Introducing carbon fee & dividend by writing about morality, co-benefits or pragmatism

First survey results on how framing and backgrounds influence policy support and idea dissemination

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Abstract

'Fee & dividend' (F&D) would incentivize the energy transition by levying an annually rising fee on fossil fuels. Simultaneously, all revenues would be given straight back to citizens, protecting a majority against price increases on products and services. Proponents say that this translates into broad popular support and makes the policy the most feasible option for realizing adequate carbon pricing.

This study explored whether the framing of written F&D introductions to previously unaware people matters for policy support and idea dissemination. First, proponents' existing communication as well as literature on climate communication/psychology/policy support was consulted. *Morality*, *Co-benefits* (both economic and non-economic) and *Pragmatism* were concluded to be promising frames with broad appeal. Results also included relevant variables to measure. The frames were then quasi-experimentally tested in a web survey (n = 412; good representativeness for the Swedish public) that randomly assigned respondents to one of three versions of a text about an EU-level F&D implementation.

No overall framing effects were found on evaluations on the dependent variables (e.g. positive/negative attitude, perceived fairness, perceived effectiveness). However, several background-variable effects were discovered (e.g. from gender, weekly hours of paid work, municipality population density, political orientation). Of greater importance, though, many interaction effects were also found – i.e. how background variables and frames together affected evaluations. The correlations were mostly weak but nonetheless significant, leading to the conclusion that morality/co-benefits/pragmatism framing does matter when directing the written F&D communication to specific audiences. With care – this being the first study on the topic – the study's results can thus help proponents tailor their written F&D introductions.

The results also put into question the common claims that F&D is perceived as being ideologically neutral.

Keywords:
climate change, carbon pricing, fee & dividend, carbon tax, revenue recycling, framing, morality, co-benefits, pragmatism

Contents

1. Introduction

Many economists claim that putting an adequate price on carbon would maximize the cost-efficiency of reducing carbon emissions (GCEC, 2015). However, roll-out is slow: only about 40 national and 20 sub-national jurisdictions have to date adopted or scheduled carbon pricing policies (The World Bank, 2015). Oft-quoted explanations for this include politics – emissions trading is often labeled "right", carbon taxation "left" – and popular dislike for price increases in general.

One policy aimed to counter this is 'annually increasing carbon fee with full dividend' – henceforth, 'fee & dividend' or 'F&D' (see chapter 3 for why the word 'tax' is not used). As Figure 1.1 illustrates, a fee would be placed on the carbon content of fossil fuel companies' sales, i.e. upstream in the economy. The price increases downstream that the fee would give rise to would incentivize less emissions-intensive production and consumption. 100 % of the revenues from the fee would then be deposited in equal parts straight into the accounts of all adult individuals. Families with children would receive one half of such a dividend per child under 18 years of age for a maximum of two children per family) (CCL, 2016a, 2016b; Klimatsvaret, 2015a, 2015b; Hansen, 2015).[1] 'Ideological neutrality' thus arises, say proponents: the government would not increase in size (neither measured in bureaucracy, since most tax and banking infrastructure already exists, nor in revenue), difficult political arguments would not arise over spending allocation or emissions caps, and the market is given clear incentives rather than strict regulations.

Critically, proponents also say that the policy design ensures relatively high popularity. The public would like it since a majority of people would become net recipients of money[2] due to the fact that carbon consumption is disproportionally distributed across wealth levels (see e.g. SCB, 2013a). Low-income households would thus be protected against price increases without the need for extra bureaucracy. Businesses would like F&D since it leads to a more stable "playing field" than e.g. cap and trade. In sum, therefore, proponents hold that F&D represents the most

[1] The economic literature that looks specifically at F&D is limited but houses both support and critique (Klenert & Mattauch, 2016; Pezzey & Jotzo, 2012; Nystrom & Luckow, 2014 (commissioned by CCL); Solaymani, *et al.,* 2015; Goulder & Hafstcead, 2013; Parry & Williams III, 2011; Timilsina & Shrestha, 2007). Revenue recycling via income tax rebates achieves cheaper emissions reductions than full dividends in many models, but these rarely consider policy acceptance.

[2] This is supported by findings that revenue neutrality and revenue recycling to households increase popular support for carbon taxes (Drews & van den Bergh, 2015; Kaplowitz & McCright, 2015).

feasible path towards implementing comprehensive, adequate carbon pricing. Challenging debates[3] would persist, however, especially over fee levels and the necessity and design of a border adjustment mechanism designed to protect trade balance and domestic competitiveness.[4]

F&D is a relatively new and unknown policy proposal and has not been implemented anywhere. To change this, starting with the unawareness, requires much communication.

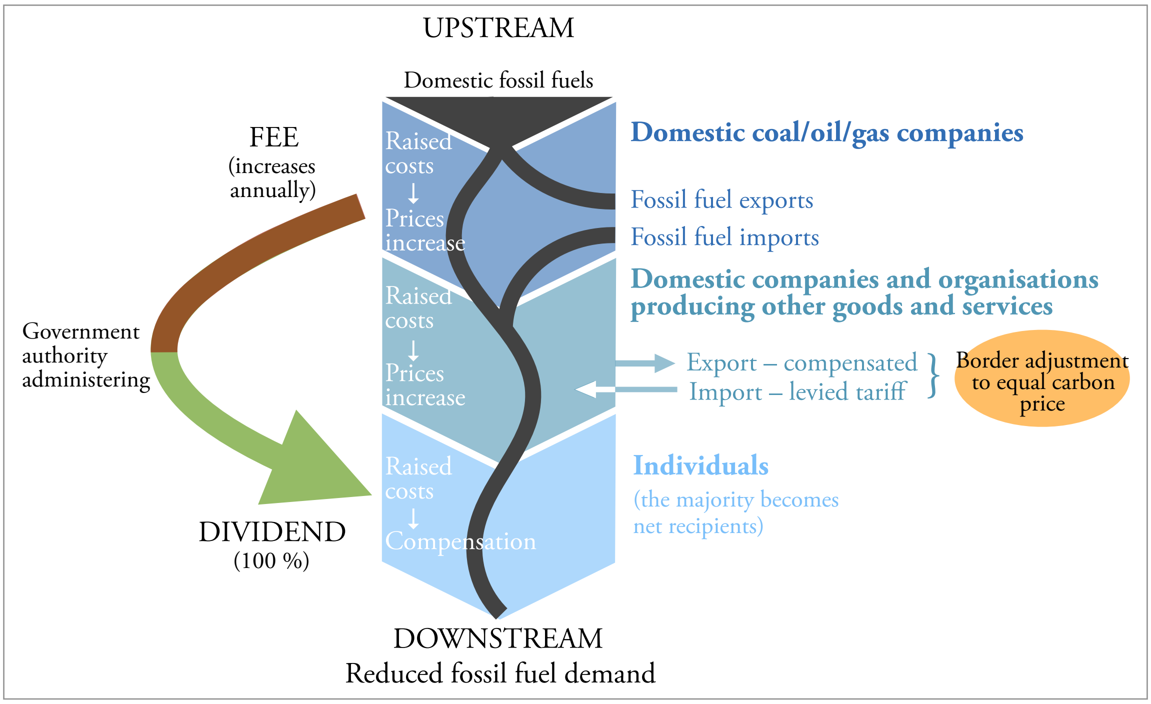

Fig 1.1: F&D basics

For administrative simplicity and in order to include fossil fuel exports, the fee would be levied as far upstream as practically possible: coal mining, oil refinery, natural gas and fossil fuel import companies. To enable a smooth transition, the fee would initially be low and then increase annually in predetermined increments. In the border adjustment, imported (non-fossil fuel) goods would be tariffed to so as to simulate the domestic carbon pricing level, which would also incentivize other economies to harmonize their carbon pricing level so as to keep those funds in the country instead). Conversely, export goods would be compensated. This would be administered in a separate fund.

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[3] Some critiques specifically against F&D are that it is difficult to implement alongside existing mitigation policies; that building support for known policy alternatives is preferred; and that there are ideological arguments against "handing people money".

[4] Several evaluators hold that this would be e.g. WTO compatible (e.g. Sewalk, 2014; de Cendra, 2006), but questions remain. This critique applies to all unilateral carbon pricing schemes, however.

2. Purpose, research questions and delimitations

2.1 Purpose and research questions

In order to aid the effectiveness of all the communication that will be needed, the study's purpose was to generate insights into how to introduce F&D to previously unaware people in ways that induce evaluations good for policy support and idea dissemination. Many factors underlie message evaluation, both contextual (e.g. messenger trust) and directly to do with the message itself. One such factor is how the message is 'framed', meaning how its topical content and/or chosen words/ phrases highlight and activate some values or connotations while hiding and downplaying others. All our thinking, talking and knowing involves frames. Single words can activate both a specific frame and other, proximate (or perhaps higher-level) frames in the network of frames that is our thinking (Lakoff, 2010; Marshall, 2014; Stoknes, 2015). One simplified typology consists of 'conceptual' frames and 'deep' frames. The former are shorter-term, lower-order and less robust and concern getting the language right (e.g. 'fee' rather than 'tax') whereas the latter are longer-term, higher-order and more robust and are about forging connections between a topic and a set of deeper values or principles (e.g. framing taxes as theft to activate ideologically-based dislike for large government) (CCCAG, 2010; Lakoff, 2010; *cf.* Bernauer & McGrath, 2016a).

To study overall framing effects is a large, mature sub-field not least of climate communication/psychology. Results are mixed – many studies show at least short-term effects (e.g. Obradovich & Guenther, 2016; Wolsko, *et al.*, 2016; Morton, *et* al., 2011; Spence & Pidgeon, 2010; Feygina, *et al.*, 2010) while others show no effects from isolated reframing attempts (e.g. Bernauer & McGrath, 2016a; McCright, *et al.*, 2016), with study design and focus of course contributing to the ambiguity. However, no research has examined F&D framing specifically; the current study pioneers this approach. Since the explicit objective was to aid F&D proponents as much as possible in their communication, the wish was to choose, adapt and compare frames that could all be suspected to be promising. Because of the research gap and the often differing methodologies and geographical foci of tangential research (*cf.* Drews & van den Bergh, 2015), however, no direct guidance existed regarding which frames these might be.

Figure 2.1 shows the four research questions that were employed to operationalize the study's purpose and the focus on framing:

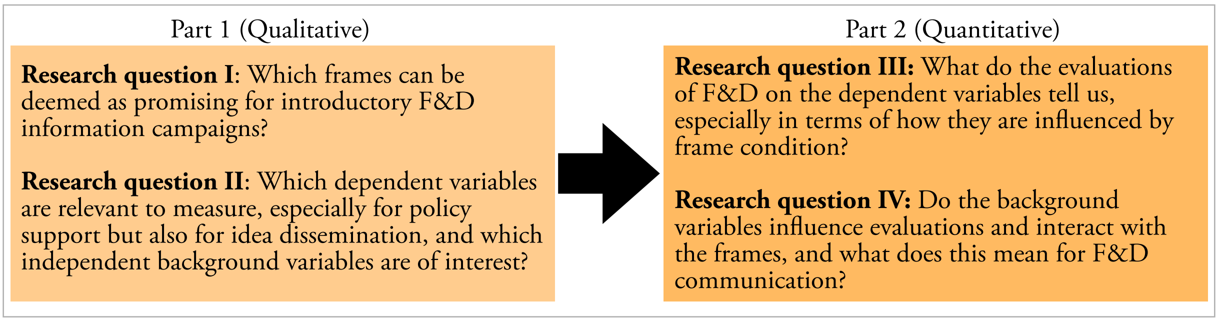

Fig 2.1: Research questions
These two parts of the study are sequential; the second depends on the first.

2.2 Delimitations

Communication science and climate psychology clearly demonstrate the importance of tailoring messages to what recipients care about (Stoknes, 2015; Clayton, *et al.*, 2015; CRED & ecoAmerica, 2014; Marshall & Corner, 2015; Kahan, *et al.*, 2011; Patchen, 2010). Researching initial F&D communication with specific groups is therefore likely fruitful[5], but may still be premature due to the lack of research insights about F&D communication in general. Moreover, due to this research gap it was also deemed to be more feasible to adopt an exploratory approach with a descriptive focus than to test pre-existing hypotheses and attempt to explain potential associations. The choice was therefore made start out broadly and study the general public. Because of personal convenience, this translated into the Swedish general public, but it did not entail a specific attempt to test what works best in the Swedish context.

Since EU customs rules prevent unilateral implementation of the mentioned border adjustment mechanism, the scenario explored was an EU-level F&D implementation[6] – anything else would have been too farfetched.

To achieve good population representativeness (and thus also enable many different sub-group comparisons) and anonymity (in order to make it more feasible to ask sensitive questions) under the study's time and budget constraints, the methods chosen for research questions III and IV was to survey a sample of web-panel respondents. This meant that the study examined only written introductory F&D communication. Due to the lack of general F&D familiarity, the study did not

[5] E.g., it may be interesting to focus on politicians and civil servants, since these are important groups from a policy perspective that may look at the issue differently from the general public.

[6] The main Swedish F&D proponent, Klimatsvaret, lobbies for an investigation of a domestic F&D implementation limited to transportation, since those fuels are not included in the EU Emissions Trading System (personal communication with founder Lars Almström, Lund, 2016-01-25).

ask directly about policy support.[7] The unfamiliarity also made the choice not to compare F&D with other carbon pricing policies less problematic.

Swedish research shows that it can be beneficial for policy support to compare carbon taxes' projected cost-efficiency to that of alternative policies (Jagers & Hammar, 2009), but such figures were not available for an EU-level F&D implementation. For the same reason, dividend size and impacts on consumer costs were not mentioned either.

Three mutually exclusive frames, eight dependent variables and eight independent variables were chosen to balance research breadth with budget constraints. Regarding the frames, no 'frameless' control condition was used since framing is inescapable, even if only created unconsciously (Lakoff, 2010; Stoknes, 2015). The frame choice process considered only frames of sufficient high order to be able to accommodate the sufficient amount of arguments to allow for natural insertion into the zoomed-out focus of the F&D presentation text used in the survey.

Regarding the dependent variables, policy support was deemed to be of larger interest at this budding stage of the research field than was idea dissemination. All variables measuring constructs were broad, single items rather than indices, due to budget constraints and the web-panel survey format's need to stay below 15 minutes of response time.

Framing theory is not presented in a chapter of its own but rather is revisited throughout chapters 4 and 7 and somewhat in chapter 3. The concepts of attitudes, policy support and idea dissemination are not explicated upon.

Finally, it should be noted that since F&D still is a relatively unknown policy proposal and the study chose broad single-item variables, the survey results were of less interest in absolute terms already at the outset; the focus was directed at the relative effects of the frames. Nevertheless, the hope was that the results in absolute terms could still be of some use if interpreted carefully.

Although not a delimitation, it should be noted already here that the study distinguishes between 'overall framing effects' (effects from framings found for the whole sample), 'background effects' (effects solely from background variables), and 'interaction effects' (effects from interactions between background variables and frames).

Figure 2.2 provides an overview of how the delimitations lay the path for the study's results together with the employed methodologies:

[7] Supporting this decision is that the only survey found that specifically has asked about support for F&D saw as many as 31 % of the American respondents answer 'Don't know' (44 % support, 25 % opposition; Howe, *et al.,* 2015).

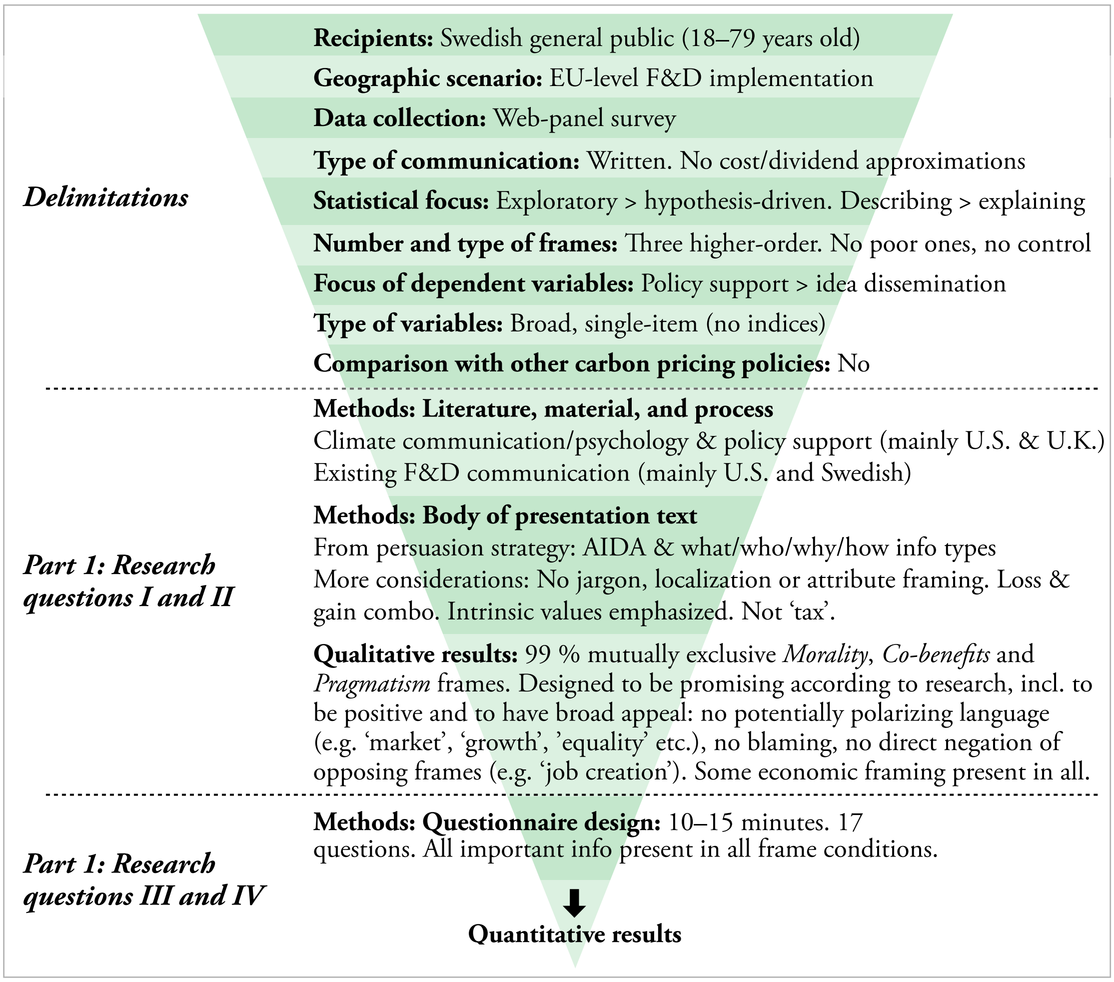

Fig 2.2: Scope
The study's design constrained its scope and perhaps the generalizability of its results. The delimitations have been described above; methodologies and results are described below. 18–79 years stems from the web panel, see section 5.2.

2.3 Disposition

The remainder of the study is divided into three parts:

Part 1 Chapter 3 concerns the methods for research questions I and II (literature and material for frame choice and adjustment plus considerations for the body of the survey's presentation text), while chapter 4 describes the results for these research questions.

Part 2 Chapter 5 concerns the methods for research questions III and IV (questionnaire design, data collection, survey sample), while chapter 6 presents their results, the statistical analysis.

Part 3 Chapter 7 discusses implications for written introductory F&D communication, study limitations, and directions for future research. It focuses mainly on part 2. Chapter 8 provides conclusions.

Part 1

3. Methods, research questions I and II

This chapter describes how the literature and material utilized for research questions I and II were found, the design of the frame choice and adjustment process (the results of which are described in chapter 4), and some principles adhered to when creating the text body of the three-version (one per frame) F&D presentation that was used in the survey.

3.1 Literature, material and process

As Figure 3.1 shows, the three promising frames were chosen and adjusted for introductory F&D communication by extrapolating findings from research on climate communication, climate psychology and climate policy support[8], as well as

[8] The database platform LUBsearch, consisting of more than 100 research databases (Lund University, 2015), was the main search engine used. Google Scholar was used to complement, with cross-checks to ensure peer-review. Overview articles and meta-analyses were chosen over single-case studies as much as possible in order to develop an understanding of the field's main, agreed-upon findings. Likewise, recent research was preferred. Search words and phrases were the following, either used on their own or combined with boolean operators: (climat* OR carbon), (fee AND dividend), "fee and dividend", "fee & dividend", ("reinvest" OR "reinvestment" OR "recycle" OR "recycling" OR shift), (avgift AND utdelning), (lump-sum OR lump sum), NOT "double dividend", (fee OR tax), (koldioxidskatt OR klimatskatt OR (klimat AND skatt)), (klimat* OR grön) AND (skatteväxling OR (skatt* AND växl*), ((cap AND trade) OR (emission* AND (trade OR trading))), ((utsläpp* OR koldioxid OR växthusgas*) AND (handel OR handling OR utsläppsrätter)), "cap and dividend", "cap & dividend", communicate, communicating, frame, framing, message, messages, messaging, (kommuni* OR inram* OR framing OR frame OR budskap), and climate AND (psycholog* OR communicat*) AND (overview OR review OR meta OR synthesis), ("first impression" OR "first impressions" OR "impression formation") AND information.

by looking at material consisting of existing F&D proponents' communication. This approach was judged to be sufficiently broad to capture the relevant communication insights while also delimited enough to be practical and give adequate intersubjectivity.

