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Hidden ownership in suspicious transactions - experimental evidence on anti-money laundering reporting priorities in Norway

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A B S T R A C T

Concealing illicit funds through hidden ownership is a well-known money laundering method. This paper analyzes whether non-transparent ownership receives sufficient attention relative to other red flags of money laundering, using a randomized discrete choice experiment of 334 Norwegian anti-money laundering (AML) professionals. The results show that while unknown beneficial ownership increases the odds that a transaction is reported as suspicious, it increases reporting odds by only about half as much as unknown origin of funds. This suggests that although non-transparent ownership is considered a primary red flag of money laundering, and despite the increased attention this issue has received by international policymakers, non-transparent ownership may still receive insufficient attention by AML professionals. Paradoxically, our analysis indicates that industry professionals consider the AML reporting system to be well-functioning as there are no major differences between which transactions respondents say are reported and which transactions should be reported to combat money laundering.

1. Introduction

Money laundering is the process of concealing or disguising the original ownership and control of the proceeds of crime by making such proceeds appear to have derived from a legitimate source, cf. Art 1(3) of Directive (EU) 2015/849.[1] Money laundering cases often involve the use of shell companies and other opaque and complex corporate vehicles aimed at concealing ultimate beneficial ownership (Chaikin and Sharman, 2009).[2,3] Research has demonstrated how non-transparent ownership can make crime more profitable and attractive as it enables tax evasion, illegal insider trading, circumvention of sanctions and trade restrictions, fraud, corruption, and money laundering (Alstadsæter et al. 2022; Alstadsæter and Økland, 2022; Johannesen and Zucman, 2014; Janský et al., 2022; Janský et al., 2023; Hampton, 1995; Al-Hadi et al., 2022; Christensen, 2012; Schjelderup, 2016; Alstadsæteret al., 2019, 2018; Schwarz, 2011; Lord et al., 2019).[4] A decade ago, the OECD identified weak beneficial ownership requirements as "perhaps the biggest problem in tackling financial crime and illicit financial flows" (OECD, 2014, 46). Since then, beneficial ownership transparency has progressively gained momentum among policy makers and international organizations (Transparency International, 2020; FATF 2023b; UNCAC, 2021; OECD, 2024; IMF, 2022; World Bank, 2021, 2022). Despite an increased focus on the problem of non-transparent ownership, successive document leaks have highlighted systemic weaknesses in the

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[1] Estimating the magnitude of criminal proceeds is challenging due to its clandestine nature, though attempts have been made, suggesting that it is sizeable (Collin, 2020; Zucman, 2015; Levi, 2015; Levi and Reuter, 2006; Masciandaro et al., 2007; Ferwerda et al. 2020; Unger, 2009; UNODC, 2023).

[2] A shell company is a legal entity without active business operations or any noteworthy assets. It is not an illegal construct per se, but is often used illegitimately to conceal ultimate beneficial ownership (FATF 2012-2025).

[3] A beneficial owner means "any natural person(s) who ultimately owns or controls the customer and/or the natural person(s) on whose behalf a transaction or activity is being conducted […]", as defined by Art 3(6) of Directive (EU) 2015/849.

[4] "Non-transparent ownership", "hidden ownership", "unknown beneficial ownership", "ownership difficult to verify", and "unverifiable ownership" are terms used throughout this paper to refer to situations where the true ownership of an entity, such as a company, trust, or asset, is inaccessible or difficult to ascertain.

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anti-money laundering (AML) domain, showcasing how criminals from around the world – including allegedly corrupt government officials and other politically exposed persons (PEPs) – continue to conceal illicit funds through hidden ownership (ICIJ, 2023).[5] This raises the question of whether beneficial ownership receives sufficient attention by AML professionals. Hence, the aim of this paper is to analyze how non-transparent ownership is assessed and prioritized relative to other indicators of money laundering risk (red flags) in order to gain more insight about the effectiveness of the AML reporting system.

AML regulations require gatekeepers to the financial system, such as banks, insurance companies, auditors, accountants, lawyers and real estate agencies (referred to as regulated entities) to have AML compliance procedures in place to prevent and detect money laundering.[6] Such procedures include knowing their clients (including ultimate beneficial owners); monitoring transactions in which their clients are involved; and filing strictly confidential suspicious activity reports (SARs) to the national Financial Intelligence Unit if suspicious activities are detected (FATF, 2012). However, an absence of proper incentives and motivation (social or moral), insufficient knowledge and capacity, and/or insufficient external pressure may lead to inadequate compliance and undesirable SAR filing prioritizations by regulated entities (Parker and Nielsen, 2011).

To analyze the effects of different red flags on SAR filing priorities, and to assess the extent to which industry experts perceive the AML reporting system as effective, we conduct a randomized discrete choice experiment (DCE) to elicit the stated relative importance of selected red flags as judged by 334 Norwegian AML professionals.[7] Respondents to our survey were randomized into two different question framing conditions. Respondents in the first condition were presented with pairs of financial transactions characterized by the presence or absence of a set of red flags, and asked which transaction had the *highest probability of being reported* as suspicious. Responses from this condition permit us to estimate the effect of non-transparent ownership and other red flags of money laundering on the odds of a transaction being reported as suspicious. Respondents in the second condition were presented with the same pairwise comparisons of suspicious transactions, and asked which transaction had the *highest risk of involving money laundering*. By comparing responses between the two conditions, we get an evaluation of which red flags respondents believe are most likely to be reported and which red flags they believe inherently represent the greatest money laundering risks. This allows us to assess reporting effectiveness as judged by industry professionals themselves. Using a between design, we avoid answers to one question influencing answers to the other.

While hypothetical, a discrete choice elicitation of reporting prioritizations complements the analysis of observational reporting data in two important ways: First, official SAR filing code statistics permit us to see only what is reported, but the frequency of red flags in the universe of transactions from which the SARs are selected is not readily available, so red flags that are reported often may either be prioritized by regulated entities or simply be more prevalent in the underlying universe of transactions, cf. Haghani et al. (2021a, 2021b) and Miller et al. (2024).[8] In a discrete choice setting, the attributes are equally represented in the set of transactions that we ask respondents to compare, providing a more reliable estimate of the relative priority given to each red flag. Second, by forcing a choice between two transactions comprising different attributes, discrete choice data also provide better estimates of the relative importance of each attribute than do sequential survey questions.

Our results show that difficulty in verifying beneficial ownership significantly increases the chances that a transaction is reported as suspicious; the odds of a transaction being reported is about 2.8 times higher for a transaction with beneficial ownership difficult to verify compared to a transaction where ownership is known and verified. However, difficulty in verifying the origin of funds is by far the most important red flag for a transaction to be reported as suspicious and has an impact on reporting that is almost twice as high as difficulty in verifying beneficial ownership. In other words, non-transparent ownership does not appear to receive sufficient priority in stated reporting practice, despite it being a primary risk factor of money laundering that arguably rivals the origin of funds in importance, and in spite of the significant attention it has been receiving by international policymakers. For the other red flags studied, we find that involvement of a high-risk country, involvement of foreign PEPs, and adverse media coverage all increase the odds of a transaction being reported as suspicious, while involvement of domestic PEPs has only a marginal effect on reporting. Comparing responses across our two conditions, we detect no major differences between attributes that influence reporting and perceived money laundering risk, though involvement of a high-risk country is believed to be slightly overreported. This suggests that respondents consider the AML reporting system as reasonably well-functioning, as their views of what is most likely reported are broadly aligned with their views of what represents the highest money laundering risks.

Our study adds to an experimental literature suggesting that non-transparent ownership may receive too little priority by regulated entities. Field experiments on compliance with beneficial ownership requirements have shown that banks and other intermediary firms prove remarkably insensitive to risk in establishing shell companies and bank accounts on behalf of unknown clients, and that some are willing to sacrifice compliance in the quest to make money (Findley et al., 2013; Findley et al., 2015; Sharman, 2010; Allred et al. 2017). Our results add to this literature by providing estimates of how non-transparent ownership affects AML reporting probabilities, and how this effect compares to that of other red flags of money laundering. Methodologically, our experiment is related to the vignette experiment conducted by Ogbeide et al. (2023) on how the quality of AML risk assessments made by experts compare to those of novices. They find that both groups are overconfident about their risk judgments and that this effect is slightly more pronounced in the expert group. One interpretation of our results is that confidence in the accuracy of individual risk assessments may also extend into confidence in the reporting system working well, as reflected in the minor differences between our question framing conditions. Relatedly, experimental studies in accounting have shown that auditors sometimes fail to be sufficiently skeptical and to adequately assess red flags as indicators of fraud, mis-appropriation of assets, and earnings management (see e.g., Brazel et al. (2014); Lee et al. (2013); Bierstaker et al., 2012; Majid et al.(2001); Gullkvist and Jokipii (2013); Brazel et al. (2022)).

More generally, our paper contributes micro-level evidence to an empirical literature on the effectiveness of AML systems that in the words of Gara et al. (2023, 5) "seems to offer little beyond the comparison of different national regulatory frameworks and the analysis of rather aggregate data". Although AML regulations are implemented in most countries worldwide, we conducted the experiment in Norway because institutionally it is a well-functioning country with an internationally oriented economy. These are favorable conditions for studying how red flags are assessed and prioritized to produce desired outcomes, and any indications suggesting that the system is not working well also has implications for countries where regulatory compliance conditions are less favorable. The findings of our study are of value to policy makers

[5] A politically exposed person (PEP) is "a natural person who is or who has been entrusted with prominent public functions […]" and includes certain family members and close associates, as further specified by Art 3(9) of Directive (EU) 2015/849.

[6] Entities and professionals defined as "regulated entities" may vary depending on jurisdiction. For example, lawyers are considered regulated entities in the European Union and Norway, but not in the United States.

[7] Replication data and code available at Mendeley Data, cf. Bjønness and Kolstad (2025).

[8] Reference is made to Figure A.1 in Appendix A for an overview of official filing code statistics in Norway.

and AML professionals alike, particularly when it comes to addressing non-transparent ownership. Our results may indicate that the relatively low risk to concealing their identity through opaque legal structures may make this a profitable strategy for money launderers, particularly where they can engage in legitimate business activities to ease blending of clean and dirty money to enable provision of plausible evidence of origin of funds, thereby reducing their major risk factor for being reported by regulated entities. Hence, policy makers could benefit from implementing measures to prohibit legal constructs that enable hidden ownership and providing real-time updated ownership registries to promote transparency. Law enforcement and supervisory authorities could benefit from directing prevention, detection, and supervisory efforts towards the misuse of corporate vehicles to conceal beneficial ownership, as well as identifying businesses particularly vulnerable to the blending of criminal funds. Finally, employees of regulated entities could benefit from awareness and training on non-transparent ownership.

