11].

There has grown up a critical tradition of assessing nudge that sees it largely as expression of neo-liberalism. Critics regard the phenomenon as essentially ideological in that it legitimates a form of governance that perpetuates a loss of autonomy of individuals and reinforces inequalities of power between them [12]. Academics who are suspicious of

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[5] Thaler, *Misbehaving*; Lewis, *The Undoing Project*.
[6] John, *How Far to Nudge?*
[7] Halpern, *Inside the Nudge Unit*.
[8] John, 'Policy Entrepreneurship in UK Central Government'.
[9] Sunstein, *Simpler*.
[10] John, *How Far to Nudge?*
[11] OECD, 'Behavioural Insights and Public Policy - Lessons from Around the World - En - OECD'.
[12] Jones, Pykett, and Whitehead, *Changing Behaviours*.

nudge see it as commensurate with a neoliberal state [13]. They also use the term the psychological—even a neuro-liberal—state [14], referring to the use of psychologists and cognitive scientists in the creation of behavioural public policies. Nudge's origins in economics is part of the reason why these critics think behavioural sciences give primacy to individual-level analysis and non-structural forms of knowledge. Behavioural public policy might be thought to be allied to public choice theory, which justifies the doctrines of the new public management leading to contracting-out, market systems of competition, incentivisation, and measures to introduce performance-related-pay [15]. However, behavioural economics does not depend on a strict version of the rational model. Nudge can be regarded as less abstracted from everyday reality of citizens than the model of the individual in conventional economics. In fact, a contrary position can be advocated: nudge might operate beyond the ideologies that have typically affected neo-liberal projects. A behavioural analysis could imply that that neo-liberal schemes, such as contracting out and market competition, are likely to fail because they are not based on realistic human psychology, such as people not responding to the level of incentives. Nudge might be seen as consistent with critique of neoliberalism as it is based on a broader more socialised conception of human nature than rational-actor models.

The main argument of the critics, however, is not about the nature of behavioural models, but that they are de-politicised—that is introduced as if social and political relationships are not there, making government policies a panacea for social problems without taking account of wider social structures and obscuring the social and political

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[13] Leggett, 'The Politics of Behaviour Change'.
[14] Whitehead et al., *Neuroliberalism.*
[15] Hay, 'The Normalizing Role of Rationalist Assumptions in the Institutional Embedding of Neoliberalism'.

relationships at their core [16]. For example, a nudge designed to improve tax collection might not consider why some people cannot pay, such as those in debt, making sections of the population invisible to those who design nudges. In fact, this line of criticism is not entirely true either since there is a big debate about the heterogeneity of treatment effects and their effects on different communities or subgroups, such as for tax collection [17].

As part of the debate about the progenitors of neo-liberalism, it might also follow that nudge might work better with political parties on the right as champions of market-based approaches, though of course one of the critiques of social democratic parties, such as Labour in Britain, is that it moved to integrate itself with neo-liberal processes and practices, how 'New Labour', as it was called, normalised neo-liberalism [18]. There is a different line of argument that, in spite of the integration of New Labour into an accommodation with market forces, the party at that time is better seen as a hybrid, moderating its market preferences by the strong commitment to state intervention and generous social policies [19]. Whichever the interpretation, it is not clear from these literatures whether governments of the left or right are more susceptible to the use of behavioural insights. Both could be neo-liberal and both use behavioural insights. Probably a stronger factor might be the commitment to utilitarian insights in public policy. This would appeal more to centrist politicians and to moderate left and right allies, rather than radical-left or nativist-right politicians.

Country factors might be important on their own, as well as being different sites for the expression of neo-liberalism. The diffusion of behavioural insights partly relates to the origins of behavioural economics in the US and UK and groups of economists working

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[16] Jones, Pykett, and Whitehead, *Changing Behaviours*.
[17] John, Sanders, and Wang, 'The Use of Descriptive Norms in Public Administration'.
[18] Hay, 'The Normalizing Role of Rationalist Assumptions in the Institutional Embedding of Neoliberalism'.
[19] Beech, *Neoliberalism, New Labour, and the Welfare State*.

there, and a supportive environment in the quality press. In histories of the development of behavioural economics, a lot of traction is given to the importance of private US foundations in encouraging the development of behavioural units which encourage the diffusion from small circles of economists to a wider influence in economics and beyond [20]. The power and wealth of these funders was an important motivator, as was the east coast intellectual culture of the US with its research universities and supportive networks, and behavioural economics was well represented in the outputs of elite media outlets, such as *The New York Times* [21]. Newly created specialist research institutes and companies, often led by academics, as well more established consultancies, were keen to have government agencies sponsor new research and practice, and helped create a more policy-relevant message from academic studies so encouraging the transfer. Nudge was also supported by mature bureaucracies in the UK and US, where officials traditionally funded (or encouraged research councils to fund) the acquisition of scientific knowledge for outcomes that maximise social welfare, and were comfortable using academics, such as economists for advice, though of course this happens right across OECD countries and elsewhere.

