



Behavioral Responses to Capital Taxation: Evidence From the Norwegian Wealth Tax

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**Behavioral Responses to Capital Taxation and Their Consequences:
Evidence From The Norwegian Wealth Tax**

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An undergraduate thesis submitted to the Department of Applied Mathematics
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Abstract

Tax implementations give rise to behavioral changes among taxpayers, of which tax avoidance is a critical adaptation for policymakers to understand. Using Norwegian administrative data with individual-level tax records for 2015-2022, I identify three main legal wealth tax avoidance strategies used by Norwegian taxpayers to minimize their wealth tax liability. In contrast to previous studies, focused on singular aspects of avoidance or behavioral reactions to the tax, I identify multiple avoidance methods and quantify the annual revenue losses to the government associated with each one. I estimate a total of NOK 1,754 - 2,842 million in annual wealth tax revenue, or about 18 percent of collected wealth tax revenue, is lost to legal tax avoidance techniques.

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1 Introduction

Wealth and capital taxation has been an area of tax-policy receiving increasing attention in academic and political settings over recent decades. Among European countries, many have entertained taxing wealth, but only a handful ever got around to implementing a wealth tax, and even fewer continue to collect a wealth tax to this day. Among the countries continuing to levy a wealth tax is Norway, which has done so to some extent for over a century. Having consistently ranked toward the top of Europe’s countries with the least income inequality (Eurostat, 2024), the country has always enforced redistributive tax policies on its taxpayers. However, despite its long-standing history of high levels of taxation, the wealth tax and its implementation has proven to be unusually controversial among both politicians and taxpayers.

In recent years, disagreements about the wealth tax and its design have led to divergence within Norway’s otherwise homogeneous political scene, and the wealth tax is consistently referenced as a key element in voter decisions. Despite this controversy, there have been few empirical studies of the wealth tax and its consequences, and the political debate about its implementation has mainly been driven by theories, ideologies, and hypotheses rather than insights from the vast amount of data collected since the tax’s inception. In addition to the overall lack of empirical work, the few available empirical publications have taken a narrow approach, limiting their analysis to phenomena only relevant for a small subsection of the taxpayer population. I aim to provide a broader empirical evaluation of the wealth tax and taxpayer behavior than previous empirical work. Several of the insights I obtain have applications to the fundamental aspects of the wealth tax policy design, and I hope my results can serve as useful facts for future discussions about the tax and its implementation.

In this paper, I look deeper into the Norwegian wealth tax design and the legal tax avoidance methods arising from it. Using administrative data with individual-level tax records for the period 2015-2022, I identify three sources of wealth tax avoidance that together are available to the majority of wealth taxpayers, quantify annual tax revenue losses associated

with the avoidance methods, and obtain an estimate of the total revenue losses the government suffers from taxpayers taking advantage of the wealth tax policy design in an effort to legally decrease their wealth tax liability.

To investigate the behavioral reactions to the Norwegian wealth tax, I obtained anonymized administrative records with individual-level data on tax, family structure, labor, education, and health, among other categories, reported on an annual basis for all Norwegian residents. The data is made available and maintained by the Norwegian Bureau of Statistics and the Norwegian Knowledge Services Department, and is offered to select Norwegian students and scientists through the "microdata" application, microdata.no.

The Department of Statistics states that aggregate statistics obtained from Microdata generally align well with numbers published using their own internal data sources, but warn that discrepancies between numbers reported by the Department of Statistics and aggregate results obtained from Microdata may vary for a number of reasons described in deeper detail on their website, and in section A of the appendix. However, discrepancies are not supposed to be large, and the Department of Statistics claim that microdata.no is an accurate representation of what the department has available to analyze population-level trends among Norwegian residents.

The main variables used in the paper are related to individual tax records, as well as parental links in the dataset allowing for identification of direct family members. Tax record data is available from 1993-2022, but for the paper's analysis I will leverage records from the period 2015 to 2022, as this time period provides sufficient sample sizes and policy variation to investigate the behaviors of interest. There is no exclusion from the population of Norwegian residents in the population made available through microdata, and the only restriction on analysis enforced on the platform is a minimum sample size restriction to limit possibilities of re-identification of individuals in the data.

For the three methods of avoidance I identify, I first leverage family-connections in the administrative data to identify tax-optimizing transfers of wealth from parents to children.

The motivation is that parents above the taxable wealth threshold can take advantage of the minimum threshold for taxable wealth by distributing taxable wealth across adult family members. In analyzing intra-family transfers, I identify significantly higher transfers to children further below the threshold, and find that transfer-size sensitivity with respect to the child's wealth is almost twice as high for children below the threshold relative to children above the threshold. Additionally, I find strong evidence for the taxable net wealth of both parents and children converging toward the taxable wealth threshold from pre- to post-transfer, indicating an effort to minimize total family wealth tax liability by equalizing wealth levels across family members. I lastly construct the counterfactual wealth tax liabilities of each parent-children pair and compare them to their empirical values to obtain an estimated annual revenue loss of NOK 125 to 197 million from intra-family transfers.

Second, I look at tax revenue losses from emigration by leveraging primary residence location information in the administrative data. I find that a wealth tax policy change increasing the wealth tax liabilities of high-wealth individuals lead to more than a 3x annual increase in the number of wealthy residents leaving the country, without substantial change in overall emigration numbers. Using a Difference-in-Differences approach, I identify a 0.35% larger increase in probability of emigration of those with over NOK 20M in pre-emigration taxable net wealth relative to lower-wealth residents, representing a substantial divergence when viewed in the context of the baseline emigration probability of 0.74%. I estimate the annual wealth tax revenue loss from wealthy residents emigrating to be between NOK 44 and 197 million, with the post-policy change emigration increase leading to a NOK 124 and 130 million jump in revenue losses in the first and second year after the change, respectively. In addition to estimating wealth tax revenue losses, I quantify income tax revenue losses as the principal negative externality from wealthy taxpayers emigrating, which increases the annual revenue losses suffered by the government by as much as 2.3x.

Lastly, I identify broad over-allocation to primary housing among (potential) wealth taxpayers motivated by a 75% valuation discount given to primary housing holdings in the

wealth tax calculation. Leveraging administrative data on housing values, gross- and net wealth, I compare the asset allocation of Norwegians to aggregate values of residents from 29 comparable OECD countries, reported in a 2022 housing taxation publication (OECD, 2022). I find that primary housing allocation levels are similar for low-wealth residents, but that there is substantial divergence from Norwegian residents with wealth above the tax threshold, for which Norwegian residents allocate up to 20% more to primary housing relative to comparable residents in the OECD sample. I leverage the reported OECD asset allocation percentages and wealth variables for Norwegians resident in the administrative data to construct counterfactual wealth tax liabilities for all Norwegian taxpayers, for which I estimate annual revenue losses from primary housing over-allocation of NOK 1,568 to 2,842 million.

The paper is structured as follows. I begin with introducing relevant literature on wealth tax from Norway and other European countries in section 2. Section 3 presents an overview of the Norwegian wealth tax and its policy design, as well as theoretical motivation and examples of tax avoidance, serving as background for later-presented results. Section 4 presents descriptive statistics of key variables from the administrative data in later results, as well as identifies bunching of tax filers below the wealth tax threshold, serving as an indication of tax avoidance behavior and motivating later results. Section 5 decomposes wealth tax revenue and intentional discounts given in the wealth tax design into individual components, and estimates the contributions of different asset classes to total tax revenue. This enables later tax losses to be interpreted in the context of collected tax revenue and planned revenue discounts given to taxpayers. Section 6 looks at tax-beneficial transfers from parents to children. Section 7 quantifies tax losses from wealthy taxpayers leaving the country and identifies emigration as a reaction to heightened wealth tax. Section 8 identifies over-allocation to tax-discounted assets among potential Norwegian wealth taxpayers relative to comparable residents of other OECD countries. Section 9 presents the total wealth tax losses associated with taxpayers optimizing with respect to the wealth tax policy design.

Lastly, section 10 summarizes the results and concludes.

2 Literature Review

Tax avoidance has been a topic of interest among economists for a long time. The research started with early theoretical models of income tax avoidance introduced by (Allingham and Sandmo, 1972), and moved to decades of papers based on empirical evidence of income tax avoidance such as (Slemrod, 2007). Avoidance methods such as taxpayer bunching below jumps in marginal income tax rates (Bastani and Selin, 2014), income dispersion to family members (Laurin and Kesselman, 2011), and income under-reporting (Kleven et al., 2011) have all been shown in detail and are taken into consideration when designing income tax policies.

The wealth tax, although implemented in only a small number of countries, has received relatively broad academic attention at an international level. Many of the existing publications on the topic have been focused on taxpayer incentives arising from different wealth tax designs. Both (Boadway, Chamberlain and Emmerson, 2010) and (Kopczuk, 2013) point to the importance of wealth tax policy design in shaping inter-generational wealth accumulation and tax avoidance strategies. (Boadway, Chamberlain and Emmerson, 2010) argue for high minimum thresholds for taxable wealth, unified tax treatment of gifts and inheritance, and minimal asset-specific tax exemptions in order to minimize tax avoidance and taxpayer distortions. Norway's existing wealth tax design conflicts with each of their suggestions by implementing a small wealth threshold, wide variety of asset-specific discounts, and has separated between taxation of gifts and inheritance¹.

Existing Norwegian literature on the wealth tax and its consequences generally looks at selective, isolated consequences of the tax and its design. (Iacono and Smedsvik, 2024) look at flows of wealthy taxpayers and capital into Bø, a small county in Northern Norway which, as the only county to do so, had lowered their wealth tax from 0.85% to 0.35%. They identify

¹Norway levied an inheritance tax on its taxpayers up until the 2014 tax year.

a 10% increase in the number of wealth tax payers in Bø the year after the policy went into effect, and estimate a 30% increase in taxable net wealth in Bø from the half percent drop in wealth tax rate. Although the results are interesting and show taxpayers' desire to limit their wealth tax liability, the county's less than 1,000 wealth tax-payers (and 2,200 total residents) represent less than 0.3% of the wealth-tax paying population, limiting the revenue loss and subsequent impact on wealth tax policy design.

Migration as a behavioral response to wealth tax has also been identified in a number of empirical settings outside of Norway. (Agrawal, Foremny and Martínez-Toledano, 2025) use between-region differences in wealth taxation in Spain to show significant inflows of taxpayers and capital to Madrid, a region which removed capital taxation, from neighboring regions with taxation. They identify a 7.5% increase in Madrid's wealthy population and a 1.7% average reduction in the wealthy population of neighboring regions imposing a wealth tax on their citizens within 6 years of the policy change, leading to sufficient gains in income tax revenue for Madrid to offset its lost wealth tax revenue.

Previous literature has also identified behavioral responses to thresholds for tax thresholds often associated with wealth tax, only taxing wealth above a pre-determined threshold. (Brüllhart et al., 2016) use individual-level tax records from Bern, Switzerland to show a bunching of non-taxpayers right below the canton's wealth tax threshold. Despite identifying this effect, they argue that the bunching itself has a small impact on both the number of taxpayers and wealth tax revenue, with "bunched" taxpayers representing only 0.3% of the total taxpayers in the sample and consisting of taxpayers at the left tail of the taxpayer wealth distribution.

There is limited literature on the empirical effects of other parts of wealth tax policy design than the tax threshold and tax rate changes, such as non-uniform asset discounting. (Rotberg, 2022) leverages a power-law model to argue that the theoretically optimal wealth tax policy should discount housing wealth relative to other capital in order to maximize welfare, but references no empirical data in making his argument. Although only preliminary,

there has been some Norwegian literature looking at the effect of asset discounting on asset allocation. (Sekkesaeter, Bratt and Leite, 2024) leverage Norwegian stock market data to argue that increased flows of capital into large-cap domestic stocks in the period before January 1st are motivated by the discount on stock wealth relative to cash, incentivizing individuals to hold their savings in stocks when their wealth tax liability for the year is calculated on January 1st. Aside from such initial attempts, however, none of the existing empirical studies leverage the full extent of data on Norwegian taxpayers to identify and quantify a broader set of tax avoidance behavior arising from the detailed Norwegian wealth tax design.

3 The Norwegian Wealth Tax and its Calculation

The structure of the Norwegian wealth tax has varied drastically over the century it has been in place. However, from the passing of the Norwegian Tax Law in 1999 up until 2022, the core structure of the tax remained similar.

The main aspects of the wealth tax structure for the years from 1999-2021 were the following:

- **Tax Rate:** Tax rate applied to the taxpayers taxable net wealth. Fluctuated from 0.85% to 1.1% over the period and was applied uniformly with no steps in the rate other than above/below the initial tax threshold before the 2022 tax design changes.
- **Asset discounts:** Discounts applied to specific asset categories in the calculation of taxable net wealth. Categories with discounts are primary housing, secondary housing, leisure homes, business property, and non-cash financial wealth.
- **Debt discounts:** Discounts applied to asset-specific debt. Prior to 2016, all debt was applied to the taxable net wealth calculation at its full notional value. Since then, all debt tied to specific assets in tax filings except primary housing is discounted at the same rate as the corresponding asset, while primary housing debt is included at its full

notional value.

- **Tax Threshold:** Deduction applied to all taxpayers’ taxable net wealth. The threshold increased relatively linearly from NOK 151,000 to NOK 1.7M from 2005-2022, as show in table 7 of the appendix.

These four elements of the tax are central elements in disagreements around the tax’s design, and all provide opportunities for optimizing taxpayers to engage in avoidance.