The paper is structured as follows: Section 2 draws on theories of regulatory compliance and the anti-money laundering literature to motivate our experimental set-up and main hypotheses. Section 3 presents our experimental design and empirical strategy. Section 4 provides the results of the empirical analysis and Section 5 critically discusses the findings. Section 6 concludes.

2. Literature, theory, and hypotheses

The literature on regulatory compliance offers a range of theoretical arguments for why regulated entities may prioritize reporting certain money laundering risk factors over others, and why these priorities may differ from regulator expectations and/or what is socially optimal. In a simple principal-agent framework (Jensen and Meckling, 1976), the regulated entity (agent) objective of maximizing profits differs from the regulator (principal) objective of fighting money laundering. The regulator may try to align the two by introducing incentives for regulated entities to report transactions involving money laundering correctly. However, since regulated entities have private information on their client base, and their own costs of compliance, such incentives may be imperfectly targeted. In deciding which transactions to report, the regulated entity will then compare the expected costs of non-compliance (the detection probability times the punishment imposed by the regulator) with the benefits of non-compliance, cf. Becker (1968); Shavell (2004); Ehrlich (1972); Stigler (1970). The benefits of non-compliance include avoiding costs of meeting AML compliance requirements in terms of time and company resources that could otherwise be spent on core business activities, as well as any clients or business forgone as a result of suspicious transactions being reported. In terms of relative reporting prioritizations, this means that red flags that entail greater compliance costs and more lost business will be deprioritized, ceteris paribus. Alternatively, if the regulator imposes high expected costs of underreporting, but there are low costs of overreporting, the result may be extensive defensive filing in line with the crying wolf theory, leading to excessive reporting and diluted information value of the SARs (Takáts, 2009). In this case, there should be few discernable differences in reporting prioritizations between different red flags of money laundering. The above arguments are compounded by the observation that within regulated agencies there are additional principal-agent relationships, notably between management and staff tasked with implementing AML compliance.

According to (Parker and Nielsen, 2011), regulatory compliance may be influenced by a combination of factors in addition to the classic economic incentives discussed above. These factors include social motives, which imply earning approval from key stakeholders and the regulator and consequently avoiding reputational risk (Nolan and Wallen, 2021); normative motives, which are a sense of moral duty that represents internalized value-based judgements (Tyler, 2006); knowledge and capacity people and organizations have to comply with the rules (van Rooij, 2021); enforcement strategies, inspection efforts, and sanctions by supervisory authorities (Parker and Nielsen, 2011); and external factors such as regulators' and firms' interactions with their broader social, economic, and political environments (Parker and Nielsen, 2011). Existing compliance literature typically focuses on a subset of theories and single motives (Kuiper et al. 2023). However, as compliance may have mixed motives and influences, it can vary between different regulated entities or even within a regulated entity. How this is manifested in AML compliance generally, and SAR filing specifically, needs further research. However, even if compliance behavior by and within regulated entities is influenced by a complex set of factors, what the above mechanisms suggest is that the relative prioritization of different risk factors may depend on the extent to which they entail reputation risks to the firm, moral costs to the decision maker, come up against knowledge or capacity constraints, and/or are related to external expectations and pressures.

To generate more specific hypotheses on reporting behavior, and to design a discrete choice experiment consistent with the cognitive boundaries of respondents, we use insights from the scientific and policy literature on money laundering to hone in on a set of key risk factors (red flags) that we include in our analysis. It should be noted that a red flag is context dependent and does not imply a preponderance of evidence that money laundering or some kind of predicate offence has occurred. The threshold for filing a SAR is very low and only requires "reasonable grounds to suspect that funds are the proceeds of a criminal activity" (FATF 2012,19). Consequently, regulated entities must be able to identify red flags, assess whether these are possible indicators of money laundering risk in the specific case at hand, conduct further investigations to uphold or refute the suspicion, and subsequently file a SAR if suspicions are sustained (FATF, 2012).

To assist regulated entities in assessing money laundering risk and identifying suspicious activities, authorities have compiled various red flag indicator lists (see e.g., European Commission (2019); EU (2023); FATF (2012-2025); Økokrim & Politiets sikkerhetstjeneste, 2022; Finanstilsynet (2022); Tilsynsrådet for advokatvirksomhet (2021); Lotteri- og stiftelsestilsynet, 2021; NTAES (2017–2022)). These lists seem to have limited basis in scientific research but appear to be generally accepted by the AML community. The lack of systematic empirical evidence in the AML domain has been subject to criticism, and some argue that policy makers are "quoting and re-quoting what is convenient and [in] making use of very narrow literature bases" (van Duyne, Harvey, and Gelemerova, 2018, 13). Nevertheless, we have drawn on a combination of current observations, guidance, policy documents, legislation, and academic literature to identify relevant red flags for the purpose of hypothesizing and testing SAR filing prioritizations.

The fundamentals of AML compliance is knowing who the ultimate beneficiaries to a transaction are, as well as knowing where the money comes from (FATF, 2012). Hence, primary red flags include difficulty in verifying beneficial ownership and difficulty in verifying the origin of funds.[9] Uncertainty about beneficial ownership can make it challenging to ascertain whether funds are the proceeds of crime (Christensen, 2012). A range of secondary red flags may contribute to raising suspicion even if ownership and origin of funds appear transparent and legitimate. We have chosen the following three for inclusion in our analysis:

[9] For the purpose of this paper, "difficult to verify" may encompass not only beneficial owners and origin of funds that are "impossible" to verify, but also circumstances where it would be prohibitively costly, time consuming, or otherwise too resource demanding to obtain absolute verification, or where it would be practically impossible to validate through independent sources and where reliance on client information may be the only practical solution, which in turn may represent increased risk.

1) Involvement of PEPs. A PEP is an individual who holds or has held a prominent public position or function, such as a government official, senior executive in a state-owned enterprise, or a high-ranking political party official, including certain of their family members and close associates, cf. Art 3(9) of Directive (EU) 2015/849. By virtue of their public powers, position, and access to state resources, PEPs face opportunities to use their positions for personal gain through kickbacks, bribes, nepotism, and other undue advantages or by simply directing public funds to themselves or close associates (see e.g., (Pieth and Søreide, 2023); Graycar and Smith (2011); Rose-Ackerman (2007); Gordon (2009); Chaikin and Sharman (2009)).
2) Involvement of high-risk jurisdictions. These include countries with significant deficiencies in their AML regimes; countries prone to corruption; sanctioned countries; and countries promoting corporate secrecy, e.g., through non-transparent ownership and legal constructs such as trusts and bearer shares[10,11] (FATF 2023c; OFAC, 2024; United Nations, 2024; European Commission, 2024; Tax Justice Network, 2023; Transparency International, 2023).
3) Adverse media coverage. This includes negative information indicating suspicious activities which may be revealed through news articles, press releases, social media, regulatory filings, public records, ongoing criminal proceedings and convictions, online data leaks, and other open or semi-open sources (FATF, 2012).

Based on the preceding discussion, we formulate three main hypotheses which reflect what reporting prioritizations should look like if the AML system is well-functioning. Under favorable conditions, where respondents are truthful about their reporting priorities, and regulated professionals and entities are properly incentivized, motivated (socially or morally), have sufficient capacity, and/or face sufficient external pressure, we expect the following: The two primary red flags – difficulty in verifying beneficial ownership and difficulty in verifying the origin of funds – should be close to equally important in shaping reporting priorities as they are both fundamental to AML compliance. This is our first (null) hypothesis.[12] Moreover, we expect each of these primary red flags to be more important for reporting than each of the selected secondary red flags, including high-risk country, PEPs (foreign or domestic), and adverse media coverage. This is our second hypothesis. Finally, we should see little deviation between answers on which red flags are most likely reported and answers on which red flags represent the highest risk of money laundering. This is our third (null) hypothesis. As arguments from the above discussion of regulatory compliance theory suggest, these three hypotheses need not hold if alternative costs of compliance, reputational risks, moral costs, capacity constraints or external pressures differ between these red flags, or if they are sub-optimally incentivized by the regulator.

An additional concern which arises from the theoretical discussion above is that wealthier or more important clients may be able to escape reporting by regulated entities. A study by Findley et al. (2015, 160) suggests that "material self-interest remains an all-too-powerful temptation to violate international standards" when it comes to choosing between business and AML compliance. To more directly explore this possibility, we include a sixth transaction attribute that captures reporting entity self-interest in the form of securing future business from a client. Under favorable compliance conditions, SAR filing should not be influenced by self-interest. We formulate this as a fourth, auxiliary (null) hypothesis. As answers from respondents from regulated entities may be self-serving on this aspect, we also test whether respondents from non-regulated entities (which includes regulators, law enforcement, and supervisory authorities) differ in their assessment of the effect of securing future business opportunities on reporting priorities.

Because assessment of red flags may vary between and within different regulated entities, demographic variables and other corporate and personal characteristics can be important explanatory variables to filing priorities. These may include a combination of several factors outlined in the compliance model by (Parker and Nielsen, 2011), manifested in variables such as the respondents' education level and years of work experience; the extent of work tasks associated with AML; hierarchical work position; the size of the regulated entity in which the respondent is employed; the regional base of the organization; and corporate AML compliance culture. These variables could possibly correlate with each respondent's assessment of the relative importance of various red flags which influence stated SAR filing priorities, as well as the trade-offs between these characteristics. However, the inclusion of fixed effects in our estimations rule out results being driven by these types of respondent characteristics.

3. Data and empirical strategy

3.1. Sampling

Our experiment was implemented through an online survey using 334 Norwegian AML professionals as respondents. Recruitment of respondents was facilitated by industry organizations of regulated entities subject to AML reporting obligations and achieved through calls for survey participants in industry journals and newsletters, and at industry conferences.[13] Data was collected during the period September 27 to November 24, 2023. While recruitment through industry channels ensured that respondents had a background relevant for making informed judgements about money laundering risks, our sample is a selected one of professionals reachable through our channels of data collection and willing to answer our survey. We do not claim that our results are representative for the population of Norwegian AML industry professionals. [14]

Table B.2 in Appendix B presents descriptive statistics on our sample and shows that almost 87 per cent of our respondents work in regulated entities, with the remainder working in supervisory authorities, law enforcement, or other relevant non-regulated entities.[15] Of the regulated entities, almost 40 per cent of respondents work in the financial industry (banking, forex, payment services, or insurance), while the other 60 per cent work in designated non-financial businesses and professions (auditing, accounting, real estate, and law). A more detailed breakdown on industry is provided in Table B.3 in Appendix B, showing that banking and accounting firms make up about a third of our respondents each, reflecting the higher response rates for the AML conference and accounting organization channels of data collection, while responses

[10] A trust is a legal arrangement where one party, known as the trustee, holds and manages assets on behalf of another party, called the beneficiary (FATF, 2019). The trustee appears in documents and public registries, but the person(s) owning or controlling the entity is unknown to the public.