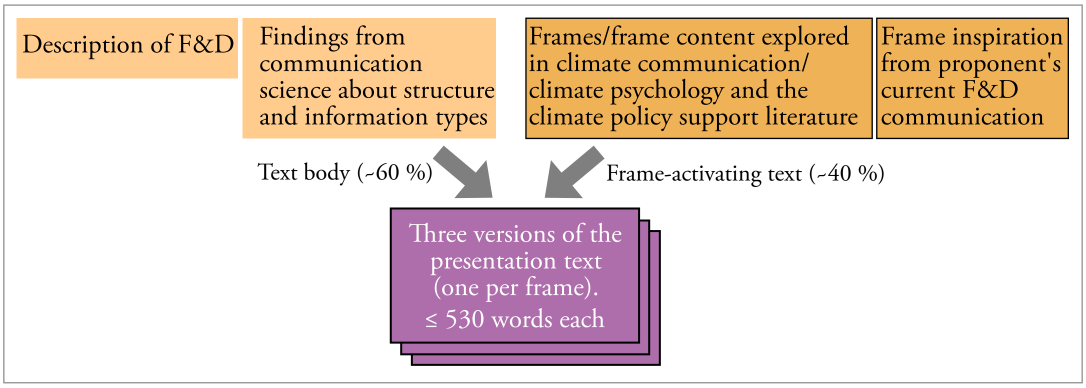

Fig 3.1: Creation of the three-version F&D presentation text used in the survey
The text body (see Appendix 1 and 2) needed to include the F&D essentials but not be overly strenuous or time consuming to read. Moreover, the structure needed to lend itself well both to persuasion and to allow for fluent insertion of frame-activating text while holding everything else constant. These factors resulted in a total length of maximum 530 words, of which the frame-activating text made up around 40 % (the differences between versions were held to less than fifteen words).

Previous framing studies in climate communication/psychology have mainly looked into how different frames affect perceptions regarding the threat from climate change, one's willingness to act, issue saliency etc. – nearly not at all into perceptions regarding climate policies. The choices of frames (research question I) and the creation of the body of the presentation text was thus informed by more general literature with mainly a tangential connection to F&D. The same research also informed many of the measurement variable choices (research question II), which however also drew upon literature about climate policy support.

Regarding F&D proponents' existing communication[9], the view from the outset was that the experience of these practitioners should not be neglected (*cf.* Kahan, 2013). An unstructured thematic text analysis (the process of which is not described further) was therefore conducted on a selection of existing written material. However, since proponents' main focus has been to communicate with policymakers, not the general public, and a host of factors can have led to inertia and groupthink,

[9] The primary sources here were websites for leading U.S. (Citizens' Climate Lobby) and Swedish (Klimatsvaret) proponents, opinion pieces and letters to the editor, and newspaper articles and interviews about F&D. Some of these were found via LUBsearch but most were found via Google. The messenger and medium's relative relevance was subjectively evaluated. Influential messengers' own words were favored over third-party articles on them.

caution was used against adopting language directly.

It should be noted that the literature and material drawn upon mainly but not exclusively stems from the U.S. and U.K. contexts, with just a few Swedish studies. Much of the proponents' material was Swedish, though.

3.2 Body of presentation text

Although a larger focus was put on the relative effects of the three frames than on the absolute quality of the presentation text (see Appendix 1; Appendix 2 for original, Swedish version), effort was made to make the structure of the text body work well for a persuasive text and to adhere to important general findings in the employed literature.

The text body creation drew somewhat upon the subfield to communication science called persuasion strategy, in which e.g. McGuire's (1989) Information Processing Theory is a central concept. A commonly used popularization of this 12-step analytical model is the 4-step AIDA model: Attention, Interest, Desire, Action (Palm, 1994; Doyle, 2011). This model was deemed to fit well with the 'selling' approach explained below. The personal-level focus of the Action step is not straightforward in relation to F&D but was applied in the presentation text by explicit cues to spread the F&D idea and to click on a hyperlink. Much research, including on climate communication, shows that Interest, Desire and Action can be bolstered if recipients feel self-efficacy, i.e. that the suggested action feels possible and meaningful on a personal level (Morton, *et al.*, 2011; Bostrom, *et al.,* 2013; Marshall, 2014; Stoknes, 2015; Palm, 2006; Palm, 1994). This was attempted in the presentation text not least by making use of modeling, i.e. "if they can then so can we" arguments (Palm, 2006; Palm, 1994) This was done by pointing to a popular example of a similar policy that has been implemented, namely the Canadian province British Columbia's carbon tax with revenue recycling via tax rebates (CCL, 2016c; Klimatsvaret, 2015b). Space constraints in the presentation text as well as dissimilarities from F&D excluded mention of the existing Swedish carbon tax and the EU Emissions Trading System.

Another core area of persuasion strategy is to study how to balance various information types – WHAT, WHY, WHO and HOW – in a message's content. E.g., HOW information is viewed as important for lowering recipients' 'decision involvement', i.e. to make decisions easier to take (Palm, 2006; Palm 1994). The short-term, personal HOW is largely lacking from introductory F&D communication, but the mentioned cues provided some such information as well.

The aim for the presentation text was to be somewhat 'selling' rather than neutral, because although a smaller focus on social marketing may be better in the long run (*cf.* CCCAG, 2010), the study did examine language meant for F&D

proponents' communication. Moreover, this made it easier to insert frame-activating text without disrupting the text's flow. Another important aspect is that the emotional and deliberative sides of our brains go hand in hand – to maximize the likelihood of favorable understanding, evaluation and pursuant behavior, they are both needed (Roeser, 2012; Patchen, 2010; Lakoff, 2010; Marshall, 2014). At the same time, an effort was made not to oversell F&D with entirely unequivocal language since softening the tone with language such as "it could be the case" can make arguments more persuasive (Chenhao, *et al.*, 2016).

It is important for messages not to rely overly much on jargon, not least in climate communication (CRED & ecoAmerica, 2014; Stoknes, 2015; Marshall, 2014; Lakoff, 2010), since unfamiliar words and concepts such as 'revenue-neutral', or 'internalize costs of burning carbon' create barriers to engagement. In general, the aim was to make the presentation text as simple as possible – but not more.

Most climate communication should often at least allude to potential impacts from climate change, in an honest way, to be effective (Marshall, 2014; CCCAG, 2010; Stoknes, 2015; CRED & ecoAmerica, 2014). The reasons for this include our well-documented cognitive bias for loss aversion: typically, we prefer avoiding losses over achieving gains, even if the gains are almost twice as large (Kahneman, 2012; Marshall, 2014). Moreover, fearful anticipation of deteriorating conditions can be motivating, especially if holding such fear is a norm among one's in-group (Marshall, 2014). However, it is also well documented that fear-inducing narratives can lead to apathy or denial if adequate solutions are not simultaneously communicated (Stoknes, 2015: Marshall, 2014; CCCAG, 2010). Furthermore, studies have found that 'gain framing' might fit better than 'loss framing' for prevention behaviors (Spence & Pidgeon, 2010). There is also the risk for loss framing to either induce risk seeking, resulting in people gambling that "the impacts might not materialize" (van der Linden, *et al.*, 2015; Kahneman, 2012; CRED & ecoAmerica, 2014) or to induce processes of rationalizing inaction or discounting the future by constructing narratives of uncertainty (Marshall, 2014; Kahneman, 2012). On balance, then, it seems possible that the best approach is a combination of loss and gain framing which emphasizes that we can achieve a higher likelihood of avoiding present and future losses (Stoknes, 2015). This emphasizes the positive aspects of uncertainty by highlighting the possibility of risks not materializing (Corner, *et al.,* 2015b; Morton, *et al.*, 2011). The combination approach was therefore adopted.

The perceived 'psychological distance' of climate impacts is often an important obstacle that needs to be considered and attempted to manage (Rickard, *et al.,* 2016; Stoknes, 2015; McCright, *et al.,* 2016; Climate Outreach, 2015a), but temporal, social or spatial 'localization' has been found to be less important for mitigation than for adaptation and in some cases even counterproductive (Brügger, *et al.,* 2015; *cf.* Rickard, *et al.,* 2016). Localization was therefore not attempted beyond avoiding emphasis on future generations.

Relatedly, a common recommendation for engaging people with climate change is to couple the ordinary 'thematic', large-scale narratives with human-scale, 'episodic' narratives (Stoknes, 2015; Marshall, 2014; Corner, *et al.,* 2015b). However, doing so was difficult for a short presentation text on a previously unheard-of policy, especially when frame-activating language needed to be easily attached. There are also other reasons for not attempting this for this particular topic. One is that doing so is that the nature of the policy would lead to many personal-level economic arguments then being used, which would risk activating extrinsic values (e.g. wealth, status, consumption) more than intrinsic ones (e.g. helpfulness, being one with the environment, being responsible, valuing social justice). That could be problematic since extrinsic persuasion may not only strengthen the activated value itself but also other, nearby values, leading to a potentially counterproductive spiral (Clayton, *et al.,* 2015; Crompton, *et al.,* 2014; CCCAG, 2010; PIRC, 2011; Kasser, 2009; Markowitz & Shariff, 2012; Baranzini & Carattani, 2015; Patchen, 2015; van der Linden, *et al.*, 2015). Moreover, research has found that combining intrinsic and extrinsic values does not seem to work better than to speak to extrinsic values alone, while activating only intrinsic values can lead to more of the intended support even for people with personalities that favor extrinsic values (Crompton, *et al.,* 2014).

Literature on climate policy support was also used to some extent for the text body creation. For example, the word 'fee' ('avgift' in Swedish) was used rather than 'tax', since people tend to highly dislike the latter (Stoknes, 2015: 49; CRED & ecoAmerica, 2014; Drews & van den Bergh, 2015; Cole & Brännlund, 2009; Kallbekken, *et al.,* 2011), including in Sweden (Brännlund & Persson, 2012). This may be due to associations with large government, regressive policies and threats against one's income (Baranzini & Carattini, 2015; Matthews, 2010) as well as revenue raising rather than being a (Pigouvian) instrument designed to decrease negative external effects from an activity (Kallbekken, *et al.,* 2011; Kallbekken & Sælen, 2011). 'Fee' can thus lead to more policy acceptance. It can also be argued that F&D essentially is not a tax, since the government does not keep any revenue (Swedish Environmental Protection Agency, 2016).[10]

Many climate policy support studies examine effects from including or excluding mention of policy characteristics (Parag, *et al.,* 2011; Matthews, 2010; Brännlund & Persson, 2012). However, since incentive structures and revenue recycling both are important for policy support (Drews & van den Bergh, 2015; Baranzini & Carattini, 2015), and due to the obvious bearing on popular support of the border adjustment and F&D's progressiveness (people tend to prefer progressive carbon policies over regressive ones; Drews & van den Bergh, 2015; Zvěřinová, *et al.*, 2013; Brännlund & Persson, 2012; Gevrek & Uyduranoglu, 2015), it was deemed unfeasible for this study to exclude major policy attributes from any frame.

[10] However, F&D's redistributive aspect can enable interpretations of it being a wealth tax.

4. Results, research questions I and II

This chapter describes the choices and adjustments of the frames and variables.

4.1 Research question I: Frame choice and adjustment

Researchers are increasingly calling for more supportive and positive frames for climate communication – yet simultaneously balanced and honest – to substitute the traditional fear appeals (apocalypse, dystopia), foci on personal and societal sacrifices and guilt, and blame-casting (Stoknes, 2015; Marshall, 2014; CRED & ecoAmerica, 2014; CCCAG, 2010; Wolsko, *et al*, 2016; *cf.* Schor, 2015). This push's main rationale is to counter the polarization that has arisen regarding climate change, with messages failing especially (and needlessly) to engage conservative audiences. The study therefore attempted to avoid negativity and to aim for broad appeal, which is highly possible (Lakoff, 2010; Marshall, 2014), which went well with the aim for promising frames. So although e.g. security concerns could motivate people with system justification tendencies (Feygina, *et al.,* 2010), others could react negatively and undesired associations might be activated (*cf.* Marshall, 2014; *cf.* Lakoff, 2010). Likewise, attempting to negate opponents' frames may turn out to actually strengthen them (Lakoff, 2010; Stoknes, 2015; Marshall, 2014). Therefore, the frame-activating text did not directly mention e.g. number of jobs or government size, since that could have activated common anti-tax or pro-fossil fuel frames.[11]

Tables 4.1 and 4.2 further describe the frame choice and adjustment process. Three relevant, higher-order general climate change frames on which there exist much research were looked at, as well as two frames that were identified as being common in F&D proponents' communication. Frames that did not adhere to the above paragraph were not examined. The three final frames – Morality, Co-benefits and Pragmatism – were chosen and adjusted to be mutually exclusive to the degree that made the frames sufficiently different from each other while still not ruling out certain important concepts from featuring in more than one frame. The only clear-cut example of this was waste/resource efficiency, which features in both the Morality and the Co-benefits frames. Note also that the frames all make use of broad ranges of content, in line with F&D's all-encompassing ramifications; if employed in isolation,

[11] Note e.g. that the Co-benefits frame included many more co-benefits than just the economic ones.

narrowly framed messages such as "F&D helps society be less wasteful" would likely sound strange to recipients, e.g. by possibly inducing perceptions of selling the policy short. The story would not match the policy's scope, an inconsistency that our brains are acutely attuned to detect and punish cognitively (Kahneman, 2012).

The frame-activating text finally employed can be seen in Appendix 1 (Appendix 2 for the original, Swedish versions).

Table 4.1: Frame choice and adjustment – climate communication/psychology/policy support

Frames and frame-activating text excluded on the basis of the findings outlined above are not shown. Explanations and references are given where deemed necessary. The end of each bullet point describes whether that theme was utilized or not. The language of the utilized frame-activating themes was adapted and in many cases simplified in the presentation text.

FRAMES AND FRAME-ACTIVATING THEMES

RISK REDUCTION FRAME

Potential frame-activating themes:

- *Factual information about climate risks* in terms of talking about potential impacts (a colloquial interpretation of the risk concept; Painter, 2015) could of course contextualize an F&D presentation (and sometimes does; Klimatsvaret, 2015c; CCL, 2016a; Hansen, 2015; Mosko, 2015). Despite results in a recent study indicating that sticking to this traditional framing is better than attempting simple, one-off reframings to co-benefits or community spirit (Bernauer & McGrath, 2016a), this framing is increasingly questioned elsewhere. Many researchers claim that there may be a saturation (or even counter-productive) effect to providing climate-scientific information past a certain point, including regarding impacts (Stoknes, 2015; Climate Outreach, 2015b; Marshall, 2014; Kahan, *et al.*, 2011). For people with relatively little knowledge, more information can have short-term effects (Ranney & Clark, 2016; Patchen, 2010), but since facts are always filtered according to people's existing worldviews and in-group identifications etc. (Kahneman, 2012; Marshall, 2014; Climate Outreach, 2015b) there is a risk for polarization.
  Not utilized due to particularly ambiguous results and potentially being polarizing.
- The *technical sense of risk* has to do with probabilities and possible magnitudes. Using language such as 'low-probability, high-impact risk' could open up the scope for the public to get a sense of the broad set of possible climate outcomes and how different solutions – including F&D – can achieve different amounts of risk reduction (Painter, 2015). It can also be a way of shifting from polarizing perceptions of uncertainty to constructive insights concerning risk management (Corner, *et al.*, 2015b). However, it could also easily seem jargon-ridden and confusing, scaring people away from the seemingly elitist and technocratic issue (Painter, 2015).
  Not utilized, risky.
- (Pension/house) insurance could be a rewarding F&D metaphor: just as how we put aside money today to insure our older selves, F&D could be implemented to prepare us better against future climate risks (*cf.* Painter, 2015; *cf.* Stoknes, 2015).
  Utilized, but not on its own. Rather, in the text body.
- As mentioned above regarding gain/loss framing, it could be good to communicate F&D as a way specifically to *achieve reduced risks for current and future*…

  …*societal resilience impacts.*
  …*ecosystem and biodiversity impacts.*
  …*economic impacts.*
  …*health impact.*
  …*lifestyle impacts*: for example, research has found that massages that encourage recipients to regard action on climate change as protection of the status quo (i.e. as 'system-sanctioned change') can reduce the negative effect on pro-environmental behavioral intentions that typically goes along with system justification tendencies (Feygina, *et al.*, 2010), which we all carry to some extent.
  Utilized, but not on their own: aspects adopted and adapted in the Co-benefits frame (except resilience, an unfamiliar concept), logic utilized in text body.

Frame not chosen.

MORALITY FRAME

Potential frame-activating themes:

- *Liberal arguments* for implementing F&D: it would help care for and avoid harm to present and future generations as well as help rectify the unfairness of the burden distribution caused by climate change, including by addressing 'climate justice' across socioeconomic or ethnic groups. These two types of moral arguments have traditionally often been invoked in climate messages, but since they tend to speak mainly to liberals, conservatives can be alienated (Wolsko, *et al.*, 2016; Markowitz & Shariff, 2012; Marshall, 2014; Lakoff, 2010).
  Utilized together with conservative arguments, except for direct mention of climate justice (potentially polarizing) and future generations (see above about psychological distance).
- *Conservative arguments* for implementing F&D: in order to resonate with conservatives, moral messages should address in-group loyalty and protection/stewardship of the purity/sanctity of nature (Wolsko, *et al.*, 2016; Markowitz & Shariff, 2012; Stoknes, 2015; McCright, *et al.,* 2016; Butler, *et al.,* 2015; Marshall, *et al.,* 2016; Nisbet, 2009). Reducing wasteful practices is another theme that resonates well here (Corner, *et al.,* 2016; Marshall, 2014).
  Utilized together with liberal arguments.
- Unfairness (mainly liberal argument) and in-group loyalty (mainly conservative argument) both extend to future generations (unborn victims/in-group members). A way to include such considerations without increasing the psychological distance is to encourage 'perspective taking' in terms of *what legacy people want to leave behind* (Climate Outreach, 2015a).
- It could be rewarding to talk about F&D implementation as *patriotism construed as general love for one's country and local place* (much F&D proponent communication draws upon this theme; Klimatsvaret, 2015c) *as well as energy independence*, rather than interpretations such as military standing or security (see above). E.g., research has found that messages that encourage recipients to regard action on climate change as patriotism (i.e. as 'system-sanctioned change') can decrease the common relationship between relatively small pro-environmental behavioral intentions and people with relatively high system justification tendencies (Feygina, *et al.*, 2010; Wolsko, *et al.*, 2016). This type of 'peaceful' patriotism can still be interpreted as potentially polarizing, of course, not least since environmental attitude differences between groups may partly be explained by system justification tendencies (*ibid.*). However, since all people suffer from loss aversion (mentioned above) to varying degrees, and thus status quo bias (Kahneman, 2012), the risk for polarization may not be large.
  Utilized in moderation, since potentially polarizing.
- Feeling a *responsibility to act* is important for how people view climate change (Patchen, 2010; Marshall, 2014; Zvěřinová, *et al.*, 2013; *cf.* Lu & Schuldt, 2015; *cf.* Newell, *et al.*, 2015) and could thus be important to address in F&D communication.
  Utilized.
- People prefer the policies that preserve *freedom to choose* to high extents, as carbon pricing and F&D does (Drews & van den Bergh, 2015). Could also be included in the Pragmatism frame.
  Not utilized, since there was not sufficient space to allow for adequate comparisons between F&D and competing policy options, which meant that an attempt to negate this common anti-tax frame would run a very high risk backfiring.

Frame chosen and adjusted for introductory F&D communication.

CO-BENEFITS FRAME

Potential frame-activating themes:

- F&D communication could highlight the policy's possibilities for *creating a better future* in terms of societal resilience, economic robustness, competitiveness and innovation, (industrial) leadership, local and democratic energy production, community spirit, reduced resource waste (efficiency), ecosystem conservation, livable cities, public health, and equality. Such co-benefit framing has been found to be promising (McCright, *et al.,* 2016; Stoknes, 2015; Butler, *et al.,* 2015; Drews & van den Bergh, 2015; Marshall, 2014; Corner, *et al.,* 2015b; Baranzini & Carattini, 2015; Nisbet, 2010). Many of these co-benefits are mentioned by F&D proponents (Klimatsvaret, 2015c; CCL, 2016a; BAS, 2013; Hansen, 2015; Ekeland, 2014). Note that a certain degree of techno optimism and elitism underlies some of this and that there is a need for an honest balance so as to not alienate people, trivialize the risks, or induce problem denial (Marshall, 2014). Note that the 'better' part is crucial; what is needed is a visionary, progressive shift away from the status quo.
  Utilized, except resilience, community spirit, equality and direct mention of techno optimism (all potentially polarizing; resilience unfamiliar; equality with complex causality).
- F&D communication could highlight the policy's possibilities for *creating room to restore past loss*, such as landscape/forest beauty and vitality, well-functioning societal institutions and food security. The effects of losses already incurred are considerably easier to draw to mind than the prospect of future loss, the effects of which can be difficult to imagine (Marshall, 2014). Reducing air and water pollution and reversing forest loss are other aspects of this theme that are sometimes used by F&D proponents (Klimatsvaret, 2015c).
  Utilized, except well-functioning societal institutions and food security, since they do not feel particularly topical in the Swedish context.

Frame chosen and adjusted for introductory F&D communication.

Table 4.2: Frame choice and adjustment – proponent's existing F&D communication

Frames and frame-activating text excluded on the basis of the findings outlined above are not shown. Explanations and references are given where deemed necessary. The end of each bullet point describes whether that theme was utilized or not. The language of the utilized frame-activating themes was adapted and in many cases simplified in the presentation text.