The role of academics as promoters is an established phenomenon in the US, and Richard Thaler became a celebrity academic, as recounted in his recent book [22]. The UK culture is more reserved and less outward facing; but academic economics is traditionally important in policy evaluation and there are close links between academia and government, which means the civil service is sympathetic to behavioural economics [23]. In addition, as John [24] argues, personalities and chance conjunctions were important in the development of

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[20] Lewis, *The Undoing Project*.
[21] John, *How Far to Nudge?*
[22] Thaler, *Misbehaving*.
[23] John and Richardson, 'Nudging Citizens towards Localism?'
[24] *How Far to Nudge?*

behavioural public policy, especially in the UK context, with a sympathetic Cabinet Secretary, Gus O'Donnell, a former academic economist, as a keen champion. The politics was favourable with the socially progressive conservative leader of the Conservative party, David Cameron, keen to show his reformist credentials in a temporarily modernised Conservative Party. In the US, nudge was helped by the academically-inclined US President Obama. The conclusion to draw is that there were contingent factors that helped nudge get established in the UK and US, with links to other Anglo-American influence countries through contact and emulation, which are traditionally analysed together as a group of countries with particular characteristics so likely to adopt together [25], as with the new public management reforms [26]. Both US and UK politics have changed a lot since that time, which means that it would have been unlikely that a behavioural unit would have been established after 2016, the year Trump got elected and the British public voted for Brexit, which seem to indicate that populist politicians might be less in favour of top-down technocratic policies.[27] The overall conclusion to draw is that rather than as an expression of the neoliberal state or the practice of psychological governance, agency and context played a role in establishing behavioural public policies and nudge units, which reveals a more open and political process than that conveyed in the critical literature [28].

It is likely that contingency played a role in other countries too, but it is to be expected that more natural diffusion processes are present, which come from competition and emulation. In diffusion theory (see below) the adoption of innovations is path dependent and based on existing networks, such as professional associations or informal

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[25] Castles, 'The Dynamics of Policy Change'.
[26] Peters, 'Policy Transfers between Governments'; Pollitt and Bouckaert, *Public Management Reform*.
[27] For a discussion of the relationship between populism and nudge see the newly-written epilogue in John et al., *Nudge, Nudge, Think, Think*.
[28] John, 'Behavioural Science, Randomized Evaluations and the Transformation of Public Policy: The Case of the UK Government'.

contacts. International organisations may play a role in diffusion of behavioural insights, especially if they are dominated by economists, such as the World Bank [29], which published a report on behavioural sciences, and the OECD, which has been important in commissioning reviews and studies, as well as the European Union which is a major sponsor of research (see https://ec.europa.eu/jrc/en/research/crosscutting-activities/behavioural-insights). Consultancies and think tanks have traditionally been important in the diffusion of ideas [30], and behavioural sciences should not be thought about as an exception to this pattern. Advocates of behavioural insights have been particularly entrepreneurial. Partly as a result, there is a demand for ideas, revealing nudge to have the classic feature of policy transfer [31]. Countries have sought to learn from the use of behavioural sciences as they adapt them to their own contexts. This active and intellectual component to policy transfer is stressed in the literature [32] and is consistent with how behavioural insights have been adopted, particularly through academic contacts, and visits, and face-to-face seminars. These characteristics of the international network on behavioural public policy highlights the importance of policy learning and ideas in the policy process [33].

In spite of this active process and the high engagement of policy-makers, some countries might be more resistant to the use of behavioural insights because of the lack of factors that played a role in the US and UK, and also because their bureaucracies might be dominated by lawyers preoccupied with process and ethics. There are different institutional traditions that affect the popularity of behavioural public policy. Moreover, journalists

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[29] *World Development Report 2015*.
[30] Stone, *Capturing the Political Imagination*.
[31] Dolowitz and Marsh, 'Learning from Abroad'; Stone, 'Transfer Agents and Global Networks in the 'Transnationalization'of Policy'.
[32] Shipan and Volden, 'The Mechanisms of Policy Diffusion'.
[33] Sabatier, *Policy Change And Learning*; Moyson, Scholten, and Weible, 'Policy Learning and Policy Change'; Dunlop, Radaelli, and Trein, *Learning in Public Policy*.

outside the US and UK, even those in the quality press, might not be so sympathetic to economists, and may see it as a foreign North American phenomenon aligned with globalisation which should be resisted in favour of homegrown policy solutions. Learning is a complex process and depends on the engagement of officials and experts which can vary according to context [34]. If this argument is accepted, path dependence is part of the process of diffusion and may explain the timing of adoptions.