3.1 Calculation of Wealth Tax Liability

The tax is levied annually on taxpayers’ taxable net wealth, which is made substantially lower than their net wealth through asset-specific discounts as well as the deduction of a tax threshold from the discounted net wealth. To arrive at a taxpayer’s taxable net wealth, taxpayer i ’s year t gross wealth is first computed as the sum of the value² of all their assets k :

$$\text{Gross Wealth}_{i,t} = \sum_k \text{Asset Value}_{i,t,k} \quad (1)$$

Asset-specific discounts are then applied to reduce the naive gross wealth by the appropriate discounts to obtain tax-adjusted gross wealth as:

$$\text{Adj. Gross Wealth}_{i,t} = \text{Gross Wealth}_{i,t} - \sum_k \text{Asset Value}_{i,t,k} \cdot \text{Asset Discount}_{i,t,k} \quad (2)$$

To obtain tax-adjusted net wealth, we subtract tax-adjusted debt from the adjusted gross wealth, where the tax-adjusted debt is defined as:

$$\text{Adj. Debt}_{i,t} = \text{Debt}_{i,t} - \sum_k \text{Asset-Specific Debt}_{i,t,k} \cdot \text{Debt Discount}_{i,t,k} \quad (3)$$

The debt discounts are equal to asset discounts in all cases except for primary housing, and not discounted in the case of unsecured debt and other non asset-specific debt holdings.

With the adjusted gross wealth and debt defined, we define tax-adjusted net wealth as:

$$\text{Adj. Net Wealth}_{i,t} = \text{Adj. Gross Wealth}_{i,t} - \text{Adj. Debt}_{i,t} \quad (4)$$

²Asset value = (Estimated) Market Value for all assets, except shares in private companies, which are valued at book value.

Lastly, we apply the tax threshold to the adjusted net wealth to obtain taxable net wealth:

$$\text{Taxable Net Wealth}_{i,t} = \text{Adj. Net Wealth}_{i,t} - \text{Tax Threshold}_{i,t} \quad (5)$$

As can be inferred from equation 5, a tax filer’s taxable net wealth would be negative if their tax-adjusted net wealth is lower than the tax threshold. With this in mind, taxpayer i ’s year t wealth tax liability is computed in the following manner³:

$$\text{Wealth Tax}_{i,t} = \text{Tax Rate}_t \cdot \max(0, \text{Taxable Net Wealth}_{i,t}) \quad (6)$$

Having laid out the derivation of a taxpayer’s wealth tax liability and the design of wealth tax, I define the following aspects of the wealth tax design that a taxpayer can take advantage of in legal tax-avoidance efforts:

1. **Tax Threshold Nonlinearity:** The wealth tax is not levied on the entirety of a taxpayer’s wealth, and taxpayers can therefore limit their wealth, distribute wealth to family and friends, or donate to charity to keep their wealth below the wealth tax threshold.
2. **Asset Discounts:** Taxpayers can allocate more wealth to high-discount assets, such as primary housing, to decrease their tax-adjusted net wealth without changing their naive net wealth.
3. **Emigration:** Taxpayers sufficiently unhappy with the wealth tax can choose to emigrate from the country to eliminate all their domestic tax liabilities.

With the avenues of legal tax avoidance defined, I compute the avoidance-related tax revenue losses the government suffers from each taxpayer as

$$\text{Wealth Tax Revenue Loss}_{i,t} = \text{Threshold Loss}_{i,t} + \text{Discount Loss}_{i,t} + \text{Emigration Loss}_{i,t} \quad (7)$$

Although illegal avoidance is part of the total tax avoidance revenue loss, considering this paper is relying on tax-reported data, I will not spend time on losses from illegal evasion as such evasion is impossible to detect in government-reported data. The presented results will focus on legal tax avoidance through exploitation of the tax threshold, asset-specific discounting, and emigration of wealthy tax payers.

³Up until 2022, when an additional step in the tax rate was applied.

3.2 Tax Avoidance Examples

To illustrate the motivation behind tax-avoidance behavior enabled through the asset-specific discounts, which is the most unusual element of the Norwegian wealth tax implementation, I start with presenting examples of asset-reallocation enabled tax-avoidance. Table 1 shows the outcomes for two different taxpayers changing their asset composition to decrease their wealth tax liability.

Taxpayer 1 is a person not yet owning a primary home, but with a relatively large stock of savings. They have NOK 4M in stocks or other financial wealth, NOK 3.5M in bank deposits, and no debt, leaving them with a tax-adjusted net wealth of NOK 5.7M, and a 2021 tax liability of NOK 35,700⁴. If they choose to invest NOK 6M in primary housing by reducing their stock holdings to NOK 550k and bank deposits to 500k, they would be left with a tax-adjusted net wealth of NOK 2.55M, and a 2021 tax liability of NOK 8,925. By reallocating their assets from stocks and cash into primary housing, they could reduce their annual wealth tax liability by NOK 26,775, or 75%.

Example 2 is a taxpayer with a pre-optimization asset composition of a primary house worth NOK 10M, a condo they rent out, which is considered secondary housing, valued at NOK 5M, and NOK 1M in bank deposits. To optimize their wealth tax liability, the taxpayer can sell the condo and invest the money in financial wealth, either through funds or directly in stocks, and receive a higher wealth tax discount relative to what they receive on their secondary housing. If the taxpayer sold the condo and invested the NOK 5M in the stock market, they would reduce their 2021 tax liability by $0.0085 \cdot (\text{NOK } 8,000,000 - \text{NOK } 6,250,000) = \text{NOK } 14,875$, which would increase their baseline investment yield on the NOK 5M by 0.3 percent, providing a cushion on returns from the stock market relative to the privately held investment property. As seen in the next example, this multiple could be significantly increased if the taxpayer had access to attractive investment opportunities in private markets.

⁴2021 wealth tax liability = $0.0085 \cdot (\text{Adj. Net Wealth} - 1,500,000)$

	Asset Category	Discount Rate	Pre-Avoidance		Post-Avoidance	
			Gross Wealth	Adj. Gross Wealth	Gross Wealth	Adj. Gross Wealth
Taxpayer 1	Primary Housing	0.75	0	0	6,000	1,500
	Secondary Housing	0.1	0	0	0	0
	Stock Holdings	0.45	4,000	2,200	1,000	550
	Bank Deposits	0	3,500	3,500	500	500
	Total	-	7,500	5,700	7,500	2,550
Taxpayer 2	Primary Housing	0.75	10,000	2,500	10,000	2,500
	Secondary Housing	0.1	5,000	4,500	0	0
	Stock Holdings	0.45	0	0	5,000	2,750
	Bank Deposits	0	1,000	1,000	1,000	1,000
	Total	-	16,000	8,000	16,000	6,250

Table 1: Pre- and post-avoidance naive and tax-adjusted gross wealth for two examples of taxpayers engaging in asset-reallocation avoidance. All values other than discount rate in NOK 1,000s. $\text{Wealth Tax}_{2021} = 0.0085 \cdot (\text{Adj. Gross Wealth} - 1,500)$.

4 Descriptive Statistics and Tax Bunching

For readers to accurately interpret later-presented results on Norwegian taxpayer behavior, I will first present summary statistics and general data about Norway and its wealth taxpayers. Norway is a country with approximately 5.5 million residents, of which 4.4 million are over the age of 18 and considered eligible taxpayers. The Norwegian wealth distribution has a significantly smaller right tail than countries like the United States. Figure 1 shows the 2022 net wealth distribution for all tax filers. The 99th net wealth percentile of the Norwegian net wealth distribution is approximately NOK 20M (\$1.9M). As a metric of comparison, the cutoff for 2022 99th percentile wealth in the United States was \$11.2 million⁵. So despite Norway being an immensely wealthy country at a per capita basis, its wealth is held disproportionately by the middle class relative to the country’s wealthiest, in part because of large redistributive taxes such as the wealth tax.

The wealth tax implementation is a broad-targeting tax relative to wealth taxes implemented in other countries. Norway’s 2022 NOK 1.7M (approx. €150k) single-step tax

⁵As reported in FRED data series ID: WFRBL99T999309

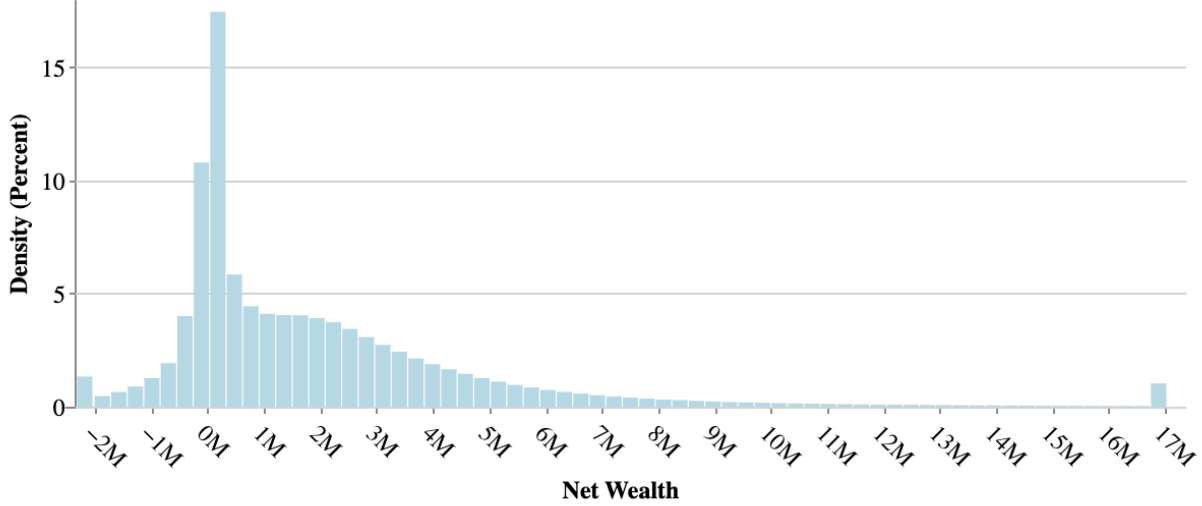


Figure 1: Histogram of (non tax-adjusted) net wealth for all Norwegian tax filers in 2022. Sample size of 4.4 million.

threshold is much lower than in countries such as Spain, which applies a €700k country-wide threshold on taxable wealth for single filers, and Switzerland, where there is a more detailed step structure different for each canton, but citizens of cantons such as Zug have negligible tax liabilities up to a taxable net wealth of €500k⁶. Almost 15 percent of tax-eligible Norwegian residents have a taxable net wealth above the minimum threshold, while the Spanish wealth tax only applies to 0.1% of its residents, as reported by (Buchanan, 2024). The combination of its low threshold and single-step tax rate sets the stage for analysis of wealth tax reactions in Norway at a much larger scale than other countries.

Table 2 shows the means of equations (1)-(4) from left to right, as well as mean wealth tax and income for the population of wealth tax payers each year. Calculating the wealth tax on tax-adjusted wealth is clearly beneficial to taxpayers, as their tax-adjusted gross wealth on average receives a 30-40% discount relative to their naive gross wealth. Despite the mean gross wealth of taxpayers increasing steadily year over year, the adjusted gross and net wealth decrease in 2018, 2020, and 2021, all of which are years with increased asset-

⁶In the Swiss canton, Zug, the first 168,000 CHF are taxed at 0.05%, the next 168,000 at 0.10%, and then at 0.15% for the third tranche. Anything above 504,000 CHF is taxed at 0.20%.

specific discounts, showing the responsiveness of tax revenue to wealth tax design changes. The wealth tax represents a relatively small liability relative to income tax, with the average liability being approximately 3% of gross income (or 5.6% of net income).

Tax Year	Number of Taxpayers	Gross Wealth	Tax-Adj. Gross Wealth	Tax-Adj. Debt	Tax-Adj. Net Wealth	Wealth Tax Liability	Gross Income
2015	546,353	5,656	3,649	404	3,211	17	679
2016	513,915	6,404	4,184	468	3,676	20	678
2017	524,617	6,937	4,386	505	3,839	21	694
2018	537,950	7,025	4,327	502	3,793	21	707
2019	560,021	7,223	4,483	500	3,946	21	721
2020	596,615	7,395	4,456	499	3,920	21	730
2021	667,025	7,797	4,436	505	3,895	20	803
2022	647,587	8,295	5,194	597	4,548	27	801

Table 2: Table of means for main tax-reported variables for all wealth tax payers by year. All values except sample size in NOK 1000's. Formulas for all tax-adjusted values are defined in section 3.

Despite the uniform tax rate and low wealth tax threshold, wealth tax revenue mainly comes from the rightmost tail of the wealth distribution. Table 3 shows total wealth tax revenue contributions from different parts of the wealth tax distribution by year. The vast majority of wealth tax revenue is collected from the 90th+ percentile of the taxpayer wealth distribution, which approximately corresponds to the 98th+ percentile of the wealth distribution of all Norwegians. The 75th-90th percentile of the wealth tax distribution contributes 5-10% of its annual revenue, and all taxpayer below that contribute less than 2% of overall revenue. So although the tax is designed to target a broad portion of the population it is disproportionately levied on those with extreme levels of wealth because of the nature of their wealth holdings.