FRAMES AND FRAME-ACTIVATING THEMES
PRAGMATISM FRAME Potential frame-activating themes: • *Ideological neutrality – no increase in government size, no extensive regulation, but still clear rules for the market – makes F&D the most realistic way of implementing carbon pricing* (Klimatsvaret, 2015a, 2015b, 2015c; CCL, 2016b, 2016c; Hansen, 2015; Schultz & Becker, 2013; Mosko, 2015; Schaeffer, 2015; Hurst, 2012; Lavelle, 2008). Utilized, except explicitly using the phrase 'ideological/political neutrality' (to avoid prescribing opinions). • *F&D would be effective and cost efficient without necessarily impacting personal lifestyles extensively* (Klimatsvaret, 2015a, 2015c; CCL, 2016a, 2016b; Hansen, 2015; Mosko, 2015; Lavelle, 2008) (*thus enabling the public to accept a high fee*; Ekeland, 2014). This combination that has been found to be important (Zvěřinová, *et al.*, 2013). Utilized, except framing the fee as becoming 'high' and directly saying that personal lifestyles will not be affected. • *F&D required comparatively little new administration, due to the fee being levied upstream and since the requisite tax and banking infrastructure already exists* (Klimatsvaret, 2015a, 2015b, 2015c; CCL, 2015a, 2016b; Hansen, 2015; Schaeffer, 2015; Schultz & Becker, 2013; Lavelle, 2008). Utilized. • *F&D eliminates the need for centrally planned phaseouts via regulations* (Ekeland, 2014) Utilized. • *F&D is more realistic to implement and use than other carbon pricing policies, including through the fact that low-income households would be protected against price increases without requiring additional complexity* (Klimatsvaret, 2015c; CCL, 2016a, 2016b; Hansen, 2015; Schaeffer, 2015); *that, once implemented, politicians would have less to argue over thanks to the 100 % dividend* (CCL, 2015a, 2016b; Schaeffer, 2015); *that the monthly dividend makes it even more salient to people what the fee does* (Lavelle, 2008)*; and that it is simpler to understand, which helps support* (Klimatsvaret, 2015c; CCL, 2016a, 2016b; Lavelle, 2008). Income-protection utilized (emphasized here and also alluded to in the text body); reduction in arguments utilized; saliency only alluded to; and simple to understand not utilized, since it might be for everyone, which not least the test questionnaire suggested. • *F&D makes it simple to lower emissions* (Klimatsvaret, 2015b, 2015c). This statement runs the risk of trivializing the challenge by framing it in overly positive, bright-sided terms; an honest but supportive approach is likely better in general (Marshall, 2014; Stoknes, 2015; Climate Outreach, 2015a). Not utilized directly, but alluded to in terms of making the challenge eas*ier*. • *F&D fits well with the Swedish consensus tradition*. Not utilized: could constrain the study's geographical validity. **Frame chosen and adjusted for introductory F&D communication.**

ECONOMIC FRAME

Since F&D is an economic policy it was deemed necessary to include the core macroeconomic implications and arguments in the text body. Thoughts about testing an entirely economic frame were quickly abandoned since research warns against relying overly much on solely economic arguments when trying to build support for climate action. This is because doing so has been shown to then limit one's ability to mobilize complementary values (Marshall, 2014; CCCAG, 2010; Stoknes, 2015; van der Linden, *et al.*, 2015). The result is that all versions of the presentation text have some conscious economic framing in them, namely the five first points below.

Potential frame-activating themes:

- *F&D* *makes the transition to a green economy as smooth as possible for everyone* (CCL, 2016a, 2016b; Hansen, 2015; Schaeffer, 2015).
  Core importance, utilized in the text body.
- *F&D* *institutionalizes the polluter pays principle* (Klimatsvaret, 2015b, 2016c), which people tend to agree with (Dietz & Atkinson, 2010) (could also be a frame-activating theme for the Morality frame).
  Core importance, utilized in text body.
- *F&D* *instills a clear signal and a well-balanced pace for the transition* (Klimatsvaret, 2015b, 2015c; CCL; 2016a; Schultz & Becker, 2013; BAS; 2013; Hansen, 2015).
  Core importance, utilized in the text body.
- *F&D* *kickstarts large-scale investments and innovation* (Klimatsvaret, 2015b, 2015c; CCL; 2016a).
  Core importance, utilized in the text body. Also hinted to in the Pragmatism frame.
- *F&D's* *border adjustment incentivizes other countries to introduce carbon prices of their own* (CCL, 2016b; Hansen, 2015; Mosko, 2015).
  Core importance, utilized in the text body.
- *F&D* *builds a robust economy, with competitive advantages for the frontrunners* (Klimatsvaret, 2016c; CCL, 2016a, 2016b; Hansen, 2015; Schultz & Becker, 2013). This could be good to emphasize (SEI, 2016).
  Utilized in the Co-benefits frame.
- *F&D* *brings economic growth or at least does not hamper it (overly much)* (Klimatsvaret, 2015c; CCL, 2016a, 2016b; Reckmeyer, 2015; Schultz & Becker, 2013).
  Utilized in the Co-benefits frame (not 'growth', however, as potentially polarizing).
- *F&D is* *a market-based and market-friendly policy* (Klimatsvaret, 2015b, 2015c; CCL, 2016a, 2016b; Hansen, 2015; Lavelle, 2008).
  Not utilized: potentially polarizing as well as jargon-laden.
- *F&D* *does not increase the total tax burden, as it is a tax-shifting policy* (Klimatsvaret, 2015a, 2015b, 2015c).
  Not utilized: the former statement is not true for everyone, the latter statement not true at all, and both might activate the tax frame.
- *F&D is* *better than cleantech subsidies since a price on carbon would effectively do the same thing while also enjoying the market's superiority at finding cost efficient emissions reductions* (CCL, 2016b; Hansen, 2015; Ekeland, 2014; Schultz & Becker, 2013; McKibben, 2012; Lavelle, 2008).
  Not utilized: quite complex and potentially polarizing.
- *Helping to explain F&D by likening it to non-conditional benefits such as the Swedish "barnbidrag" (child benefit), which is a popular policy* (Klimatsvaret, 2015b).
  Not utilized: such policies are not universally popular.
- *F&D is* *better than regulatory phaseouts since there is less scope for black markets* (Ekeland, 2014).
  Not utilized: not of high priority.

Frame not utilized but many of the themes used elsewhere.

4.2 Research question II: Measurements

Tables 4.3 and 4.4 show the dependent and independent variables that were found to be most relevant and practical. Note again that policy support received more focus than idea dissemination but was not measured directly and that the study was constrained to single-item measurements rather than indices.

Table 4.3: Dependent variables.
The first six variables – especially the first five – were intended to mainly concern policy support; the last two idea dissemination.

DEPENDENT VARIABLE AND ITS RELEVANCY
Policy comprehension. Although it is not immediately obvious why comprehension would differ between frame conditions, this was deemed relevant to investigate both because comprehension carries obvious implications for policy evaluations and idea dissemination and because of the common claims that F&D is simple to understand.
Positive/negative feeling. Whether recipients feel positively/negatively towards a message is important in itself (Roeser, 2012; Slovic, 1999; Rickard, *et al.,* 2016) and also envelopes other emotions directly relevant for policy support and idea dissemination. Emotions are an inescapable part of understanding, evaluation and the shaping of behavior and should therefore not be neglected (Roeser, 2012; Lakoff, 2010; Marshall, 2014; *cf.* Patchen, 2010).
Perceived political ease/difficulty to implement in the EU. F.&D is often hailed as the most pragmatic carbon pricing policy. Do people tend to agree? The word 'political' is used to exclude the technical/institutional dimension, which however also is relevant.
Perceived effectiveness for achieving the EU climate mitigation goal for 2050. Whether a potential climate policy is deemed effective at achieving its objectives is an important determinant of policy support (Drews & van den Bergh, 2015; Baranzini & Carattini, 2015; Zvěřinová, *et al.*, 2013), including for carbon taxes (Kallbekken & Sælen, 2011; Jagers & Hammar, 2009). Perceived cost efficiency also holds high relevance (Drews & van den Bergh, 2015) but was excluded since there are no such figures and since general understanding of such numbers likely is weak.
Perceived fairness. People, including Swedes (Brännlund & Persson, 2012), typically want climate policies to be fair (Butler, *et al.,* 2015; Zvěřinová, *et al.*, 2013). This holds for carbon taxes as well (Kallbekken, *et al.,* 2011; Dietz & Atkinson, 2010). E.g., perceptions about direct personal impacts mediate policy support in different ways (Clayton, *et al.*, 2015; Brännlund & Persson, 2012; Kallbekken & Sælen, 2011).
Placement of F&D on left–right scale. Perception of which type of politics a certain climate policy is associated with matters for support (Clayton, *et al.,* 2015; Drews & Bergh, 2015; CRED & ecoAmerica, 2014; *cf.* Patchen, 2010), including in Sweden (Hammar & Jagers, 2003). Furthermore, it holds relevance for F&D proponents' claims about ideological neutrality. Note that the oversimplified left–right response scale utilized is a sub-optimal measurement for this. Note also the link with the last variable in Table 4.4.
Desire to discuss F&D with other people. One's wish to talk to others about F&D, be it to one's family or peers or to experts, is of course directly relevant to idea dissemination. Ideally, desires for different types of such conversations should have been gauged.
Followed/did not follow a hyperlink to more info. Holds relevance for idea dissemination (via curiosity) and is measured by a specific call to action made in the presentation text, namely to click on a hyperlink in order to learn more. This reduced the risk for an opposition between talking and reading with the desire-to-discuss variable, which would be larger if respondents simply had been asked whether they wanted to read more about F&D.

Table 4.4: Independent background variables

BACKGROUND VARIABLE AND ITS RELEVANCY	
Age. **Gender.** **Municipality population density.**	The proximate factors age (Corner, *et al.,* 2015a), gender (Feygina, *et al.,* 2010) and where one lives (*cf.* Patchen, 2010) cover many ultimate factors (e.g. fuel costs, societal influence, type of work) that tend to matter for climate policy views (*cf.* Slovic, 1999), although relationships may be complex and not always straightforward. Population density was chosen over "tätortsgrad" (a Swedish measurement for a municipality's share of urban area) in order to facilitate international comparisons. Moreover, the two measures overlap.
Years in formal education (excl. research beyond PhD). Educational attainment matters for risk perception in general (Slovic, 1999) as well as views on climate change (Patchen, 2010) and carbon taxes (Gevrek & Uyduranoglu, 2015). The reason for asking for number of years in formal education rather than highest accomplished degree was to simplify international comparisons. Moreover, the multiple reforms of the Swedish education system means than an ordinal scale is not necessarily easier for respondents. Ideally, knowledge directly about aspects of climate change should also have been gauged (Drews & van den Bergh, 2015), as well as parents' educational attainment.	
Paid working hours per week (not counting studies). Was deemed relevant since how one works can affect F&D attitudes in multiple ways, e.g. via one's income (Dietz, *et al.*, 2007), which however was deemed too sensitive and unreliable to ask about directly (*cf.* Ejlertsson, 2014; Dahmström, 2005), and via views on the dividend's redistributional aspect of giving people unconditional money. Relatedly, civil status might be relevant but is difficult to capture well in single questions (Ejlertsson, 2014) and might matter less in the context of F&D's society-wide implications. The more response-wise straightforward and topic-tailored variable adopted here was chosen over the complex and often ambiguous (SCB, 2013b) variables for work time often measured in official statistics, although this ruled out testing for representativeness on this variable.	
Amount of worry about climate change. Climate change risk perceptions and concern – e.g. perceived threat against oneself, one's country, or distant people – are important determinants of climate policy support (Drews & van den Bergh, 2015; Stoknes, 2015; Patchen, 2010; Rickard, *et al.,* 2016; Poortinga, *et al.*, 2012). Since the present study was constrained from qualifying 'threat', however, it instead asked the more straightforward question of how much respondents worry about climate change, which is also common (see e.g. Leiserowitz, *et al.,* 2015) and easier to interpret. Although problematic, 'worry' was also considered to partly include other climate change related perceptions – e.g. that it is happening and anthropogenic – that have been found to matter for policy support (Bernauer & McGrath, 2016a; Drews & van den Bergh, 2015). Ideally, respondents' perceived moral duty to counteract climate change would have been measured (Markowitz & Shariff, 2012; Clayton, *et al.,* 2015: 642), as well as constructs of religion/religiosity (Drews & van den Bergh, 2015; Marshall, *et al.,* 2016) and culture.	
Conviction that we can solve the problem of climate change. Although what constitutes 'solving' the wicked problem of climate change is highly open to interpretation, one's perception about our ability to do so matters greatly (Marshall, 2014; Stoknes, 2015; Patchen, 2010; *cf.* Roeser, 2012). Problematically, this perceived efficacy includes a range of underlying constructs which ideally should be measured directly, such as e.g. optimism aptitude and one's understanding regarding available solutions. 'Conviction' was chosen over 'hope' since the latter is captured to some extent by the worry variable, and over 'belief' since this is open to religious associations and is less precise.	
Placement of self on left–right scale. One's political conviction holds much importance for climate change perceptions (e.g. Stoknes, 2015; Marshall, 2014; Leiserowitz, *et al.*, 2015; Kahan, 2012), including for carbon taxes in different ways (Thalmann, 2004; Jacquard, 2012). Though not possible in this study, it would likely be rewarding to go beyond this superficial measurement and look at worldviews and values. Ideally, trust in authorities and other people should have been measured since it is always of interest (Slovic, 1999; Baranzini & Carattani, 2015; Zvěřinová, *et al.*, 2013), including in Sweden (Hammar & Jagers, 2011).	

Part 2

5. Methods, research questions III and IV

This chapter first describes the reasoning behind the design of the quasi-experimental web questionnaire, whereupon the data collection procedure and the sample are described. The latter includes its representativeness for the population and how alike the three treatment groups were.

5.1 Questionnaire design

Figure 5.1 describes the questionnaire's structures. Appendix 1 contains the actual questionnaire, while Appendix 2 contains the original, Swedish version (note that linguistic nuances may differ).

The questionnaire was designed to minimize irritation and priming effects (Ejlertsson, 2014). E.g., Q1–Q5 were asked in randomized order so as to eliminate potential priming effects. Most background questions were still asked in the beginning, however, both because a warm-up was deemed to be necessary and in order to avoid the risk for BQ3 and BQ4 to become dependent variables. BQ5 was placed at the end, however, since its variable was deemed to be more resistant to priming and since it itself could otherwise have acted to influence the reading of the presentation text. Moreover, potential irritation caused by this sensitive question and ensuing consequences for response quality were also avoided (Dahmström, 2015). An optional open question, Q9, was included for the same reason.

An approximate response time of 10 minutes was aimed for in order to ensure satisfactory response quality and internal response rates.

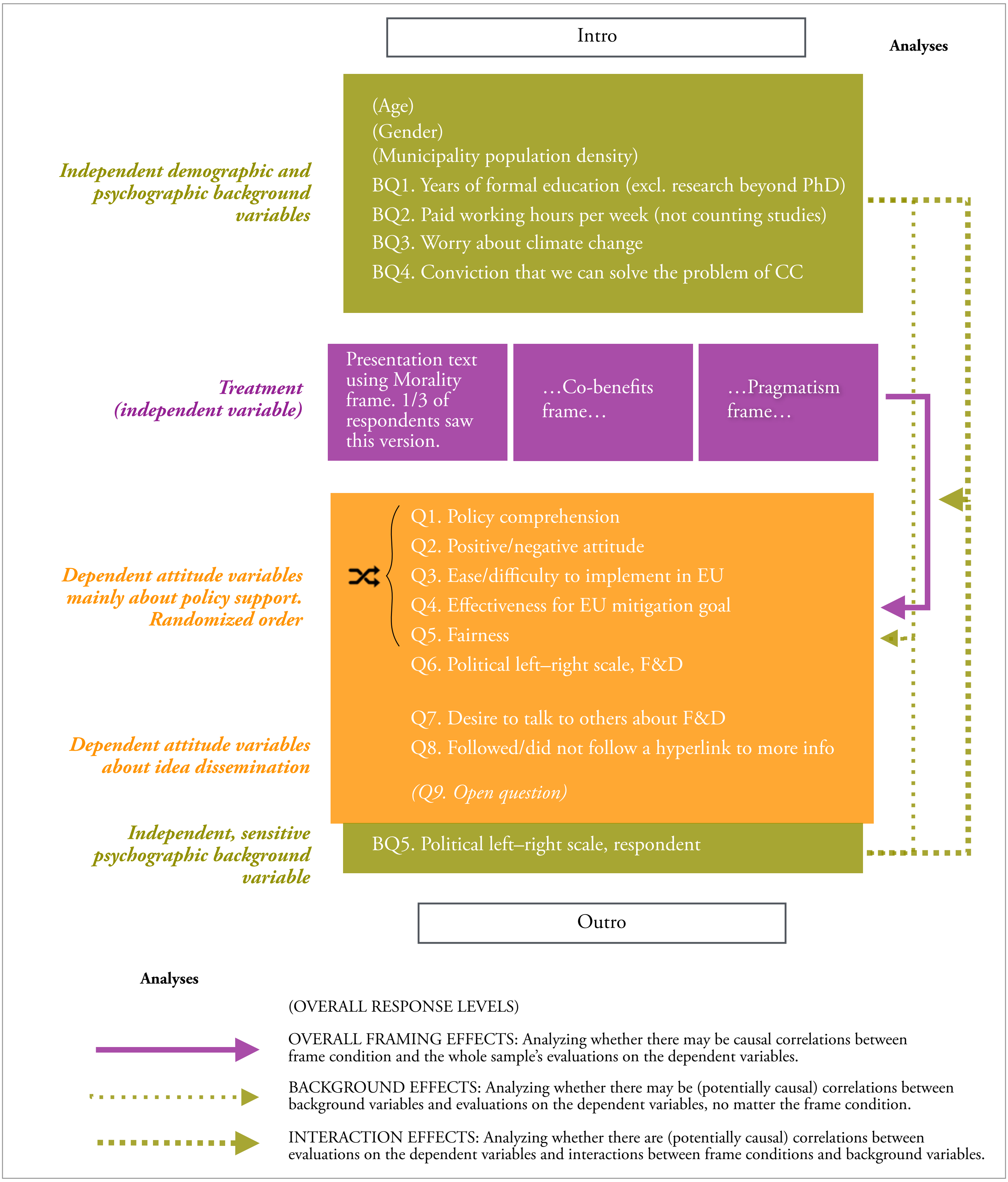

Fig 5.1: Questionnaire structure and variables plus intended analyses
10-minute response times were aimed for in order to avoid irration and safeguard response rates. The variables are explained in Tables 4.2 and 4.3. Age, gender and municipality were pre-registered in the web panel. Q1–Q5 were randomized so as to eliminate potential priming effects.

The 7-increment response scales for Q1–Q7 and BQ3–BQ5 were chosen to offer sufficient options without demanding too much accuracy as well as to be an odd number, allowing respondents neutral response options. "Don't know/No opinion/ Don't want to answer" options were also offered, to decrease irritation and increase response quality (Ejlertsson, 2014) and since neutral attitude options cannot be considered their substitutes (Dahmström, 2005). It also made it more feasible not to allow respondents to skip questions. Q1–Q5 and Q7 were measured by (Likert-type) attitude questions with statements to agree/disagree with. The statements were all positively written since rating negations can be confusing (*ibid.*).

Potentially distortionary extreme outliers due to input mistakes were prevented by prohibiting answers higher than 30 and 70, respectively, for BQ1 and BQ2. This was accomplished by programming the questionnaire to detect violations. Age, gender and the municipality in which the respondent resides (which was then transformed into the municipality's population density) were pre-registered in the web panel. Respondents were allowed to go back and forth between questions.

As regards the specific question and statement wordings, a conscious effort was made not to communicate any social norms (Ejlertsson, 2014); Q4's intended variable was operationalized by relating it to the EU 2050 climate mitigation target, which was briefly presented both in the presentation text and the question text; and questions were subjectively formulated to be unequivocal, which was a concern especially relevant for Q4.

The questionnaire's title and introduction were designed to grab attention and speak to people's inner motivations ("comprehensive new idea about society") more than outer motivations (*ibid.*), although "and private economy" was added in order to not systematically scare off panelists who might not wish to interact with large societal issues. In order to prevent self-selection neither carbon pricing nor climate change were mentioned in the title (*cf.* McCright, *et al.,* 2016) and the latter just sparingly in the introduction and presentation text.

A test survey was administered, with some of the 78 respondents subjectively chosen for extremeness in order to stress test the questionnaire (Dahmström, 2005). To be present in person during the questionnaire testing was not possible, which limited the benefit (Ejlertsson, 2014). However, extra survey items e.g. asked about question order, time requirements and whether respondents felt tricked since they did not learn about the study's actual purpose until at the very end, see Appendix 1/2). Some of the test respondents were also subsequently contacted. Overall, the questionnaire improved substantially as a result.

5.2 Sample and data collection

Survey company TNS Sifo was contracted to perform the data collection via their web panel. The panel consists of approximately 100,000 active members, with around 250 new ones each week being continuously recruited among respondents in telephone or postal surveys that the company conducts. This process counteracts the self-selection among respondents that is often a problem with web panels (Brännlund & Persson, 2012). The panelists are between 18 and 79 years old and care is taken to ensure population representativeness, to avoid 'professional panelists' and to safeguard response quality by only sourcing survey invitees from members who have recently neither participated in too many nor too few other surveys.

The survey was available online between April 28 and May 9 2016, during which time two reminders were administered. The final number of respondents was 412. Respondents were quota invited so as to meet pre-determined representativeness criteria for age, gender and geographic distribution (region) – e.g., more invites were sent to younger panelists, who tend to be slower to reply. The sampling method thus consisted of a mix of stratified probability sampling and quota sampling, which can lead to better representativeness than pure probability sampling (Dahmström, 2005).

The external response rate was 27.3 % in total (31 % in weighted average across age-stratification categories),[12] which was better than expected according to the TNS Sifo contact person considering the short time that the survey was online. The gender ratio and median population density did not significantly differ between invitees who did not participate and those who did. The former group's mean age was a few years higher ($p < 0.000$).

Table 5.1 shows statistical comparisons between the sample and the population on five background variables.[13] The sample represented the population well in terms of age and gender ratio but the sample median differed from the median Swede by having somewhat more formal education (reflecting a common problem with web survey panels; Brännlund & Persson, 2012) and by living in a municipality with higher population density.[14] Furthermore, potentially problematic under-representation of course exists among people who do not like to participate in

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[12] These figures are not easy to interpret, since those who did not accept the invitation to join the particular survey are counted but those who did not join the panel in the first place are not. Moreover, the survey was taken offline when the pre-agreed number of respondents had been met.

[13] As is mentioned in chapter 4, number of paid working hours (BQ2) comes with difficulties of measurement and comparison and no sufficiently similar population data exists for worry about climate change (BQ3), conviction that we can solve the problem (BQ3) and political orientation (BQ5), so these variables were excluded from the comparison.

[14] Neither of these over-representations were surprising, given that the share of people living in big city municipalities was 56.6 % for the sample and approximately 48.1 % for the population. See Section I in Appendix 3 for details.

surveys, who have trouble accessing the internet (Dahmström, 2005) or who have language difficulties.

Frame condition was randomly assigned so that each presentation text version was seen by a third of the respondents. Table 5.2 shows statistical analyses of how these three treatment groups compared to each other on all nine background variables. No systematic differences were found at conventional significance levels, so the randomization seems to have been successful. Note that there was no clear bias among respondents for either the left or the right side of the political spectrum.