Patterns of adoption are explained, at least in part, by theories of diffusion and represent the academic interest in the emulation of social practices and a need to understand their transfer. In more recent studies, the interest is directed to the pattern of the diffusion, in particular of innovations, especially in studies of the S-curve, the importance of innovators and the gradual isolation of laggards, promoted by Rogers book, first published in 1962 [35]. In public policy, there has been the long interest in policy transfer noted above [36], with more recent contributions in the study of European public policy [37].

Attention to measurement and methods appears in the literature on US state politics, which can be seen to be laboratory for innovations that are adopted within the national system [38]. There are studies using event history analysis to map and assess the pattern, such as for environmental and health policies [39]. Recent work has focused on using more advanced statistical models, such as spatial regression, and is linked to the international political economy literature [40]. The debate in the 2010s has been about an

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[34] Dunlop, 'Policy Learning and Policy Failure'.
[35] Rogers, *Diffusion of Innovations, 4th Edition*.
[36] Rose, 'What Is Lesson-Drawing?'
[37] Radaelli, 'Policy Transfer in the European Union'; Dunlop and Radaelli, 'Policy Learning in the Eurozone Crisis'.
[38] Walker, 'The Diffusion of Innovations among the American States'.
[39] e.g. Berry and Berry, 'State Lottery Adoptions as Policy Innovations'; Mintrom and Vergari, 'Policy Networks and Innovation Diffusion'.
[40] e.g. Cao, 'Networks as Channels of Policy Diffusion'.

exact specification of the causal relationships in spatial regression models [41]. There is a more general focus on mechanisms behind diffusion and being precise about them [42].

The conclusion to draw from reading the literatures on behavioural insights, policy transfer, and diffusion is that there is good reason to expect the transfer of nudge units and behavioural initiatives to be path dependent because of the appearance of behavioural economics in prominent Anglo-American democracies, UK and US, associated with the prominence of neo-liberal ideas in these places, and then for diffusion to happen within this country group as with other policies, such as new public management. An alternative model is the extent to which European countries tend to adopt together, which might be enhanced because of the UK's prominence in behavioural insights and close proximity as well as interest in behavioural policy by the EU. In terms of politics, we might expect nudge to prosper more with centre politicians in place rather than those from the right or left, though we also expect politicians of all stripes except nativist right or extreme left to be interested in behavioural insights to a degree, but with the centre as the favoured ground. These considerations based on country characteristics and political complexion can be considered to be expectations to test in competing statistical models, implemented in the following sections.

Methods and data collection

The basic idea behind the methods and data collection for this study is to see whether the adoption of nudge reflects its dominance in the Anglo-American sphere, in particular whether there is a more general diffusion of nudge beyond the places where behavioural

[41] Gilardi, 'Four Ways We Can Improve Policy Diffusion Research'; Ward and John, 'Competitive Learning in Yardstick Competition'; Plümper and Neumayer, 'Model Specification in the Analysis of Spatial Dependence'.
[42] Maggetti and Gilardi, 'Problems (and Solutions) in the Measurement of Policy Diffusion Mechanisms'.

economics became a dominant voice and whether countries outside the Anglo-US sphere are observed to follow in a natural diffusion pattern. The focus here is on the adoption of a centrally organised behavioural units or networks as an expression of official interest in nudge, which creates the step shift associated with a policy adoption as noted in the diffusion literature. Of course, there are many kinds of adoption of behavioural insights, which may include a more general interest in developing nudge, such as in a network operating across several government departments, which works for some contexts, such as the Netherlands [43], or one department taking a lead. One person might the focus, who occupies an official position, like with Cass Sunstein. It may be the case that the nudge unit operates outside government, but with contracts with departments or agencies to deliver services. Even the most famous nudge unit, the Behavioural Insights Team, now operates outside government so might not even qualify as one. In this research, the interest is in having a measure of a nudge unit or the functional equivalent that takes account of these different circumstances, but recognises the step-change in official interest which represents the extent of the policy diffusion. The definition of the policy adoption used is: *an integrated and focused official interest and sponsorship of behavioural public policy*, which may be expressed as: a) a nudge unit operating out of a prime minister's or Treasury department, with civil servants seconded to it and with an official role, which sums up BIT in its early phase; b) a network or partnership of central departments and agencies behind behavioural public policy where there are links between civil servants interest in promoting nudges, which is typical of official interest in the Netherlands; c) an external nudge unit, such as a non-profit body, but with strong relationships to central government and where central government regards the unit as important in delivering improvements even if the units