Taxpayer asset allocation and its responsiveness to tax-policy changes is also crucial, especially across the categories receiving different asset-specific discounts. Table 4 shows the mean holdings of asset classes receiving different discounts in the wealth tax calculation for different percentiles of the wealth tax-payer wealth distribution. Up to the 90th wealth percentile of wealth tax-payers, primary housing is the asset class receiving the highest

Year	Wealth Tax Percentile					Total
	< 50th	50th–75th	75th–90th	90th–99th	>99th	
2015	18 <i>0.1%</i>	93 <i>1.0%</i>	740 <i>7.9%</i>	4,316 <i>45.9%</i>	4,242 <i>45.1%</i>	9,409
2016	1 <i>0.0%</i>	39 <i>0.4%</i>	238 <i>2.4%</i>	4,247 <i>42.3%</i>	5,507 <i>54.9%</i>	10,032
2017	1 <i>0.1%</i>	48 <i>0.4%</i>	309 <i>2.8%</i>	4,745 <i>43.4%</i>	5,822 <i>53.3%</i>	10,925
2018	23 <i>0.2%</i>	123 <i>1.1%</i>	1,001 <i>9.2%</i>	5,156 <i>47.2%</i>	4,610 <i>42.2%</i>	10,913
2019	25 <i>0.2%</i>	127 <i>1.1%</i>	1,164 <i>10.1%</i>	5,506 <i>47.8%</i>	4,702 <i>40.8%</i>	11,524
2020	27 <i>0.2%</i>	145 <i>1.2%</i>	1,394 <i>11.6%</i>	5,812 <i>48.2%</i>	4,685 <i>38.8%</i>	12,063
2021	33 <i>0.2%</i>	200 <i>1.5%</i>	1,800 <i>13.6%</i>	6,448 <i>48.6%</i>	4,793 <i>36.1%</i>	13,274
2022	3 <i>0.0%</i>	92 <i>0.5%</i>	980 <i>5.8%</i>	8,309 <i>49.1%</i>	7,528 <i>44.5%</i>	16,912

Table 3: Total annual wealth tax revenue from different parts of the wealth tax distribution. All values in in NOK Millions. Population is all wealth tax-payers in each respective tax year.

gross wealth allocation, before financial wealth takes over for the top 10 percent. Once again, we can observe the low levels of wealth holdings of Norwegians at the right tail of the wealth distribution relative to countries like the U.S. Even among the 90th-99th percentile of wealth tax-payers, representing approximately the 99th-99.9th percentile of the total population wealth distribution, average gross wealth holdings are slightly over NOK 20M. This is substantially lower than the wealth holdings of Americans at the equivalent percentile of the wealth distribution, and is important to keep in mind when interpreting the magnitudes of later-presented results.

Year	Asset Category	Net Wealth Percentile (Among Wealth Tax Payers)				
		< 50th	50th–75th	75th–90th	90th–99th	>99th
2015	Primary Housing	1,680	2,452	2,825	3,423	5,019
	Misc. Real Estate	383	835	1,416	2,474	5,334
	Financial Wealth	187	550	1,527	8,219	100,300
	Other	586	1,139	1,665	2,349	5,708
2016	Primary Housing	1,900	1,245	3,134	3,813	5,612
	Misc. Real Estate	410	947	1,638	2,916	5,745
	Financial Wealth	218	669	1,857	9,857	117,000
	Other	664	1,245	1,762	2,327	5,320
2017	Primary Housing	2,061	2,927	3,370	4,120	6,121
	Misc. Real Estate	410	989	1,802	3,258	6,097
	Financial Wealth	209	623	1,747	9,856	126,000
	Other	760	1,398	2,049	3,535	19,484
2018	Primary Housing	2,079	2,925	3,379	4,145	6,101
	Misc. Real Estate	412	967	1,794	3,300	6,251
	Financial Wealth	185	534	1,521	9,164	127,000
	Other	817	1,519	2,316	4,788	36,161
2019	Primary Housing	2,110	2,980	3,445	4,273	6,309
	Misc. Real Estate	421	976	1,784	3,363	6,651
	Financial Wealth	220	646	1,739	9,304	126,000
	Other	791	1,518	2,335	5,127	43,919
2020	Primary Housing	2,157	3,023	3,501	4,347	6,383
	Misc. Real Estate	408	953	1,765	3,430	6,782
	Financial Wealth	212	611	1,604	8,355	118,000
	Other	843	1,634	2,606	6,381	61,085
2021	Primary Housing	2,329	3,317	3,869	4,821	7,213
	Misc. Real Estate	389	928	1,766	3,573	7,203
	Financial Wealth	208	590	1,491	7,327	107,000
	Other	875	1,722	2,846	7,528	77,331
2022	Primary Housing	2,463	3,503	4,160	5,149	7,488
	Misc. Real Estate	438	1,065	2,006	3,839	7,500
	Financial Wealth	235	687	1,837	10,091	143,000
	Other	901	1,685	2,552	5,715	50,244

Table 4: Mean (non tax-adjusted) asset holdings by year across wealth tax-payer gross wealth percentiles. "Other" reflects bank deposits and miscellaneous wealth holdings (art, vehicles, etc.). Misc. Real Estate includes all privately held real estate aside from primary housing. Population is all wealth tax-payers in each respective tax year.

4.1 Tax Threshold Bunching

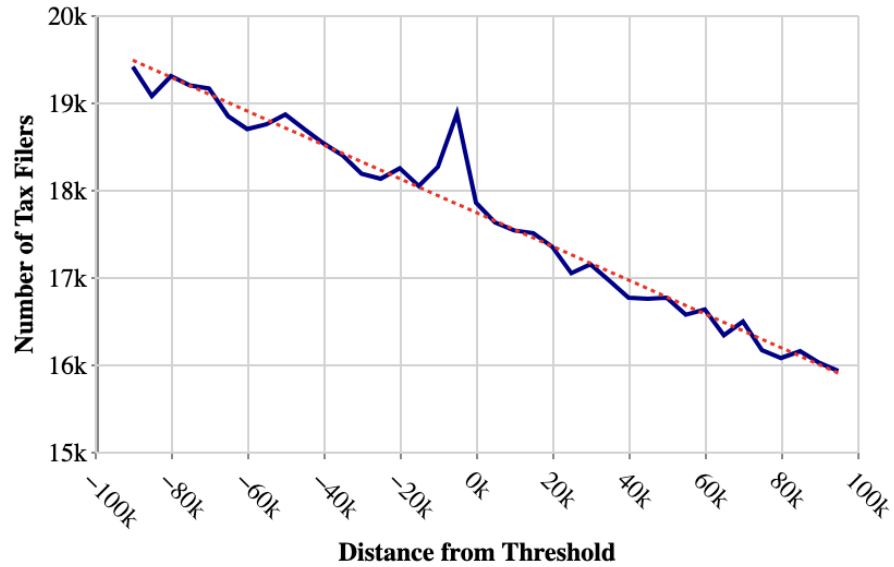
Having presented descriptive information about the population of wealth tax-payers, I can further motivate my investigation of avoidance methods by identifying an intuitive, and well-known, result of tax avoidance. A common outcome of marginal tax thresholds and increases in tax rates is the concept of potential taxpayers bunching up below the threshold, creating a nonlinear component in an otherwise smooth relationship between the number of taxpayers and the size of their tax liability. This has been shown extensively for income tax brackets by (Le Maire and Schjerning, 2013) among others, finding that taxpayers bunch up below marginal tax thresholds by both misreporting income or working less than they could due to being dis-incentivized to make additional income above the next marginal tax rate threshold. It has also been previously shown for capital taxation in Switzerland (Brühlhart et al., 2016), and serves as a useful indicator of taxpayers changing their behavior in response to the potential tax liability they face. I do not consider bunching in the context of wealth tax a method of tax avoidance, but rather as an indicator of tax avoidance existence and evidence of taxpayer awareness of the components of the wealth tax design.

Bunching can be shown directly by analyzing the distribution of tax filers around the tax threshold. Figure 2 shows the distribution of taxpayers around the tax threshold for the years 2015 to 2022. In figure 2b, tax filers are grouped in NOK 10,000 buckets, and there is a clear nonlinearity in the relationship directly to the left of the wealth tax threshold. The deviation from the linear trend becomes more pronounced in figure 2a, when grouping tax filers in NOK 5,000 buckets. The bunching deviation consists of approximately 1,000 tax filers from the line of best fit in the NOK 5,000 bucket immediately below the wealth tax threshold. Since the sample contains seven years of data, from 2015-2022, this indicates bunching of 150-200 potential taxpayers per year. Clearly, bunching directly below the tax threshold represents a small sample of taxpayers. This suggests low levels of illegal tax avoidance, since hiding wealth illegally can be done with high precision. As for the legal wealth tax avoidance methods, presented in later sections, they generally do not enable outcome precision at the

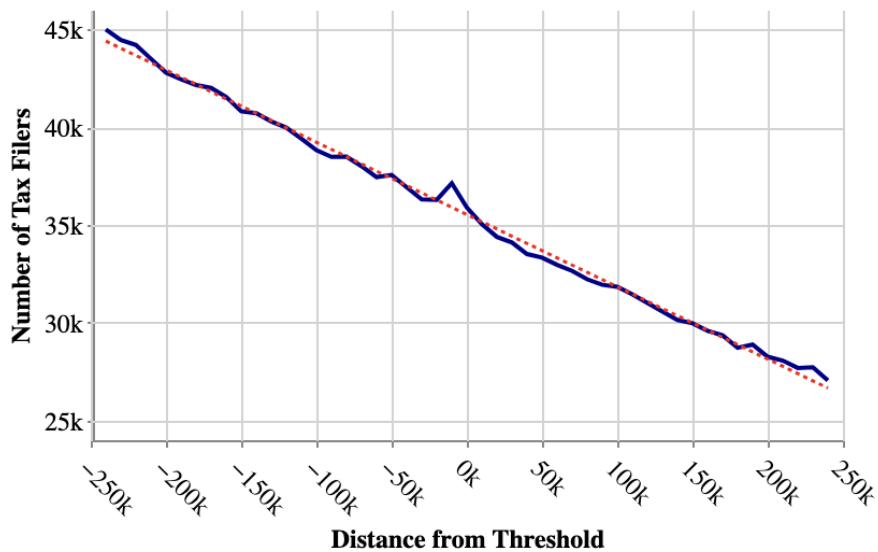
level of NOK 5,000 or 10,000. With this lack of precision in combination with avoidance generally being done by wealth tax-payers far past the tax threshold, it is not expected for legal tax avoiders to show up in the bunching group, which is reflected in the small portion of direct tax threshold bunchers.

The nature of the bunching is different compared to bunching found in the Swiss wealth tax implementation (Brülhart et al., 2016), where the bunching takes place as a plateau lasting for nearly CHF 10,000 (NOK 100,000) before the threshold followed by a drop at the threshold. In the Norwegian data, bunching appears as a spike (lasting for NOK 10,000) directly below the threshold, with indications of a lower density for the NOK 75,000-100,000 above the threshold. This can likely be attributed to the lower wealth-level of those around the Norwegian threshold relative to the Swiss case, since the Swiss threshold is around 5x as high as the Norwegian one. First, Swiss taxpayers at the margin have more flexibility in allocating their wealth and can make larger shifts to keep themselves below the threshold than less wealthy Norwegians. Additionally, the wealthier marginal Swiss taxpayers will have larger absolute wealth increases year-over-year on average, which could lead them to bunch further below the threshold by take expected annual wealth increases into account.

The results I will present in the following sections describe behavioral responses to the tax observed across different parts of the wealth tax-payer population. In each section, I introduce the behavioral phenomenon and what aspect of the wealth tax design motivates it, show how the behavior appears in the data, and quantify the wealth tax revenue loss the Norwegian government incurs from it. Section 5 presents the aggregate wealth tax revenues compared to the "naive" tax revenue that would be obtained if no discounts or threshold was applied in the wealth tax calculation and the tax was applied to naive taxpayer net wealth rather than tax-adjusted wealth. Section 6 looks at tax-motivated intra-family transfers. Section 7 identifies tax losses related to high net wealth individuals emigrating and changing primary housing to tax-beneficial locations. Section 8 identifies over-allocation to primary housing relative to other OECD countries. Lastly, section 9 quantifies the total government



(a) Distribution of tax filers within NOK 100k of the tax threshold (NOK 5k bins).



(b) Distribution of tax filers within NOK 250k of the tax threshold (NOK 10k bins).

Figure 2: Distribution of tax filer distance from the wealth tax threshold in NOK 5/10k buckets. The sample includes all tax filers within NOK 100/250k of the threshold for the tax years 2015 to 2022. The dotted red line is a linear least-squares line of best fit for each distribution.

tax revenue losses from behavioral responses to the wealth tax and its design.

5 Aggregate Wealth Calculation

To understand the impact of tax-avoidance behavior on the government’s wealth tax revenue, it is first useful to establish the size of annual tax revenue, as well as the pre-avoidance revenue losses associated with each element of the wealth tax design described in section 3. The empirical wealth tax revenue can be observed in the data by adding the wealth tax paid by all residents in the each tax year. To calculate the counterfactual ”estimated” wealth tax and the losses associated with the asset-specific discounts, I follow the derivation of a taxpayer’s wealth tax liability from section 3.1. I decompose each taxpayer’s gross wealth into gross wealth held in primary housing, secondary housing, business housing, non-cash financial wealth, and other wealth. Then, I apply asset-specific discounts to each asset value to arrive at tax-adjusted gross wealth. I then subtract tax-adjusted debt⁷ to obtain tax-adjusted net wealth. Lastly, I subtract the tax year’s threshold from tax-adjusted net wealth, and apply the relevant tax rate to arrive at each taxpayer’s estimated tax liability.