Table 5.1: Sample representativeness to the Swedish general public

Appropriate treatment group descriptives and the scale-type-appropriate tests performed to compare them. Significant differences were found for municipality population density and years of formal education. The latter comparison suffered from several problems, however. See section I in Appendix 3 for details.

VARIABLE	SAMPLE (n = 412)	POPULATION	TEST
Age (years)[a]	$\bar{x}$ = 46.5 s = 17.15	μ = 46.2 σ = 17.33	Not necessary
Gender[b]	49.5 % women	49.5 % women	Not necessary
Municipality population density[c]	Median = 77.3 IQR = 473.4	Median = 21.6 IQR = 37	One-sample Wilcoxon signed-rank test): p = 0.000***
Years of formal education[d]	Q1 class: 10.1–13 Median class: 10.1–13 Q3 class: 13.1–19		chi-squared goodness-of-fit test: p = 0.000***

[a] Source, population data: Own calculations from SCB (2016a) material for 2015, looking at the same ages as the sample (18–79). Looking at the mean was deemed to be appropriate by looking at the population's age pyramid. An analysis was made for men and women separately, finding no systematic differences. See section I in Appendix 3 for details.

[b] Source, population data: *ibid.*

[c] This refers to the mean/median size of a Swedish person's municipality, not the mean/median size of the municipalities themselves. Source, population data: Own calculations from SCB (2016b; 2016c) material for 2015.

[d] Source, population data: Own calculations from SCB (2016d). See the appendix for details, including several important weaknesses of the comparison.

Table 5.2: Background variable balance statistics for treatment groups

Appropriate treatment group descriptives and the scale-type appropriate tests performed to compare them. Note that the central limit theorem states that parametric tests for large samples are robust against violations of the normal distribution, making it alright to perform one-way ANOVA tests also on variables where the mean is only a semi-good dispersion measurement for the parameter. No systematic differences were found at conventional significance levels.

VARIABLE	MORALITY FRAME (n ~ 136)	CO-BENEFITS FRAME N=133 (n ~ 139)	PRAGMATISM FRAME (n ~ 137)	TEST
Age (years)	$\bar{x}$ = 45.8 s = 17.1	$\bar{x}$ = 46.5 s = 17.3	$\bar{x}$ = 47.3 s = 17.1	One-way ANOVA test: p = 0.766
Gender	Men: 60 Women: 76	Men: 73 Women: 66	Men: 75 Women: 62	Chi-squared test of independence: p = 0.180
Municipality population density	Median = 80.2 IQR = 512.2	Median = 78.2 IQR = 301.3	Median = 69.3 IQR = 302.2	Independent samples median test: p = 0.871
Years of formal education	$\bar{x}$ = 14.7 s = 4.1	$\bar{x}$ = 14.4 s = 3.1	$\bar{x}$ = 14.4 s = 3.3	One-way ANOVA test: p = 0.838
Paid working hours per week	Median = 38 IQR = 40	Median = 38 IQR = 40	Median = 37 IQR = 40	Not necessary
Worry about climate change (0 = Not at all; 6 = Enormously)	Q1 class = 3 Median class = 4 Q3 class = 5		Q1 class = 3 Median class = 4 Q3 class = 4	Chi-squared test of independence: p = 0.09
Conviction that we can solve climate change (0 = Not at all; 6 = Entirely)	Q1 class = 2; Median class = 3; Q3 class = 4			Chi-squared test of independence: p = 0.087
Self on political left–right scale (1 = Very much to the left; 7 = Very much to the right)	Q1 class = 3; Median class = 4; Q3 class = 5			Chi-squared test of independence: p = 0.657 [a]

$\bar{x}$ denotes means, s denotes standard deviations.

[a] Performed on collapsed categories (1 = Left; 2 = Neither left nor right; 3 = Right) since over a fifth of expected counts were less than 5.

6. Results, research questions III and IV

This chapter presents the results from the survey and the statistical analyses. The latter were conducted in SPSS v. 23.

6.1 Results: descriptives, including absolute response levels

Since respondents were not allowed to skip questions, it is difficult to interpret internal response rates. That said, the proportions of 'Don't know/no opinion/don't want to answer' responses were 6.8–13.8 % for Q1–Q7 and 1.2–6.3 % for BQ3–BQ5, which is not especially high. In both cases, the most such responses were given to the sensitive questions about political left–right scale (Q6 and BQ5), which was to be expected. All 'Don't know…' answers were excluded from further analysis. Frame condition did not affect the number of such answers (see section II in Appendix 3).

Respondents varied extensively in survey completion time: the mean was just under nine minutes, with a six-minute standard deviation, while the median was just under seven minutes and the interquartile range somewhat over seven minutes. The latter figures may be more appropriate here, due to several extremes (for example a 36-minute one, perhaps someone who was interrupted). Frame condition did not affect survey completion time.

Plate 6.1 shows the share of responses across categories in the dependent variables. Interestingly, all the dependent variables that had response options to a statement showed distributional tendencies that seem to exclude the possibility for their response levels simply to approximate normal distributions centered on the neutral response option. Rather, they all show distributions that do center on one option, have a large degree of mirror symmetry and offer good predictability for response levels across response options, but that simultaneously are shifted either towards agreement or disagreement with the various statements. Q1–Q2, Q4–Q5 and possibly Q7 show clear biases for agreement, which means that F&D is evaluated more in positive terms than in negative ones on the evaluations of those variables. Q2 (positive feelings), Q4 (effectiveness), and Q5 (fairness) are especially biased. One dependent variable – ease of implementation on the EU level (Q3) – shows the opposite tendency, with a bias for disagreement.

Q6's response levels show that the median respondent clearly connected F&D more with the left side of the political spectrum than with the right. Q8's response levels show that only 12.6 % of all respondents followed the hyperlink in the presentation text.[15] Although highly non-conclusive, it should be noted that the responses to the open question seemed to support the notion that F&D is a largely unknown policy alternative among the Swedish public. See section IV in Appendix 3 for the comments. (Frame condition was found not to mediate respondents' desire to leave comments).

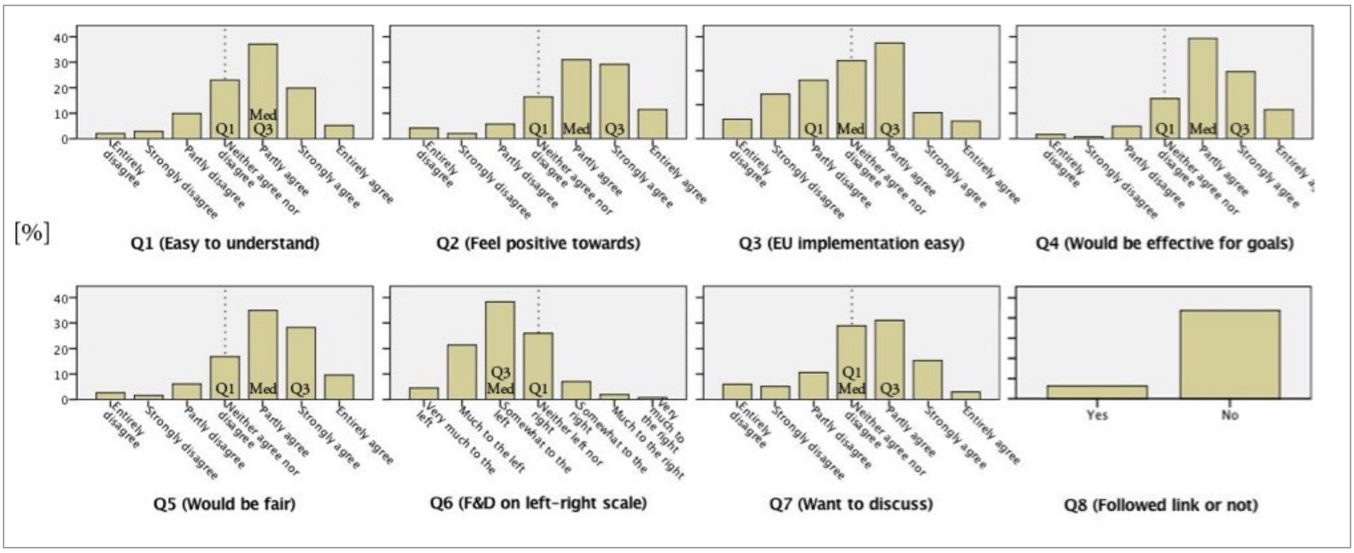

Plate 6.1: Response levels for dependent variables
Vertical axes in percentages.

6.2 Results: Overall framing effects

Testing for overall framing effects entailed a simple procedure: chi-squared tests of independence on the dependent variables' response categories grouped by frame condition. No significant differences were found, meaning that the risk is unacceptably high that random sampling errors are the cause of the observed patterns e.g. for Q2, Q3, Q6 and Q7 (see Plate 6.1). Hence, for the sample as a whole it did not seem to matter whether a written F&D introduction is framed in terms of morality, co-benefits, or pragmatism.

[15] The upshot here is that the risk is decreased for distortionary influences from people who did follow the hyperlink and then started reading on the website before completing the survey, thus possibly being exposed to other frames.

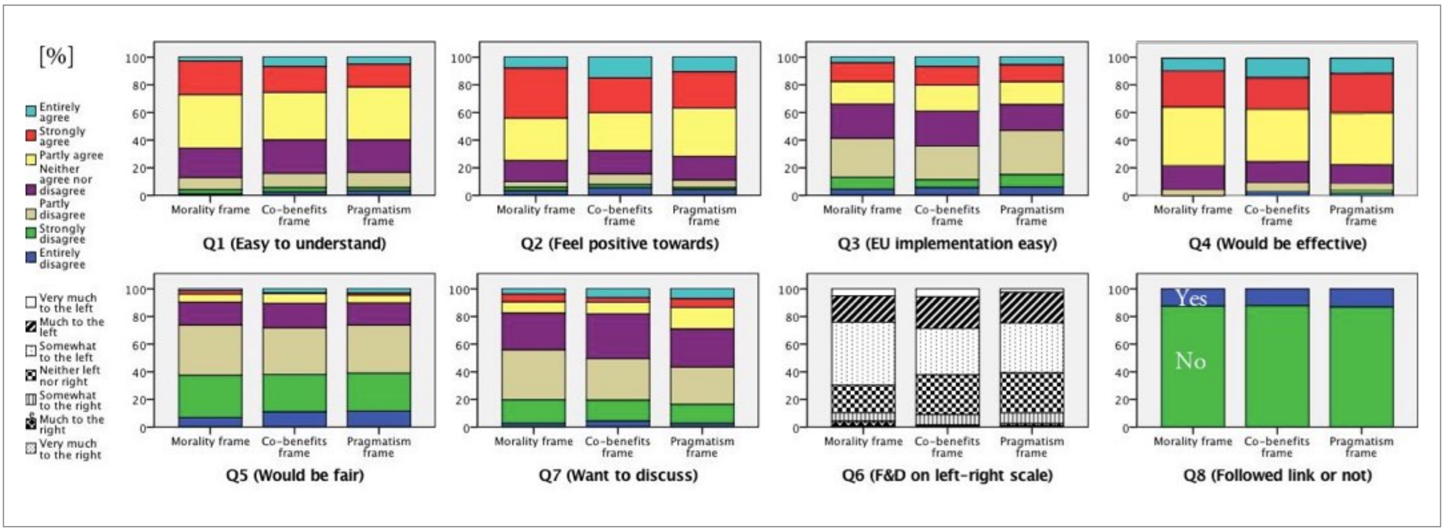

Plate 6.2: Comparisons on dependent variables across treatment groups
Vertical axes in percentages. No significant differences between treatment groups were found for any of the dependent variables. Some of the chi-squared tests required collapsing the dependent variable into three categories (Agree, Neither agree nor disagree, Disagree) in order to meet expected cell counts criteria.

6.3 Results: Background effects and interaction effects

The search for background effects began by performing tau-c and Somer's d tests[16] for associations between the background variables[17] and the dependent variables, one background variable at a time. The numeric background variables were collapsed into categories[18] for this (thus losing information) so that the low frequencies in some categories would not distort interpretations.

25 background effects were found in total. As Figure 6.1 shows, they were found for all background variables, with the most for worry about climate change and survey completion time and the fewest for age and paid working hours per week

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[16] Chi-squared tests (and Cramér's V correlations) for gender on all dependent variables and for all background variables on Q8 (follow hyperlink or not), since these variables are nominal. For gender and Q8, Phi was used to measure correlation.

[17] It has been proposed that time spent reading the message might interact with frame effects, since spending more time reading may mean that the frame becomes better internalized (Bernauer & McGrath, 2016b). The survey format is hardly representative for normal reading circumstances, however, and in any case this factor cannot be controlled. Moreover, it was not technically possible to determine how much of the time spent in the survey was in fact spent reading the text. Survey completion time will therefore not be discussed but is included in relevant tables and figure for reference.

[18] The categorizations were chosen so as to ensure sufficient numbers of respondents in each category: for age, 18–32, 33–47, 48–63, 64–79; for municipality population density, three categories ranging from sparsely populated to big city municipalities (note: not exactly the population density measure), see section I in Appendix 3 for details; for formal education, 0–13 and 13.1–26 years (same appendix reference); for paid working hours per week, 0–39, 40–70; and, for survey completion time, [x ≤ Quartile 1], [Quartile 1 < x ≤ Quartile 2], [Quartile 2 < x ≤ Quartile 3], and [x > Quartile 4].

(no associations). All dependent variables showed associations with at least one background variable. Most associations were found for agreement on the statements about F&D being easy to implement in the EU and effective for the EU climate goals, whereas the fewest were found for left–right placement of F&D and whether or not the hyperlink was followed. Some of the associations are illustrated in Plate 6.3.

In order to test for interaction effects – i.e. interactions between background variables and frames that influence responses on the dependent variables – the same procedure as for background effects was used, but now carried out in three runs: one within each frame condition. Splitting the data like this necessitated further collapsing of background variables, but also of dependent-variable categories, again in order to prevent low cell frequencies from distorting interpretations (recall Plate 6.1's tendencies for bell-curve distributions). The resulting information loss is potentially problematic. Q3–Q7's neutral categories were kept intact.

42 interaction effects were found in total. There were at least one interaction effect for each dependent variable and all background variables interacted with at least one frame. An example is that women who read the morality-framed presentation text expressed more agreement than men with the statement that F&D would be a fair policy. See Plate 6.4 for illustrations of this and some of the other discovered interaction effects, which are all shown in Figure 6.1.

Worry about climate change partook in the most interactions, and for every dependent variable where it did there were interactions with all three frames. As the study found no overall framing effects, this means that it e.g. cannot be said that morality-framed F&D introduction translates into more understanding, positive attitudes etc. with people who are relatively worried about climate change, than do co-benefits- or pragmatism-framed introductions. Rather, the within-group variation is distributed so that there is no overall effect.

The in-between case – one background variable partaking in two interaction effects for the same dependent variable – was also present. E.g., age correlated both with the Co-benefits and the Pragmatism frames when it came to perceived ease of implementing F&D. So these two frames worked better for older people than for younger, whereas the morality frame did not significantly mediate responses here.

As Figure 6.1 shows, correlations were mostly weak both for background effects and interaction effects.

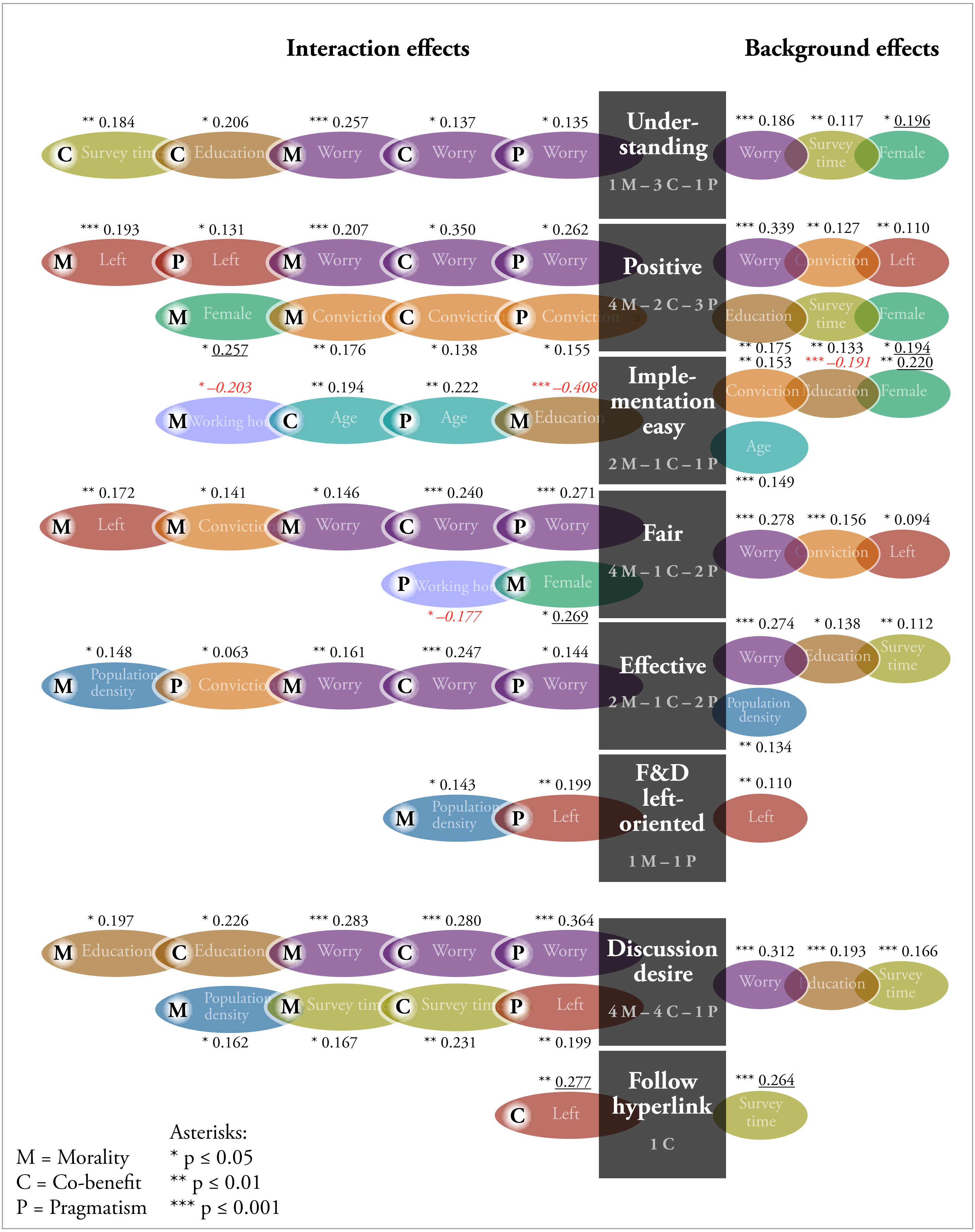
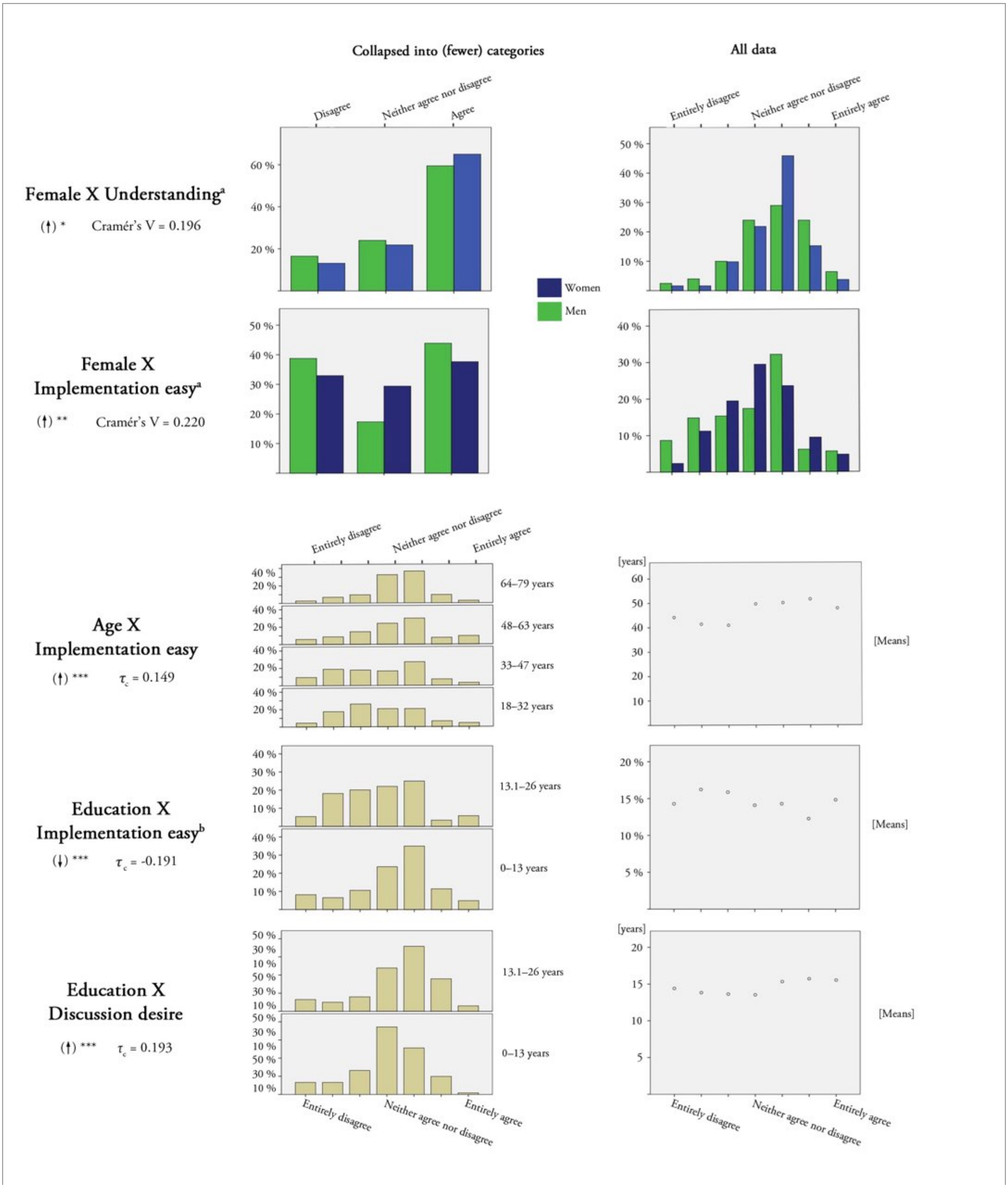


Figure 6.1: Discovered background and interaction effects.
Listed as Q1–Q8, grouped by policy support/idea dissemination. Figures denote tau-c correlation values (-1 to +1), except for the underlined nominal associations for Female (gender, man = 1, woman = 2) and Follow hyperlink, which are Cramér's V correlation values (0 to 1). Directions for these were interpreted graphically. Red, italicized digits denote negative correlations.