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[43] Feitsma, 'Brokering Behaviour Change'.

works across many jurisdictions, the new BIT model; and d) where one prominent official is given a role that incorporates nudges in the job definition and represents the level of official interest which was Cass Sunstein's post in the Obama administration in the US. In this definition, there are some challenges in creating a variable where some units/time periods score zero and others have a one score. With a nudge unit, there is a clear start date and launch of the unit, which might have official press, and can be seen as the commencement date. That said, there is likely to be behaviour change initiatives happening before the nudge unit started, but the idea behind the coding is that unit is about a step-change in these initiatives. The b part of the definition is more complex because a network is more diffuse, but the idea is that there is some announcement or where an official document proclaims the initiative and some evidence that more behavioural policy initiatives followed from this. C is also hard to code because there are many private nudge units and the challenge is identifying whether the initiative represents official interest or is just about researchers or lobbyists getting organised. Official contracted research and evaluation is important and maybe a mention of the government on the website of the group. D would need some kind of post created or changed or the occupant being clearly seen as an advocate of these policies. In the research to create the database, there is a need to find the level of interest and also to find an exact date in official documentation.

The other issue is the spatial level. One is that nudge is sometimes the property of international organisations as well as countries, but this is hard to fit into an event history model or diffusion model which needs equivalent actors. Similarly, it might be possible to include the use of nudges by state or local governments as this is where nudges might be adopted, maybe more so than in central sponsor departments as they are closer to the delivery level where these insights have more applications. It may be the case in a federal

state, with considerable decentralisation, state-sponsored nudge policy would be equivalent to that at the central level in a smaller unitary state. For this analysis, however, state or local-level nudge units are excluded for the reasons of equivalence mentioned above; but it might be possible in future to include the states as separate units or incorporate them in central scores or at least to include different measures of attention to nudge at the subnational level as part of robustness checks for the statistical models. Qualitative work would also be important in assessing their impact. For similar reasons of creating equivalence, nudge units in international organisations are excluded.

It is possible to sample all countries in the world, but in practice behavioural public policies have appeared first in developed contexts, making a sample with all countries with too many zeros for effective analysis. The other issue is that data collection and sample selection for this research used as a starting point the OECD survey of behaviour change across its members and partner countries [44]. As part of its task, OECD sought to ascertain the leadership for nudge in many jurisdictions which gives an indication of the official engagement with behavioural insights in this domain. It adopts a similar approach to this paper when defining the coordination of behavioural public policy, differentiating between a central steering model and diffuse model, as well as a further project model. These first two definitions are key to the measurement of adoption as operationalised for this paper. The OECD data does not have an exact measurement of the timing of the adoption of behavioural insights in each country, which is needed for this study; but it shows whether the sampling makes sense overall even if exact measurement needed in the further desk search. Figure 1 shows a summary from the report of central coordination by country ascertained from the 2016 survey, which also produces a useful list of eighteen countries to

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[44] OECD, 'Behavioural Insights and Public Policy - Lessons from Around the World - En - OECD'.

consider for inclusion as centrally sponsored behavioural initiatives [45]. Though not with such large coverage, another study also justified the sampling, which was by the European Union [46], which reports individual country surveys of the use of behavioural insights, which are in turn published separately with documents to summarise the extent of institutional support. With these two reports as the impetus, the data collection for this paper sampled forty-two OECD and OECD-partner countries. Then the coding of the adoption of behavioural insights and its timing relied on identifying an initiative from official reports or an authoritative source. As well as the OECD and EU surveys, it involved noting a behavioural unit when mentioned in academic publications [47], then following up with internet searches. The summary of these searches is contained in the Appendix, which notes the nature of the initiative, the date of its inception, and the sources used. The United States of America is a different case because it drops out of the dataset when Trump abolished the Social and Behavioral Sciences Team (SBST) in January 2017. Because the paper is interested in predicting adoption not in multiple outcomes over time, this analysis does not account for this reversal in the US context. But this could be done in future research using time-varying measures for both independent and dependent variables in a panel design.

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[45] OECD, 'Government at a Glance 2017', 168.
[46] Sounsa et al., 'Behavioural Insights Applied to Policy - European Report 2016'.
[47] Halpern and Sanders, 'Nudging by Government'; Balzo, *Nudging in the UK, in the USA, in Denmark, in Italy*. Afif, '"Nudge Units" – Where They Came from and What They Can Do', Let's Talk Development, 25 October 2017. http://blogs.worldbank.org/developmenttalk/nudge-units-where-they-came-and-what-they-can-do.