To quantify the revenue loss from each of the discounts, I first calculate the ”naive” wealth tax revenue as the tax revenue in the case where the tax rate was levied on each taxpayer’s non-discounted net wealth, without a taxable wealth threshold or asset discounts applied. It is computed as:

$$\text{Naive Tax Revenue}_t = \text{Tax Rate}_t \cdot \sum_i (\text{Gross Wealth}_{i,t} - \text{Debt}_{i,t}) \quad (8)$$

I quantify each of the asset-specific discounts using gross asset holdings reported in each taxpayer’s annual tax return, defining the ”planned” tax revenue loss from each discount as:

$$\text{Discount Value}_t = \text{Tax Rate}_t \cdot \text{Discount Rate}_t \cdot \sum_i \text{Asset Value}_{i,t} \quad (9)$$

For the threshold-discount, I calculate the revenue loss using the tax-adjusted net wealth described in section 3.1, computing the loss as the amount of tax-adjusted net wealth between 0 and the threshold:

$$\text{Threshold Discount}_t = \text{Tax Rate}_t \sum_i \max(0, \text{Adj. Net Wealth}_{i,t}) \quad (10)$$

⁷Debt holdings are not separated by the asset they are related to in the data, but there is a directly observable tax-adjusted debt variable which I use to obtain estimated tax-adjusted net wealth.

Table 5 shows the annual naive tax revenue⁸ and estimated revenue losses from asset discounts. The largest revenue planned loss comes from the 75% valuation discount given to primary housing assets, with annual revenue losses ranging from NOK 7,539 to 14,358 million, representing 80 to 91% of annual collected tax revenue. The tax threshold also represents substantial revenue loss, ranging from NOK 4,896 to 9,308 million. It would represent a substantially larger loss if I also considered the lost tax revenue from tax filers with tax-adjusted net wealth between NOK 0 and the tax threshold instead of only including losses from existing wealth tax-payers, but this is not a relevant comparison for the tax revenue losses related to planned discounts for wealth tax-payers.

I define the estimated wealth tax revenue as Naive Tax Revenue – Total Discounts. Comparing it to the empirical wealth tax revenue, the difference between the two is consistently less than 2% of empirical tax revenue, with the largest absolute (and percentage) estimation error being NOK 296 million from the 2015 tax year, representing 3.2% of tax revenue. The RMSE of the individual-level estimated tax liability relative to their observed tax liability is NOK 2,473 across all years in the sample. Overall, the reconstructed wealth tax estimates fit empirical observations closely enough to provide context for the magnitudes of tax revenue losses from tax avoidance. The close estimates will enable us to compare avoidance-related revenue losses to potential and collected tax revenue, as well as "planned" losses from asset-discounts and the tax threshold.

⁸The "naive" tax revenue is contained to the revenue obtained from existing wealth tax payers, as the idea is to compare the revenue potential of the existing payers to what is currently being paid, not to expand the population of wealth tax payers to all tax filers with positive net wealth. Additionally, the estimated net wealth calculation would be meaningless if the sample was changed between line items.

Year	2015	2016	2017	2018	2019	2020	2021	2022
Naive Tax Revenue	22,963	24,231	27,290	28,924	31,111	34,159	40,275	45,930
Discounts:								
Primary Housing	7,539	7,866	8,420	8,695	9,290	10,118	12,396	14,358
Secondary Housing	609	503	315	337	343	369	426	262
Financial Wealth	0	0	1,351	2,487	3,300	4,625	6,195	4,520
Business Property	259	244	255	259	301	323	361	466
Tax Threshold	4,869	5,299	5,762	5,934	6,264	6,654	7,354	9,308
Total Discounts	13,276	13,912	16,103	17,712	19,498	22,089	26,732	28,914
Estimated Tax Revenue	9,687	10,319	11,187	11,212	11,613	12,070	13,543	17,016
Empirical Tax Revenue	9,391	10,045	10,977	11,118	11,697	12,282	13,603	17,201
Difference (<i>Estimated - Empirical</i>)	296	274	210	94	-84	-212	-60	-185

Table 5: Total gross wealth, discounts, estimated, and empirical tax revenue for each year in the sample. All values in NOK millions. Numbers are calculated using all wealth tax-payers in each respective year. Naive tax revenue is the counterfactual tax revenue that would be obtained from removing the tax threshold and asset-discounts from the wealth tax. Estimated tax revenue is Naive Tax Revenue - Total Discounts.

6 Tax-Beneficial Intra-Family Transfers

An interesting potential method of tax avoidance in response to the wealth tax threshold is wealth tax-payers distributing wealth across direct family members to maximize the amount of below-threshold wealth the family holds. Families have been shown to take advantage of individual-level marginal tax brackets for income by dispersing income across family members to end up in lower individual tax brackets (Laurin and Kesselman, 2011). Wealth is considerably easier to disperse across family members than income, as income generally is tied to a taxpayer’s contract with a third-party while wealth typically is in full control of the taxpayer. In the case of wealth tax, distributing wealth is also impactful because of the magnitude of wealth that can be transferred to taxpayers’ family members. The nature of the wealth tax design would allow, as an example, a married couple with two zero net wealth adult⁹ children to directly distribute NOK 3.4 million in wealth through transfers to their children, representing an annual tax liability decrease between NOK 32,300 and 37,400¹⁰.

⁹Children’s net wealth is attributed to their parents tax filings up until the age of 18, making transfers have no wealth tax benefit until children turn 18.

¹⁰According to 2022 tax rates. NOK 32,300 if the transferring parent’s pre-transfer taxable net wealth is

The potential wealth displacement is also much larger than this when considering the vast proportion of transfer recipients with a negative tax-adjusted net wealth.

The parents’ ability to displace wealth increases dramatically when considering the type of asset allocation that children can do after receiving a transfer. They will often not yet own primary housing pre-transfer, in which case a tax-paying parent could eliminate up to NOK 6,800,000 in wealth per zero net wealth child. The transfer would be discounted to NOK 1,700,000 if allocated to primary housing, and would leave the child with a wealth tax liability of 0 if they had a non-positive taxable net wealth pre-transfer. This would represent an annual wealth tax saving between NOK 64,600 and 74,800, showcasing the significant potential for parents to decrease their wealth tax liability by distributing wealth to their children.

There is substantial motivation for parents with a wealth tax liability to distribute excess wealth to their children. In identifying whether or not empirical transfer behavior is aligned with the theoretical optimizing behavior, we can look at transfers from two different sides: the receiving, and the transferring. The motivating factor from the receiving end is represented by whether, and how far, a child is below the wealth tax threshold. A child further below the threshold should receive larger wealth transfers to leverage the additional room they have to receive tax-free wealth. From the transferring parent’s side, the motivating factor is to minimize their tax liability by transferring themselves as close to the wealth tax threshold as possible. Considering these two factors, we would expect to see larger transfers to children further below the threshold, and larger transfers from parents further above the threshold.

To understand the relationship between transfer size and the receiving child’s pre-transfer net wealth¹¹, we can run the following regression:

$$\text{Transfer Size}_{i,t} = \sum_k \beta_k \mathbb{1}(\text{Bucket}_k) + X_{i,t} + \gamma_t + \epsilon_{i,t} \quad (11)$$

In equation 11, transfer size is the tax-reported inheritance or gift received by child i in year t , lower than NOK 20 million, and NOK 37,400 if their post-transfer taxable net wealth is greater than NOK 20 million

¹¹”Pre-Transfer Net Wealth” is referring to a child’s tax-adjusted net wealth reported the year prior to receiving the transfer

$\mathbb{1}(\text{Bucket}_k) = 1$ if child i 's pre-transfer net wealth threshold distance is part of wealth distance bucket k , $X_{i,t}$ is a set of individual-year controls, and γ_t are year fixed effects. The wealth distance buckets are constructed as NOK 500k intervals from Net Wealth Distance \leq NOK -2M to Net Wealth Distance \geq NOK 2.5M. The controls used in the regression are parent pre-transfer net wealth, and an indicator for whether or not the receiving child owned primary housing prior to the transfer year. The parental wealth control is in place because wealthier parents tend to transfer larger amounts to their children, and controlling for child primary housing ownership is key because children not owning primary housing can receive substantially higher amounts of tax-free capital relative to those at the same wealth level already owning one.

I run the specified regression on all observations of parent-children transfers where the transferring parent's pre-transfer net wealth is above the tax threshold and the parent did not pass away in the transfer year or the following 2 years¹², for the years 2015-2022. I find significantly higher transfer sizes to children with lower levels of pre-transfer net wealth relative to those at the threshold, with children more than NOK 2.5M receiving NOK 600k larger transfers on average relative to those at the threshold. Additionally, there is initial evidence of nonlinearity between below- and above-threshold distance from the threshold. Where children NOK 2M below the threshold receive 600k higher transfers on average, those NOK 2M above the threshold only receive transfers NOK 375k lower than the ones at the threshold, suggesting higher transfer-size sensitivity to children's pre-transfer net wealth below the threshold relative to above the threshold. Table 14 in the appendix shows the values and significance of all the coefficients from the regression used to make figure 3.

To understand the relationship between transfer size and child pre-transfer wealth, it is important to identify whether transfer-size differences are motivated by the wealth tax benefit available to the transferring parent, or by parental altruism of wanting to transfer more to children in a worse financial situation. We can quantify the sensitivity of transfer-size

¹²I remove recent post-transfer deaths to avoid transfers resulting from planned generational changes

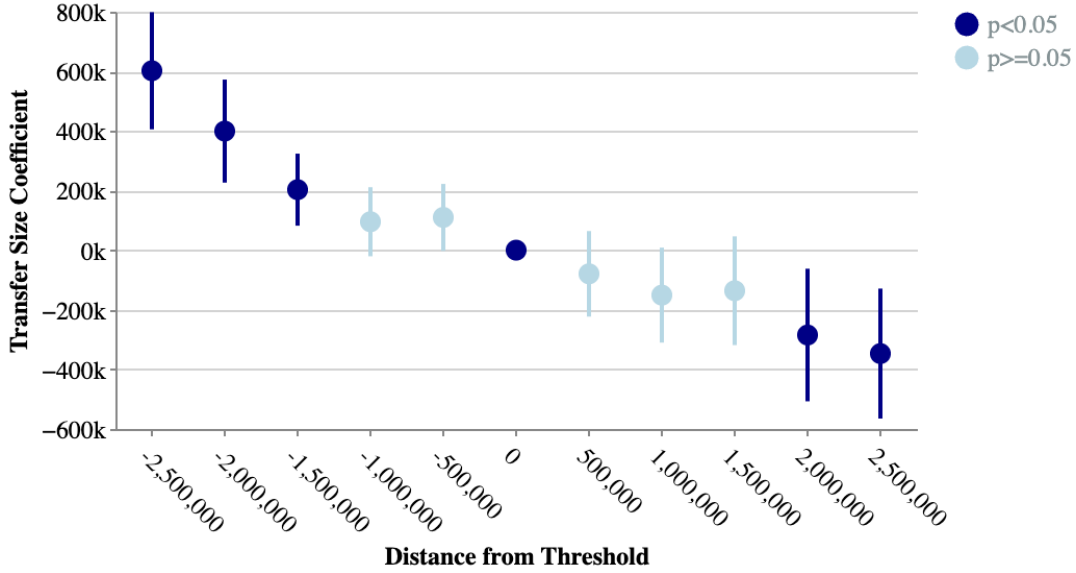


Figure 3: Regression Coefficients with 95% confidence interval for child pre-transfer wealth distance buckets in equation 11. X-axis labels represent the lowest distance in each respective net wealth distance bucket, and Y-axis values represent average transfer size difference for the respective bucket relative to a child with pre-transfer wealth in the 0-bucket.

with respect to the child’s net wealth by running the following regression:

$$\begin{aligned}
 \text{Transfer Size}_{i,t} = & \beta_0 + \beta_1 \text{Child Net Wealth}_{i,t} \times \mathbb{1}(\text{Below Threshold})_{i,t} \\
 & + \beta_2 \text{Child Net Wealth}_{i,t} + \beta_3 \text{Parent Net Wealth}_{i,t} \\
 & + \beta_4 \mathbb{1}(\text{Child Housing})_{i,t} + \epsilon_{i,t}.
 \end{aligned} \tag{12}$$

Table 6 shows the coefficients obtained from running equation (12) on the same sample used to produce figure 3. I find that transfer size sensitivity is -0.107 per NOK increase in child net wealth for children above the threshold receiving transfers, and increases to -0.195 for children below the threshold. The transfer size is thus approximately twice as sensitive to higher child pre-transfer net wealth if the child’s net wealth is below the threshold relative to above the threshold. Transfer size choices being substantially more sensitive to the amount of wealth held by the child when there is a wealth tax benefit relative to when there is not suggests that transfers sizes are motivated in part by the available wealth tax savings.