Collapsed into (fewer) categories
All data
Disagree
Neither agree nor disagree
Agree
Entirely disagree
Neither agree nor disagree
Entirely agree
Female X Understanding[a]
(↑) * Cramér's V = 0.196
Women
Men
Female X Implementation easy[a]
(↑) ** Cramér's V = 0.220
Age X Implementation easy
(↑) *** τ_c = 0.149
64–79 years
48–63 years
33–47 years
18–32 years
[years]
[Means]
Education X Implementation easy[b]
(↓) *** τ_c = -0.191
13.1–26 years
0–13 years
[Means]
Education X Discussion desire
(↑) *** τ_c = 0.193
13.1–26 years
0–13 years
[years]
[Means]
Entirely disagree
Neither agree nor disagree
Entirely agree

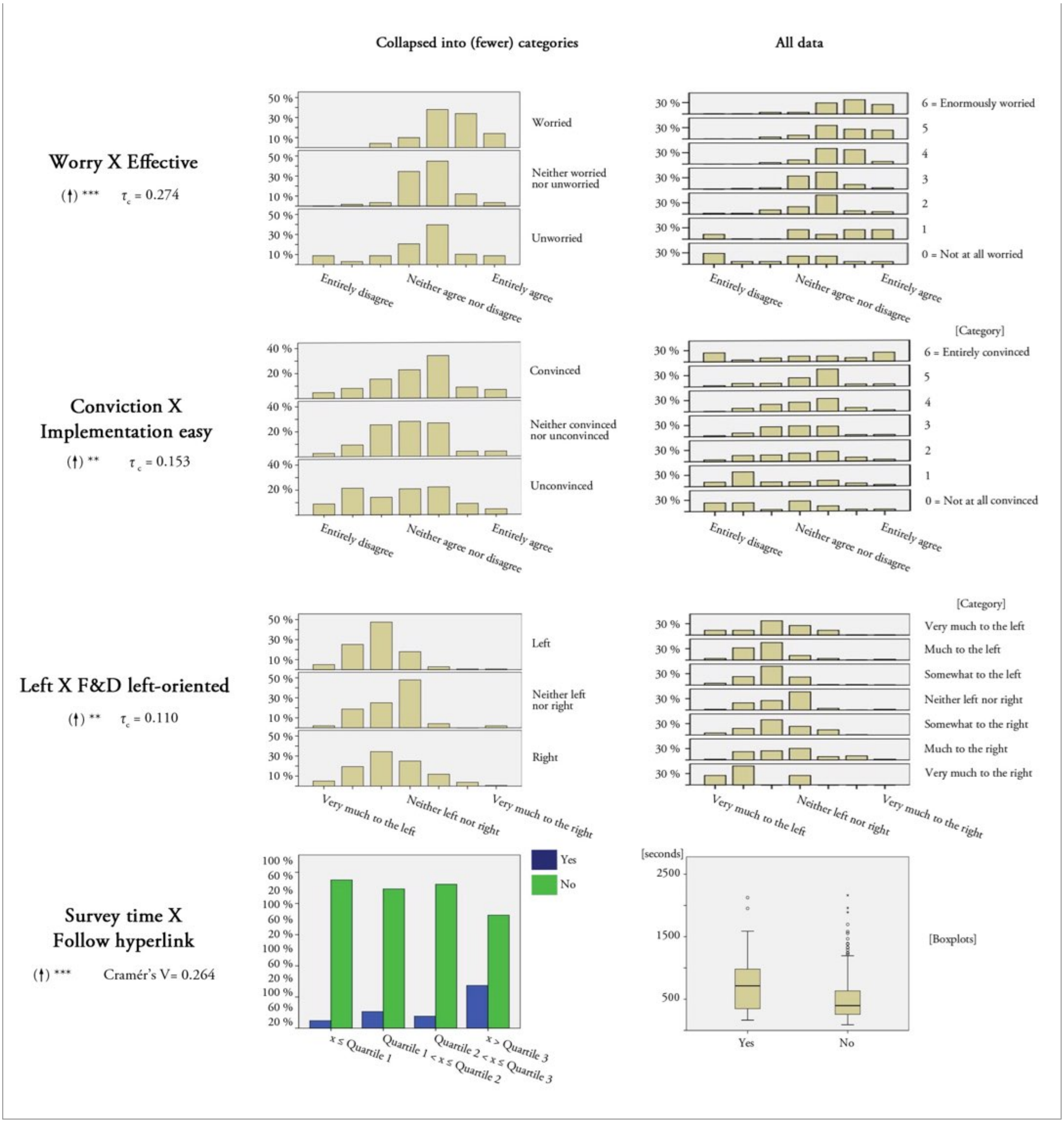


Plate 6.3: Some of the discovered background effects

All associations are statistically significant. Collapsed-categories versions of the associations are included in order to aid interpretation, including for the categorical background variables. All correlation values are for the chart with the fewest background-variable categories.

[a] The dependent variable was collapsed into fewer categories here in order to aid interpretation.

[b] The only negative association found in this analysis. Interpretation: people with 13.1–26 years of formal education agree less with the statement that it will be easy to implement F&D at the EU level than do people with 0–13 years.

Plate 6.4: Some of the discovered interaction effects

All are associations statistically significant, see Table 6.2. Significant relationships were found only for the frames (the three-point lines) indicated in the chart titles. Line charts were chosen to reduce clutter.

[a] Note that two interaction effects are shown in these charts.

[b] Percentages in color for Morality; added to aid interpretation of all graphs.

Part 3

7. Discussion

This chapter delves deeper into the survey results as well as discusses limitations of both the qualitative and the quantitative parts of the study. Cues for further research are also given. Throughout, the reader should keep in mind that there are reasons to suspect that the results' validity will likely be lower in countries other than Sweden. Just as how the study may have suffered from discrepancies between its Swedish/EU context and the mainly American/British literature it draws upon, the results may not hold for locations other than Sweden. E.g., the Swedes likely have relatively much awareness of carbon pricing (having implemented partial carbon taxes already in 1991 and participating in the EU Emissions Trading System). Swedes' attitudes towards taxation and trust in government and other people may also differ from other places in ways that bias results in one way or another – in general, people's cultural surroundings always shape how they treat incoming information (Kahan, 2012; Marshall, 2014; Stoknes, 2015; CRED & ecoAmerica, 2014).

7.1 Discussion: Absolute response levels

As mentioned, the study did not focus on the absolute response levels for the dependent variables, not least since F&D is still largely unknown and such results therefore may be misleading. On the other hand, however, this problem is diminished by the study's focus on just that: introductory communication.[19] Some discussion of the absolute response levels is thus warranted.

[19] The fact that Q1–Q5 had a Cronbach's α of 0.83 seems to indicate that policy support indeed was measured quite well, but multiple caveats apply. E.g., it is problematic that the inter-item correlations (see section V in Appendix 3) vary quite a lot (Schmitt, 1996).

The statement that respondents agreed to the least was that F&D would be politically easy to implement on the EU level. These responses on their own might not be surprising, but it is interesting that this dependent variable has the lowest level of agreement of all – especially since this is where proponent's have the smallest ability to change perceptions.

The response levels for all other dependent variables with Likert-type response options were more or less biased towards statement agreement, with the possible exception again being perceived implementation ease. Overall, this seems to bode well for F&D support but whether or not it means that the frames are in fact promising ways of introducing F&D in writing cannot be safely deduced. More research is needed. Such research might benefit particularly from also testing a traditional risk reduction frame. It would of course also be good to compare F&D with e.g. a regular carbon tax and with emissions trading. Furthermore, surveys should be complemented by other methods, such as focus groups and expert interviews – lacking this is a weakness of the current study.

Something that bodes less well for F&D support is that the policy seems to be viewed as politically left-oriented, despite the common claims about ideological neutrality. This may indicate that the tax association is inevitable to some extent (even though the word 'tax' was not used). However, since the above-mentioned bias towards agreement exists despite both this and the political neutrality of the sample (if anything, there was a small bias to the right), this might not be a large problem. It should again be noted, however, that the left–right scale is a heavily simplified measurement of ideology, so being careful in one's interpretations is advocated – just as with all of the study's results.

Finally, very little can be read into the fact that only a small fraction of respondents followed the hyperlink, since the survey format may be the culprit.

7.2 Discussion: Overall framing effects

As has been mentioned, a recent high-profile study (Bernauer & McGrath, 2016) argues against the overall merits of so-called 'simple reframings' of climate change messages. The study used two survey-based experiments to treat respondents with a rather general text about rationales for mitigating climate change – framed either as risk reduction, (only economic) co-benefits, good society or health benefits – and then measured e.g. policy support (for three not particularly specific policies). No overall framing effects were found. Despite the many studies that have found such effects, the authors then argued that communicators should not spend much effort into 'spinning' their messages, since their results show that the traditional risk reduction frame worked equally well as the others. Thus, at least the short-term payoff from framing messages was put into sharp question.

The current study's results about overall framing effects at first seem to support this notion, by indicating that it does not matter for any of the dependent variables whether a written introductory F&D text is framed in terms of morality, co-benefits, or pragmatism. As will be discussed, though, it seems that the choice of frame does matter for audience-specific communication. Nevertheless, and despite this study's focus on describing rather than explaining found associations, not least Barnauer & McGrath's results warrant discussion of why it is the case that no overall framing effects were found.

One possible reason is related to the distinction between 'simple reframings' and, supposedly, more complex such efforts. Because it is not a new finding that although important, finding and tweaking language to fit the particular issue well is subordinate to connecting recipients' deeply-held values to the given topic – recall the distinction between 'conceptual' and 'deep' framing. The latter is a more difficult and longer-term effort and it is also the case that conceptual framing needs to resonate with deep framing if it is to be effective (CCCAG, 2010). In other words, a given frame's effectiveness is mediated by the degree to which it is relevant or applicable to the recipient's existing network of frames (Nisbet, 2009; Lakoff, 2010; *cf.* SEI, 2016), including so-called counter frames that are already floating around in the world ready to be activated (McCright, *et al.*, 2016; Bernauer & McGrath, 2016). So one possibility here could be that in general, the Morality, Co-benefits and Pragmatism frames simply were no match for other frames to which F&D was immediately connected. If so, one obvious candidate is the prevailing anti-tax sentiment that has already been mentioned – perhaps higher- and lower-order frames concerning tax aversion are so strong that they dominate all interpretations of F&D. The survey's overall finding that F&D is regarded as left-oriented supports this.[20]

Another possibility is of course that there simply are no clear-cut overall framing effects for as multifaceted issues as is F&D – an all-encompassing policy designed to counter climate change, which in turn is a highly complex problem. Most framing research regarding climate change concerns the less nitty-gritty topics of climate impacts or clean energy futures. Clearly, then, more research is needed on framing research specific climate policies and their details.

There is also the possibility that there are overall framing effects but that the study simply failed to detect them. Just as how the survey results do not guarantee that there are background/interaction effects on the constructs intended to be measured, neither can the results be interpreted as saying that morality/co-benefits/pragmatism framing cannot affect F&D policy support and idea dissemination. This holds both for the measured dependent variables and for others, because there are likely other factors that are important for F&D policy support – and there certainly are for idea dissemination, which was not measured particularly well in this study.

[20] Future research should look into whether there are ways to frame F&D to 'inoculate' it against counter-frames (McCright, *et al.*, 2016; Palm, 2006: Palm, 1994).

Moreover, it must not be forgotten that the survey used single-item measurements rather than indices, which would give better construct validity (Ejlertsson, 2014). This is a substantial limitation that future research should address.

It is also the case that it is difficult to hold everything else equal in experiments, not least in framing research. Despite best efforts, the presentation text's structure could e.g. have benefitted a certain frame that under equal circumstances would have fared worse than the other two. More research is therefore needed to validate the results. Also related to research design is the choice of offering neutral response options in the response scales. This is praxis and fits better with how people think about things in the real world than not offering the option, but perhaps discovering overall framing effects would have been more likely if respondents were forced to choose to agree or disagree with the statements; it might be more comfortable to avoid doing so if one is unfamiliar with the topic.

Furthermore, since the employed frames contained rather broad sets of content[21] it is possible that different aspects/arguments in them do work well but are hampered by others. A good option for future research would thus be to test for this, argument by argument and also in combinations, in order to disentangle the effects (*cf.* Wolsko, *et al.*, 2016).

Finally, it should be noted that the responses' overall bias towards agreement on the dependent variables at least does not discredit the qualitative claims that Morality, Co-benefits and Pragmatism are promising frames for introductory F&D communication.

7.3 Discussion: Background effects and interaction effects

The survey results seem to indicate that although the frames were chosen and adjusted for broad appeal, background effects and interaction effects did mediate evaluations on the dependent valuables in quite a few instances. This section will now discuss how these associations can help proponents to tailor their F&D communication for best effect with different audiences. Attempting to explain the

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[21] The below summarizes which frame-activating themes the three frames drew upon.

- **Morality:** liberal arguments (avoid harm to people everywhere, rectify unfair burden distribution), conservative arguments (in-group loyalty, stewardship of nature's sanctity, reducing waste), the legacy people want to leave behind, peaceful patriotism, and the responsibility to act.
- **Co-benefits:** economic robustness, competitiveness, innovation, industrial leadership, local and democratic energy production, efficient resource use, ecosystem conservation, livable cities, public health, and to create space to restore past loss (landscape/forest beauty and vitality as well as air and water quality).
- **Pragmatism:** government size not increasing and no increase in central planning but still clear and stable playing field, effective, cost efficient, comparatively little new administration, automatic (non-complex) protection of low-income households, and little for politicians to argue about.

mechanisms behind the associations will not be done, as it falls outside the study's scope.

Not finding any overall framing effects makes it more important to consider the interaction effects: if the frames have no overall effects on the responses from the whole sample, then an interaction effect means that the statement agreement increased for some categories of the background variable but decreased it for the other categories, compared to the frames without interaction effects. This means that if one does not know any details about the message recipients' on a given background variable then one might want to consider going for the safe choice, i.e. the frame that did not partake in an interaction effect and thus bring no unwanted consequences for how certain categories of people on the background variable evaluate dependent variables. In contrast, if there had been overall framing effects then it would likely be best to simply go with the frame that performed the best for most dependent variables. Figure 7.1 illustrates.

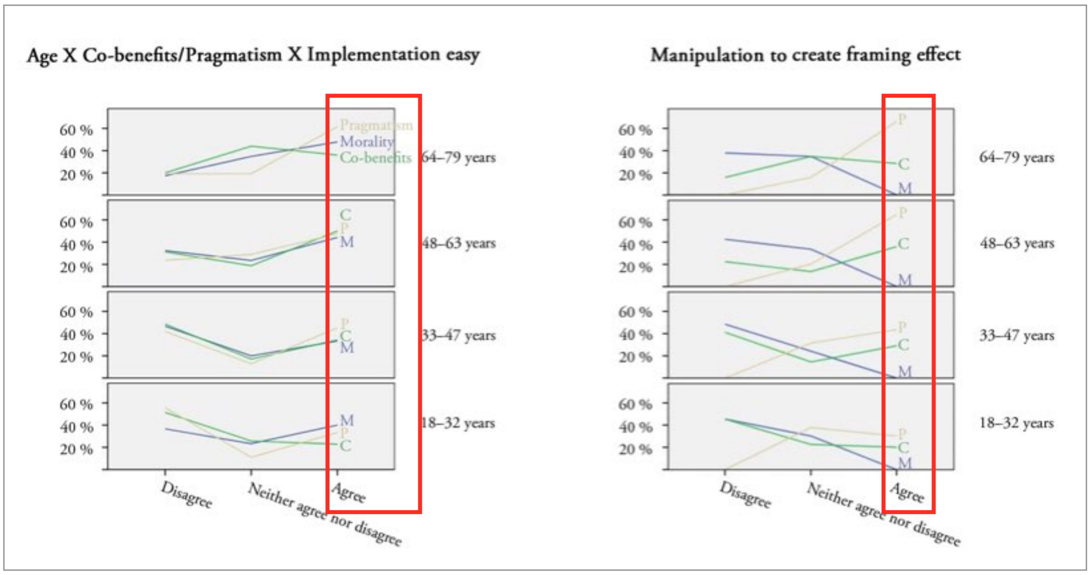

Figure 7.1: No framing effect necessitates analysis of safe choice

The left chart (which is also shown in Plate 6.4) has no framing effect, so the interaction effects for the Co-benefits and Pragmatism frames here cancel themselves our for the whole age range compared to the Morality frame. This means that it is unclear which framing one should attempt if the recipients' age span is unknown. Morality would be the safe choice since it partakes in no interaction effects. In contrast, the right chart is based on the one to the left but the data for the Morality and Pragmatism frames have been manipulated to create a strong framing effect. Here, the Morality frame is always the worst choice and Pragmatism is always the best choice. The framing effects has thus made the interaction effect less important to consider.

A simple way to utilize the insights regarding interaction effects is to plan introductory F&D communication by thinking in dichotomies[22] and then consult Figure 6.1. E.g., if the recipients are relatively young the figure shows what the different frames mean for the dependent variables. If one of the recipients' background variables is unknown then one can also look at the safe choices.

More importantly, one could also look at multiple background variables. simultaneously. Doing so could be done by simply listing all of the implications for the background variables on which something is known about the recipient as well as the safe choices for those where nothing is known. E.g. for a relatively young conservative female politician in the national parliament this could look something like the following. Frames that bring desired outcomes (before the arrow) or are safe choices (after the arrow) are italicized.

- **Young**
  Co-benefits & Pragmatism ↓ Ease of implementation – go with *Morality* instead.
- **Female**
  Morality ↑ Positive.
  Morality ↑ Fairness.
- **Densely populated area**
  Morality ↑ Effective.
  Morality ↑ Left-orientation – go with *Co-benefits* or *Pragmatism* instead.
- **More education**
  Co-benefits ↑ Understanding.
  Morality & *Co-benefits* ↑ Discussion desire.
  Morality ↓ Implementation ease – go with *Co-benefits* or *Pragmatism* instead.
- **Much paid work**
  Morality ↓ Implementation easy – go with *Co-benefits* or *Pragmatism* instead.
  Pragmatism ↓ Fair – go with *Co-benefits* or *Pragmatism* instead.
- **Unknown level of conviction**
  Safe choices for Fair: *Co-benefits* & *Pragmatism.*
  Safe choices for Effective: *Morality* & *Co-benefits.*
- **Right**
  Morality & Pragmatism ↓ Positive – go with *Co-benefits* instead.
  Morality ↓ Fair – go with *Pragmatism* or *Co-benefits* instead.
  Pragmatism ↓ F&D left-oriented.
  Pragmatism ↓ Discussion desire – go with *Morality* or *Co-benefits* instead.
  Co-benefits ↓ Follow hyperlink – go with *Morality* or *Pragmatism* instead.

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[22] Note that nothing clear can be said about the boundaries between categories; the following are just attempts at preliminary rules-of-thumb.

One possible decision strategy could then be to simply choose the frame that is italicized the most, which in this case would be the co-benefits frame. Of course, one could and very likely also should assign weights, perhaps based on correlation values, both for background and dependent variables. A deeper data analysis, e.g. by ordinal logistical regression, could be of use here, and constructing a policy support index would simplify the decision task. Looking at specific dependent variables is another strategy. The point is that the available options are made clear in a salient way. More research could continuously improve this tool for communication planning.

Once again, though, one has to be careful at this stage. An obvious limitation is, again, the lack of indices for measuring the variables' intended constructs, both regarding dependent and background variables. E.g., many proven multi-item indices for ideology and worldview exist that could be used, such as the framework of cultural cognition of risk. Another limitation concerns political orientation: since asking about this is sensitive it was done last in the survey. A second rationale for this choice was the wish to avoid priming respondents with considerations about left and right. A possible consequence, though, is that positioning the question after the treatment may undermine its role as a background variable somewhat, perhaps making it into semi-independent, semi-dependent variable. Some extra restrain should therefore be used when interpreting these associations.

Another politics-related limitation is the one mentioned in the beginning: it is possible that politicians differ systematically from the public in their outlooks upon policy suggestions. In the politician example above, then, adding e.g. a binary politican-yes-or-no variable may well change the calculation more than other background variables would. More research is thus needed not only regarding how to frame F&D for communication with the public, but also on how to do so for particular groups of high relevance. Such research should thus look at more background variables and look at them in better ways (indices etc.). Table 4.4 contains some possibilities for this.

Yet another important limitation is that it is unknown whether the interaction effects persist for longer than the duration of the survey, since there was no follow-up. Ideally, a test-retest procedure should have been used (Ejlertsson, 2014). That said, duration may not be all-important in this particular context since it seems logical that first impressions are important when it comes to introductory communication. So it should not be disregarded whether one chooses to introduce F&D by writing about it as a moral imperative, something where the co-benefits alone are highly desirable, or it being the most pragmatic way forward. Rather, with all its limitations in mind, this study seems to provide the first, budding insights into how one can realize benefits and avoid pitfalls by using frames to tailor introductory F&D communication to different types of recipients. The results, as shown in Figure 6.1, need to be developed but can still be of some help already today.