[11] A bearer share is a share where ownership is evidenced by the physical certificate without traceability. Whoever holds (bears) the share in their hands owns the share (FATF, 2012).

[12] All hypotheses are formally specified in Section 3.3.

[13] See Table B.1 in Appendix B for a breakdown of the data across channels, and Table D.4 in Appendix D for further details on distribution dates, channels, and targeted regulated entities.

[14] There are no official statistics on the overall size of the AML expert population, but the number of regulated entities licensed by the Norwegian Financial Supervisory Authority as per December 31, 2023, amounts to 23571 legal entities and individuals (Finanstilsynet 2024, 20).

[15] The questions on industry, organization size, location and perceived AML culture were only asked of respondents from regulated agencies, hence there are at most 290 responses on these questions. Missing observations for the gender, education level, perceived AML culture and extent of AML tasks performed variables reflect the number of respondents replying "Not relevant/ Prefer not to answer" to these questions.

from auditors and law firms are sparser. Summary statistics in Table B.2 in Appendix B further show that 45 per cent of respondents are male, 43 per cent have a master's degree or higher, 63 per cent have an education in business and economics, and three quarters of respondents have more than 10 years of work experience. A little more than a third of respondents work in large organizations (more than 100 employees), a little over half in an organization located in a large city, and 44 per cent are in management positions. On being asked to grade the AML culture in their organization on a 1–5 scale, the mean grade is four, and almost 80 per cent of respondents rate the AML culture in their organization as good or very good. Grading the extent to which their job consists of AML related tasks on a 1–5 scale, the mean response is 3.7, with more than 60 per cent stating that their job involves these tasks to a large or very large degree.

3.2. Experimental design

Our experiment was designed to identify which red flags are most likely to be reported by a regulated entity; whether there is a discrepancy between what is most likely reported and what is considered the highest risk of money laundering; and whether regulated entity self-interest impact filing prioritizations. We chose a discrete choice experimental design, which makes respondents able to evaluate multiple attributes simultaneously and face trade-offs between them, providing a view of attribute priorities for which a ranking and rating exercise through sequential survey questions would be less suited. Though hypothetical, stated preference data from discrete choice experiments are useful when the analysis of revealed preference data based on actual choices is constrained by limited data on attributes of available alternatives and in the absence of real-world variability in relevant attributes (Haghani et al., 2021a).

In our experiment, respondents were asked to compare eight sets of two hypothetical transactions for money laundering reporting (or risk) potential. An example of a comparison or choice set is presented in Table 1.

Each transaction in the discrete choice experiment was described through six attributes, with two or three levels for each attribute. The number of attributes was limited to six, to minimize the risk of cognitive fatigue, experimental complexity, and confusion in responding to the survey while still yielding sufficient alternatives and promoting choice consistency, as advised by Caussade et al. (2005). The full set of attributes and levels are provided in Table D.1 in Appendix D. As discussed in Section 2, the first five attributes were selected because they are considered key risk indicators of money laundering. Additionally, an attribute regarding "self-interest" was included to test whether commercial considerations in terms of likelihood of continued business with the client would influence relative filing priorities.

A pilot study was conducted in August 2023 where 15 subject matter experts who would not be responding to the final survey were asked to complete the questionnaire. Subsequent debrief interviews were conducted and lead to several minor adjustments to ensure that respondents understood the definitions of attributes and levels; could cope with the number of attributes and number of choices; understood the choices; and found the response alternatives in the demographic questions exhaustive, in line with best practices outlined by Ryan et al. (2012). The attributes were all considered relevant for inclusion in the choice sets, including the self-interest attribute. None were deemed to consistently dominate or rule out any other attribute, and no alternative attributes were suggested to replace the ones chosen.

The final choice sets were selected through an efficient design approach based on priors from the pilot study. An efficient design, as opposed to an orthogonal design, was chosen to increase the precision of parameter estimates, i.e., minimize the standard errors of the estimated coefficients, allowing some correlation between attributes, which a perfect orthogonal design would not allow (Ryan et al. 2012). The goal of the analysis is to estimate the relative importance of each of the various attributes, denoted β_i, which represents the weight the respondents give to the attributes in the experiment (Train, 2009). An efficient design minimizes the size of the variance-covariance matrix given a prior for β_i, while at the same time constructing the choice sets in such a way so as to maximize the precision of the estimates of β_i (Zwerina et al., 1996).[16] To avoid order effects, respondents in each group were also randomized into four different blocks where the order of the attributes was altered, with the four blocks being identical across the two conditions.

In our survey, the 334 respondents were randomized into two conditions which each contained 174 and 160 respondents, respectively. We deliberately chose a between-subjects design, with randomized assignment to two different question framing conditions rather than a within-subjects design where each respondent would be asked the two questions in turn, as we wanted to avoid responses to one question influencing the other.[17] Randomization also ensures that differences in responses across conditions are not driven by unobserved differences between respondents in the two groups, which permits identification of the causal effect of question framings on responses to the discrete choice experiment (de Quidt et al., 2019). In comparing the two alternatives in each choice set, respondents in the first condition were asked the question: *"Which transaction do you believe is most likely to be reported by a regulated entity?"* To minimize response bias, the respondents were not asked what they or their organization of employment would most likely report, but rather what they believe regulated entities in general would most likely report. Respondents in the second condition were asked: *"Which transaction do you believe has the highest risk of money laundering?"* The purpose of framing the questions differently was to test whether there is a difference in which red flags respondents believe are most likely to be reported and which red flags they believe inherently represent the highest money laundering risks.

Our study is reasonably well-powered to test effects of the attributes of interest within treatment conditions, but statistical power for comparisons across treatment conditions and across respondent sub-groups

Table 1
Sample choice set of discrete choice experiment.

Attribute	Transaction A	Transaction B
Ultimate beneficial owners	Difficult to verify	Known and verified
Transaction geography	Involves low risk country	Involves high risk country
Adverse media coverage on suspicious activities	Yes	No
PEP (politically exposed person)	Domestic	Foreign
Origin of funds	Known and verified	Difficult to verify
Likelihood of continued business with this client	Low	High

[16] We used the Stata dcreate command to generate a D-efficient design. The resulting frequencies of the red flags in our design are presented in Table D.2 in Appendix D, and correlations between the attribute levels are presented in Table D.3 in Appendix D. The negative correlations between Origin of funds, Adverse media coverage and Unknown beneficial owner reflect significant positive estimates for all three attributes in the pilot, the efficient design hence increases the information gained from respondent choices by making them face trade-offs.

[17] The experimental design also included two priming treatments (in addition to the two question framing conditions) and a control group without priming, but because there is little evidence that these priming treatments had any effect, we report only aggregate results for the two conditions. Please see Appendix E for further details.

may be lower.[18] In Table B.4 in Appendix B we test for balance across conditions on respondent characteristics. The final column contains the p-value of a *t*-test which shows that the mean of each variable is the same across conditions. Our conditions are balanced as we do not get significant p-values for any of the eleven variables.

3.3. Empirical strategy

The discrete choice experimental design generated 16 observations for each respondent (8 choice sets, 2 transactions in each), which implies a total of $16 \times 334 = 5344$ observations and subtotals of 2784 observations for the likelihood of reporting question and 2560 observations for the money laundering risk question.[19] The data from the discrete choice experiment was analyzed using conditional logit estimation. The formal specification is as follows:

$$\Pr(y_{ijt} = 1 | \boldsymbol{x}_{ijt}) = F(\alpha_{ij} + \boldsymbol{x}_{ijt}\beta) \quad (1)$$

Here, the dependent variable y_{ijt} is a dummy variable capturing whether the respondent selects transaction A or transaction B as having a greater chance of being reported or greater risk of money laundering, respectively. $\boldsymbol{x}_{ijt}$ is the vector of attribute levels for individual i's choice set j and alternative t, with the attribute variables listed in Table D.1 in Appendix D. This type of estimation is essentially a logit estimation with fixed effects at the respondent-choice set level, where the cumulative logistic distribution is given by $F(z) = \frac{\exp(z)}{1+\exp(z)}$. We therefore only used within-respondent variation in responses in the estimation of how attributes impact choices. The conditional logit model controls for any unobserved characteristics that are constant within a choice set, including respondent characteristics.

The four hypotheses presented in Section 2 can be formally specified as follows. Let β_i^j denote the coefficient of attribute i in condition j. Our first hypothesis addresses the relative importance of the two primary attributes, difficulty in verifying beneficial ownership ($i = UBO$) and difficulty in verifying the origin of funds ($i = orig$), in the reporting condition ($j = rep$). Against a null hypothesis that their effect on reporting is the same, we test the following alternative hypothesis:

$$H_A: \quad \beta_{UBO}^{rep} \neq \beta_{orig}^{rep} \quad (2)$$

The second hypothesis relates to whether each of the two primary attributes is more important than each of the secondary attributes in the reporting condition. Against the null hypotheses that primary and secondary attributes matter equally, we test the following alternative hypotheses:

$$H_A: \quad \beta_{prim}^{rep} > \beta_{sec}^{rep} \forall prim \in \{UBO, \quad orig\}, \quad sec \in \{high\ risk\ country, \quad pep\ foreign, \quad pep\ domestic, \quad adverse\ media\} \quad (3)$$

Furthermore, the third hypothesis relates to whether there is any deviation in answers on which red flags are most likely reported (β_i^{rep}) and answers on which red flags represent the highest risk of money laundering (β_i^{risk}). Against the null hypotheses that each attribute matters equally in both conditions, we test the alternative hypothesis below.

$$H_A: \quad \beta_i^{rep} \neq \beta_i^{risk} \forall i \quad (4)$$

We analyze the difference between the two conditions in two ways; by splitting the sample and through an analysis of the full sample where we include interaction effects between all attribute variables and a dummy for the money laundering risk probability condition to gauge whether any differences in estimates between the two conditions are statistically significant.