Another way of observing empirical agreement with the transfer motivation on the receiving end is by comparing the distribution of the receiving child’s net wealth pre- and

	(1)	(2)	(3)	(4)
Child Net Wealth $\times \mathbb{1}(\text{Below Threshold})$	-0.088** (0.040)	-0.066* (0.040)	-0.081** (0.041)	-0.073* (0.041)
Child Net Wealth	-0.107*** (0.028)	-0.046* (0.027)	-0.075*** (0.028)	-0.079*** (0.028)
Parent Net Wealth	0.054*** (0.008)	0.061*** (0.008)	0.054 (0.008)	
$\mathbb{1}(\text{Child Primary Housing Ownership})$	-560,117*** (50,955)	-393,287*** (48,755)		
Constant	542,946*** (52,632)	677,256*** (44,675)	307,303 (48,840)	461,995 (43,857)
Year Fixed Effects	✓	✗	✓	✓
Sample Size	37,480	37,480	37,480	37,480
R^2	0.16	0.05	0.04	0.05

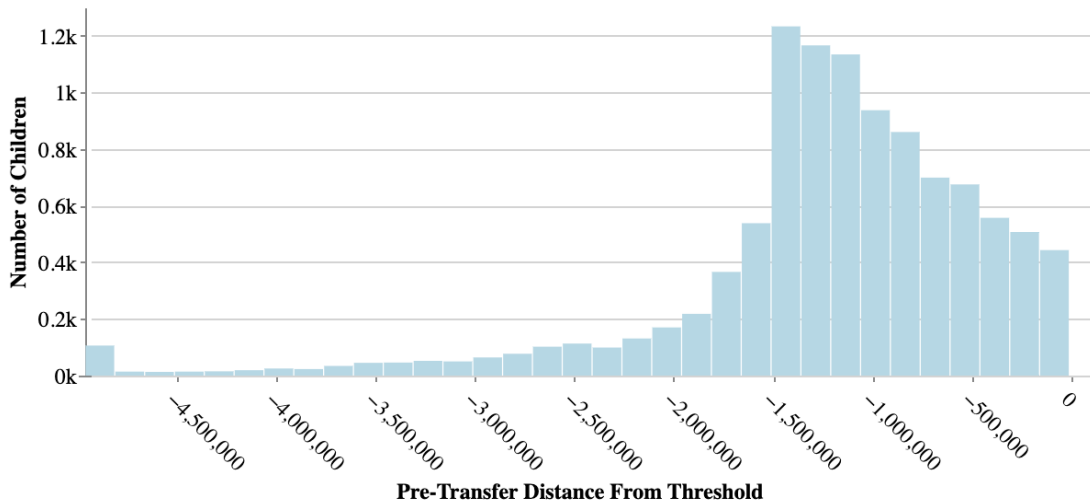
Table 6: Regression coefficients for equation (12). *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Standard errors in parentheses.

post-transfer. In doing this, it is important to realize that there is potential for significant differences between the child’s planned post-transfer net wealth at the time of transfer and the net wealth observed in their transfer-year tax report, as they could have made significant asset-allocation changes and seen other unplanned fluctuations in their wealth between the transfer decision and the year’s tax filing. Because of this, it makes more sense to look at the theoretical post-transfer net wealth when determining what the intended post-transfer net wealth of the receiving child was at the time of the transfer. I define this as:

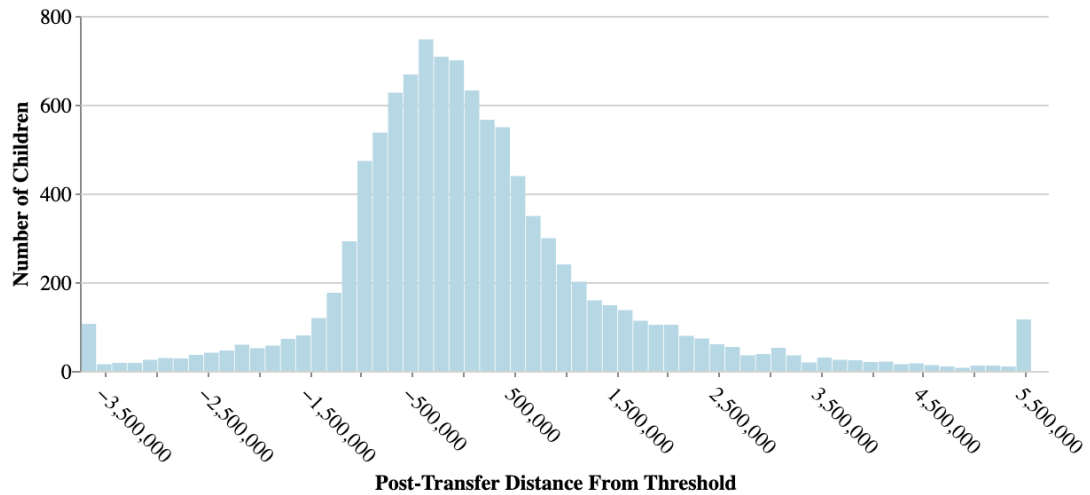
$$\text{Post-Transfer Net Wealth}_{i,t} = \text{Pre-Transfer Net Wealth}_{i,t-1} + \text{Transfer}_{i,t}$$

Figure 4 shows the pre- and post-transfer distribution of transfer-receiving children. The sample contains all children with pre-transfer tax-adjusted net wealth below the tax threshold who have transferring parents above the taxable wealth threshold for the years of 2015-2022. Consistent with the transfer-size results shown in figure 3, there is significant convergence around the threshold in post-transfer, tax-adjusted net wealth, with the post-transfer distribution having the highest density directly below the wealth tax threshold.

One can also view the motivation for transfer size being based on a parent’s wish to



(a) Pre-transfer distribution of transfer-receiving childrens' distance from net wealth threshold. Sample limited to children with potential for wealth tax benefit from receiving transfer.



(b) Post-transfer distribution of transfer-receiving child distance from net wealth threshold. Same sample as shown in Figure 4a.

Figure 4: Comparison of pre- and post-transfer distributions for transfer-receiving children in buckets of NOK 150k. (a) shows the pre-transfer net wealth distribution, (b) shows the post-transfer distribution. Both use the same sample population with observations from 2017-2022.

decrease their wealth tax liability as much as possible. In this case, we would want to see parents further from the threshold transferring larger amounts to their children, and those closer to the threshold transferring smaller amounts, as they do not need to disperse as much wealth as the ones further to the right on the distribution. The results in table 7

already indicate suggest this behavior, with a positive coefficient of 0.054 for parent net wealth. We can show this behavior visually by again looking at the transferring-parent wealth distribution around the tax threshold before and after the transfer. Figures 5a and 5b show the distribution of transferring parents pre- and post-transfer, respectively. There is significant convergence toward the threshold with the post-transfer distribution being centered around the bucket immediately to the left of the threshold. The distance domain for the histograms is restricted to -500k and 3.5M for readability, and the sample considers all parents where the receiving child’s pre-transfer net wealth is lower than the tax threshold (meaning the parents are incentivized to transfer wealth to them).

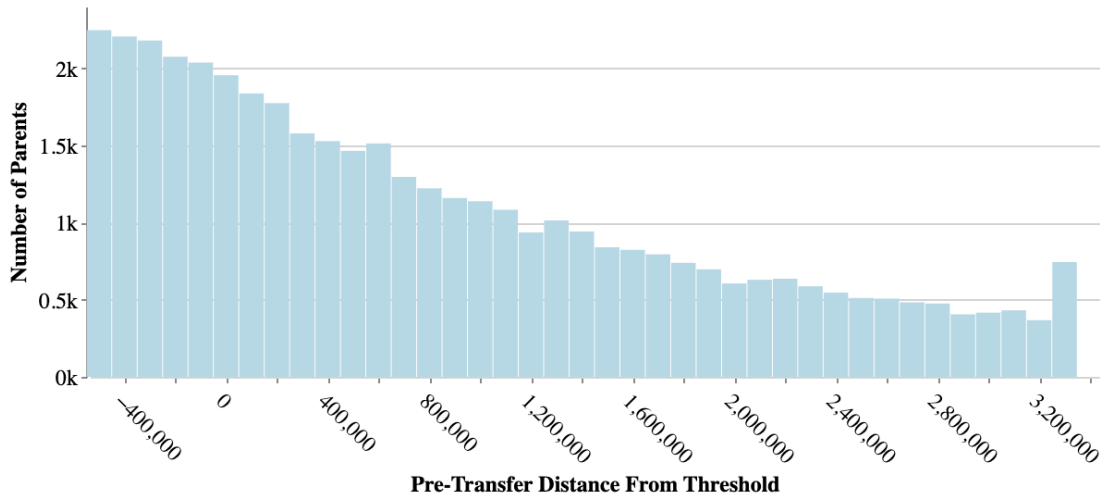
To quantify the revenue loss from the parent-children transfers, I compare the combined post-transfer wealth tax paid by each family with the counterfactual combined wealth tax the family would have paid if the transfer(s) did not take place. I construct the counterfactual wealth tax by computing the child’s counterfactual taxable net wealth as:

$$\text{Child Net Wealth}_{i,t} = \max \{ \text{Adj. Net Wealth}_{i,t} - \text{Transfer}_{i,t} - \text{Tax Threshold}_t, 0 \} \quad (13)$$

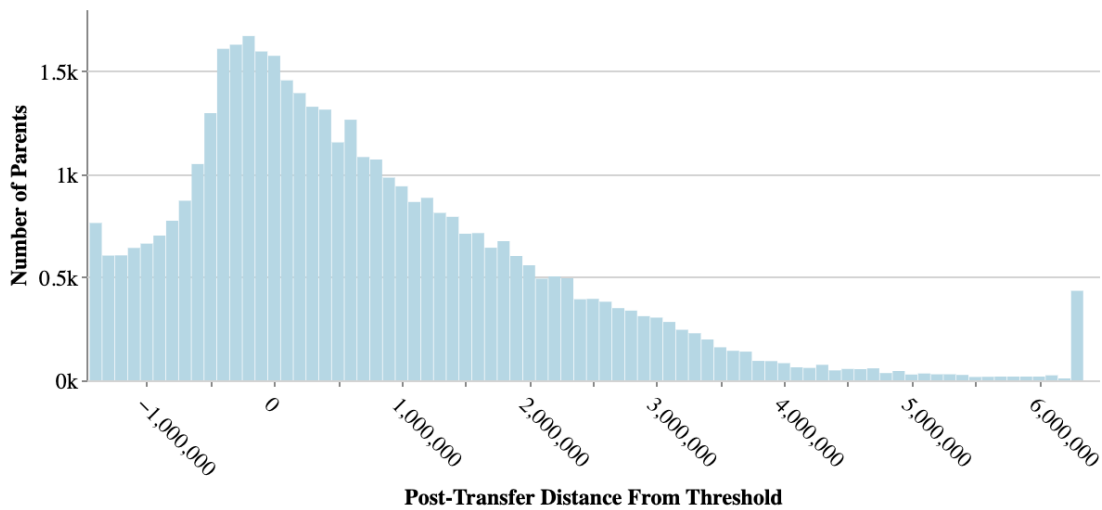
Similarly, the parent’s counterfactual net wealth is defined as

$$\text{Parent Net Wealth}_{i,t} = \max \{ \text{Adj. Net Wealth}_{i,t} + \text{Transfer}_{i,t} - \text{Tax Threshold}_t, 0 \} \quad (14)$$

Calculating counterfactual net wealth in this way makes for all child-parent post-transfer wealth tax savings to be attributed to the non-linearity in wealth tax relative to net wealth the tax threshold produces, which is what we are interested in quantifying in this case. With the counterfactual expressions for taxable net wealth defined, I compute the estimated family wealth tax as the sum of each child-parent pairs taxable net wealth multiplied by the year’s tax rate. I define the wealth tax loss as Estimated - Empirical, where the empirical wealth tax revenue is the sum of the child-parent pair’s empirical wealth tax payments, observed in the data. Doing this, I identify that each child-parent pair’s empirical wealth tax is significantly smaller than their estimated tax liability, with the annual average tax saving per pair being between NOK 18,757 and NOK 29,585 for the years in the sample, as shown in table 7. This implies an annual wealth tax revenue loss to the government of



(a) Pre-transfer distribution of transferring parent distance from net wealth threshold. Limited to domain of -500,000 to 3.5M for readability.



(b) Post-transfer distribution of transferring parent distance from net wealth threshold. Same sample as shown in Figure 5a.

Figure 5: Comparison of pre- and post-transfer distributions for transferring parents. (a) shows the pre-transfer net wealth distribution, (b) shows the post-transfer distribution. Both use the same sample population with observations from 2017-2022.

NOK 125-200 million from intra-family transfers, representing approximately 1% of annual collected wealth tax revenue. Viewed in the context of the estimated revenue loss associated with the tax threshold (from table 5), eliminating premature family transfers would decrease the size of annual losses from the tax threshold discount by 1.6-3.1 percentage points.

Variable Name	2015	2016	2017	2018	2019	2020	2021	2022
Family-Level:								
Observations	7,042	6,129	10,139	6,375	4,814	6,686	6,293	6,219
Wealth Tax	78,025	88,076	70,793	85,940	98,609	108,849	99,453	106,058
Est. Wealth Tax	99,348	111,443	89,550	107,168	124,767	138,434	127,459	129,636
Tax Savings	21,323	23,367	18,757	21,228	26,158	29,585	28,006	23,578
Government-level:								
Tax Revenue	549,452	539,818	717,770	547,868	474,704	727,764	625,858	659,575
Est. Tax Revenue	699,608	683,034	907,947	683,196	600,628	925,570	802,099	806,206
Tax Revenue Loss	150,156	143,216	190,177	135,328	125,924	197,806	176,241	146,632
<i>(%Loss)</i>	<i>(1.60%)</i>	<i>(1.43%)</i>	<i>(1.73%)</i>	<i>(1.22%)</i>	<i>(1.08%)</i>	<i>(1.61%)</i>	<i>(1.30%)</i>	<i>(0.85%)</i>

Table 7: Mean empirical and estimated wealth tax liability per child-parent transfer pair and the associated government tax revenue and losses. All government-level values in NOK millions. All Family-level variables except observations in NOK. Percentage revenue loss calculated using empirical tax revenue from table 5.