8. Conclusions

This study operated on mostly uncharted research territory, so the conclusions should be treated just as carefully as the interpretations of the individual discovered effects. Moreover, the conclusions' validity are likely constrained to what was tested: written introductory F&D communication – to Swedes – with broad appeal that attempts to be positive, to avoid polarizing language, to not cast blame, and to not negate opposing frames. With all this in mind, it seems reasonable to draw the following conclusions from the results, with the fifth deserving most emphasis:

1. *(Research question 1)* The morality, pragmatism and co-benefits frames – as they were constructed – all seem to be promising for written introductory F&D communication. This was supported mostly by the qualitative results, but the quantitative results at least did not seem to undermine it. This is not to say that other, untested frames are not also promising.
2. *(Research question 3)* F&D does not seem to be viewed as being an ideologically neutral policy, on the whole. Rather, it is viewed as being left-oriented.
3. *(Research question 3)* There does not seem to be any overall framing effects – i.e. for the public as a whole – on evaluations on the measured dependent variables (which mostly concerned policy support). Much further research is needed, however.
4. *(Research question 4)* There seemed to be many background effects, meaning that different groups of people view F&D differently no matter the tested frame. This speaks for the need to tailor introductory F&D communication.
5. *(Research question 4)* There seemed to be even more interaction effects, meaning that background variables in many cases interacted with one or more frames in ways that influenced evaluations of F&D policy support and idea dissemination. Although correlations were mostly weak, this seems to mean that it does matter whether written introductory F&D communication is framed in terms of morality, co-benefits or pragmatism, thus emphasizing the need for audience-tailored messages.
6. *(Research question 4)* Although care is needed (this is the first research of its kind and several limitations apply, including that measurements of better construct validity are needed; *Research question 2*), they likely can be used to inform proponents' introductory F&D communication in ways that boost beneficial evaluations especially regarding policy support but perhaps also regarding idea dissemination. Since Swedes desire "a push for an environmentally friendly society" – around 80 % said this was 'a very good suggestion' in a 2014 survey (Harring & Sohlberg, 2015) – the findings in this study can thus be used both as a stepping stone for further research and to make it more likely that F&D becomes that push.

Acknowledgments

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The references are sorted as follows:

- peer-reviewed journal articles;
- original research published as book chapters or self-published;
- resources based on peer-reviewed research;
- F&D proponents' communication;
- other references; and
- textbooks.

Asterisks (*) indicate that the reference was used to inform the frame choices process or the creation of the presentation text's body. Some of these were also used to inform the research questions.

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Appendix 1: Web questionnaire, incl. presentation text and frame-activating text

[Note that the color scheme and font were different in the web survey software. The responsens did not see the reply option codings, the question numbers or anything in the left column. Each text/question made up an entire page. The respondents' age, sex, and the municipality in which they live were preregistered in the panel.]

Title

Your opinion about a comprehensive new idea for society and private economy

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Introduction

Hello X,

This study from Lund University surveys the general public's views on an idea on how to facilitate reductions of climate-affecting emissions. If this system is implemented it would affect us all. Therefore, we are looking for many different perspectives on the issue and would thus be very grateful for your replies.

The questionnaire takes approximately ten minutes to finish. It contains a few background questions, a text that you are asked to read, and a few questions about this text. Your personal details are protected in accordance with 'personuppgiftslagen' (SFS 1998:204). Neither the study's author nor other people are given access to them. The data transfer is encrypted and your replies will be treated anonymously. The de-identified data may be used in other research projects.

The questionnaire's results will be used in a Master's thesis which will be published on http://www.lu.se/forskning/sok-vara-avhandlingar-och-ovriga-publikationer. If you have any questions you are welcome to contact the author, Tim Isaksson, on telephone (0702-328993) or email (aar08tis@student.lu.se).

By clicking "Next" and start the questionnaire you accept the above terms. Thank you for your help!

We start with a few short background questions, which are important for the interpretation of the questionnaire results.

Two independent demographic background variables.

[BQ1] **How many years have you spent in formal education?**
Please include primary education (but not preschool), secondary school, adult education, community college, and college/university (include PhD studies, if any, but not higher research). Please reply only with digits.

[BQ2] **How many paid hours do you work each week, on average?**
Please exclude studies and reply only with digits.

[BQ3] **How worried are you about climate change?**

Please indicate your degree of worry. The higher the digit, the higher the worry.

- ◯ 6 = Enormously worried
- ◯ 5
- ◯ 4
- ◯ 3
- ◯ 2
- ◯ 1
- ◯ 0 = Not at all worried

- ◯ *Don't know/no opinion/don't want to answer (9)*

Two independent psychographic background variables.

[BQ4] **How convinced are you that we can solve the problem of climate change?**

- ◯ 6 = Entirely convinced
- ◯ 5
- ◯ 4
- ◯ 3
- ◯ 2
- ◯ 1
- ◯ 0 = Not at all convinced

- ◯ *Don't know/no opinion/don't want to answer (9)*

Treatment

Each respondent only saw one set of the frame-activating texts

Nu följer en presentation av systemet **avgift & utdelning**. Vänligen läs hela innan du går vidare till nästa sida.

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _

AIDA structure: *Attention*

A new idea for a big challenge

The EU has a common goal of reducing emissions of climate-affecting gases by 80–95 % until 2050. The purpose is to achieve reductions in, and ensure against, the risks that these emissions bring. One way to facilitate this strive is the policy 'fee & dividend', which also would give a majority of people more to live on.

Morality: In other words the policy is a promising way for us to maintain a stable climate and thus improve the outlook for those we care about, for order and stability, and for the protection of our beautiful, pure nature. It would also contribute to a more ethically proper distribution of burdens.

Co-benefits: In other words the policy is a promising way to transition to clean energy and at the same time create a better society in which economy, personal safety, health, and ecosystems are not only protected but also developed.

Pragmatism: This policy is thus more realistic to introduce than other carbon fees, since most people are automatically protected against price increases. Moreover, it gives businesses more clear and predictable rules than for example emissions rights trading.

AIDA structur:e *Interest*

How fee & dividend would work

A carbon fee is introduced on fossil fuels and paid by fossil fuel companies. Prices then rise on all goods and services that directly or indirectly use coal, oil, or gas in their production. At the same time around 100 % of the fee's revenues are given back to all adult citizens, in even shares, straight into their accounts each month. (Families with children are given half a dividend per child, for a maximum of two children.) Individuals, companies and authorities thus become better off by buying and producing in climate-smart ways, and only those individuals who consume very much get less back in dividends than what they pay extra in price. The fee starts out at a low level and then increases every year. Renewable energy therefore gradually becomes cheaper than fossil fuels while the transition is made as smooth as possible. For the same reason export businesses are compensated for the fee, while imported goods are tolled so as to eliminate unfair competitive advantages. This furthermore gives other countries strong reasons to implement carbon fees of their own.

AIDA structure: *Desire*

Promising example

Fee & dividend requires broad support to be introduced. **Morality:** It is therefore good that the system would help us to protect what we value, such as out homes, our and others' safety, our possibility to leave behind legacies that we are proud of, and energy independence. Very few implemented policies around the world are as comprehensive as fee & dividend, but one similar example is the carbon fee that has reduced Canadian province British Columbia's emissions by around 15 % since 2008. Here the revenues are used to decrease for example income taxes, however. Public support for the fee increased from 40 % initially to around 60 % from 2012 and onwards.[1]

Co-benefits: Since 2008 the province's economy has kept being the country's strongest, which bodes well for how fee & dividend can give increased economic robustness, pioneering openings for development and new export opportunities through innovation and industrial leadership.

Pragmatism: Even more people would likely support fee & dividend, since the dividend would make an adequate fee more acceptable and create a very clear and predictable price signal. Furthermore, trust would rise in general regarding how the policy neither increases government size nor leads to more central control. In short, it is a very realistic policy.

Action is needed and you can help

In a 2014 Swedish survey 80 % said that it is good to "strive for an environmentally friendly society".[2]

Morality: To do this with fee & dividend would robustly improve our ability to act with strength in the climate issue, and hence make it easier for us to tackle this moral duty. Because the EU can and should lead the world in taking responsibility for this collective problem. Moreover, the policy would also counter the unfair waste of our common resources that some are freely allowed to engage in.

Co-benefits: To do this with fee & dividend would bring many positive side effects, for example more local and democratic energy production, nicer and healthier cities, more effective resource use, and space to restore lost nature such as living forests and water and air quality. Furthermore, the dividend could strengthen the economy not only through innovation but also via the positive spiral that arises when a majority of the population gets larger economic possibilities to pursue climate-smart living.

Pragmatism: To do this with fee & dividend would be beneficial also because most of the necessary administration already exists (tax infrastructure, bank accounts). It is also good in this context that only fossil fuel companies are charged the fee, since there are relatively few of them. Moreover, the policy's simple design ensures that politicians don't have to agree on complex revenue distributions.

AIDA structure: *Action*

Fee & dividend lets us take on the climate challenge flexibly, effectively and together – large companies and private persons, young and old. But few are yet aware of the policy, unfortunately. A good thing you can do is therefore to talk about it with family, friends, and politicians. Or just learn more, for example by visiting Klimatsvaret's website (link is opened in new window).

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _

References: Harring & Sohlberg, 2015; CCL, 2016c; Murray & Rivers, 2015 (link is to draft); The World Bank, 2014; BCBC, 2015

[1] Sources: CCL, 2016; Murray & Rivers, 2015; Världsbanken, 2014; Business Council of British Columbia, 2015
[2] Source: SOM-institutet, 2015

We now ask you five questions about how much you agree with different statements about fee & dividend. Please read the statements carefully and choose the option that fits your view best. Kindly indicate only one alternative.

[Q1] *To which extent do you agree with this statement?*
It is easy to understand how fee & dividend would work.

- ○ Entirely agree (7)
- ○ Strongly agree (6)
- ○ Partly agree (5)
- ○ Neither agree nor disagree (4)
- ○ Partly disagree (3)
- ○ Strongly disagree (2)
- ○ Entirely disagree (1)
- ○ *Don't know/no opinion/don't want to answer (9)*

Six dependent attitude variables mainly regarding policy support. The order of the five first was randomized. randomiserades. All these five used the same reply scale.

[Q2] *To which extent do you agree with this statement?*
I feel positive about an EU-level implementation of fee & dividend.

[Q3] *To which extent do you agree with this statement?*
It would be politically easy to implement fee & dividend on the EU level.

[Q4] *To which extent do you agree with this statement?*
If the EU implemented fee & dividend it would be easier to achieve the shared climate goal to reduce the EU's emissions of climate-affecting gases by 80–95 % until year 2050.

[Q5] *To which extent do you agree with this statement?*
Fee & dividend would be a fair way to reduce the EU's emissions of climate-affecting gases.

The following question is also about fee & dividend but is not about a statement.

[Q6] *In discussions about politics and ideology it is common to talk about a scale from left to right.* **Where would you place fee & dividend on such as left–right scale?**

- ◯ Very much to the left (7)
- ◯ Much to the left (6)
- ◯ Somewhat to the left (5)
- ◯ Neither left nor right (4)
- ◯ Somewhat to the right (3)
- ◯ Much to the right (2)
- ◯ Very much to the right (1)

- ◯ *Don't know/no opinion/don't want to answer (9)*

We now ask you three more questions about your views on fee & dividend, of which one is completely open.

[Q7] *To which extent do you agree with this statement?*
I want to discuss fee & dividend with others.

- ◯ Entirely agree (7)
- ◯ Strongly agree (6)
- ◯ Partly agree (5)
- ◯ Neither agree nor disagree (4)
- ◯ Partly disagree (3)
- ◯ Strongly disagree (2)
- ◯ Entirely disagree (1)

- ◯ *Don't know/no opinion/don't want to answer (9)*

Two dependent attitude variables about idea dissemination and an open question.

[Q8] **Did you click on the link on the page before the last (that is, in the presentation text) that took you to the**

[Q8] **Did you click on the link on the page before the last (that is, in the presentation text) that took you to the organization Klimatsvaret's website?**

○ Yes (1)

○ No (2)

[Q9] **Do you have any other comments regarding fee & dividend?**
It could be general or specific thoughts. Answering this question is not required but your opinions would be greatly appreciated.

The next question is the last. It is not about fee & dividend but about you.

One independent, sensitive psychographic background variable.

[BQ5] **Where would you place YOURSELF on a political/ideological left–right scale?**

○ Very much to the left (7)

○ Much to the left (6)

○ Somewhat to the left (5)

○ Neither left nor right (4)

○ Somewhat to the right (3)

○ Much to the right (2)

○ Very much to the right (1)

○ *Don't know/no opinion/don't want to answer (9)*

Wind-up

Thank you very much for your replies, they will help the study a lot. The results will primarily be used to analyze whether different ways of describing fee & dividend leads to systematic differences in how the system is perceived. The reason for why this was not disclosed in the introduction is the risk that the results would not have been as useful. We hope that you will excuse this.

The master's thesis, which is written in the Mater's Program in Applied Climate Strategy at Lund university, will be made available on http://www.lu.se/forskning/sok-vara-avhandlingar-och-ovriga-publikationer. If you have any questions you are welcome to contact the study's author, Tim Isaksson, on telephone (0702-328993) or email (aar08tis@student.lu.se).

Kindly note that the organization Klimatsvaret was not part of this research and that the author is not a member.

Thanks again for your help!

Appendix 2: Original, Swedish version of web questionnaire (Ursprunglig, svensk version av webbenkäten)

[Observera att färgschema och typsnitt var annorlunda i webbenkätmjukvaran. Respondenterna såg inte svarsalternativkodningen, frågenumren eller något av det i vänsterspalten. Varje text/fråga utgjorde en enskild sida. Respondenternas ålder, kön och i vilken kommun de bor var förregisturerat i panelen.]

Titel

Din åsikt om omvälvande ny idé för samhälle och privatekonomi

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Introduktion

Hej X,

Denna studie från Lunds universitet handlar om att undersöka allmänhetens åsikter angående en idé om hur utsläppen av klimatpåverkande gaser lättare kan minskas. Om detta system införs skulle det påverka oss alla. Därför söker vi många olika perspektiv på frågan och hade varit mycket tacksamma för dina svar.

Enkäten tar runt tio minuter att besvara. Den innehåller några bakgrundsfrågor, en text som du ombeds läsa samt några frågor om denna text. Dina personuppgifter skyddas enligt personuppgiftslagen (SFS 1998:204) och varken studiens författare eller utomstående får tillgång till dem. Dataöverföringen är krypterad och dina svar kommer att behandlas anonymt. Den avidentifierade datan kan komma att användas i fler forskningsprojekt.

Enkätens resultat kommer att användas i en masteruppsats som sedan publiceras på http://www.lu.se/forskning/sok-vara-avhandlingar-och-ovriga-publikationer. Om du har några frågor är du välkommen att kontakta författaren, Tim Isaksson, på telefon (0702-328993) eller epost (aar08tis@student.lu.se).

Genom att påbörja enkäten godkänner du villkoren ovan. Tack på förhand för din medverkan!

Två oberoende demografiska bakgrunds-variabler

Vi inleder med några korta bakgrundsfrågor, vilka är viktiga för tolkningen av enkätresultaten.

[BQ1] **Hur många år har du spenderat i formell utbildning?**
Vänligen räkna med grundskola (inte förskola), gymnasium, vuxenutbildning, folkhögskola och högskola/universitet (räkna med eventuella doktorandstudier men inte högre forskning). Var god svara enbart med siffror.

☐

[BQ2] **Hur många betalda timmar arbetar du varje vecka i genomsnitt?**
Vänligen räkna inte med studier och svara enbart med siffror.

☐

[BQ3] **Hur oroad är du över klimatförändringarna?**
Vänligen ange din grad av oro. Ju högre siffra desto mer oroad.

- ○ 6 = Enormt oroad
- ○ 5
- ○ 4
- ○ 3
- ○ 2
- ○ 1
- ○ 0 = Inte alls oroad

- ○ *Vet inte/ingen åsikt/vill inte svara (9)*

Två oberoende psykografiska bakgrunds-variabler

[BQ4] **Hur övertygad är du om att vi kan lösa problemet med klimatförändringarna?**

- ○ 6 = Helt övertygad
- ○ 5
- ○ 4
- ○ 3
- ○ 2
- ○ 1
- ○ 0 = Inte alla övertygad

- ○ *Vet inte/ingen åsikt/vill inte svara (9)*

Behandling

Varje respondent såg enbart en uppsättning av de inramnings-aktiverande texterna

Nu följer en presentation av systemet **avgift & utdelning**. Vänligen läs hela innan du går vidare till nästa sida.

AIDA-struktur: *Attention* (uppmärksamhet)

En ny idé för en stor utmaning

EU har som gemensamt mål att minska utsläppen av klimatpåverkande gaser med 80–95 % till år 2050. Syftet är att lyckas minska och försäkra emot de risker som dessa utsläpp medför. Ett sätt att underlätta denna strävan är systemet 'avgift och utdelning', vilket dessutom hade gett en majoritet av befolkningen mer att leva på.

Moral: Med andra ord är systemet en lovande väg för oss att upprätthålla ett stabilt klimat och därmed förbättra utsikterna för de vi bryr oss om, för ordning och reda, samt för skyddet av vår vackra, rena natur. Det hade också bidragit till en mer etiskt riktig fördelning av bördor.	**Samfördelar:** Med andra ord är systemet en lovande väg för att gå över till ren energi och samtidigt skapa ett bättre samhälle där ekonomi, trygghet, hälsa och ekosystem inte bara skyddas utan också utvecklas.	**Pragmatism:** Därmed är detta system mer realistiskt att få på plats än andra koldioxidavgifter, eftersom de flesta automatiskt skyddas mot prisökningar. Vidare ger det näringslivet en tydligare och mer stabil spelplan än vad t.ex. handel med utsläppsrätter gör.

AIDA-struktur: *Interest* (intresse)

Hur avgift & utdelning skulle fungera

En koldioxidavgift införs på fossila bränslen och betalas av fossilbränslebolagen. Då stiger priserna på alla varor och tjänster som direkt eller indirekt framställs med hjälp av kol, olja eller naturgas. Samtidigt går 100 % av avgiftens intäkter tillbaka till alla vuxna medborgare, i lika stora delar, rakt in på kontot varje månad. (Barnfamiljer ges en halv utdelning per barn, för högst två barn.) Individer, företag och myndigheter tjänar därmed på att handla och producera klimatsmart, och enbart de individer som konsumerar väldigt mycket får tillbaka mindre i utdelning än vad de betalar extra i pris. Avgiften börjar lågt och stiger sedan varje år. Därmed blir förnybar energi gradvis billigare än fossila bränslen samtidigt som omställningen blir så smidig som möjligt. Av samma skäl kompenseras exportföretag för avgiften, medan importerade varor påläggs tull för att eliminera orättvisa konkurrensfördelar. Detta ger dessutom andra länder starka skäl att själva införa koldioxidavgifter.

AIDA-struktur: *Desire* (önskan)

Lovande exempel

Avgift & utdelning behöver brett stöd för att införas. **Moral:** Det är därför bra att systemet hade hjälpt oss att värna om det vi värdesätter, som t.ex. våra hem, vår och andras trygghet, vår chans att lämna efter oss arv och avtryck som vi är stolta över, samt energisjälvförsörjande. Väldigt få system har införts runt om i världen som är så omfattande som avgift & utdelning, men ett liknande exempel är koldioxidavgiften som har minskat utsläppen i provinsen British Columbia i Kanada med runt 15 % sedan 2008. Här går intäkterna dock till att minska bl.a. inkomstskatten. Allmänhetens stöd för avgiften ökade från 40 % vid starten till ca 60 % från 2012 och framåt.[1]

Samfördelar: Sedan 2008 har provinsens ekonomi fortsatt vara landets starkaste, vilket bådar väl för att avgift & utdelning kan ge ökad ekonomisk robusthet, nydanande öppningar för utveckling och nya exportmöjligheter genom innovation och industriellt ledarskap.	**Pragmatism:** Antagligen skulle ännu fler stödja avgift & utdelning, eftersom utdelningen hade gjort en tillräcklig avgift mer acceptabel samt skapat en väldigt tydlig och förutsägbar prissignal. Överlag hade dessutom tilltron blivit starkare på att systemet varken ökar statens storlek eller leder till mer centralstyrning. Det är helt enkelt ett väldigt realistiskt system.

Handling behövs och du kan hjälpa till

I en svensk undersökning 2014 sade 80 % att det är mycket bra att "satsa på ett miljövänligt samhälle".[2]

Moral: Att göra detta genom avgift & utdelning hade kraftigt stärkt vår förmåga att agera ordentligt i klimatfrågan, och därmed underlättat för oss att ta oss an denna moraliska plikt. EU kan och bör nämligen leda världen i att ta ansvar för att lösa detta kollektiva problem. Dessutom hade systemet också motverkat det orättvisa slöseri av gemensamma resurser som några få fritt tillåts ägna sig åt.	**Samfördelar:** Att göra detta genom avgift & utdelning hade medfört många positiva bieffekter, som t.ex. mer lokal och mer demokratisk energiproduktion, trevligare och mer hälsosamma städer, effektivare resursanvändning, samt utrymme för att återställa förlorad natur som t.ex. levande skogar och vatten- och luftkvalitet. Dessutom hade utdelningen kunnat stärka ekonomin inte bara genom innovation utan också genom den positiva spiral som uppstår då en majoritet av befolkningen får större ekonomiskt utrymme för klimatsmart leverne.	**Pragmatism:** Att göra detta genom avgift & utdelning vore fördelaktigt även för att det mesta av nödvändig administration redan existerar (skatteinfrastruktur, bankkonton). Det underlättar också att avgiften enbart läggs på fossilbränslebolagen, eftersom dessa är relativt få till antalet. Systemets enkla utformning gör dessutom att politikerna inte behöver komma överens om komplicerade intäktsfördelningar.

AIDA-struktur: *Action* (handling)

Avgift & utdelning låter oss anta klimatutmaningen flexibelt, effektivt och tillsammans – storbolag och privatperson, ung och gammal. Men tyvärr är det fortfarande få som känner till systemet. En bra sak som du kan göra är därför att prata om det med familj, vänner och politiker. Eller bara lära dig mer, t.ex. genom ett besök på Klimatsvarets hemsida (länken öppnas i nytt fönster).

Referenser: Harring & Sohlberg, 2015; CCL, 2016c; Murray & Rivers, 2015 (länk är till utkast); The World Bank, 2014; BCBC, 2015

[1] Källor: CCL, 2016; Murray & Rivers, 2015; Världsbanken, 2014; Business Council of British Columbia, 2015
[2] Källa: SOM-institutet, 2015

Nu följer fem frågor om hur mycket du instämmer i olika påståenden om avgift & utdelning. Vänligen läs dessa påståenden noggrant och välj det alternativ som passar bäst in på din åsikt. Var god markera enbart ett alternativ.