Figure 1: Share of public bodies in countries using behavioural insights "at least some of the time" by policy stage, 2016

	Research / Diagnosis	Design	Implementation
Australia	♦	●	●
Canada	♦	●	●
Denmark	■	■	■
Finland	●	●	●
France	●	■	■
Germany	♦	♦	♦
Hungary	■	■	■
Ireland	●	●	●
Israel	●	●	●
Italy	●	●	■
Netherlands	●	●	●
New Zealand	●	●	●
Portugal	■	●	■
Spain	♦	♦	♦
Sweden	■	■	■
Switzerland	■	■	●
United Kingdom	●	●	●
United States	●	●	●
OECD Total			
● >66%	9	11	10
♦ 33.1% to 65.9%	5	2	2
■ <33%	4	5	6
Colombia	♦	♦	♦
Brazil	■	●	■
Singapore	●	●	●
South Africa	X	X	X
UNDP	●	●	●
World Bank	■	●	●
X No Response			

Source: OECD (2016) Behavioural Insights Case Study Survey, OECD, Paris.

The independent variables designed to test the pattern of diffusion for this paper are time invariant. The basic demographic variables are collected from http://gsociology.icaap.org/dataupload.html and comprise GDP as a predictor of overall capacity and resources to commission research-led initiatives. Then an Anglo-American variable is designed to test for Anglo-American dominance in the pattern of diffusion, which core to this paper, which includes UK and US and a larger Anglo-American country group. For this study, the variable is coded one for the US, UK, New Zealand, Canada, Australia, and Ireland, then zero for all other cases. Then there is a country variable of West European countries, taking the value of one for these with others coded as zero, designed to reflect contiguous patterns of diffusion in this region, that they are key EU members, and their geographical proximity to the Behavioural Insights Team. For robustness and to reflect EU processes, a variable comprised of EU members is created, with EU coded as one, with the others taking the value of zero. The final variable might be time-varying and that is political control. It is derived from Comparative Political Data Set 1960-2016 (CPDS).[48] Two variables are of interest: gov_right which is government compositions: cabinet posts of right-wing parties as a percentage of total cabinet posts weighted by the number of days in office in a given year. Similarly, gov_left is cabinet posts of social democratic and other left parties as a percentage of total cabinet posts weighted in the same way. There are a few country gaps that needed to be filled manually by searching databases and using new sources. Because of the lack of other time-varying variables in the rest of dataset, this variable is used for the start time only, but for robustness the variable is adjusted to take a different value at the time of transfer (which does not make much difference to the results).

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[48] Klaus Armingeon and Romana Careja. 2007. Comparative Data Set for 28 Post-Communist Countries, 1989-2007. Bern: Institute of Political Science, University of Bern. Updated on http://www.cpds-data.org

The analysis uses event history analysis (sometimes called survival analysis) typical of the study of diffusion in US states, which is concerned with explaining the timing of an event as well as its occurrence [49]. This enables an understanding the pattern of diffusion in that the variables predict the timing of the innovation. The analysis here uses Cox proportional hazards, a common event history model that can estimate a 'failure rate' [50]. Failure rate here measures the probability of adoption. There is a goodness of fit measure for Cox models similar to Hosmer-Lemeshow test for logistic regression, which is reported alongside the hazard ratios and standard errors in Table 1. For visual interpretation, it is possible to show graphs of the cumulative change in the survival rate of the time of the study. A commonly used measure is the Kaplan–Meier estimator, a cumulative hazard function that plots the change in the survival rate over time as it grows, in this case the time without a nudge unit. It is possible to present graphs for different groups of variables, which is of interest for this paper, so Figure 2 plots the Anglo-American countries against the rest, then Figure 3 does the same for West Europe. This also has the advantage of being a visual check to see whether the proportional hazard assumption holds in the model: the two slopes need to be parallel. Another test for violation of the assumption of the model is to detect whether the slopes of the plots of the residuals are not zero, which have been implemented for the models in this paper (see discussion below).

The dataset starts on 1 June 2009 as a date after the publication of *Nudge* so giving countries enough time to put in place measures or a unit, but before the appointment of Cass Sunstein in September 2009 which is the first event in our data base. In the language of event history, the dataset is not left-censored.[51] It may be right-censored in that the end

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[49] Yamaguchi, *Event History Analysis*; Allison, *Event History and Survival Analysis*.
[50] Cox, 'Regression Models and Life-Tables'; O'Quigley, *Proportional Hazards Regression*.
[51] The dataset and commands to produce the results may be obtained by contacting the author directly.

date is just the date when the research was completed, which is 31 October 2018. The data cover 3,440 days. For ease of interpretation, the day unit is converted into years (9.42 in total).