Finally, our fourth hypothesis asks whether reporting is influenced by self-interest in the form of securing future business from a client ($i = bus$). Against the null hypothesis that future business does not affect reporting, we test the alternative hypothesis that it affects reporting negatively:

$$H_A: \quad \beta_{bus}^{rep} < 0 \quad (5)$$

As answers from respondents from regulated entities may be self-serving, we also analyze whether respondents from non-regulated entities (which includes regulators, law enforcement, and supervisory authorities) differ in their assessment of the effect of securing future business opportunities on reporting priorities, though we note that given the small number of respondents from non-regulated entities in our sample, statistical power in making this comparison is low.

For robustness, we added results from mixed logit estimations, which also provide an analysis of the extent of heterogeneity in attribute effects across respondents, which we explore further through analysis of subsample differences in responses.

4. Main results

Our main results are summarized in Fig. 1, which provides estimates from our conditional logit regressions. The results are presented as odds ratios; estimates above 1 entail that the attribute level in question leads to an increase in perceived reporting probability (black dots) or money laundering risk (gray tilted squares), whereas an estimate below 1 means that an attribute level is associated with reduced reporting probability or money laundering risk. Full estimation results are also displayed in Table C.1 in Appendix C, where the first and second columns present separate results for the conditions receiving the reporting probability and the money laundering risk question, respectively. Results in the third column uses the full sample and includes interaction terms between a dummy variable of whether a respondent was in the money laundering risk condition and the attribute variables, to check whether differences across conditions are statistically significant. The individual term (dummy) for the risk of money laundering condition is subsumed by the fixed effects in the third column estimation.

The attributes are presented in order of decreasing importance in the probability of reporting condition, and we first discuss the results for this condition, represented by the black dots in Fig. 1. Difficulty in verifying the origin of funds is by far the most influential attribute in the assessment of reporting priorities; the point estimate in column one of Table C.1 in Appendix C suggests that a transaction where the origin of funds is difficult to verify has 5.5 times higher odds of being reported compared to a transaction where the origin is known and verified. This is almost twice as high as the impact of difficulty in verifying beneficial

[18] For attribute effects in the reporting condition, which is what we test in hypotheses 1, 2 and 4, we use the method of de Bekker-Grob et al. (2015) to assess the minimum sample size required to capture estimates from our pilot data at 80 per cent power and 95 per cent significance. While our sample of 174 is too small to capture the pilot effects for the two PEP variables, the largest minimum sample required for the other five attributes is 107, well below our sample size. To assess power to detect differences in attribute effects between treatment conditions, as in hypothesis 3, we apply the approach developed by Schuessler and Freitag (2020) for randomized DCE designs. At 80 per cent power and 95 per cent significance, we can detect a minimal average marginal component effect of 0.076 for attribute-treatment interaction terms. While this is larger than the median effect of 0.05 from DCEs found in meta-studies, the absence of related DCE studies incorporating a question framing treatment means there is little existing guidance on what would count as a small effect size in our case. Moreover, as this approach was developed for randomized DCE designs, which include more uninformative choice sets than an efficient design, these calculations of minimal detectable effects may well understate the power of our design.

[19] Each respondent generated 16 observations because each comparison is represented by two rows in the dataset – one for the selected transaction (dependent variable = 1) and one for the transaction not selected (dependent variable = 0). The conditional logit model accounts for this structure through fixed effects identifying each choice set.

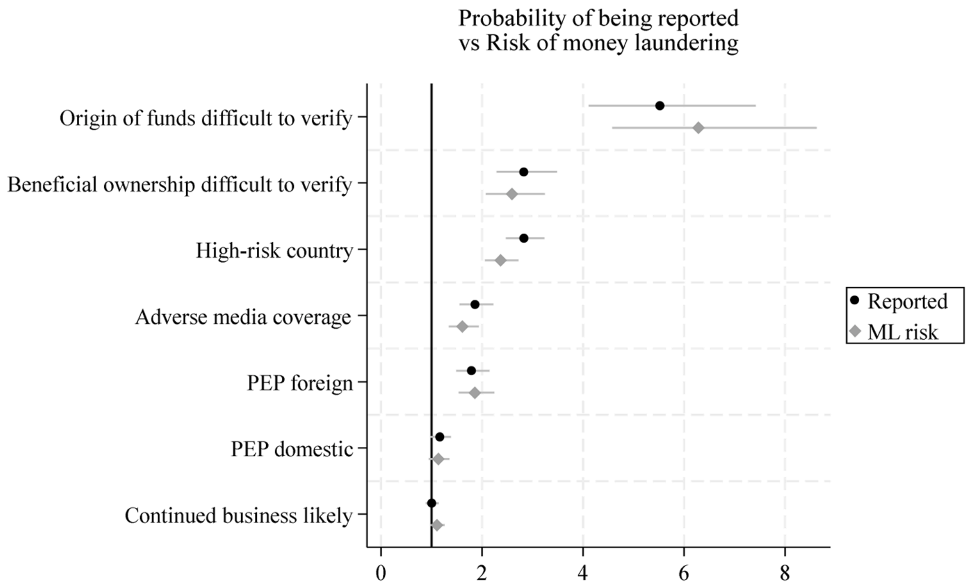

Fig. 1. Results by question asked (odds ratios with 95% confidence intervals).

ownership or a high-risk country, which have almost identical estimates of 2.8.

In terms of statistically different impacts, the variables fall into four categories. The origin of funds variable estimate is significantly greater than the estimates for each of the other attributes ($p = .0000$ for all the other attributes). This means that for our first hypothesis we reject the null hypothesis that the effect of difficulty in verifying beneficial ownership on reporting probabilities is the same as that of difficulty in verifying the origin of funds; difficulty in verifying beneficial ownership has a significantly lower effect on reporting.[20] The estimates of beneficial ownership difficult to verify and high-risk country are statistically indistinguishable from each other, but both are significantly greater than the bottom four variables in Fig. 1($p = .0001$ for the high-risk country and adverse media coverage comparison, $p = .0005$ for the beneficial owner difficult to verify and foreign PEP comparison, otherwise $p = .0000$). This means that hypothesis two of the primary red flags being more important for reporting than the secondary red flags holds for all but one primary-secondary comparison, i.e. we reject the null hypothesis of no difference between primary and secondary red flags in almost all cases. Among the four least important attributes, adverse media coverage and foreign PEPs have statistically indistinguishable estimates of about 1.8 and are both more important than domestic PEPs and likelihood of continued business ($p = .0000$ for all comparisons with these two variables). Finally, whether a domestic PEP is involved in a transaction marginally increases the odds that it is reported, while likelihood of continued business with a client has no significant impact.

Comparing results for the condition where respondents were asked about the likelihood of reporting (the black dots in Fig. 1) and the condition where they were asked about money laundering risk (the gray tilted squares) reveal few differences. Overall, industry professionals' assessment of which transactions are most likely reported accords well with their beliefs of which transactions represent the highest money laundering risk. The relative importance of the attributes is almost the same for the money laundering reporting condition as for the risk condition. The difference in importance of the origin of funds variable and beneficial ownership variable grows even larger in the money laundering risk condition, the point estimates of adverse media coverage and foreign PEP change places when ranked by importance, and domestic PEP is assessed as unimportant for money laundering risk. But in general, the variables fall into the same four categories in terms of relative importance as in the reporting condition. Looking at the interaction effects in column three in Table C.1 in Appendix C only one variable is assessed significantly differently in the money laundering risk condition. Respondents in this condition perceive high-risk country involvement as significantly less important than respondents in the reporting condition, suggesting that industry professionals may see this attribute as overemphasized in reporting compared to the money laundering risk it poses. We note, however, that this difference is only significant at the 10 per cent level, and with seven interaction terms tested, could result by chance. In sum, for our third hypothesis our results do not allow us to reject the null hypothesis that coefficients in the reporting and money laundering risk condition are the same, with the exception of one attribute.[21] Since power may be lower for the interaction effects, however, we note that while our analysis rules out major differences across conditions, our analysis may not be able to pick up small differences.

As shown in Table C.4 in Appendix C, the results are broadly robust to using mixed logit estimation; the attributes fall into roughly the same ranking in terms of importance. The estimated heterogeneities in respondent perceptions, captured by the standard deviations in the bottom panel of Table C.4 in Appendix C however that there is significant variation between respondents in how important they believe several of the attributes are for reporting and money laundering risk. Significant heterogeneity is found for the variables origin of funds, beneficial ownership, high-risk country, adverse media coverage and the likelihood of continued business. In further estimations, we explore key correlates of some of these heterogeneities by examining differences in responses between subgroups of respondents. We stress that the following analyses of response heterogeneity are descriptive and explorative, since we separate respondents based on their place of employment, which is endogenous.

[20] In Table C.2 in Appendix C, we also present estimations including an interaction effect between these two variables. We see no evidence of significant interaction effects.

[21] Based on the argument that assignment in discrete choice experiments is at the choice set level (Schuessler and Freitag, 2020), following Abadie et al. (2023) we use robust standard errors for our main results. In Table C.3 in Appendix C we show, however, that results are robust to using standard errors clustered at the respondent level. The only exception is that the difference in the effect of high-risk country between treatment conditions becomes insignificant when errors are clustered.

The likelihood of continued business is, as mentioned, unimportant for the odds of reporting as judged by the respondents. Since most respondents are from regulated entities, who may have some bias in claiming reporting priorities are not driven by corporate self-interest, we also investigate differences in responses between respondents from regulated and non-regulated entities. In Table C.5 in Appendix C we present results for the sub-sample of respondents from non-regulated entities in column one and regulated entities in column two. Neither group sees future business opportunities as a constraint on reporting, though with only 44 respondents in the non-regulated entity subgroup, statistical power is low in this case. Nevertheless, for hypothesis four our data does not permit us to reject the null hypothesis of no effect of continued business on reporting.

A couple of other results from Table C.5 in Appendix C shed further light on the other findings discussed above. The relative importance of the origin of funds variable relative to beneficial ownership (as measured by their ratios) is smaller for the non-regulated entities than for the regulated entities, suggesting that respondents from non-regulated entities see less of a difference in importance of difficulty in verifying beneficial ownership for reporting than perceived by respondents in regulated entities. Moreover, the perceived over-emphasis of the high-risk country attribute reported in the preceding paragraph seems to be driven by responses from regulated entity staff. Columns three and four in Table C.5 in Appendix C provide some additional detail here by disaggregating respondents from regulated entities into non-financial (column three) and financial (column four) institutions, and the results suggest that the over-emphasis on high-risk countries in reporting reflects primarily views of respondents in the financial services industry. We find similar patterns if we disaggregate by institutional size and location,[22] the perceived over-emphasis is driven by respondents from larger entities located in large cities, but as both are positively correlated with being a financial institution, we cannot distinguish what is the source of the underlying heterogeneity. This nevertheless suggests that institutions that are more engaged in international business, perceive the attribute of high-risk country to be overreported compared to its money laundering risk.