[Q1] *I vilken utsträckning instämmer du i följande påstående?*
Det är lätt att förstå hur avgift och utdelning skulle fungera.

- ◯ Instämmer helt (7)
- ◯ Instämmer mycket (6)
- ◯ Instämmer delvis (5)
- ◯ Varken instämmer eller tar avstånd (4)
- ◯ Tar delvis avstånd (3)
- ◯ Tar mycket avstånd (2)
- ◯ Tar helt avstånd (1)

- ◯ *Vet inte/ingen åsikt/vill inte svara (9)*

Sex beroende attitydvariabler framförallt om policystöd. Ordningen på de fem första randomiserades. Alla dessa fem använde samma svarsskalor.

[Q2] *I vilken utsträckning instämmer du i följande påstående?*
Jag är positivt inställd till ett införande av avgift och utdelning på EU-nivå.

[Q3] *I vilken utsträckning instämmer du i följande påstående?*
Det skulle vara politiskt enkelt att införa avgift & utdelning på EU-nivå

[Q4] *I vilken utsträckning instämmer du i följande påstående?*
Om EU införde avgift & utdelning skulle det bli lättare att uppnå det gemensamma klimatmålet om att minska EU:s utsläpp av klimatpåverkande gaser med 80–95 % till år 2050.

[Q5] *I vilken utsträckning instämmer du i följande påstående?*
Avgift & utdelning skulle vara ett rättvist sätt att minska EU:s utsläpp av klimatpåverkande gaser.

Nu följer en annan fråga om avgift & utdelning, men utan påstående.

[Q6] *I diskussioner om politik och ideologi är det vanligt att tala om en skala från vänster till höger.* **Var skulle du placera in avgift & utdelning på en sådan vänster–höger-skala?**

- ◯ Väldigt mycket vänster (7)
- ◯ Mycket vänster (6)
- ◯ Något vänster (5)
- ◯ Varken vänster eller höger (4)
- ◯ Något höger (3)
- ◯ Mycket höger (2)
- ◯ Väldigt mycket höger (1)

- ◯ *Vet inte/ingen åsikt/vill inte svara (9)*

Nu följer ytterligare tre frågor om dina åsikter om avgift & utdelning, varav en är helt öppen.

[Q7] *I vilken utsträckning instämmer du i följande påstående?*
Jag vill diskutera avgift & utdelning med andra.

- ◯ Instämmer helt (7)
- ◯ Instämmer mycket (6)
- ◯ Instämmer delvis (5)
- ◯ Varken instämmer eller tar avstånd (4)
- ◯ Tar delvis avstånd (3)
- ◯ Tar mycket avstånd (2)
- ◯ Tar helt avstånd (1)

- ◯ *Vet inte/ingen åsikt/vill inte svara (9)*

Två beroende attitydvariabler om idéspridning och en öppen fråga.

[Q8] **Klickade du på länken på förrförra sidan (d.v.s. i presentationstexten) som tog dig till organisationen Klimatsvarets hemsida?**

- ◯ Ja (1)
- ◯ Nej (2)

[Q9] **Har du några andra kommentarer om avgift & utdelning?**
Det kan vara allmänna eller specifika tankar. Denna fråga behöver inte besvaras men dina åsikter skulle uppskattas mycket.

Nästa fråga är den sista. Den handlar inte om avgift & utdelning utan om dig.

En oberoende, känslig psyko-grafisk bakgrunds-variabel.

[BQ5] **Var skulle du placera in DIG SJÄLV på en politisk/ideologisk vänster–höger-skala?**

- ◯ Väldigt mycket vänster (7)
- ◯ Mycket vänster (6)
- ◯ Något vänster (5)
- ◯ Varken vänster eller höger (4)
- ◯ Något höger (3)
- ◯ Mycket höger (2)
- ◯ Väldigt mycket höger (1)

- ◯ *Vet inte/ingen åsikt/vill inte svara (9)*

Avslutning

Tusen tack för dina svar, de kommer vara studien till stor nytta. Resultaten kommer framförallt användas för att analysera ifall olika sätt att rama in en skriftlig beskrivning av avgift & utdelning leder till systematiska skillnader i hur systemet uppfattas. Anledningen till att detta inte berättades i introduktionen är att studien då hade kunnat bli lidande. Vi hoppas att du har överseende med detta.

Masteruppsatsen, som skrivs inom Masterprogrammet i tillämpad klimatstrategi vid Lunds Universitet, kommer som sagt göras tillgänglig på http://www.lu.se/forskning/sok-vara-avhandlingar-och-ovriga-publikationer. Om du har några frågor är du välkommen att kontakta studiens författare, Tim Isaksson, på telefon (0702-328993) eller epost (aar08tis@student.lu.se).

Observera att organisationen Klimatsvaret inte ligger bakom denna enkät och att studiens författare själv ej är medlem i den.

Tack igen för din medverkan!

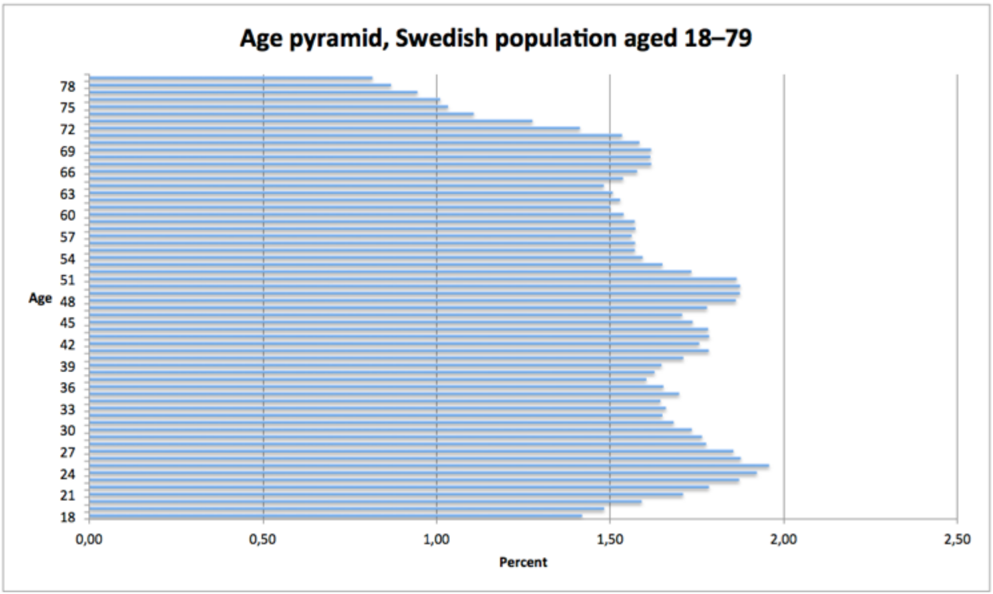
Appendix 3: Supplementary details on statistical analyses

Note that this appendix is non-exhaustive; it mostly consists of details for analyses where further clarifications were deemed needed.

Contents

I. Test output for representativeness comparison between sample and population

Age distribution in population



Source: Own calculations from SCB (2016a) material for 2015, looking at the same age span as the sample (18–79).

Age by gender, within-sample group comparison

Task: Compare sample means for Age (continuous) categorized by Gender (nominal, binary) with the same for the population.
Perform two-tailed independent two-sample z-test.
Population standard deviations are known. Population parameters are not normally distributed, but n is large.

H_0: $\mu_{men} = \mu_{women}$ H_1: $\mu_{men} \neq \mu_{women}$

α = 5% –> Critical z value is 1,96

$$z = \frac{(\bar{x}_{women} - \bar{x}_{men}) - (\mu_{women} - \mu_{men})}{\sqrt{(\sigma_{men}^2/n_{men} + \sigma_{women}^2/n_{women})}} = \frac{44.96 - 48.1 - 0}{\sqrt{(17.027^2/208 + 17.496^2/204)}^{a}} = -1.85 \text{ (corresponds apprx. to p = 0.064)}$$

z < 1,96

Null hypothesis cannot be rejected. **No systematic age difference between the genders has been found.**

[a] Source, population data: Own calculations from SCB (2016a) material for 2015, looking at the same ages as the sample (18–79).

Municipality categories, sample–population comparison

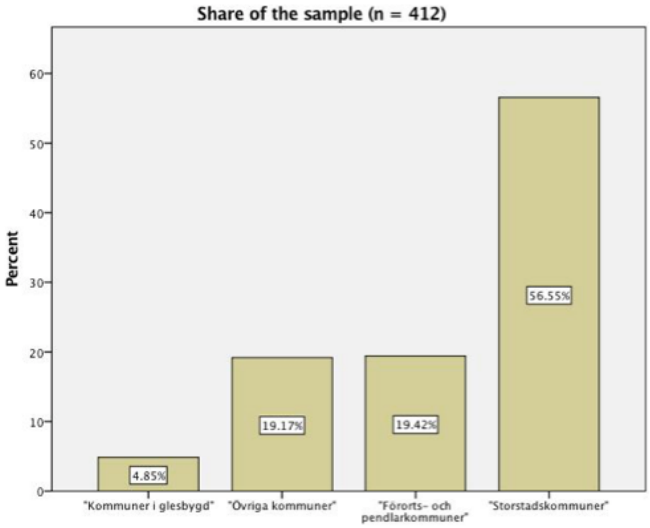
To make this comparison, municipality categories bradly corresponding to population density were adopted from SKL, 2011:

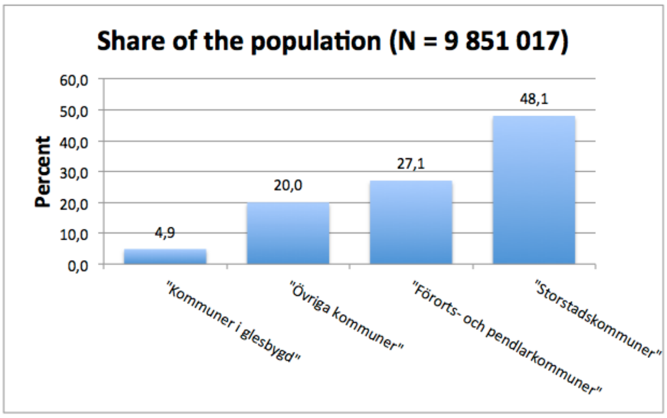
1. Storstäder; 2. Förortskommuner till storstäder; 3. Större städer; 4. Förortskommuner till större städer; 5. Pendlingskommuner; 6. Turism- och besöksnäringskommuner; 7. Varuproducerande kommuner; 8. Glesbygdskommuner; 9. Kommuner i tätbefolkad region; 10. Kommuner i glesbefolkad region.

These were then collapsed into four categories:

(1, 3) "Storstadskommuner"
(2, 4, 5) "Förorts- och pendlarkommuner"
(6, 7, 8, 9, 10) “Övriga kommuner"

The comparison was then performed. Source, population data: SCB, 2016. Note that those data are from 2015, whereas the municipality categorizations are from 2011. Note also that the population data is for the entire population, all ages, not the sample's 18–79 years.





Number of years in formal education (sample) compared with education level (population)

To enable the comparison, the categorical population data's categories first had to be somewhat more defined and the sample data's collapsed into matching categories.

	Data missing	"Folkskole-utbildning" (mainly pre-reform), < 9 years	Elementary school, 9 (10) years	SECONDARY EDUCATION < 3 years	3 years	TERTIARY EDUCATION < 3 years	≥ 3 years	Researcher schooling	Σ
Categories of accumulated years in formal education		0–10 years		10.1–13 years		13.1–19 years[a]		19.1–26 years[b]	
Number of 20–74 year-olds, population[c]	121450	356313	639055	1499621	1582035	1024034	1465082	76683	6764273
	Excluded	995368		3081656		2489116		76683	6642823
Cumulative		995368		4077024		6566140		6642823	
Quartile classes				Q1 class, Median class		Q2 class			
Expected number of 20–74 year-olds in the sample if the distribution was the same as in the population		54.5		168.9		136.4		4.2	364
Actual number of 20–74 year-olds, sample		23		116		198		27	364
Cumulative		23		139		337		364	
Quartile classes				Q1 class, median class		Q2 class			

[a] Subjectively assigned.

[b] Subjectively assigned to match the questionnaire's PhD-level limit.

[c] Source: Own calculations from SCB (2016d), which also is the source for the categorization. Note that the population data actually only concerned finished degrees, which introduces substantial error for the comparison with the class-divided continuous data. Other problems for the comparison with the sample data include that the population data did not entirely cover the sample's 18–79-years range, so years 18, 19, and 75–79 were dropped for this analysis; that data was missing for the population but not for the sample (at least to the extent that all respondents entered a figure); and that some cases in the population data, although they should be few in number, may violate the boundaries between categories. E.g., pre-elementary-school-reform pupils could plausibly have finished their secondary education without it taking them ten years, and then have moved on to tertiary education etc. Another possibility are people who have spent more than six years at university during their tertiary education.

A $\chi 2$ goodness-of-fit test was then performed:

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Number of years in formal education classified to match population data categories and range occur with the specified probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The strong rejection of the null hypothesis somewhat diminishes the above outlined problems with the comparison.

The above four categories were then collapsed into just two – 0–13 and 13.1–26 – for the search for background and interaction effects, since there otherwise would be too few respondents in the outer categories.

II. External response rates

The external response rate is quite complex to for web panels, especially when stratification is used, as here. Note that stratification was also done by region, which is not shown here.

	QUOTA GROUP (AGE)						
	18–24	25–34	35–44	45–54	55–64	65–79	Σ
Invited	380	400	400	360	260	200	2000
Invited (edited)[a]	289	315	309	258	190	148	1509
Did not start	310	315	308	238	159	94	1424
Aborted	5	10	10	16	16	16	73
Quota full	15	5	11	30	18	12	91
Completed	**50**	**70**	**71**	**76**	**67**	**78**	**412**
Response rate[b]	17,3 %	22,2 %	23,0 %	29,5 %	35,3 %	52,7 %	27,3 %
Weighted average response rate	31,0 %						

[a] 20 % of invites are assumed to bounce and never get to the panel member, for various reasons,and those that attempt to start the survey when their age quota is full are subtracted from the response rate calculation.
[b] Completed divided by Invited (edited)

III. Inter-item correlations for background-variables

Inter-Item Correlation Matrix

	Age in years	Male/female	The respondent's municipality's population density (people/km2)	How many years have you spent in formal education? (Please include primary education (but not preschool), secondary school, adult education, community college, and college/university (include PhD studies, if any, but not higher research). Please reply onl	How many paid hours do you work each week, on average? (Please exclude studies and reply only with digits.)	How worried are you about climate change? (Please indicate your degree of worry. The higher the digit, the higher the worry.)	How convinced are you that we can solve the problem of climate change?	BQ5 collapsed into three categories.	Survey completion time (sec)
Age in years	1.000	-.091	.061	-.085	-.130	-.125	.045	.030	.200
Male/female	-.091	1.000	.027	.082	-.160	.281	.006	.118	.113
The respondent's municipality's population density (people/km2)	.061	.027	1.000	.181	-.008	.053	.070	.026	.043
How many years have you spent in formal education? (Please include primary education (but not preschool), secondary school, adult education, community college, and college/university (include PhD studies, if any, but not higher research). Please reply onl	-.085	.082	.181	1.000	.176	.119	-.078	.040	.118
How many paid hours do you work each week, on average? (Please exclude studies and reply only with digits.)	-.130	-.160	-.008	.176	1.000	-.146	-.017	-.014	-.108
How worried are you about climate change? (Please indicate your degree of worry. The higher the digit, the higher the worry.)	-.125	.281	.053	.119	-.146	1.000	.055	.173	.121
How convinced are you that we can solve the problem of climate change?	.045	.006	.070	-.078	-.017	.055	1.000	-.048	-.032
BQ5 collapsed into three categories.	.030	.118	.026	.040	-.014	.173	-.048	1.000	.014
Survey completion time (sec)	.200	.113	.043	.118	-.108	.121	-.032	.014	1.000

IV. Responses to the open question (Q9), in Swedish

The question was: “Do you have any other comments regarding fee & dividend? It could be general or specific thoughts. Answering this question is not required but your opinions would be greatly appreciated ”

Note that only 122 out of 412 respondents chose to reply to this question. (Frame condition in parenthesis.)

- “Tanken kanske är god men det kändes som en komplicerad idé. Fast någonstans måste man ju börja försöka.” (Co-benefits)
- “Problemet med koldioxidutsläpp kan inte lösas regionalt, och måste lösas globalt. Att operera inom det kapitalistiska systemet för att lösa klimatkrisen vilket är en direkt konsekvens av det kapitalistiska systemet är problematiskt. Så länge kapitalackulation är det grundläggande intresset blir det svårt att lösa problemet utan att ta bort detta.” (Co-benefits)
- “Inför billigare tågresor. Stoppa höghastighetstågen. Varför jäkta.” (Co-benefits)
- “Det verkar inriktat på EU, men jag tycker att det skulle röra alla kontinenter som också är stora "miljöförstörare" med sina utsläpp. Ta bara t ex Peking där luften är så förorenad att folk inte får gå ut vissa dagar…” (Co-benefits)
- “Jag tyckte exemplet lät konstigt eftersom om tjänsterna som var byggda på fossil kraft skulle få högre avgifter så skulle folk köpa mindre av dom och alltså få tillbaka mindre pengar. Människorna har ingen drivkraft att sluta använda fossilt då.” (Co-benefits)
- “Det skulle vara bar om samhället blev mer informerat om det, så att fler skulle förstå vad det innebär” (Pragmatism)
- “Om alla får utdelning och alla köper klimatsmart, kommer de bolag som producerar energi och betalar avgift att ställa om sin produktion. Bra för miljön, men då kommer det inte in några avgifter och då får antingen skattekollektivet betala utdelningen eller så blir det ingen utdelning mer..............detta leder då till protester...............hur handskas politiken detta?” (Pragmatism)
- “Det behövs bättre alternativ till fossilt bränsle om det ska vara attraktivt med "avgift och utdelning” (Morality)
- “En del i omställningen. Det behövs mera styrning.” (Pragmatism)
- “Stor risk för att man betalar in stora summor men får ytterst lite tillbaka.” (Morality)
- “Med tanke på att man inte klarar av att få medlemsländer att göra samma saker, när besluts har tagit i EU. Så har jag svårt att se hur man skulle kunna lösa detta på ett ‘enkelt' sätt.” (Pragmatism)
- “Litet krångligt att förstå och uppfatta om det är en maximalt bra lösning.”(Morality)
- “Fler företag skulle välja att lämna Sverige.” (Co-benefits)
- “Konstig undersökning. Det antas för självklart att det redan är och skall bli stora klimatförändringar i framtiden. Nästan alla prognoser som tagits fram hittills har visat sig felaktiga. Många forskare hoppar av IPPC för att det bluffas för mycket. Visst kommer klimatet att förändras men jag tror inte att det blir i så stor grad som ni och EU tydligen tror.” (Co-benefits)
- “Det är nog svårt på EU nivå givet våra helt olika källor för el. Svensk vattenkraft vs polsk kolkraft. Dessutom är inkomstskillnadena stora. Får fundera om det är bra eller dåligt.” (Pragmatism)
- “Jag blev lycklig av att läsa att någon kommit på denna möjlighet att göra något radikalt för miljön så att utvecklingen kan börja gå åt rätt håll.” (Co-benefits)
- “förefaller omständigt” (Pragmatism)
- “Det är viktigt att både USA och Kina tar sitt ansvar annars kommer det att bli mycket svårt. De fattiga länderna som Indien mm måste ha hjälp av de rikare länderna med expertis och pengar för att kunna ändra syn på klimatfrågan.” (Morality)
- “Idén till avgift och utdelning är positiv, men som med så mycket annat när det gäller miljö ska det se bra ut och låta bra, men sedan fuskas det mycket i verkligheten.” (Co-benefits)
- “Är rädd att detta på något sätt kommer att drabba glesbygdsbor mer än människor som bor i tätbebyggda områden (med tanke på drivmedel).” (Pragmatism)
- “Det här låter fantastiskt! Det är bara att hoppas på att politikerna vågar genomföra detta.” (Co-benefits)
- “Detta kan vara ett sätt att nå de uppsatta klimatmålen. Man borde per omgående göra ett test i något av EU-länderna motsvarande det i British Columbia för att kunna visa allmänheten, den stora massan att systemet fungerar. Men simultant med detta måste mycket mer göras på global nivå för att komma till rätta med de miljöproblem vi har nu och kommer att få om ingenting görs.” (Co-benefits)
- “Mycket intressanta tankar. Alla förslag som kan minska klimatutsläppen måste beaktas. Detta är ett förslag som kan gynna många medborgare ju fler som ställer upp. Smart!” (Co-benefits)
- “Svårt att svara på utifrån en så pass kort introduktion. Jag undrar spontant varför jag inte har hört något om detta tidigare.” (Morality)
- “Har inte tidigare hört om detta men det verkar helt klart intressant eftersom man i detta förslag faktiskt tänkt till på väldigt många saker. Verkar smart helt enkelt, genomtänkt!” (Morality)
- “Kan vara lite svårt att sätta sig in hur systemet fungerar. EU är inte så bra och smidiga på att samarbeta i stora frågor.” (Morality)
- “Har själv funderat på liknande tillvägagångssätt för att lösa såväl miljökrisen som den ekonomiska. Det är väldigt uppenbart att lösningen till miljö-problemen måste lösas med ekonomiska strategier - Vi behöver en ekonomisk drivkraft för att få privatpersoner att agera som ett kollektiv! Robin Hood-politik blandat med en snygg samhällsekonomisk lösning är THE WAY TO GO!” (Co-benefits)
- “Det måste vara realism i genomförande. Ta tex insamlingen av matrester i kommunerna. Med hela organisationen kring bränning till biogas är det säkerligen så att kostnaderna för att få fram den gasen är extremt höga. Matresterna bör brännas på samma sätt som övriga hushållssopor och därvid ge värme, som ersätter fossilframställd värme.” (Pragmatism)
- “Borde bestämmas av experter och forksar som har gjort matematiken.” (Morality)
- “Varför har man inte hört talas om detta i tidningar och TV tex. Har aldrig hör talas om detta tidigare” (Pragmatism)
- “Detta låter som ett vettigt införande. Men som alltid är det svårt att få infört något som drabbar de som tjänar på att ha det som vi har det nu. Pengar är alltid viktigast för många!! Men vi måste absolut göra något NU.” (Pragmatism)
- “Pengar, korrupta politiker, egoistiska konsumenter... Ja tyvärr har inte miljön en chans.” (Pragmatism)