7 Wealth Tax Motivated Emigration

A behavioral reaction to wealth tax implementations that has received a lot of attention historically, and has been a central topic in Norway’s political debate about its wealth tax design, is taxpayers emigrating. In countries such as Spain and Switzerland, empirical studies have focused on within-country, between-province migration as both their wealth tax policies had significant heterogeneity between sub-regions of the country. In Norway, the wealth tax is uniformly enforced across the country¹³, leaving taxpayers with a willingness to migrate in order to decrease their tax liability with no other option than moving abroad.

To highlight the motivating aspect the wealth tax represents in emigration among the wealthy, the following section has two main focuses. First, it will quantify the annual wealth tax revenue losses associated with taxpayers leaving the country. Second, it shows the sensitivity that wealthy Norwegians exhibit to their wealth tax liability by highlighting a substantial increase in wealthy Norwegians leaving the country following a wealth tax policy reform from 2022 targeted at the country’s wealthiest residents. The 2022 reform included an additional ”step” added to the wealth tax, increasing the marginal tax on wealth over NOK

¹³With the exception of one county, Bø, in which the tax rate is lower. (Iacono and Smedsvik, 2024) identify significant immigration of wealthy taxpayers to Bø following the policy change, as mentioned in section 2.

20M to 1.1% relative to the 0.95% baseline rate. More importantly, the discount on shares in companies was reduced from 45% to 25%, the discount on business property reduced from 35% to 25%, and the discount on primary housing wealth over NOK 10M decreased from 75% to 50%. In addition to the specific discount and tax rate changes targeted at high levels of wealth, the asset composition of the wealthy being weighted toward financial wealth made the impact of the policy reform disproportionately large on the wealthy. The effect of the policy can be observed through the increased 2022 tax revenue contribution of the 99th percentile of the wealth tax distribution in table 3.

I identify emigration of wealth from Norway in two different ways. First, there is an annual variable keeping track of anyone formally emigrating from the country, as reported by the National Population Registry, capturing everyone fully detaching themselves from the country. Additionally, taxpayers can report moving abroad (not emigrating) and show that they are "practically detached" from Norway to the Norwegian Tax Department without having to formally emigrate. To identify this group of individuals, which is not directly reported, I select all taxpayers with a wealth tax liability over NOK 500,000 in year t-1 and a registered Norwegian home-county (county of primary residence) in year t-1, who in year t no longer have a registered home-county and have a year t wealth tax liability of less than NOK 5,000, in which case year t is assigned as their year of "wealth emigration".

In the entire Norwegian population, there are approximately 30,000 emigrants annually. As shown in table 8, most of these emigrants have low levels of wealth, and many are often former immigrants returning to their home country. For the purposes of analyzing wealth tax induced emigration, we consider emigrants with over NOK 10M in taxable net wealth as the eligible group, as their minimum tax liability of NOK 100,000 represents a sufficiently large tax liability to motivate emigration.

Table 8 shows the total number of leavers as both those emigrating and those identified as "wealth emigrants". From the way I estimate wealth migrants, there is no difference between number of emigrants and total leavers in the two lowest wealth buckets, and for the

top bucket we can see that the wealth migrants make up 30-49% of the total leavers per year. Although the top wealth bucket is balanced between those formally emigrating and wealth tax movers, it is clear that wealth emigration is the preferred option for the ultra wealthy, as the majority of the net wealth and wealth tax revenue comes from wealth migrants in the bucket rather than the emigrants, reflecting a thicker right tail for the distribution of wealth migrants compared to formally reported emigrants.

An important element to consider regarding tax-induced emigration relative to other tax-optimizing behavior investigated in this paper is that there are substantial negative externalities outside of the wealth tax revenue lost from this behavior. Some elements of this are factories and headquarters of big businesses moving with their business owners, as well as loss of capital being invested domestically due to restrictions on holdings of Norwegian assets for tax-emigrating individuals. Such consequences are difficult to quantify, but one easily quantifiable negative externality from tax-emigration is the lost tax revenue other than wealth tax revenue, of which the most prevalent one is income tax.

Looking at the top wealth bucket, losses from income tax represent 53.6% of the combined lost wealth and income tax revenue across all the years in the sample, thus more than doubling the tax revenue losses from migration among the wealthiest relative to just looking at the wealth tax. The annual income tax losses for the middle wealth group range from NOK 45 to 82 million, representing a 5-7x increase in revenue losses compared to only considering wealth tax revenue. However, as the two lowest groups do not represent a group of leavers reasonably motivated to leave by the wealth tax, revenue losses associated with their departure from the Norwegian tax system are much less relevant in evaluating the wealth tax design than observations from the top wealth bucket.

We can use the two sources of lost tax revenue from table 8 to estimate annual tax revenue losses associated with wealth tax motivated emigration by looking only at the top net wealth bucket. Annual wealth tax losses range from NOK 36M to NOK 181M for the top bucket, with an average annual loss of NOK 92M from 2015 to 2023. Comparing

the annual numbers to the empirical wealth tax revenue from table 5, the annual revenue loss from wealthy taxpayers leaving the country represents 0.3-1.1 percentage points of the total wealth tax revenue. When considering income tax losses from wealthy leavers as well, the number more than doubles, representing annual losses in government tax revenue from wealthy leavers of up to NOK 412 million.

Wealth Group	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Number of Leavers:										
<i>< 1.5M</i>	30,573	34,071	37,709	34,124	31,771	24,674	24,975	32,317	30,101	280,315
$\in [1.5M, 10M]$	465	612	693	677	877	707	703	842	1,088	6,664
<i>> 10M</i>	41	74	79	91	73	63	59	114	177	771
<i>Emigrants > 10M</i>	25	49	49	51	55	39	33	67	102	469
Total	31,079	34,757	38,481	34,892	32,721	25,444	25,737	33,273	31,366	287,750
Total Net Wealth:										
<i>NOK millions</i>										
<i>< 1.5M</i>	1,254	1,738	1,772	1,672	1,652	1,431	1,399	1,551	1,686	14,155
$\in [1.5M, 10M]$	1,371	1,942	2,055	2,118	2,695	2,195	2,168	2,718	3,501	20,763
<i>> 10M</i>	3,212	7,325	8,652	12,100	6,602	6,116	6,262	17,111	16,737	84,117
<i>Emigrants > 10M</i>	619	2,142	2,052	2,676	2,132	1,916	739	2,654	4,347	19,304
Total	5,837	11,005	12,479	15,890	10,949	9,742	9,829	21,380	21,924	119,035
Wealth Tax Revenue Loss:										
<i>NOK millions</i>										
<i>< 1.5M</i>	1	0	0	0	0	0	0	0	0	1
$\in [1.5M, 10M]$	7	9	8	9	10	8	8	11	16	86
<i>> 10M</i>	36	79	76	94	65	60	59	180	181	830
<i>Emigrants > 10M</i>	6	18	17	22	17	16	5	21	44	166
Total	44	88	84	103	75	68	67	191	197	917
Income Tax Revenue Loss:										
<i>NOK millions</i>										
<i>< 1.5M</i>	251	298	296	254	218	206	170	192	196	2,081
$\in [1.5M, 10M]$	45	57	56	55	64	53	48	75	82	535
<i>> 10M</i>	20	63	44	92	55	54	46	193	231	798
<i>Emigrants > 10M</i>	27	78	28	80	65	53	16	68	83	498
Total	316	418	396	401	337	313	264	460	509	3,414

Table 8: Aggregate number of annual emigrants and total leavers from Norway, and the net wealth and tax revenue losses associated with their emigration, separated into buckets of pre-emigration net wealth levels. The $> 10M$ bucket has separate line showing values only for emigrants while the two lower buckets have an identical number of observations for emigrants and all leavers. All Total-calculations exclude Emigrants $>10M$ since it is contained within $>10M$ rows.

Looking at the post-2022 emigration trend, there is initial evidence of a reaction to the wealth tax policy change even in the aggregate data. Table 8 shows a 1.72x and 3.08x increase in number of leavers in the top wealth bucket relative to 2021 for 2022 and 2023, respectively, with the number of high-wealth leavers increasing from 59 in 2021 to 114 and 177 in 2022 and 2023. Net wealth outflows increased more substantially, going from NOK 6,262 million in 2021 to NOK 17,111 and NOK 16,737 in 2022 and 2023, representing a 2.72x and 4.22x increase in net wealth outflows from the top wealth bucket for 2022 and 2023 relative to 2021. Providing more support for the idea that the 2022-2023 increase in net wealth leaving the country is tax-motivated is the fact that there is substantial difference in both the number of leavers and level of wealth leaving the country for the two lower buckets relative to the top bucket. In the lowest wealth bucket, the number of emigrants increases by 1.29x and 1.21x for 2022 and 2023 relative to 2021, while the same numbers for the middle wealth bucket are 1.19x and 1.54x. With similar trends holding for the net wealth outflows in each group, it is clear that there seems to be a wealth-emigration inducing reaction to the policy among taxpayers in the top wealth bucket.

To get an understanding for the impact the 2022 wealth tax policy change had on wealthy taxpayers, it is useful to introduce an example. A taxpayer with a NOK 40M primary home, NOK 50M in financial wealth, NOK 10M in cash, and no debt, would have a 2021 wealth tax liability of NOK 403,750. Following the policy change, the taxpayer would have a wealth tax liability of NOK 657,500. The policy change would lead to an annual wealth tax increase of NOK 253,750, or 62.8%. Although the taxpayer has a high level of wealth, their primary housing and financial wealth could be highly illiquid, and their annual wealth tax liability would now make up 6.58% of their total cash holdings. With this in mind, there seems to be clear motivation for avoidance among the wealthy following such a change in wealth tax policy.

Since the figures in table 8 are not inflation adjusted, it could be argued that the increase in wealthy leavers is a function of an increased number of wealthy Norwegian residents in

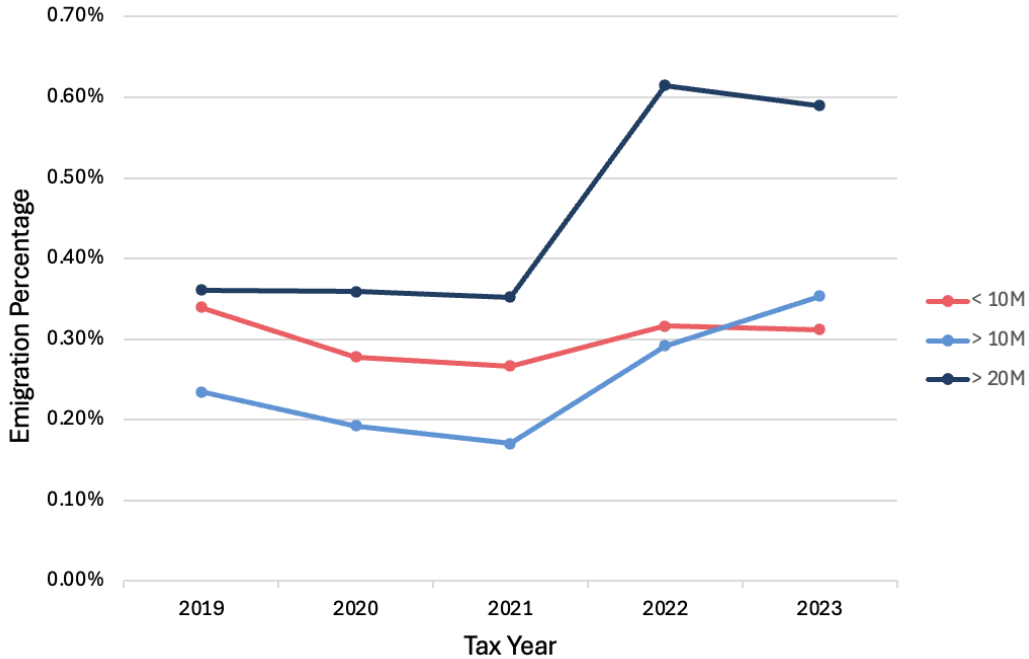


Figure 6: Annual emigration percentage by pre-emigration tax-adjusted net wealth levels. Sample includes all adult tax filers with a reported net wealth. This excludes some recent immigrants who emigrate after a short stay in the country.

2022 and 2023 (years when equity markets saw strong performance). To establish that this was not the case, and the increased number of leavers in fact was motivated by the wealth tax change, I begin with plotting the percentage of leavers by wealth group before and after the policy change. Figure 6 plots the percentage of leavers among all Norwegian residents in each respective wealth group. The graph shows a substantial jump in the percentage of leavers among high-wealth residents for 2022 and 2023, the years following the wealth tax policy change, with little change in the rate of leavers among lower-wealth residents. This provides evidence that the jump in wealthy leavers following the policy change was due to a sentiment change among wealthy residents, not a wealth increase across the population.

We can see from figure 6 that the high- and low-wealth groups satisfy the parallel trends assumption required to analyze the policy change using a Difference-in-Differences approach. We can therefore further quantify the emigration-reaction to the policy change

among wealthy taxpayers by running the following DiD-regression:

$$100 \cdot \mathbb{1}(\text{Emigration})_{i,t} = \beta_0 + \beta_1 \mathbb{1}(\text{Wealthy})_{i,t-1} \cdot \mathbb{1}(\text{Post})_{i,t} + \beta_2 \mathbb{1}(\text{Wealthy})_{i,t-1} + \beta_3 \mathbb{1}(\text{Post})_{i,t} + X_{i,t} + \epsilon_{i,t}. \quad (15)$$

In equation (15), $\mathbb{1}(\text{Wealthy})_{i,t}$ is an indicator for whether a resident had a tax-adjusted net wealth over NOK 10M (or 20M) in the year prior to the emigration observation, and $\mathbb{1}(\text{Post})_{i,t}$ is an indicator for whether the observation is after the policy-implementation (after December 31st 2021). I run the regression on the entire sample of Norwegian residents in the period 2019-2023, and include the entire sample of Norwegian residents with a tax-reported gross wealth for the period. Table 9 shows a 0.18 percentage point larger increase in emigration-rate for residents with wealth over NOK 10M, and a 0.35 percentage point larger increase for residents with wealth over NOK 20M relative to lower-wealth residents, following the policy implementation. The results are strongly significant across controls such as pre-emigration income and age, providing causal evidence that taxpayer emigration becomes more likely if their wealth tax liability is increased.