5. Discussion

Regulated entities play an important role in preventing and detecting profit-motivated crime and must be able to accurately assess red flags as indicators of money laundering risk to identify suspicious activities eligible for reporting. The above results provide insight about the effectiveness of the AML reporting system and in particular how non-transparent ownership is assessed and prioritized relative to other indicators of money laundering risk. While one might argue that a discrete choice experiment is not a realistic representation of the AML work process, this approach was chosen for its methodological advantages over sequential questions on the importance of individual red flags. A discrete choice experiment forces the respondent to make one choice over another which provides information on strength of reference, trade-offs, and probability of take-up which a ranking and rating exercise would not provide (Ryan et al. 2012). The finding that difficulty in verifying beneficial owners appears to be prioritized less strongly than difficulty in verifying the origin of funds, and that the AML system is seen as well-functioning since views are aligned regarding risk and reporting, are both striking. In the following two subsections, we discuss alternative interpretations of these main findings.

5.1. Reporting prioritizations

Understanding the relative importance of selected red flags sheds light onto the reporting priorities and risk assessment regulated entities place on suspicious activities triggering reporting. Our results show that difficulty in verifying the origin of funds is by far the most important red flag for a transaction to be reported as suspicious. Contrary to expectations and considering the increased attention non-transparent ownership has been receiving in AML policy debates, difficulty in verifying beneficial ownership is not nearly as important for reporting. Our experimental design ensures that these results are not due to order effects. In particular, the order of the six attributes were varied across blocks to prevent attribute order affecting responses, and in the resulting choice sets origin of funds did not feature more prominently than difficulty in verifying beneficial ownership. The results may nevertheless be subject to different interpretations, some of which can be ruled out through our study design and additional analyses.

First, one may argue that lack of ownership registries to enable AML compliance may cause regulated entities to think that verification of ultimate beneficial ownership is not that important for reporting purposes. This argument comes in two forms. The first is that without access to comprehensive ownership registries, or due to the administrative challenges in verifying ownership more generally, it becomes practically difficult to distinguish between high-risk and low-risk transactions on this dimension. As a result, it may not be used in discerning between transactions in reporting. However, in this event we should see a discrepancy between responses to the reportability and risk questions, respectively, which is not the case. The second form of the argument would be that the lack of ownership registry adoption provides a signal from the regulator that ultimate beneficial ownership is not all that important for money laundering risk, which is consistent with our results of no difference in the importance of this attribute across the two conditions.

Second, it may be unclear whether respondents would consider difficulty in verifying beneficial ownership a relevant red flag for reporting purposes in practice. AML regulations require regulated entities to verify beneficial ownership during the client onboarding process, and some may argue that a client whose beneficial owner is unknown or difficult to verify would not be onboarded in the first place, consequently eliminating this red flag in the onboarding process. However, the question framing conditions were designed to request respondents to objectively choose between two transactions in assessing reportability (or risk) in hypothetical scenarios, hence such considerations should not technically matter. The fact that beneficial ownership is included among the choice set attributes suggests that it should be hard to assume away this risk factor with reference to client onboarding.

Third, because Norway and the Nordic countries may be considered among the world's most trust based cultures (Bjørnskov, 2021), it raises the question whether regulated entities simply trust the documentation provided by the client (or the client's counterparty) at face value, and fail to recognize the importance of verifying the validity of this documentation. This not only goes for the validity of the ID document itself, but to verify that the person is in fact the beneficial owner and not simply a nominee or a straw man. However, since our discrete choice setup explicitly states that beneficial ownership for some transactions is difficult to verify, this type of interpretation does not seem to hold.

Fourth, it is possible that stated priorities may be influenced by availability bias, a mental "shortcut" that relies on recent examples that come to a person's mind when making a specific decision (Tversky and Kahneman, 1974). This theory suggest that even experts, such as AML professionals, make biased judgments when facing uncertainty and may prioritize red flags that they are more familiar with and that are reported more frequently and recently, regardless of relative importance, which may suggest that the selected five red flags we are testing may be prioritized in line with the frequency of SAR filing code statistics reported by the Financial Intelligence Unit, as displayed in Figure A.1 in Appendix A. PEPs and adverse media coverage are not included in the filing code list, so according to the same theory these may be considered the least important or not important at all. At first glance, this may explain why the results generally are in line with official filing code

[22] Results available upon request.

statistics. However, looking at the response demographics, we see that approximately two thirds of respondents from regulated entities represent designated non-financial businesses and professions (non-finance), which is a group of regulated entities that files substantially fewer SARs than for instance banks (finance) – and many of these respondents have likely never been involved in filing a single SAR. Results within this group still indicate that difficulty in verifying beneficial ownership is not nearly as important as difficulty in verifying the origin of funds, which suggests that availability bias most likely cannot explain the difference. Of course, it remains possible that this subgroup of respondents is cognizant of the overall reporting statistics. Relatedly, respondents could have succumbed to the representativeness heuristic, cf. Tversky and Kahneman (1974) and Kahneman and Tversky (2013). If they believe that difficulty in verifying the origin of funds is representative of money laundering, they may overestimate its predictive power. Similarly, they may overestimate the importance of certain red flags in lack of context or additional information about the transactions, in line with "what you see is all there is" (Enke, 2020; Kahneman, 2011).[23] However, as respondents are experts in the field, these points are less likely, but nevertheless a possibility.

Fifth and finally, one could argue that because AML regulations require a risk-based approach, respondents representing regulated entities may answer the survey influenced by their own decision-making context, i.e., the highest risks to which their own employer is exposed, and not necessarily what they would otherwise objectively assess as highest risk or most likely reported, regardless of context. If many respondents rarely encounter clients with unverifiable ownership, this may cause them to assess this risk as less important. Our study does not include information on respondents' client portfolio characteristics, which could have contributed to shedding light on this possibility.

While our analysis focuses on the effect of non-transparent ownership on reporting, the remaining red flag reporting prioritizations also invite some reflections. It is perhaps not too surprising that high-risk country, involvement of foreign PEPs, and adverse media coverage increase chances that a transaction is reported as suspicious. More striking is the fact that involvement of domestic PEPs is of only marginal importance for reporting. The latter could be attributable to Norway's high level of confidence in public institutions and general trust-based culture (Bjørnskov, 2021). However, considering recent years' massive media coverage of Norwegian PEPs and their close associates' involvement in cases of conflicts of interest, allegations of insider trading, abuse of public office, travel expense fraud, and tax evasion (Milne, 2021; Milne, 2023) it is noteworthy that respondents nevertheless believe that domestic (Norwegian) PEPs are only marginally relevant for AML reporting.

5.2. Reporting vs. risk and self-interest

The results show that there are no major discrepancies between which red flags are most likely to be reported and which red flags represent the highest risk of money laundering, except high-risk country, which appears slightly over-reported compared to the risk it is perceived to pose (though this result is only significant at 10 per cent and not very robust). Apart from this minor difference, industry professionals seem to believe that the AML reporting system generally works well, as their views of what is most likely reported are broadly aligned with their views of what represents the highest money laundering risks. Our between-subjects design ensures that these results are not due to responses to one question influencing the other, and randomization means that that differences in responses across question framing conditions are not driven by unobserved differences between respondents across groups. Moreover, in the reporting condition, respondents were not asked what they themselves or their organization of employment would most likely report, but rather what they believe respondents from regulated entities in general would most likely report. We framed the question in this way as to minimize self-interest bias and hypothetical bias, which are general concerns in discrete choice experiments where choices have moral aspects (Bocian and Wojciszke, 2014; Haghani et al. 2021a, b).

A possible alternative interpretation of this result can however be derived from the theory of cognitive scripts. "Scripts are cognitive frameworks that guide human thought and action. Although they are generally not written down, scripts contain information about the appropriate sequence of events in routine situations" (Trevino and Nelson 2021, 76). Socialization may create norms over time (Valentine and Hollingworth, 2012), and the responses to the two question framing conditions (reportability or risk) can thus be a result of respondents being influenced by mental scripts that have developed in the AML industry over the years, i.e., that respondents have been socialized into engaging in adequate compliance behavior or into believing that their behavior is optimal from a social point of view. In other words, money laundering risk perceptions may be inferred from reporting practice, rather than independently assessed.

For the one attribute where we do find a difference between reporting probabilities and money laundering risk, heterogeneity analyses show that the small over-reporting of high-risk country is driven by responses from respondents from the financial sector (mainly banks). This may be because banks are more frequently involved in transactions with high-risk countries, coupled with banks' difficulty in maneuvering within the complex landscape of a continuously changing sanctions regime where they struggle to get timely advice and guidance from the authorities, possibly causing them to be more cautious resulting in defensive filing, cf. (Takáts, 2009).[24] Alternatively, it may simply be attributable to banks' perception that the authorities over-emphasize high-risk countries compared to the inherent risk perceived by the financial sector.

Overall, our study suggests that regulated entities do not behave in a manner where self-interest trumps desired compliance behavior. Respondents do not perceive that future business opportunities impact reporting priorities, meaning regulated entities do not prioritize transactions differently regardless of likelihood of continued business opportunities.[25] One would think that this question is subject to self-serving or social desirability biases by respondents from regulated entities, but heterogeneity analyses show that answers are consistent across regulated entities and non-regulated entities alike, though statistical power for making comparisons between these groups is low. The self-interest attribute was assessed as relevant by the 15 pilot study respondents, and the order of appearance of all attributes were randomized into blocks to avoid order effects, so the absence of an effect does not reflect a low level of prominence in the choice sets. Nevertheless, self-interest in the form of other attributes such as client size or growth or political influence could potentially impact filing priorities; the limitations to discrete choice experiment designs did not permit the inclusion of additional attributes of these kinds. Finally, while our results do not provide evidence that self-interest based on likelihood of future business opportunities affects reporting priorities, the non-incentivized nature of our experiment means that some caution is advised in

[23] We thank an anonymous reviewer for suggesting that the representativeness heuristic and the "what you see is all there is" bias may be relevant to our analyses.