Results

The coding produced eighteen nudge initiatives across the countries. Countries with coordinated nudge interventions are: Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Japan, Netherlands, New Zealand, Peru, Singapore, Sweden, United Kingdom, and the United States (see Appendix). The regression results are contained in Table 1, with two models that include different political variables: model A reports estimates for cabinets of left and right with centre as the reference value; model B reports the impact of centre cabinets with left and right shares as the reference value. Conventional levels of statistical significance are reported by stars, but variables that meet the ninety per cent probability threshold are marked with crosses.
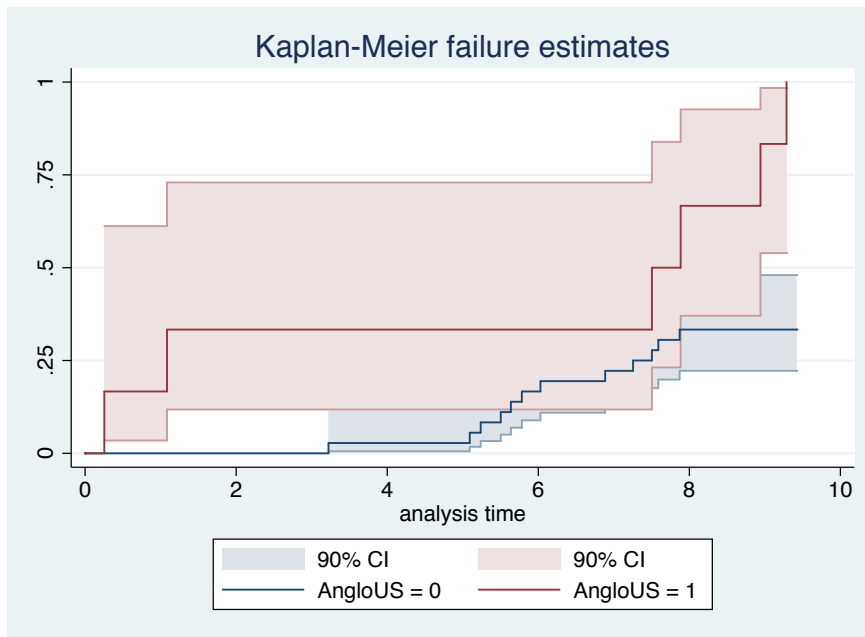
Table 1: Central government adoption of nudges, Cox proportional hazard ratios

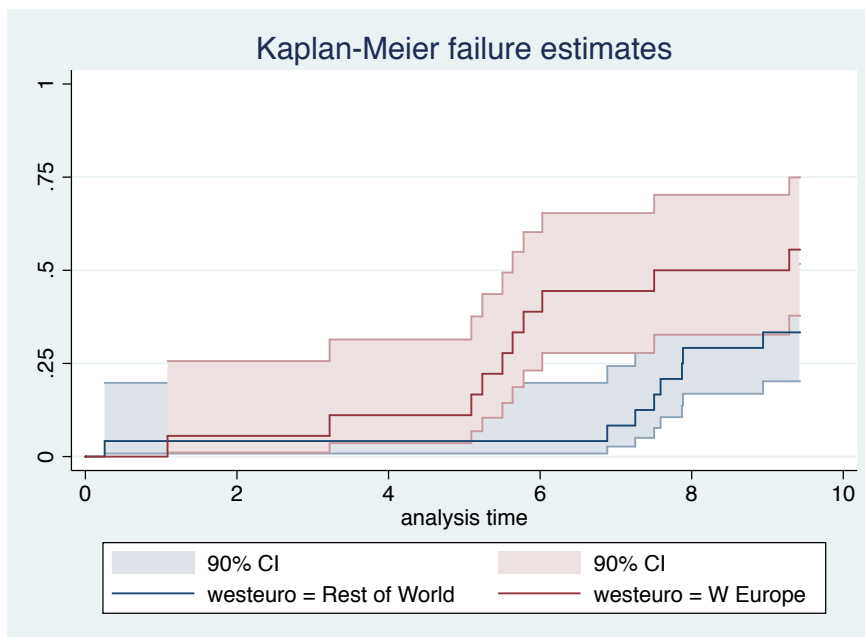| VARIABLES	A	B
GDP	1.000	1.000
	(2.83e-05)	(2.76e-05)
West Europe	2.280	2.162
	(1.406)	(1.315)
Anglo-US	5.370*	7.208**
	(3.701)	(4.745)
gov_left	-0.976*	
	(0.0117)	
gov_right	-0.985	
	(0.0102)	
gov_centre		1.0+
		(2.76e-05)
Fit	.6964	.3354
Observations	42	42

Standard error in parentheses
** p<0.01, * p<0.05, + p<.1

Figure 2: comparing adoption rates for Anglo-American countries and the rest, years

Kaplan-Meier failure estimates

Figure 3: comparing adoption rates for West European countries and the rest, years