	High Wealth > 10M			High Wealth > 20M		
	(1)	(2)	(3)	(4)	(5)	(6)
High Wealth $\times \mathbb{1}(\text{Post})$	0.183*** (0.024)	0.188*** (0.024)	0.098*** (0.025)	0.354*** (0.039)	0.372*** (0.039)	0.224*** (0.041)
High Wealth	0.114*** (0.017)	0.038** (0.017)	-0.087*** (0.017)	0.325*** (0.026)	0.277*** (0.026)	0.061** (0.027)
$\mathbb{1}(\text{Post})$	-0.048*** (0.002)	-0.032*** (0.002)	0.020*** (0.002)	-0.047*** (0.002)	-0.031*** (0.002)	0.020*** (0.002)
Pre-migration Income (NOK 1000s)	-0.000049*** (0.000001)	-0.000055*** (0.000001)		-0.000052*** (0.000001)	-0.000059*** (0.000001)	
Age	-0.008*** (0.00002)			-0.0082*** (0.000059)		
Constant	0.736*** (0.003)	0.312*** (0.002)	0.293*** (0.002)	0.737*** (0.003)	0.313*** (0.002)	0.292*** (0.002)
Sample Size	21,368,132	21,368,132	21,368,132	21,368,132	21,368,132	21,368,132
R^2	0.001	0.001	0.001	0.001	0.001	0.001

Table 9: Regression coefficients for equation 15. Dependent variable is emigration percentage, and standard errors are clustered at the individual-level.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Standard errors in parentheses.

8 Primary Housing Over-Allocation

For the two responses to the wealth tax I have showed so far, intra-family transfers are motivated by the wealth tax threshold, and emigration is a response to overall wealth tax liability increase. The final element of the wealth tax design creating opportunity for tax optimization is the asset-specific discounts. Among the main assets receiving a discount, the one with the largest discount throughout the sample period is primary housing, which was valued at 25% of its estimated market value in the wealth tax calculus between 2015 and 2022¹⁴. In addition to receiving the largest discount, primary housing also stands out as an asset particularly beneficial to allocate additional capital to as it is the only asset with a different debt discount than its asset discount. Although the asset-debt discounting relationship remains arbitrage-proof as long as the wealth tax rate remains lower than the mortgage rate, the combination of an asset valuation discount and non-discounted leverage provides substantial opportunity for taxpayers to decrease their wealth tax liability by allocating more capital to primary housing. As explained in section B of the appendix, taxpayers obtain no financial benefit from taking on a larger primary housing mortgage than necessary, meaning the wealth tax optimization strictly happens within wealth allocation, not financing.

As a motivating example, we can consider the two taxpayers with wealth allocations laid out in table 10. They both have a gross wealth of NOK 20M and we follow the 2021 wealth tax rules. Taxpayer 1 owns a NOK 18M primary house and has NOK 2M in cash deposits. Taxpayer 2 owns a NOK 8M primary house, holds NOK 5M in stocks, owns a NOK 5M secondary home, and has NOK 2M in cash deposits. In this scenario, taxpayer 1 would have a tax liability of NOK 42,500, while taxpayer 2 would have a tax liability of NOK 82,875, leaving taxpayer 2 with a 95% higher wealth tax liability than taxpayer 1 despite having the same net wealth.

Despite the theoretical incentive for asset-allocation optimization, the illiquidity of primary housing and stickiness residents have to their primary home both present barriers

¹⁴With the exception of primary housing holdings over NOK 10M in 2022, which received a 50% discount.

Asset Category	Discount Rate	Taxpayer 1		Taxpayer 2	
		Market Value	Tax Value	Market Value	Tax Value
Primary Housing	0.75	18,000	4,500	8,000	2,000
Secondary Housing	0.1	0	0	5,000	4,500
Stock Holdings	0.45	0	0	5,000	2,750
Bank Deposits	0	2,000	2,000	2,000	2,000
Total	-	20,000	6,500	20,000	11,250

Table 10: Theoretical 2021 tax adjusted net wealth for different wealth allocations (in NOK 1,000s). Wealth Tax = $0.0085 \cdot (\text{Tax Value} - 1,500)$.

to empirical identification of over-allocation. There is no significant policy change related to primary housing within my sample period, so I will approach the problem with a cross-sectional analysis and compare asset allocation between similar countries rather than observe behavioral change following a policy change (which is not available for primary housing). To observe relative primary-housing allocation among Norwegian residents, I leverage the population-level data from 2019 to compute aggregate statistics for different wealth levels, and compare with 2019 wealth allocation numbers reported for 29 comparable countries in an OECD housing taxation report (OECD, 2022). I compute gross wealth allocation percentages across all five quintiles as well as for the 90-95th, 95th-99th, and 99th+ percentile of the wealth distribution. The wealth quintiles are calculated following a description given in the OECD report, and should thus represent the same sample of the population as is being looked at for the different countries in the OECD report.

Table 11 shows the wealth allocation percentages to major asset categories across the wealth distribution for Norwegian and OECD residents. Firstly, we see that the gross wealth for Norwegian wealth quintiles are slightly higher than the OECD average, but that the two are close enough to where our comparison across quintiles is similar to a comparison across wealth levels. We can observe an interesting development in average primary housing wealth allocation across the wealth quintiles. In the 1st quintile, where the gross wealth of all Norwegian residents is well below the wealth tax threshold, Norwegian residents allocate a similar share of household wealth to primary housing as OECD residents, with the Norwegian

mean being 48.8% and the OECD mean being 52.3%. However, as Norwegian gross wealth increases past the wealth tax threshold, meaning the residents are "potential" wealth taxpayers, Norwegians begin allocating significantly more to highly discounted primary housing relative to OECD residents. In the 2nd quintile, Norwegian residents allocate 77.1% of their wealth to primary housing, while OECD residents allocate 64.1%. In quintile 3 Norwegians allocate 77.6% while the OECD average is 64.1%. In quintiles 4 and 5, Norwegians allocate 74.5% and 59.6% to primary housing, respectively, while the OECD averages are 64.2% and 39.9%. Over-allocation to primary housing among Norwegian residents persists up until the 99th percentile, for which convergence could be explained from forced increased holdings of wealth in personal businesses or other equity interests.

In addition to the divergence in primary housing allocation from the lowest to higher wealth quintiles, the low levels of secondary housing allocation among Norwegians relative to OECD numbers support the argument that allocation differences are motivated by wealth tax liability reduction. Secondary housing is only discounted by 10% in the wealth tax calculus, while primary housing is discounted at 75%. With this in mind, taxpayers are more heavily incentivized to purchase a single primary home, rather than splitting their housing wealth between a primary and a secondary home. The wealth allocation to secondary housing in Norway is consistently lower than the OECD average across all wealth levels, with the largest difference being for the top 1%, where Norwegians allocate only 9.1% of gross wealth to secondary housing, while the OECD average allocation is 24.8%. This could partially be explained by wealthy Norwegians generally holding rentals and other investment properties in holding companies rather than through themselves individually, which may not be the case in the entire sample of OECD countries. Holding investment properties through a company is also beneficial from a wealth tax perspective, as the asset value will receive the financial wealth discount of 25% in 2019 rather than the 10% secondary real estate discount if the properties were held privately.

To compute the estimated wealth tax revenue losses from primary housing over-allocation,

	Gross Wealth Quintile	Gross Wealth (NOK 1000s)	Net Wealth (NOK 1000s)	Primary Housing	Secondary Real Estate	Financial Wealth	Other Wealth
Norway	1st Quintile	1,117	267	0.488	0.036	0.361	0.111
	2nd Quintile	1,982	731	0.771	0.036	0.139	0.052
	3rd Quintile	2,742	1,306	0.776	0.039	0.138	0.047
	4th Quintile	3,828	2,257	0.745	0.052	0.157	0.045
	5th Quintile	7,949	5,922	0.596	0.096	0.261	0.048
	Top 10%	12,661	10,266	0.510	0.114	0.326	0.050
	Top 5%	18,847	16,028	0.414	0.124	0.412	0.050
	Top 1%	54,222	49,420	0.179	0.091	0.686	0.043
OECD	1st Quintile	950	—	0.523	0.091	0.198	0.188
	2nd Quintile	1,525	—	0.641	0.067	0.177	0.116
	3rd Quintile	2,195	—	0.711	0.078	0.145	0.067
	4th Quintile	3,254	—	0.642	0.118	0.187	0.054
	5th Quintile	7,343	—	0.399	0.222	0.344	0.035
	Top 10%	—	—	0.337	0.234	0.397	0.032
	Top 5%	—	—	0.275	0.240	0.457	0.029
	Top 1%	—	—	0.207	0.248	0.520	0.025

Table 11: Mean gross wealth asset allocation by gross wealth quintile for Norway and OECD countries. OECD gross wealth numbers are converted from USD 2015 to NOK 2019 by applying US inflation numbers 2015-2019 and an exchange rate of 8.5 (approximate average USD-NOK in 2019). Financial wealth includes bank deposits for both groups.

I leverage the quintile-level OECD data to approximate the counterfactual housing allocation of Norwegian wealth tax payers in the non-wealth-tax case. I compute the estimated tax for Norwegian and OECD asset allocation averages across quintiles (and the top 10 percent groups) by defining the following estimated taxable gross wealth for individual i in wealth group k , where assets are divided into: primary housing, secondary housing, financial wealth (including bank deposits), and other wealth, all receiving asset discounts as laid out in section 3.

Est. Adj. Gross Wealth $_{i,t}$ =

$$\text{Gross Wealth}_{i,t} \cdot \sum_{k=1}^K \mathbb{1}(\text{Wealth Group}_{k,t}) \sum_{n=1}^N \text{Asset Allocation Pct}_{n,k,t} \cdot (1 - \text{Asset Discount}_{n,t}). \quad (16)$$

In equation (16), the wealth groups are the partitions of wealth used in table 11. For the overlapping groups (5th quintile and top 10% groups), I round wealth down, meaning 90-95th

Pct. wealth group receives asset allocation percentages from the top 10% line, 95th-99th Pct. wealth group use top 5% allocation, and so on. Following the logic laid out in section 3, I define each taxpayer's estimated wealth tax liability as

$$\text{Est. Wealth Tax}_{i,t} = \text{Tax Rate}_t \cdot (\text{Est. Adj. Gross Wealth}_{i,t} - \text{Adj. Debt}_{i,t} - \text{Tax Threshold}_t). \quad (17)$$

Aggregate wealth allocation data for the OECD countries is not available on an annual basis in a consistent format, and I am thus limited to cross-sectional analysis using data from 2019. Table 12 shows the observed wealth tax revenue, the estimated wealth tax defined in equation 17 for Norwegian and OECD asset allocation percentages, and the wealth tax revenue loss from Norwegian over-allocation to primary housing, defined as the OECD estimate net of the Norwegian estimate.

Table 12 shows that there is no wealth tax loss until the 4th quintile, which coincides with the number of wealth tax payers and the wealth distribution presented in figure 1 and table 3 in section 4.

Looking at all wealth tax payers in 2019, I identify an estimated wealth tax revenue loss of NOK 1,953 million from Norwegian over-allocation to primary housing relative to comparable OECD countries. This represents 16.7% of the empirical 2019 wealth tax revenue given in table 3, indicating substantial tax revenue losses from tax optimization related to primary housing. Compared to the total primary housing discount of NOK 9,290 million in 2019, the tax loss from table 12 suggests primary housing over-allocation represents 21% of the total revenue losses associated with the primary housing discount. We can observe that the estimated wealth tax revenue tracks the empirical tax revenue relatively close, as is expected, although the asset allocation averaging for each wealth bucket creates some discrepancies. To obtain approximate tax revenue losses for years other than 2019, used to calculate total wealth tax revenue losses in table 13, I extrapolate 2019 asset allocation percentages and apply them to the respective year's gross wealth holdings to obtain estimates for actual and counterfactual wealth taxes in each year.

Gross Wealth Quintile	Number of Observations	Empirical Wealth Tax	Est. Wealth Tax Norway	Est. Wealth Tax OECD	Tax Difference OECD - Norway
1st Quintile	555,323	63	0	0	0
2nd Quintile	555,325	112	0	0	0
3rd Quintile	555,326	228	0	0	0
4th Quintile	555,329	658	113	424	311
5th Quintile	555,324	10,378	10,751	13,148	2,397
90th-95th Pct.	138,837	1,321	1,559	2,211	652
95th - 99th Pct.	111,060	3,199	3,374	4,195	820
99th+ Pct.	27,764	7,917	7,484	7,559	75
Tax Payers	520,130	11,595	10,072	12,025	1,953

Table 12: Aggregate empirical, and estimated (using Norwegian/OECD asset allocation) wealth tax revenue across gross wealth distribution. Tax payers row shows aggregate values for all empirically observed 2019 wealth tax payers. All values in NOK millions. Observations from 2019 tax year.