[24] The Norwegian Ministry of Foreign Affairs has received heavy criticism for long processing time and inefficient management of requests for advice and guidance by banks and other businesses engaged in transactions with sanctions implications (Rønning, 2024).

[25] Whether this reflects a reluctance on the part of reporting entity owners or managers to allow profits to influence reporting, or ineffective incentives for their employees to consider the client base when making operational reporting decisions, is an open question which our data does not allow us to assess.

drawing conclusions about the role of self-interest in reporting decisions.

6. Conclusion

The fundamentals of AML compliance are knowing where the money comes from and who the beneficiaries are. Non-transparent ownership can make it difficult to trace and verify the origin of funds, enabling criminals to move assets around the globe to evade taxation, sanctions, and criminal investigations undetected. Our paper adds to the literature by using a discrete choice experimental approach to elicit how non-transparent ownership is assessed and prioritized relative to other indicators of money laundering risk of quite a large sample of Norwegian AML professionals. To the best of our knowledge, this methodological approach has not previously been used within the AML domain and adds insight on the relative importance of transaction attributes which is difficult to obtain from observational data. Despite a substantial literature highlighting money laundering risks associated with non-transparent ownership, coupled with recent offshore leaks and media reports, our results suggest that criminal exploitation of the financial system through non-transparent ownership may get insufficient attention. Paradoxically, our study suggests that industry professionals generally consider the AML reporting system to be well-functioning.

In general, the use of different strategies by money launderers to escape attention will be a function of their costs, the extent to which they reduce risks of detection, and their benefits. Our results suggest that an effective way for money launderers to reduce the major risk factor for detection may be to engage in legitimate business activities to ease blending of clean and dirty money thereby providing plausible evidence of origin of funds. As money is fungible, this does not appear too costly a strategy for criminals but comes with social costs of increased criminal entity involvement in the legal economy. While concealing beneficial ownership through various legal structures to make it difficult to verify who ultimately owns or controls the legal entity may be more complex or costly, the relatively low risk of being flagged for opaque ownership would seem insufficient to substantially reduce the use of this strategy, particularly for larger entities which can more easily shoulder the costs thereof.

The findings of our study are of value to policy makers, enforcement authorities, and regulated entities alike. Recognizing the problems of hidden ownership, the European Union (EU) has enacted legislation requiring implementation of beneficial ownership registries across the EU and European Economic Area member states, including a system (BORIS) connecting these registries together to enable tracing of ownership across jurisdictions, cf. Article 22(1) of Directive (EU) 2017/1132. However, due to ongoing legal processes regarding lawfulness and concurrence with privacy regulations, several jurisdictions have temporarily put operationalization on hold (Martini, 2023; Open Ownership, 2024). Our study underlines the urgency of policy makers making such ownership registries with comprehensive, real-time information available to the regulated sector to enable them to comply with know-your-customer requirements within the AML framework to better prevent criminals from concealing ownership through complicated (cross-border) legal structures. Relatedly, our study implies that policy makers should provide comprehensive, real-time updated ownership registries with mandatory registration for other asset classes, such as real estate, to prevent criminals from escaping public record-keeping. Our study also underlines the importance of policy makers closing existing loopholes which permit legal constructs such as trusts, bearer shares, blank deeds, and similar vehicles thwarting ownership transparency. Some of these constructs are already prohibited in many countries, but in a global economy it is crucial to align policies to prevent criminals from concealing ownership in one country and legally operate in "disguise" in another. Our findings are also of value to law enforcement and supervisory authorities, which could benefit from directing prevention, detection, and supervisory efforts towards the misuse of corporate vehicles to conceal beneficial ownership and channeling their efforts towards what appears to be an underprioritized red flag within the AML domain. They could also benefit from targeting enforcement efforts towards businesses particularly vulnerable to blending of criminal funds. Finally, employees of regulated entities could benefit from undergoing more training and awareness directed at better identifying and reporting red flags, particularly regarding beneficial ownership.

Some limitations to our analysis should be noted. Discrete choice experiments are hypothetical and reported prioritizations in an online survey setting may not be equal to prioritizations in a real-life setting with real pressures, real risks, and more contextual information. Moreover, respondents to our survey were not asked to consider the likelihood of reporting both or neither transaction alternative presented in each choice set, so the study speaks to relative rather than absolute filing probabilities. While we have included the most relevant red flags of money laundering among the attributes, it is possible that results for an attribute reflect not the effect of that attribute in itself but unobserved transaction characteristics perceived to correlate with the attribute in question. In our experiment, the number of attributes was limited to six to minimize complexity and cognitive overload of respondents. Consequently, our study also does not provide an exhaustive prioritization of relevant red flags or different intensities of red flags, it provides an assessment of selected red flags which we have identified as important based on combination of current observations, guidance, legislation, and available literature. Moreover, we do not claim that our results are representative for the population of Norwegian AML industry professionals, as they are subject to self-selection (choosing to respond to our survey) and even double self-selection (choosing to attend an AML conference and answering our survey).

While our study provides some analysis of the mechanisms behind the prioritizations and assessments made, limitations in the scope of an online survey of busy professionals as well as privacy considerations makes more detailed analyses using data on for instance client profiles challenging. Future studies could benefit from qualitative assessments through interviews with subject matter experts in regulated entities to better understand reporting priorities generally, and apparent underprioritization of difficulty in verifying beneficial ownership relative to difficulty in verifying origin of funds, specifically. A direction for future studies is also to dig further into the self-interest aspect of reporting priorities to better understand whether regulated entities make different reporting prioritizations when business opportunities may be compromised, as the results of the present study somewhat contradict previous studies and economic theory. Finally, the experiment was conducted in Norway, a country that on the one hand has well-functioning institutions and high levels of social trust, and on the other is by no means a global financial hub. A replication of the study in other countries to test if the findings remain consistent and generalizable beyond Norway could be useful, particularly considering conflicting findings in the literature regarding SAR filing effectiveness.

CRediT authorship contribution statement

Anne Marthe Bjønness: Conceptualization, Methodology, Investigation, Writing - Original Draft, Project administration. **Ivar Kolstad:** Conceptualization, Methodology, Formal analysis, Data Curation, Writing - Review & Editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Official SAR Filing Statistics in Norway

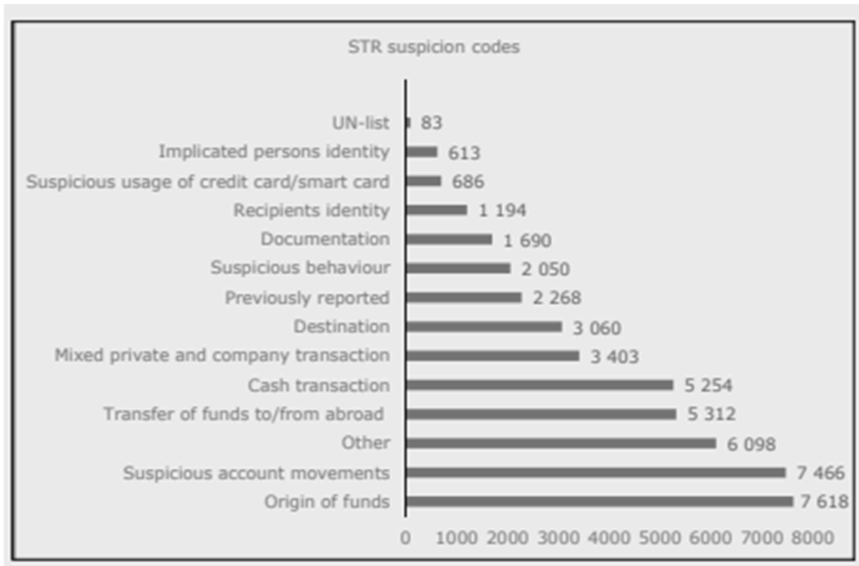

Figure A.1. Suspicious Transaction Report ("STR") filing codes used in 2022 by Norwegian regulated entities (Økokrim, 2023, 40). Note that multiple codes can be used in one transaction

Appendix B. Descriptive Statistics

Table B.1
Channels through which data were collected

Source	Frequency	Percent	Cumulative
Advokatbladet	14	4.19	4.19
Eiendom Norges Hvitvaskingsdag	40	11.98	16.17
Hvitvaskingskonferansen 2023	139	41.62	57.78
Regnskap Norge	124	37.13	94.91
Regnskap & Revisjon	17	5.09	100.00
Total	334	100.00	

Note: English translation of Norwegian channels: Advokatbladet (The Law Magazine); Eiendom Norges Hvitvaskingsdag (Real Estate Norway's AML Conference Day); Hvitvaskingskonferansen 2023 (The National AML Conference 2023); Regnskap Norge (Accounting Norway Newsletter); and Revisjon & Regnskap (Audit and Accounting Newsletter).

Table B.2
Summary statistics of respondents (individuals)

	Obs	Mean	Std. Dev.	Min	Max
Regulated entity	334	0.868	0.339	0	1
Financial institution	290	0.386	0.488	0	1
Male respondent	326	0.454	0.499	0	1
Education master's level	326	0.429	0.496	0	1
Education in economics	334	0.626	0.485	0	1
Experience more than 10 years	334	0.743	0.438	0	1
Organization size above 100 employees	290	0.372	0.484	0	1
Location large city	290	0.521	0.500	0	1
Management position	334	0.437	0.497	0	1
Perceived AML culture in organization	286	4.031	0.765	1	5
Extent of AML tasks performed	331	3.743	1.164	1	5

Table B.3
Industry breakdown of respondents from regulated entities

Industry	Frequency	Percent	Cumulative
Banking	95	32.76	32.76
Foreign exchange	1	0.34	33.10
Payment services	1	0.34	33.45
Insurance	15	5.17	38.62
Auditing	21	7.24	45.86
Accounting	106	36.55	82.41
Real estate	28	9.66	92.07
Law firm	12	4.14	96.21
Other regulated entity	11	3.79	100.00
Total	290	100.00	

Table B.4
Balance test across the two question framing conditions

	Reported	ML risk	p-value
Regulated entity	0.845	0.894	0.185
	(0.028)	(0.024)	
Financial institution	0.361	0.413	0.365
	(0.040)	(0.041)	
Male respondent	0.437	0.472	0.532
	(0.038)	(0.040)	
Education master's level	0.435	0.424	0.849
	(0.038)	(0.039)	
Education in economics	0.621	0.631	0.843
	(0.037)	(0.038)	
Experience more than 10 years	0.730	0.756	0.583
	(0.034)	(0.034)	
Organization size above 100 employees	0.333	0.413	0.164
	(0.039)	(0.041)	
Location large city	0.490	0.552	0.287
	(0.041)	(0.042)	
Management position	0.437	0.438	0.989
	(0.038)	(0.039)	
Perceived AML culture in organization	4.076	3.986	0.320
	(0.067)	(0.060)	
Extent of AML tasks performed	3.663	3.830	0.190
	(0.092)	(0.088)	
N	174	160	