Kaplan-Meier failure estimates

Overall, the results from the event history analysis show that some of the variables to be predictive of adoption. GDP does not appear to be a factor, though the coefficient is in the positive expected direction. The key finding is that the Anglo-American variable is predictive and statistically significant, showing that these countries tended to adopt first as predicted by the classic literature on nudge. From this analysis, nudge is indeed an Anglo-American phenomenon. The hazard ratio is the highest among the variables, which suggests that these democracies are between five and seven times more likely to adopt nudge units earlier than the other countries. One caveat is that this variable fails on the proportional-hazards assumption with a non-zero slope (p= 0.0179). However, this might be feature of the multivariate regression (which contains observations coded both as both Anglo-American and West European – that is the UK and Ireland). When running the variable in a bivariate model, the Anglo-American term remains positive (4.12, p=.005) and with a non-zero slope of the residuals (p=.2451). All other variables pass this check in univariate models. Another worry is that the coding is dependent on a particular interpretation of the use of behavioural insights in the US, from when Cass Sunstein was appointed, shortly after President Obama took office. The nudge unit, The Social and Behavioral Sciences Team (SBST), started during the second term of office on 15 September 2015 (Executive Order #13707). Re-running the analysis, using the later time of adoption for the US, produces similar results in terms of strength and significance of the coefficients. The West European coefficient moves into the significant range (p<0.1) and there is a reduction in the size of the US hazard ratio (p<0.05). But broadly the results are similar.

The other key country group variable that is positive is West European countries, but this is not significant in the multivariate model. In a bivariate model, however, the variable is significant at the ten per cent level (2.26, p=.087), so there may be some diffusion through

these countries (note the earlier caution about the overlaps of Anglo-American and West European variables). For robustness, a new variable of EU membership was tested, but this is decisively non-significant, both in multi- and bivariate models.

Figure 2 plots the Kaplan-Meier estimates of the hazard rate over time (years) for Anglo-American democracies and the rest, plotting ninety per cent confidence intervals above and below these estimates. Failure should read as likelihood of adoption that increases over time. Though the differences between these curves is at times non-significant as the confidence intervals cross-over, there does appear to be an early period when nudge units/initiatives were significantly more likely to be adopted in Anglo-American democracies than elsewhere, reflecting the early wave of adoptions from 2010 as the first nudge units increasingly became successful and were keen to extend their reach, especially the UK Behavioural Insights Team, which became independent (though still co-owned) from government as a not-for-profit at that time and engaged in more overseas work and in partnerships with other agencies and governments. First chosen was Australia, though New Zealand and Canada had to wait until later. The confidence intervals are very wide for the Anglo-American variable, which might reflect the US and UK that established their behavourial initiatives at the start of this period with later adoptions in this group; in contrast, there are narrower confidence intervals for the non-Anglo-American group. Overall, there is a consistent difference between the two groups over time. Figure 3 presents the same estimates for West European democracies, which shows a similar pattern but without this early trend. The wave of EU countries adopting nudge came much later in the mid-2010s, which is reflected in this figure, where the divergence happens after about three and a half years from the start.

The political variables of interest are reflected in the choice of models A and B. Model A introduces left and right, with centre as the reference category. The negative sign predicts a lower probability so has a longer time without a nudge unit, which applies to left-dominated governments. There is no impact for right governments. In model B, centre governments are more likely to adopt (significant at the ten per cent level). The caveat is that these political measures are taken at the start of the data series and have changed in some cases at the time of adoption. Future work using time-varying covariates for the whole data series would be needed to test fully the impact of politics on the adoption of behavioural initiatives.

Conclusion

Overall, the findings show there is path dependence in the diffusion of nudge through early adoption by the Anglo-American democracies. It does appear then the nudge *is* an Anglo-American phenomenon, at least in explaining the early period. The path dependence does not apply to Western Europe that could have been the focus. There is a tendency for it to be adopted by governments with more ministers in the centre than otherwise and left government are less likely to adopt. Given what is known about the diffusion of nudge from surveys and reviews, these results show it is less suited to contexts where ideology is prevalent, especially left-dominated governments. It is more likely to be adopted with particular kinds of political institutions, such as those in the UK, US, Canada, Australia, New Zealand, and Ireland, even though nudge initiatives were eventually adopted in other OECD countries and partners.

Countries outside OECD and its partners may still take comfort that nudge an adaptable phenomenon which works well in any stable context, including non-democratic states, such as Singapore in the dataset here, and could be adopted in China. The practical advantages of nudge policies are likely to appeal to a range of agencies interested in engaging citizens in public policies, such as over the environment. As nudge does not have an overt political component or ideological fixed point, it does not challenge the political system while at the same time offering an enhancement to the efficiency of public policies.