- “Att få det att sättas i system i länder där kol och olja är stora exporter kan nog vara det största problemet. Inskränkthet m.m.” (Pragmatism)
- “Jag tycker om konceptet med "poluters pay" och det verkar vara enklare att få med sig folket på den här manövern jämfört med det mindre lyckade försöket med utsläppsrätter. Frågan är bara om det går att få igenom detta utan att de som släpper ut sätter käppar i hjulen än en gång.” (Co-benefits)
- “Allt som kan möjliggöra en bättre miljö på lång sikt är värt att prova.” (Morality)
- “Det vore bra om bilskatten enbart låg på bensinen, desto mer man kör desto mer betalar man, ock man kan ha olika bilar till olika ändamål,” (Pragmatism)
- “Utan att helt förstå hur det skulle fungera tror jag att avgift och utdelning är väl värt att pröva. Mycket mer behöver göras för att vi ska uppnå klimatmålen men tyvärr är politiker alltför rädda för att fatta de beslut som behövs.” (Pragmatism)
- “De som drabbas är de som bor utanför städerna som kanske har mindre chans att välja miljösmart.” (Pragmatism)
- “Kanske optimistiskt att tro att alla EU-länder kommer med på tåget i ett projekt som detta.” (Pragmatism)
- “Det är denna typ av visionära, kraftfulla åtgärder vi behöver för att minska utsläppen och värna klimatet. Det saknas visioner i svensk politik idag.” (Co-benefits)
- “Om detta skall fungera måste man få med alla från början och det tror jag inte man kan få. Ett land som börjar är bra men det skulle inte fungera tror jag. Om alla EU länder inför det på samma gång, då är det en annan sak, men hur skall man göra i utvecklingsländer där pengarna styr eller i Kina där man inte vet vad det innebär, eftersom dom är där vi i väst var på 60 talet när det gäller miljötänk? Så teoretiskt bra men vet inte om det fungerar rent praktiskt……” (Pragmatism)
- “Svårt. De som tjänar pengar bryr sig inte.” (Pragmatism)
- “Intresserar och vill lära mig mer” (Morality)
- “Jag tycker det är viktigt att försöka göra något storskaligt i situationen, som känns rätt hopplös. Att kontrollera folks konsumtionsvanor genom att de får betala dyrare för det som ger mer utsläpp är nog ett bra sätt. Jag vet inte om det blir så lätt att genomföra överallt däremot. Folk verkar inte gilla att känna sig kontrollerade av sina stater, ännu mindre EU.” (Co-benefits)
- “För mig fick förslaget större legitimitet av jag känner till hur University of British Columbia har jobbat med och varit framgångsrika inom hållbarhetsområdet. (Antog att det är samma område som nämns i texten.)” (Co-benefits)
- “Mycket intressant förslag, som jag ej hört talas om tidigare. Goda erfarenheterna från Kanada positiv nyhet för mig.” (Co-benefits)
- “Skriv artiklar i tidningar och inlägg i sociala medier!!! Sprid information!!” (Pragmatism)
- “Jag tror att det kan bli svårt att implementera, många kommer att fuska!” (Morality)
- “Det är hög tid att diskutera detta. Tror tyvärr att det är svårt att få ett brett engagemang bland befolkningen.” (Morality)
- “Låter intressant” (Pragmatism)
- “Såg nyligen ett program om container trafik o där skulle det verkligen ett sådant system införas behövas” (Morality)
- “Jag gillar avgiftsbiten, men inte utdelningsbiten. Varför ska pengarna ges till individer baserat på deras existens istället för att användas för att stödja minskade koldioxidutsläpp på strukturell nivå? Istället för att ge massa folk pengar i handen kunde de användas för att forska på alternativa engergikällor, koldioxidbindning, infrastrukturåtgärder som gör personliga koldioxidutsläpp mindre attraktiva etc. etc. Utdelningsdelen gör mig generellt negativ till hela idén, och om jag fick rösta om den skulle jag rösta mot.” (Morality)
- “Jag orkar inte sätta mig in i sådana här frågor på en djupare nivå men jag tycker det är extremt viktigt att vi tar hand om vår jord! För att vi ska lyckas stoppa klimatförändringar och miljöförstöring krävs ett samarbete i världen och jag tror att avgift o utdelning kan vara en fungerande metod. Det måste vara enkelt, billigt och rättvist för att det ska fungera, vilket det verkar vara.” (Morality)
- “Det skulle vara en stor administrativ nackdel med utbetalningssystem till privatpersonernas konton, det skulle vara bättre att använda de till klimatsmarta lösningar i samhället. Exempelvis utbyggnad av laddstationer till bilar” (Co-benefits)
- “Det verkar bra, en konkret strategi för att uppnå målet att minska vår påverkan på klimatet kommer att göra det mer realistiskt!” (Morality)
- “Så länge att man tar in i beräkningen vars i landet man bor så tror jag att det kommer att funka” (Co-benefits)
- “Tycker att Europas länder har så olika förutsättningar att genomföra A&U att man aldrig når det utlovade resultaten. Kanske skulle experientet kunna lyckas i Norden.” (Co-benefits)
- “En god idé, men som allt annat som rør førsøk till att påværka miljøn genom att høja avgifter och priser så riktiar sig dessa idér/ personer/politker/forskare åt fel håll. Fokus borde læggas på syd amerika, afrika och asien. Det ær DÆR dem stora utslæppen sker. Att vi i europa ska punga ut med ænnu mera pengar før något påhittat skitsnack så någon/några kan tjæna ænnu mer pengar ær helt fel plats att børja på. Førnybar energi måste gøra enorma steg før att det ska løna sig. Solceller ær inte mycket bættre æn tex sopførbrænning.” (Morality)
- “Låter som en bra idé för att skapa motivation hos även "folket" att börja vara lite mera klimatsmart, för att på så sätt "tjäna" lite extra pengar.” (Co-benefits)
- “Tror att EU-länderna skulle få svårt att komma överens om ett införande.” (Co-benefits)
- “Det jag anser skumt med er presentation av avgift & utdelning är att det skulle tas in skatter av företagen och sedan betalas ut till enskilda. Det tror jag inte på. Använd istället de insamlade pengarna till att utveckla klimatsskyddande system.” (Co-benefits)
- “Det känns som om att det hela låter väldigt bra, men man oroar sig för att det ska dyka upp folk som av en eller annan orsak inte ska räknas med i detta system. Skulle inte förvåna mig om politiker o sådär skulle slippa bekymra sig för det också. Det viktiga är också att utbudet på klimatvänliga produkter blir större, så att man faktiskt har mat/saker att välja på.” (Morality)
- “Vi som inte är rika åker i begagnade bilar, som förmodligen gör att vi får betala en hög avgift. För att dra ner på el uppvärmningen eldar vi i kakelugn med egen ved. Det får vi nog också betala en hög avgift för. Vi bor på landet och är beroende av bil, kommer att bli dyrare att bo här. Man kommer att avfolka landsbygden.” (Co-benefits)
- “har svårt att tänka mig att de gamla öststaterna skulle sluta upp de tänker bara kortsiktigt på pengar” (Pragmatism)
- “Systemet borde ta hänsyn till de som bor där kollektivtrafik saknas och de som använder motorredskap i sitt arbete och måste byta dem om de ska gå på miljövänliga bränslen (de som bor på landet, bönder)” (Co-benefits)
- “Kan bara önska lycka till” (Morality)
- “Det är för mig oklart vad syftet är med utdelningen som system är. Det borde rimligtvis gå att helt enkelt ha höga koldioxidskatter. Är utdelningen mest till för att få en bred uppslutning? Ställer mig skeptisk till det. Verkar mest snurra till det hela. I första hand borde det rimligen leda till lägre skatter. Att fördela pengar till alla inom EU jämnt verkar svårt att korrigera för aktuell levnadsstandard (vilket man

kanske inte vill) och väldigt administrativt och byråkratiskt. Har svårt att se poängen med utdelningsaspekten helt enkelt. Det är möjligt att jag har missförstått men i så fall är det nog fler som har det…” (Co-benefits)

- “Företag som exporterar skulle gynnas av systemet, vad jag förstår. Men även exporter påverkar ju miljön. Hur löser man det. Självklart är det ju bra att man på lokal nivå tillverkar så mycket att man kan exportera, men problemet med hur transporter påverkar miljön kvarstår.” (Co-benefits)
- “Vi måste göra någonting åt klimatet och då är detta det mest omfattande som faktiskt skulle kunna göras” (Morality)
- “Vet för lite för att ha bestämnda åsikter men vill lära mera” (Morality)
- “Tankarna om avgift & utdelning har folklig form, dvs det kommer folk till godo som winwin och kan genomföras i demokratiska former.” (Pragmatism)
- “Påverkas avgiften beroende på inkomst?” (Morality)
- “det är mycket enklare i en totalitär stat att införa vad som helst.” (Pragmatism)
- “Så länge systemet värnar de redan goda föresatserna som svenska politiker har, är det ett bra alternativ för att minska utsläpp. Ibland framstår EU-beslut som mindre lyckliga för svensk del eftersom vi många gånger har bättre förutsättningar eller redan bättre regler för de förändringar som beslutas om.” (Morality)
- “Jag tycker att beskrivningen av hur avgift & utdelning skulle fungera är oklar, därav alla "vet ej" i de efterföljande frågorna. Tyvärr är frågorna utformade som om det vore kristallklart vad som menas.” (Morality)
- “Det är svårt att säga om det skulle vara effektivt att införa systemet i EU. Antingen flyttas bara verksamhet utanför EU området eller så tar olika länder olika skada alternativt tjänar olika mycket. Kanske kunde det vara en ide att införa det på EUnivå och sedan låta länderna i någon grad anpassa sig själva till systemet. Det är definitivt dock en ide värd att testa om det går att genomföra alla seriösa idéer för att rädda miljön bör läggas fram som kandidater.” (Pragmatism)
- “Lovande, kan faktiskt vara ett ganska bra medel.” (Morality)
- “Tror det kommer slå hårt mot glesbygden där alla behöver bil men inte har så höga inkomster så att de har råd att köpa en ny miljövänlig bil.” (Pragmatism)
- “Det är svårt att säga” (Morality)
- “Ni pratar bara EU. Övriga världen är nog ett större problem. Där gäller att få dem att verkligen tänka framåt.' Vi sorterar sopor men hur gör man i södra Europa? Ta Neapel som ett exempel.” (Pragmatism)
- “Vem kontrollerar? Hur överklagar man beslut? Är det rättvist att ge alla en lika stor andel? Hur säkerställer man att systemet inte missbrukas? Vem administrerar? Hur förhindra korruption?” (Pragmatism)
- “Intressant modell, som jag dock tidigare inte kände till! Ska lära mig mer och också studera den länk som jag inte gick in på nu!” (Pragmatism)
- “Mycket administration?” (Co-benefits)
- “Det känns som en nödvändig idé om det skall hända något över huvud taget. Tyvärr känns det idag som EU inte är kapabelt att samla sig kring viktiga frågor. Det verkar gå ut på att bara få fördelar. Jag tror att systemet skulle kunna införas i Sverige men inte i EU. Jag tänker även på att det blir en stor apparat att hantera med mycket byråkrati.” (Co-benefits)
- “Inte lätt att genomföra politiskt” (Morality)
- “En risk skulle kunna vara att det konsumtionsdrivna samhället som vi känner det idag tvärbromsar. Dvs en stor andel av de anställda inom tillverkning, handel, distribution osv går ut i arbetslöshet därför att det tar tid att ställa om från kvantitet till kvalite. Dvs från att köpa många billiga saker av låg kvalite till att köpa färre men dyrare saker av hög kvalite. Kanske till samma belopp per år.” (Co-benefits)
- “Vet inte tillrackligt om detta, har aldrig hort talas om det forut. Inte saker pa att det skulle fungera i praktiken.” (Pragmatism)
- “Om det fungerar på samma sätt som företagens utsläppsrätter...där det är möjligt att sälja sina rätt till utsläpp...så är jag mycket skeptisk till förslaget.” (Morality)
- “Tycker bara att vi måste göra något som är bra för klimatet - låt experter inom området bestämma över politiken!!!” (Morality)
- “Det verkar vara ett bra system och det är viktigt att det presenteras på ett enkelt och trovärdigt sätt. Den tveksamma inställningen till EU som finns bidrar säkert till att vi kommer att misstänka andra medlemsländer för att fuska eller slira på redovisningen eller hitta kryphål. Hela systemet måste göras trovärdigt och fusksäkert för att få alla med på banan. Går det att genomföra på ett säkert och trovärdigt sätt bör det ge visst hopp för klimatet.” (Morality)
- “Jag förstår överhuvud taget inte så mycket om det ni frågar om. Har försökt fråga andra som tycker som jag. jag å flera med mig tror att ni, politiker, miljömänniskor mfl mfl måste bli MYCKET tydligare på att förklara ert budskap.” (Pragmatism)
- “Har inte hört talas om detta innan trots att jag läser morgontidning nästan varje dag och ofta ser på nyheterna. Det är lite märkligt. Det är mycket intressantare med denna typ av politik än det eviga detaljpetandet som i princip alla politiska partier håller på med!” (Morality)
- “Att införa importtullar är ofta tveksamt. Många länder med mindre demokratiska principer kommer fuska, liksom man gör idag med all form av tillverkning. Har exvis sett kinesisk tillverkning av elektronik och gjutprodukter.” (Morality)
- “bra” (Co-benefits)
- “vill gärna sätta mej in mer i konsekvenserna av "projektet". Tidsfaktorn viktig! jag tycker inget fossilt bränsle borde tas upp med start NU! men självklart är detta problematiskt om inte det innebär en omfördelning av resurser i samhället till ekonomiskt svagare grupper” (Morality)
- “Tyvärr saknar jag fullkomligt förtroende för ett rättvist samhälle så länge kapitalism är det rådande statsskicket. När profit styr världen kommer motståndet för ett jämlikt samhälle vara så stort att liknande ambitioner inte kommer vara möjliga att genomföra. Människan är alldeles för lättköpt.” (Co-benefits)
- “Jag är orolig för möjligt boende i landsbygden i framtiden. Har ofta hört "hela Sverige ska leva", men denna devis motsäger sig själv, eftersom glesbygdsbefolkningen är mycket beroende av motorfordon för att ta sig fram och drivmedlen bara blir dyrare hela tiden. El och andra s k miljövänliga drivmedel tror jag kommer att ta lång tid att övergå helt till. Man borde som fri medborgare själv kunna ha rätten att bestämma bostadsort/plats. För många innebär boende på landsbygden mycket stor livskvalitet och bör alls inte vara dyrare än att bo i större orter.” (Co-benefits)
- “Nej. Jag anser att miljön är den viktigaste frågan vi har att lösa inför framtiden, för alla vill vi ju leva och att kommande generationer också ska kunna leva ett bra liv på denna jord. Jag såg igår den 1 Maj programmet Dokument utifrån i SVT 2 om alla utsläpp från fartyg som går kors och tvärs runt på haven runt hela världen. Det gjorde mig mycket orolig om hur vi ska klara miljön.” (Pragmatism)

- "Tror inte att ännu fler avgifter är rätt väg att gå. Snarare måste man begränsa tillgången på fossila bränslen och satsa resurser på alternativa 'bränslen', som el mm." (Morality)
- "Ett nytt sätt att tänka... Får presenteras för detta några gånger för att förstå innebörden." (Co-benefits)
- "Det låter bra att få tillbaka pengar direkt utan att nån myndighet måste blandas in. Sen skulle det vara intressant att se hur mycket dyrare saker å ting blir eftersom företagen måste kompensera sina nya avgifter." (Pragmatism)
- "I slutändan handlar det ju om vilka alternativa energikällor som finns tillgängliga" (Morality)
- "Ifall man vill minska klimatförändringarnas inverkan på människan, behöver man se dessa i ett vidare och historiskt perspektiv. Vi lever i den senaste mellanistiden i en rad av istider. De utmaningar människan står inför kan inte lösas vare sig med soldans eller fossilbränsleregleringar. Det finns andra skäl att satsa på ny teknik. Dessa bör redovisas öppet. (Morality)
- "Avgifter kommer inte att lösa problemet. Det snedvrider bara konkurrensen." ((Co-benefits)
- "verkar rimligt" (Pragmatism)
- "Det är av största vikt att ett dylikt system kunde presenteras för befolkningen på ett lättfattligt sätt. Annars slår de flesta bara ifrån sig ämnet.." (Pragmatism)
- "Det vore bra att de som skitar ner miljön också får betala! Det är troligtvis det enda sättet att komma tillrätta med klimatförändringarna. Att det sedan kommer befolkningen till godo på ett eller annat sätt är ju bara en bonus." (Pragmatism)
- "EU är stort. Det som frågas efter verkar svårt att driva igenom i dom östra länderna inom EU." (Co-benefits)
- "Har svårt att se detta som något annat än en krånglig omfördelning av pengar från de som har mer till de som har mindre. Bättre att använda sig av en reguljär CO2-skatt eller cap and trade-system där nräkterna går in i den allmänna statsbudgeten och sedan omfördelas på vanligt politiskt vis. Det är trots allt viktigt att behålla incitament att arbeta, utbilda sig mm. Oklart varför den mest effektiva metoden skulle vara en rak omfördelning till samtliga. Isåfall så kommer detta faktum påverka andra stöd- och skattesystem som kommer behöva ta höjd för detta. Ska exempelvis socialbidrag mm sänkas i motsvarande mån som CO2-pengarna tillkommer? Om" (Morality)
- "Intressant idé" (Co-benefits)
- "Förslaget tappade mycket i mina ögon när det står att "det kommer leda till ökning av förnybar energi". Målet kan aldrig vara förnybar energi utan hållbar energi/klimatneutral energi. Kärnkraft kan inte uteslutas. Jag kan aldrig köpa miljöpartiets retorik om att förnybar energi är det viktigaste för klimatet och att kärnkraften därmed skulle behöva avvecklas." (Co-benefits)
- "Bra om utdelningen går till individen och inte till skattesänkning." (Morality)
- "Man behöver förmodligen se till att det är kostnadsneutralt beroende på i vilket land man bor i" (Morality)
- "Världen består ju inte bara av Europa. Hur skulle fördelningen av utbetalningen säkerställas i förhållande till inbetalning?" (Pragmatism)
- "Det låter bra, men kommer återbetalningen verkligen medborgarna till del? Levande skogar, vatten och annat som nämns i texten kostar också att jobba med. Tror nog att återbetalningen blir symbolisk och den stora massan av straffskatten kommer staten till del som en namnlös klumpsumma att låta försvinna i den allmänna budgeten. Annars är det den perfekta kommunistiska lösningen, nästa steg är att införa medborgarlön till alla oavsett om du jobbar för den eller ägnar dig åt att pilla dig i naveln. Att tvinga landsbygdsbefolkningen att köpa dyra bilar med alternativ framdrivning bara för att de inte har en t-bana utanför knuten känns inte bra." (Co-benefits)
- "Förstår inte det här med att 100% av intäkterna skulle gå tillbaka till individen." (Pragmatism)
- "Det kommer troligen bli svårt att förklara för den stora massan hur detta fungerar. Jag ser mig som en mycket god läsare men undrade ändå vad det babblades om." (Morality)
- "Att ta ut denna information i media så fler kan läsa eller höra om det" (Co-benefits)
- "Detta är en idé som slår hårt mot landsbygden. De verkar inte kommas ihåg i denna kompensationstanke. I vårt land bor många på landet. Deras resor blir bara dyrare och dyrare och prioriteras sällan av politikerna. Man måste tänka på hela samhället när man planerar inte bara stadsregionerna." (Pragmatism)
- "Jag är för lite påläst för att kunna ta ställning i frågorna" (Morality)
- "spännande tanke men nog inte helt lätt att få med hela EU" (Co-benefits)
- "Viktigt är att människor utbildas. Och därmed får förståelse för de konsekvenser ens handlingar medför. Avgiften/utdelningen borde gå till skolan så att våra barn gör rätt och värnar om vår miljö redan från början." (Morality)

No systematic differences regarding respondent's wish to comment were found:

Count

		OpenQuestionResponse		Total
		No comment	Comment	
Frame condition	Morality frame	92	44	136
	Co-benefits frame	98	41	139
	Pragmatism frame	100	37	137
Total		290	122	412

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.937[a]	2	.626
Likelihood Ratio	.937	2	.626
Linear-by-Linear Association	.933	1	.334
N of Valid Cases	412		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 40.27.

V. Internal consistency for Q1–Q5 as a policy support index

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.826	.832	5

Inter-Item Correlation Matrix

	To which extent do you agree with this statement? It is easy to understand how fee & dividend would work.	To which extent do you agree with this statement? (I feel positive about an EU-level implementation of fee & dividend.)	To which extent do you agree with this statement? (It would be politically easy to implement fee & dividend on the EU level.)	To which extent do you agree with this statement? If the EU implemented fee & dividend it would be easier to achieve the shared climate goal to reduce the EU's emissions of climate-affecting gases by 80–95 % until year 2050.	To which extent do you agree with this statement? Fee & dividend would be a fair way to reduce the EU's emissions of climate-affecting gases.
To which extent do you agree with this statement? It is easy to understand how fee & dividend would work.	1.000	.506	.292	.460	.462
To which extent do you agree with this statement? (I feel positive about an EU-level implementation of fee & dividend.)	.506	1.000	.378	.680	.770
To which extent do you agree with this statement? (It would be politically easy to implement fee & dividend on the EU level.)	.292	.378	1.000	.377	.398
To which extent do you agree with this statement? If the EU implemented fee & dividend it would be easier to achieve the shared climate goal to reduce the EU's emissions of climate-affecting gases by 80–95 % until year 2050.	.460	.680	.377	1.000	.658
To which extent do you agree with this statement? Fee & dividend would be a fair way to reduce the EU's emissions of climate-affecting gases.	.462	.770	.398	.658	1.000

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