9 Aggregate Losses Incurred From Tax Avoidance

Having quantified estimates of tax revenue losses for intra-family transfers, emigration, and primary housing over-allocation, I sum each component to arrive at the total estimate of losses from legal wealth tax avoidance. I extrapolate the asset-allocation percentages from 2019 in section 8 to the other years by applying them to taxpayer gross wealth holdings in each respective year. Annual losses from both intra-family transfers and emigration were calculated on a year-by-year basis in their respective sections. In quantifying losses from emigration, I only use the >10M group of leavers from table 8, as this presumably is the only group for which wealth tax could represent a big enough liability to incentivize emigration.

Table 13 shows the aggregate losses across the three main behavioral reactions to the wealth tax investigated in the above sections. I identify that approximately 18% of empirical tax revenue is lost due to legal wealth tax-payer avoidance, by taxpayers taking advantage of, or reacting to, specific elements of the wealth tax design. The majority of quantified losses are associated with losses from primary housing over-allocation. Intra-family transfers represent a relatively small revenue loss, hovering around 1% of total tax revenue, which mainly is a function of the wealth tax threshold being low and transfers to children under

18 not creating a tax benefit, limiting the potential for below-threshold wealth shielding. In the case of emigration, wealth tax revenue losses are the lowest, but the 2022 (and 2023) numbers show high sensitivity to changes in the wealth tax policy. Additionally, quantifying other externalities than income associated with high levels of wealthy residents emigrating would likely increase the losses attributed to emigration by a substantial amount.

	2015	2016	2017	2018	2019	2020	2021	2022
Empirical Tax Revenue	9,391	10,045	10,977	11,118	11,697	12,282	13,603	17,201
Revenue Losses:								
Intra-Family Transfers	150	143	190	135	126	198	176	147
Emigration (Wealth Tax Only)	31	63	70	94	55	51	52	135
<i>Emigration (Income + Wealth Tax)</i>	<i>51</i>	<i>126</i>	<i>114</i>	<i>186</i>	<i>110</i>	<i>105</i>	<i>98</i>	<i>328</i>
Primary-Housing Over-Allocation	1,568	1,678	1,833	1,806	1,953	2,051	2,272	2,842
Total Wealth Tax Losses	1,749	1,884	2,093	2,035	2,134	2,300	2,500	3,124
<i>%Tax Losses</i>	<i>18.7%</i>	<i>18.4%</i>	<i>19.1%</i>	<i>18.8%</i>	<i>18.3%</i>	<i>18.8%</i>	<i>18.4%</i>	<i>18.2%</i>

Table 13: Total wealth tax revenue losses from taxpayer optimization for tax years 2015-2022. All values in NOK millions.

10 Conclusion

Using Norwegian administrative data for the years 2015-2022, I have identified a number of tax avoidance methods leveraged by wealth tax payers to decrease their tax liability. I began with identifying theoretical methods of tax avoidance by decomposing the wealth tax calculation in section 3. Furthermore, I showed evidence of taxpayers being aware of and naively optimizing with respect to the wealth tax by bunching directly below the threshold for taxable wealth as part of section 4. Despite not being a method of avoidance on its own, it is an outcome of it, and serves as a useful indicator that wealth tax avoidance exists and taxpayers are aware of its policy design.

As for evasion methods with more serious policy design implications, I identified tax-beneficial intra-family transfers in section 6. Within intra-family transfers I found convergence of both transferring-parent and receiving-children tax-adjusted net wealth toward the

wealth tax threshold from before to after the transfer. Additionally, I identified transfer sizes to children below the threshold being substantially larger than to those at or above the threshold, and found that the sensitivity of transfer sizes with respect to the receiving child's wealth is almost twice as sensitive below the threshold relative to above the threshold. This suggests that transfers and transfer-sizing decision are, at least partially, motivated by wealth tax considerations. In total, I find that transfers of wealth from parents to children represents an annual tax revenue loss of NOK 125-190M, or 0.85-1.73% of total annual wealth tax collections.

An avoidance method with large potential spillover effects aside from the direct wealth tax revenue loss is tax-motivated emigration, identified in section 7. I identified a 2 and 3x increase in wealthy emigrants in year 1 and 2 following a wealth tax policy change targeted at the right tail of the wealth distribution, with the total number of emigrants increasing by less than 30% in the same time period. Using a DiD approach, I find an excess increase in emigration of the wealthy of 0.354% relative to lower-wealth residents, representing a substantial increase from the sub-1% emigration probability of the population as a whole. Looking at wealth tax revenue loss alone, emigration of wealthy taxpayers represents a revenue loss of up to NOK 139M annually, or approximately 1% of total annual wealth tax collections. Including the simplest negative externality from emigration of wealthy residents, loss of income tax revenue, the tax revenue losses increase by 2.5x. There are many negative externalities that arise with emigration of wealthy residents, such as loss of business-related tax revenue, investment activity, and loss of employment opportunities. Considering the losses from such externalities in addition to the direct tax revenue losses, it seems evident that a wealth tax motivating the wealthy to emigrate has severe negative implications for the country and its economic growth.

Lastly, I identify substantial over-allocation of wealth to primary housing among Norwegian wealth-tax payers. Comparing asset allocation by Norwegian wealth quintiles to an average of 19 comparable OECD countries, I find that housing allocation is similar for the

first quintile, but substantially higher for Norwegians in the second, third, fourth, and fifth quintile, all of which are incentivized to over-allocate to housing in an effort to minimize their wealth tax liability. I compute the counterfactual tax losses associated with taxpayers over-allocating to housing by applying the OECD average to gross wealth holdings of Norwegians for each year in the sample, and identify a tax revenue loss from primary housing over-allocation of NOK 1,568M to 2,842M, representing approximately 16% of total annual collected tax revenue. The under-allocation of wealth to secondary housing, which is only discounted at 10%, in Norway relative to OECD supports that allocation differences are not driven by increased housing prices in Norway, but rather by taxpayers over-allocating their wealth to primary housing in an effort to decrease their wealth tax liability.

In total, I find that approximately 18% of annual collected tax revenue is lost through legal wealth tax avoidance methods. In addition to the losses being substantial on their own, there are significant negative externalities associated with some of the avoidance behavior, such as emigration. With this in mind, it seems evident that a reconsideration of the Norwegian wealth tax design would be beneficial in an effort to limit avoidance and retain wealthy taxpayers within the country's tax system.

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Appendix

A Potential Microdata Data Discrepancies

Results created in `microdata.no` should, as a general rule, be relatively similar to the figures found on Statistics Norway's statistics pages. However, it is rare that the numbers are completely identical. There are several reasons for this:

- **Data source:** The various registers used in `microdata.no` have different degrees of deviation compared with official Statistics Norway (SSB) figures. Different sources give different results, so it is important to compare data from the same sources.
- **Different measurement times:** Some statistics use annual figures, quarterly figures, monthly figures, or status figures measured at specific dates (e.g. per 1/1, 31/12, or a reference week). Figures reported from the Bureau of Statistics may use a different measurement period than what is made available through `microdata.no`.
- **Different populations:** There can be specific age restrictions or definitions of resident status (e.g. permanent residents only, or including individuals with D-numbers). These restrictions must match if you want to reproduce official figures from the Bureau of Statistics in `microdata.no`.
- **Differences in data production or processing:** Even when the same data source/register is used, the Bureau of Statistics may perform additional consistency checks or data cleaning, leading to some discrepancies from raw data in `microdata.no`.
- **Privacy filters in `microdata.no`:** Noise filters and extreme value censoring (win-sorization) can alter frequencies and summary statistics, especially min/max values or standard deviations. Large numbers are typically less affected (since the noise filter applies a modest ± 5 margin or ± 10 in differences), but the effect varies with data distribution.

Methods to Find the Cause of Deviations

- **Check “About the statistics” from Bureau of Statistics:** Each published statistic from the Bureau of Statistics has a description of its population, processing steps, and other factors that could cause discrepancies between its results and those obtained from `microdata.no`.
- **Checks variable description in `microdata.no`:** Population definitions, date ranges, or other variable elements might differ in `microdata.no` relative to the methodology used by the Bureau of Statistics.
- **Match key parameters:** Ensure you have the same age limits, resident definitions (social security number vs. D-numbers), and the same measurement period/time as used for numbers published by the Bureau of Statistics.
- **Avoid comparing “apples and pears”:** The Bureau of Statistics may publish multiple versions of the same statistical concept, based on different data sources. Verify you are comparing results generated from the same data material as your statistics are produced with.

B Primary Housing Leverage and Arbitrage

Primary housing is the only asset category receiving mismatched asset- and debt-discounts in the wealth tax calculus. Its asset value is discounted by 75%, and primary housing mortgages receive no discounts when calculating tax-adjusted net wealth. To illustrate with an example, a taxpayer whose only asset is a NOK 20M house with a NOK 5M mortgage would have a tax-adjusted net wealth of 0, since their tax-adjusted gross wealth would be $0.25 \cdot 20M = 5M$ and their tax-adjusted debt remains at NOK 5M.

Despite the mismatch in debt- and asset-valuation, primary housing mortgages remain “wealth tax arbitrage” proof. To illustrate this with another example, a taxpayer has assets consisting of NOK 20M in primary housing, which they own outright, and NOK 5M in cash.

Their 2021 wealth tax liability would be $\text{NOK } 0.0085 \cdot 10\text{M} = 85,000$. To eliminate their wealth tax liability completely, they could take out a $\text{NOK } 10\text{M}$ primary housing mortgage. This would save them $\text{NOK } 85,000$ in wealth tax liability annually, but they would now have interest rate liabilities on the mortgage of $\text{NOK } 500,000$ annually, if we assume a 5% APR on the loan. Thus, Norwegian wealth tax-payers have no incentive to over-leverage their primary housing purchases to decrease their wealth tax liability, as their new interest liability would far exceed their previous wealth tax liability. Such debt-arbitrage only exists in a world where the wealth tax rate is higher than the APR on a loan obtainable by taxpayers, which we currently are quite far away from.

Variable	Coefficient	Std. Error
Wealth Bucket Minus 2.5M	601,976***	100,272
Wealth Bucket Minus 2M	399,489***	88,153
Wealth Bucket Minus 1.5M	202,988***	61,636
Wealth Bucket Minus 1M	95,368	59,084
Wealth Bucket Minus 500k	109,943*	57,262
Wealth Bucket 500k	-79,389	73,163
Wealth Bucket 1M	-150,781*	81,258
Wealth Bucket 1.5M	-136,102	93,000
Wealth Bucket 2M	-284,655**	113,457
Wealth Bucket 2.5M	-346,924***	111,205
2016	137,169***	49,938
2017	147,978***	50,620
2018	286,107***	54,714
2019	353,365***	56,943
2020	524,467***	56,518
2021	559,618***	60,651
2022	638,801***	64,042
Parent Pre-Transfer Net Wealth Distance	0.0423***	0.0063
$\mathbb{1}(\text{Child Primary Housing Owner})$	-635,674***	59,566
Constant (At-Threshold 2015 Transfer Size)	540,678***	73,169
Observations	37,480	
R^2	0.132	

Table 14: Regression summary for equation 11. Run on all transfer observations with transferring-parent net wealth above the wealth tax threshold.

*: $p < 0.10$; **: $p < 0.05$; ***: $p < 0.01$.

Year	Tax rates and thresholds				Valuation of assets for tax purposes				
	Tax rate 1 %	Threshold 1	Tax rate 2 %	Threshold 2	Primary home	Leisure home	Secondary home	Business property	Listed and unlisted shares
2005	0.90	151 000	1.10	540 000	PY: 0	PY: 0	PY: 0	PY: 0	MV: 65
2006	0.90	200 000	1.10	540 000	PY: 25	PY: 25	PY: 25	PY: 25	MV: 80
2007	0.90	220 000	1.10	540 000	PY: 10	PY: 10	PY: 10	PY: 10	MV: 85
2008	0.90	350 000	1.10	540 000	PY: 10	PY: 10	PY: 10	PY: 10	MV: 100
2009	1.10	470 000	Removed		PY: 10	PY: 10	PY: 10	PY:60/MV:40	MV: 100
2010	1.10	700 000			MV: 25	PY: 10	MV: 40	MV:40	MV: 100
2011	1.10	700 000			MV: 25	PY: 0	MV: 40	MV:40	MV: 100
2012	1.10	750 000			MV: 25	PY:10	MV: 40	MV:40	MV: 100
2013	1.10	870 000			MV: 25	PY: 0	MV: 50	MV: 50	MV: 100
2014	1.00	1 000 000			MV: 25	PY: 10	MV: 60	MV: 60	MV: 100
2015	0.85	1 200 000			MV: 25	PY: 0	MV: 70	MV: 70	MV: 100
2016	0.85	1 400 000			MV: 25	PY: 0	MV: 80	MV: 80	MV: 100
2017	0.85	1 480 000	1.10	20 000 000	MV: 25	PY: 0	MV: 90	MV: 80	MV: 90
2018	0.85	1 480 000			MV: 25	PY: 0	MV: 90	MV: 80	MV: 80
2019	0.85	1 500 000			MV: 25	PY: 0	MV: 90	MV: 75	MV: 75
2020	0.85	1 500 000			MV: 25	PY: 0	MV: 90	MV: 65	MV: 65
2021	0.85	1 500 000			MV: 25	PY:0	MV: 90	MV: 65	MV: 55
2022	0.95	1 700 000			MV: 25 / MV: 50	PY:0	MV: 95	MV: 75	MV: 75

Figure 7: Norwegian Wealth Tax Design Overview.