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Appendix: List of nudge units/networks and sources

Nudge Unit	Nature of unit	Date of inception	Source
1. Australia	Nudge Unit: Behavioural Economics Team of the Australian Government (BETA)	1.2.2016	Journal of Behavioral Economics for Policy, Vol. 1, Special Issue, 21-26, 2017 Behavioral Policy and its Stakeholders Starting a behavioural insights team: Three lessons from the Behavioural Economics Team of the Australian Government, by Sarah Ball, Michael Hiscox, Tara Oliver.
2. Austria	*Motivierender Staat*" ("Motivating State")	11.6.2015	https://diepresse.com/home/innenpolitik/4752747/Nudging_Der-Staatssekretaer-will-stupsen, Nudging: Der Staatssekretär will stupsen, cited in OECD country survey.
3. Canada	Impact Canada Initiative	10.5.2018	https://www.canada.ca/en/innovation-hub/topics/impact-canada-initiative.html
4. Denmark	Danish Nudging Network	20.08.2012	Launch of twitter feed: https://twitter.com/DKNudgeNet Also see http://www.danishnudgingnetwork.dk and Giulio del Balzo Nudging in the UK, in the USA, in Denmark, in Italy: an international

			comparison of Behavioural Insights Teams Thesis · July 2015, p. 35.
5. Finland	Prime Minister Office initiative Demos Helsinki	09.01.2015	*Financial Times*, 10.1.2015, also OECD (2016) Finland Country Overview
6. France	Nudge France	13.03.2015	http://www.nudgefrance.org/missions/
7. Germany	Nudge unit	26.08.14	Report in *Frankfurter Allgemeine*, 26.08.2014
8. Greece	Nudge Unit Greece	01.12.2016	First conference – see https://behavioralpolicy.org/nudge-unit-greece-a-new-nudge-unit-is-starting-up/
9. Ireland	Greater focus of Irish Government Economic and Evaluation Service	13.09.2018	*Irish Times*, https://www.irishtimes.com/opinion/nobel-prize-in-economics-ideas... Robert Watt, Secretary General, Department of Public Expenditure & Reform, speaking at the Whitaker Conference on How (Not) to Do Public Policy, NUI Galway Introduction, https://www.per.gov.ie/en/robert-watt-keynote-speech-on-making-better-public-policy/
10. Israel	Team the Budget Division of the Ministry of Finance	1.1.2017	Behavioral Methods for Streamlining the Work of Government, https://www.idi.org.il/media/8909/behavi

			oral-methods-for-streamlining-the-work-of-government.pdf
11. Japan	Ministry of the Environment	14.4.2017	Ministry of Environment, The establishment of the Nudge Unit of Japan http://www.env.go.jp/en/headline/2314.html
12.The Netherlands	Behavioural Insights Network Netherlands (BIN NL)	01.12.2014	Kamerstuk (Parliamentary Papers) 34000XIII no. 140. , cited by A Wealth of Behavioural Insights: 2017 edition Behavioural Insights Network Netherlands, p. 6
13. New Zealand	Behavioural Insights Community of Practice, also BIT unit	19.4.2017	Behavioural Insights Community of Practice Inaugural Event 19 April 2018. https://dpmc.govt.nz/sites/default/files/2018-06/Behavioural%20Insights%20COP%20Tracker%20Final.pdf See also https://www.behaviouralinsights.co.uk/wellington/
14. Peru	MineduLAB (sposored by government)	19.04.2016	http://www.minedu.gob.pe/minedulab/pdf/presentacion-lanzamiento-minedulab-fabiola-caceres.pdf https://www.hertie-school.org/the-governance-post/2017/11/perus-first-nudge-unit-

			pioneering-education-reform-insights-behavioural-economics/
15. Singapore	Unit of BIT	1.9.2016	Behavioural Insights Team Singapore, https://www.behaviouralinsights.co.uk http://www.minedu.gob.pe/minedulab/
16. Sweden	Nudging Sweden	4.7.14	Launch of Nudging Sweden network https://www.awinwinworld.com/2014/06/25/en-GB/launch-for-the-new-nudging-sweden-network,-july-4th-2014.%C2%A0-22385891
17. US	Administrator of the Office of Information and Regulatory Affairs >> Social and Behavioral Sciences Team (SBST)	1.09.2009 terminated 1.2.2018	Start: OIRA News http://www.thecre.com/oira_news/?p=1055 End: https://sbst.gov
18. United Kingdom	Behavioural Insights Team	1.7.2010	Behavioral Insights Team, Annual Update 2010-2011, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/60537/Behaviour-Change-Insight-Team-Annual-Update_acc.pdf