Appendix C. Results

Table C.1
Results across questions asked

	(1)	(2)	(3)
Sample	*Reported*	*ML risk*	*Both questions*
Origin of funds difficult to verify	5.520***	6.282***	5.520***
	(0.83)	(1.01)	(0.83)
Beneficial owner difficult to verify	2.827***	2.594***	2.827***
	(0.30)	(0.29)	(0.30)
High risk country	2.827***	2.369***	2.827***
	(0.19)	(0.17)	(0.19)
Adverse media coverage	1.860***	1.611***	1.860***
	(0.17)	(0.15)	(0.17)
PEP foreign	1.791***	1.858***	1.791***
	(0.17)	(0.18)	(0.17)
PEP domestic	1.165*	1.136	1.165*
	(0.10)	(0.10)	(0.10)
Continued business likely	1.005	1.108	1.005
	(0.07)	(0.07)	(0.07)
ML risk * Origin of funds difficult to verify			1.138
			(0.25)
ML risk * Beneficial owner difficult to verify			0.918
			(0.14)
ML risk * High risk country			0.838*
			(0.08)

(*continued on next page*)

Table C.1 (*continued*)

	(1)	(2)	(3)
ML risk * Adverse media coverage			0.866
			(0.11)
ML risk * PEP foreign			1.038
			(0.14)
ML risk * PEP domestic			0.975
			(0.12)
ML risk * Continued business likely			1.102
			(0.10)
r2_pseudo	0.228	0.214	0.221
N	2784	2560	5344

Note: Results from conditional logit estimations, reported as odds ratios. Robust standard errors in parentheses. Column 3 adds interaction terms between the attribute variables and a dummy for whether an observation is in the in the money laundering risk condition. The ML risk dummy equals 1 if the respondent was asked about money laundering risk and 0 if asked about the likelihood of reporting. The main term for the money laundering risk condition dummy is absorbed by the fixed effects. *** indicates significance at the 1% level, ** at 5%, * at 10%.

Table C.2
Results including an interaction term between Origin of funds and Beneficial ownership

	(1)	(2)	(3)
Sample	*Reported*	*ML risk*	*Both questions*
Origin of funds difficult to verify	4.904***	6.649***	4.904***
	(1.00)	(1.42)	(1.00)
Beneficial owner difficult to verify	2.551***	2.724***	2.551***
	(0.41)	(0.45)	(0.41)
High risk country	2.801***	2.381***	2.801***
	(0.19)	(0.17)	(0.19)
Adverse media coverage	1.831***	1.623***	1.831***
	(0.17)	(0.16)	(0.17)
PEP foreign	1.774***	1.867***	1.774***
	(0.17)	(0.18)	(0.17)
PEP domestic	1.151	1.142	1.151
	(0.10)	(0.11)	(0.10)
Continued business likely	1.006	1.107	1.006
	(0.07)	(0.07)	(0.07)
Origin of funds difficult to verify*Beneficial owner difficult to verify	1.259	0.894	1.259
	(0.35)	(0.25)	(0.35)
ML risk * Origin of funds difficult to verify			1.356
			(0.40)
ML risk * Beneficial owner difficult to verify			1.068
			(0.25)
ML risk * High risk country			0.850
			(0.08)
ML risk * Adverse media coverage			0.886
			(0.12)
ML risk * PEP foreign			1.052
			(0.14)
ML risk * PEP domestic			0.992
			(0.13)
ML risk * Continued business likely			1.100
			(0.10)
ML risk* Origin of funds difficult to verify*Beneficial owner difficult to verify			0.710
			(0.28)
r2_pseudo	0.228	0.214	0.221
N	2784	2560	5344

Note: Results from conditional logit estimations, reported as odds ratios. Robust standard errors in parentheses. An interaction term between Origin of funds difficult to verify and Beneficial owner difficult to verify have been added to the specification, and a three-way interaction with the ML risk dummy in column three. The ML risk dummy equals 1 if the respondent was asked about money laundering risk and 0 if asked about the likelihood of reporting. The main terms for variables invariant across choice sets are absorbed by the fixed effects. *** indicates significance at the 1% level, ** at 5%, * at 10%.

Table C.3
Results with standard errors clustered at the respondent level

	(1)	(2)	(3)
Sample	*Reported*	*ML risk*	*Both questions*
Origin of funds difficult to verify	5.520***	6.282***	5.520***
	(0.94)	(1.18)	(0.94)
Beneficial owner difficult to verify	2.827***	2.594***	2.827***
	(0.32)	(0.32)	(0.32)
High risk country	2.827***	2.369***	2.827***

(*continued on next page*)

Table C.3 (*continued*)

	(1)	(2)	(3)
	(0.22)	(0.19)	(0.21)
Adverse media coverage	1.860***	1.611***	1.860***
	(0.18)	(0.15)	(0.17)
PEP foreign	1.791***	1.858***	1.791***
	(0.18)	(0.18)	(0.18)
PEP domestic	1.165*	1.136	1.165*
	(0.11)	(0.10)	(0.11)
Continued business likely	1.005	1.108	1.005
	(0.07)	(0.08)	(0.07)
ML risk * Origin of funds difficult to verify			1.138
			(0.29)
ML risk * Beneficial owner difficult to verify			0.918
			(0.15)
ML risk * High risk country			0.838
			(0.09)
ML risk * Adverse media coverage			0.866
			(0.12)
ML risk * PEP foreign			1.038
			(0.14)
ML risk * PEP domestic			0.975
			(0.12)
ML risk * Continued business likely			1.102
			(0.11)
r2_pseudo	0.228	0.214	0.221
N	2784	2560	5344

Note: Results from conditional logit estimations, reported as odds ratios. Standard errors clustered at the respondent level in parentheses. Column 3 adds interaction terms between the attribute variables and a dummy for whether an observation is in the in the money laundering risk condition. The ML risk dummy equals 1 if the respondent was asked about money laundering risk and 0 if asked about the likelihood of reporting. The main term for the money laundering risk condition dummy is absorbed by the fixed effects. *** indicates significance at the 1% level, ** at 5%, * at 10%.

Table C.4
Results from mixed logit estimations

	(1)	(2)
Sample	*Reported*	*ML risk*
Mean		
Origin of funds difficult to verify	2.368***	2.892***
	(0.28)	(0.33)
Beneficial owner difficult to verify	1.471***	1.486***
	(0.19)	(0.19)
High risk country	1.402***	1.275***
	(0.13)	(0.13)
Adverse media coverage	0.874***	0.726***
	(0.13)	(0.15)
PEP foreign	0.892***	0.906***
	(0.15)	(0.15)
PEP domestic	0.303**	0.178
	(0.13)	(0.13)
Continued business likely	0.003	0.091
	(0.09)	(0.12)
SD		
Origin of funds difficult to verify	1.417***	1.303***
	(0.24)	(0.19)
Beneficial owner difficult to verify	0.537***	0.608**
	(0.14)	(0.26)
High risk country	0.770***	0.842***
	(0.18)	(0.21)
Adverse media coverage	-0.551***	-0.724***
	(0.18)	(0.15)
PEP foreign	0.213	0.540
	(0.54)	(0.36)
PEP domestic	0.304	0.168
	(0.25)	(0.37)
Continued business likely	0.548***	0.996***
	(0.17)	(0.18)
N	2784	2560

Note: Results from mixed logit estimations. Robust standard errors in parentheses. *** indicates significance at the 1% level, ** at 5%, * at 10%.

Table C.5
Heterogeneous results for reporting probability question

	(1)	(2)	(3)	(4)
Sample	*Both questions*	*Both questions*	*Both questions*	*Both questions*
Sub-sample	*Non-regulated entities*	*Regulated entities*	*Non-finance*	*Finance*
Origin of funds difficult to verify	6.981***	5.497***	4.522***	8.451***
	(3.58)	(0.88)	(0.85)	(2.63)
Beneficial owner difficult to verify	4.695***	2.657***	2.559***	2.912***
	(1.82)	(0.30)	(0.34)	(0.61)
High risk country	3.033***	2.790***	2.729***	2.989***
	(0.55)	(0.21)	(0.24)	(0.41)
Adverse media coverage	1.922***	1.874***	1.777***	2.120***
	(0.47)	(0.19)	(0.22)	(0.37)
PEP foreign	1.634*	1.834***	1.725***	2.088***
	(0.42)	(0.19)	(0.22)	(0.36)
PEP domestic	1.514*	1.117	1.075	1.187
	(0.38)	(0.11)	(0.13)	(0.19)
Continued business likely	0.920	1.021	0.972	1.121
	(0.15)	(0.07)	(0.08)	(0.14)
ML risk * Origin of funds difficult to verify	0.879	1.169	1.314	0.873
	(0.64)	(0.28)	(0.39)	(0.36)
ML risk * Beneficial owner difficult to verify	0.675	0.970	1.009	0.871
	(0.36)	(0.16)	(0.21)	(0.24)
ML risk * High risk country	1.047	0.829*	0.943	0.669**
	(0.30)	(0.09)	(0.13)	(0.12)
ML risk * Adverse media coverage	0.896	0.862	0.884	0.800
	(0.34)	(0.12)	(0.15)	(0.19)
ML risk * PEP foreign	1.159	1.010	0.976	1.036
	(0.48)	(0.14)	(0.18)	(0.24)
ML risk * PEP domestic	0.658	1.017	1.077	0.937
	(0.27)	(0.14)	(0.19)	(0.21)
ML risk * Continued business likely	0.750	1.143	1.126	1.138
	(0.20)	(0.11)	(0.14)	(0.19)
r2_pseudo	0.258	0.221	0.213	0.247
N	704	4640	2848	1792

Note: Results from conditional logit estimations, reported as odds ratios. The ML risk dummy equals 1 if the respondent was asked about money laundering risk and 0 if asked about the likelihood of reporting. Robust standard errors in parentheses. *** indicates significance at the 1% level, ** at 5%, * at 10%.

Appendix D. Data Collection

Table D.1
Attributes, levels, and modelling

No	Attribute	Level	Modelling
1	Transaction geography	Involves high risk country Involves low risk country	Dummy variable
2	PEP (politically exposed person)	Foreign Domestic No	Dummy variables
3	Origin of funds	Difficult to verify Known and verified	Dummy variable
4	Ultimate beneficial owners	Difficult to verify Known and verified	Dummy variable
5	Adverse media coverage on suspicious activities	Yes No	Dummy variable
6	Likelihood of continued business with this client	High Low	Dummy variable

Table D.2
Attribute levels - frequencies

Attribute	0	1
Origin of funds difficult to verify	3004	2340
Beneficial owner difficult to verify	2672	2672
High risk country	2672	2672
Adverse media coverage	2672	2672
PEP foreign	3658	1686
PEP domestic	3508	1836
Continued business likely	2672	2672

Table D.3
Correlations between attribute levels

	Origin of funds difficult to verify	Beneficial owner difficult to verify	High risk country	Adverse media coverage	PEP foreign	PEP domestic	Continued business likely
Origin of funds difficult to verify	1.000						
Beneficial owner difficult to verify	-0.454	1.000					
High risk country	-0.060	0.061	1.000				
Adverse media coverage	-0.499	-0.054	-0.013	1.000			
PEP foreign	0.023	-0.011	-0.006	-0.006	1.000		
PEP domestic	0.021	0.004	0.068	-0.059	-0.491	1.000	
Continued business likely	-0.061	-0.001	0.063	0.061	-0.065	-0.020	1.000

Table D.4
Data collection procedures, sources, and timeline

Distribution Date	Closing Date	N	Channel	Target Regulated Entities	Details	Format
Sept. 26, 2023	Oct. 9, 2023	40	Eiendom Norges Hvitvaskings-dag at Hotel Bristol, Oslo	Real Estate Agents	Annual AML conference organized by the Norwegian Real Estate Agents' Association	Distribution of project flyer with QR code at the conference
Oct. 2, 2023 New opening Nov. 2, 2023	Oct. 23, 2023 New closing: Nov 24, 2023	14	Advokatbladet	Lawyers	Monthly law publication (digital and physical) issued by the Norwegian Bar Association	Article about the project with QR code and link encouraging participation in the project
Sept. 27, 2023 New opening: Nov. 1, 2023	Oct. 18, 2023 New closing: Nov 24, 2023	124	Regnskap Norge	Accountants	Weekly online publication and digital newsletter issued by the Norwegian Accounting Association. Newsletter reminder attached to new AML routine for accountants.	Article about the project with QR code and link encouraging participation in the project
Oct. 26, 2023	Nov 24, 2023	17	Revisjon & Regnskap	Auditors	Monthly publication (digital and physical) issued by the Norwegian Auditors' Association	Article about the project with QR code and link encouraging participation in the project
Nov. 9–10, 2023	Nov 24, 2023	139	Hvitvaskingskonferansen 2023 at Hotel X Meeting Point, Skjetten	Banks, Financial Institutions, other AML professionals	Annual AML conference hosted by Finance Norway (the Norwegian Financial Services Association), National Authority for Investigation and Prosecution of Economic and Environmental Crime, and the Financial Supervisory Authority of Norway.	Distribution of project flyer with QR code at the conference and a stand with information.

Note: Data was collected during the period September 27, 2023, to November 24, 2023, and includes a total of 334 respondents. The table displays the distribution dates, channels, and targeted regulated entities.

Appendix E Additional Information on Priming Treatments

As noted in Section 3.2, in addition to randomized assignment into two different question framing conditions the experimental design also included randomization into two priming treatments and a control group without priming. In the full design, respondents were hence randomized into six treatment groups in a 2 × 3 set-up, as shown in Table E.1. The main paper presents results across the two question framing conditions, with responses aggregated across the three priming treatment groups. In this appendix, we present a brief overview of the design details, motivation and estimated effects of the priming treatments.

In promoting ethical conduct in an AML compliance setting, the important question arises of which is more effective; a pragmatic approach that highlights or appeals to enlightened self-interest to promote ethical behavior (i.e., that acting morally or in accordance with others' expectations will benefit you (Keim, 1978), or a more principled approach that highlights intrinsic moral reasons for acting ethically (Konow, 2019). Consequently, we wanted to test if receiving a moral prompt or an enlightened self-interest prompt would yield different responses to that of a control group.

Table E.1
Treatment arms

	No Prime (control)	Moral Prime	Self-Interest Prime
Reporting condition			
AML risk condition			

The priming interventions took the form of on-screen text directly preceding the discrete choice experiment. Respondents had to confirm having read the priming prompt to proceed. Participants in the moral priming treatment received the following moral prime appearing on their screen prior to the discrete choice comparisons: *"Reporting of suspicious transactions is important because money laundering can undermine the entire societal structure and weaken the confidence in the welfare state and the financial system."* Participants in the self-interest priming treatment were similarly given the following self-interest prime: *"Lack of reporting of suspicious transactions can represent a business risk and may lead to costly sanctions imposed on regulated entities subject to AML obligations."* Participants in the control arm did not receive any prime.

Designing information treatments subtle enough not to introduce experimenter demand effects, but noticeable enough to have a potential effect on responses, is a difficult balance. Our interest was in how the moral and self-interest prompts affected respondent prioritization of red flags. In line with the literature on moral nudging or priming (Mazar et al., 2008) a possible effect of the moral prime could be to increase attention to the DCE task, leading to a weighting of attributes closer to their objective importance. The effect of the self-interest prime is more ambiguous, on the one hand it would have a similar effect as the moral prime, on the other it could lead to more focus on those risk factors related to business risk (the probability that a regulated entity is caught and sanctioned) rather than risk to society. While these questions can in part be addressed aggregating data across the two question framing conditions, ideally, one would also like to test whether the primes lead to smaller or greater discrepancies between responses in these two conditions. Unfortunately, the obtained sample of respondents was too small to analyze responses disaggregated along both dimensions.

The three treatment arms in the priming dimension have sample sizes of 125, 109 and 100 respondents, respectively. This means that for each of these groups we have a sample that may be borderline large enough to detect pilot level effects for our main attributes of interest but have low power to detect differences in attribute effects between the priming treatment groups (see the discussion of power in the main text). Since further subdividing the sample into both priming and framing treatments reduces sample sizes to between 50 and 67, which is too low to even provide power to estimate attribute level effects in each group, let alone differences between groups, we have not included an analysis based on this finer division, as results could be misleading. Table E.2 tests for balance across the control and two priming treatments. The results indicate that balance starts to be a problem with these small sample sizes, our self-interest prime group in particular has significantly less work experience than both other groups, a difference that may well influence results. We nevertheless present results for the three groups in Table E.3. Only one interaction effect is significant, unknown beneficial ownership is prioritized higher in the self-interest prime group than in the control. However, one significant interaction effect out of 14 may well arise out of chance, and as noted, power is low for these interaction effects. Morover, we cannot reject equality between the self-interest prime and unknown beneficial ownership interaction and the self-interest prime and origin of funds interaction, which means we cannot conclude that the relative importance of these two attributes differs substantially across conditions. Overall, we find little evidence that would allow us to conclude that the priming treatments had any substantial effect.

Table E.2
Balance across priming treatments

	Control	Moral prime	Self-interest prime	p(Control vs Moral prime)	p(Control vs Self-interest prime)	p(Moral prime vs Self-interest prime)	p-value orthogonality test
Regulated entity	0.896	0.826	0.880	0.125	0.708	0.269	0.298
	0.027	0.037	0.033				
Financial institution	0.357	0.378	0.432	0.764	0.287	0.466	0.557
	0.045	0.051	0.053				
Male respondent	0.476	0.457	0.423	0.779	0.433	0.624	0.732
	0.045	0.049	0.050				
Education master's level	0.419	0.467	0.402	0.475	0.796	0.357	0.629
	0.044	0.049	0.050				
Education in economics	0.616	0.642	0.620	0.680	0.951	0.741	0.909
	0.044	0.046	0.049				
Experience more than 10 years	0.800	0.771	0.640	0.588	0.008	0.039	0.026
	0.036	0.040	0.048				
Organization size above 100 employees	0.330	0.422	0.375	0.183	0.515	0.523	0.409
	0.045	0.052	0.052				
Location large city	0.473	0.511	0.591	0.595	0.098	0.287	0.247
	0.047	0.053	0.053				
Management position	0.440	0.477	0.390	0.572	0.451	0.206	0.446
	0.045	0.048	0.049				
Perceived AML culture in organization	4.018	4.159	3.920	0.191	0.371	0.041	0.117
	0.071	0.081	0.084				
Extent of AML tasks performed	3.808	3.774	3.630	0.818	0.264	0.393	0.518
	0.099	0.112	0.124				
N	125	109	100				

Table E.3
Results for priming treatments

	(1)
Sample	*Full*
Origin of funds difficult to verify	4.991***
	(0.86)
Beneficial owner difficult to verify	2.360***
	(0.29)
High risk country	2.477***
	(0.20)
Adverse media coverage	1.858***

(*continued on next page*)

Table E.3 (*continued*)

	(1)
Sample	*Full*
	(0.20)
PEP foreign	1.964***
	(0.22)
PEP domestic	1.063
	(0.11)
Continued business likely	0.986
	(0.07)
Moral prime * Origin of funds difficult to verify	1.303
	(0.34)
Moral prime * Beneficial owner difficult to verify	1.121
	(0.20)
Moral prime * High risk country	1.075
	(0.13)
Moral prime * Adverse media coverage	0.942
	(0.15)
Moral prime * PEP foreign	0.998
	(0.16)
Moral prime * PEP domestic	1.193
	(0.18)
Moral prime * Continued business likely	1.121
	(0.12)
Self-interest prime * Origin of funds difficult to verify	1.395
	(0.38)
Self-interest prime * Beneficial owner difficult to verify	1.476**
	(0.29)
Self-interest prime * High risk country	1.115
	(0.13)
Self-interest prime * Adverse media coverage	0.870
	(0.14)
Self-interest prime * PEP foreign	0.772
	(0.13)
Self-interest prime * PEP domestic	1.074
	(0.17)
Self-interest prime * Continued business likely	1.103
	(0.12)
r2_pseudo	0.223
N	5344

Note: Results from conditional logit estimations, reported as odds ratios. Robust standard errors in parentheses. The main terms for Moral prime treatment and Self-interest prime treatment dummies are absorbed by the fixed effects. *** indicates significance at the 1% level, ** at 5%, * at 10%.

Data Availability

Replication data and code available at Mendeley Data

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