Billionaire exodus or revenue boost?

Evidence on aggregate tax effects in Norway following a wealth tax hike

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Miljardärsflykt eller ökade skatteintäkter? Evidens om de aggregerade skatteeffekterna i Norge efter en höjning av förmögenhetsskatten.

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Abstract

In this thesis, I examine how the 2022 increase in the Norwegian wealth tax levy affected aggregate tax revenue. The analysis employs a differences-in-differences approach with two-way fixed effects using publicly available macroeconomic panel data spanning from 1995 to 2024. The model is estimated using three different dependent variables: total tax revenue, tax revenue from corporations, and, income and wealth tax revenue. The results are statistically insignificant, meaning that the null-hypothesis cannot be rejected. The point estimates show a small decrease in total tax revenue of -0.192 pp, a small increase of 0.524 pp on revenue from income and wealth taxation, as well as, a small decrease in the revenue from corporation taxes of -0.126 pp. This paper differentiates itself from previous research by using aggregate data rather than individual-level observations, implying that small effects are to be expected. The findings, although insignificant, show some directional similarities with previous research.

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Abbreviations

DiD	Differences-in-Differences
GVA	Gross Value Added
TWFE	Two-Way Fixed Effects
pp	Percentage Point
ATET	Average Treatment Effect of the Treated

1. Introduction

Taxation of the wealthiest individuals and corporations is a recurring question and is frequently up for debate when discussing government revenue and spending (Canepa, 2025). Compared to previous decades, only three European countries currently have a tax on net wealth (Yanatma, 2025) with many previous adopters who have repealed such taxation structures often citing concerns of its cost-effectiveness (OECD, 2018), fairness and effects on businesses and entrepreneurs (Rasmusson et.al., 2026). Another major concern being that they will flee the taxation and move their business, capital and investments abroad, and if a large quantity of the wealthiest individuals follow suit, this could have detrimental effects on the economy (Ghilarducci, 2025). Although the political sentiment for taxation on wealth seems to have shifted towards a more sceptical view, some countries are moving in the opposite direction. Spain recently imposed a national tax on wealth with the top levy being 3.5% after discounts (Garside, 2025). Switzerland has a long running tradition of taxation on wealth at a rate varying between cantons, but is often around 0.3% of net wealth after deductions (PWC, 2026). The final European country with a wealth tax is Norway which is the country of interest for this thesis.

In this paper I estimate the effect of the 2022 wealth tax levy increase on total tax revenue in Norway by implementing a Differences-in-Differences method with time and unit fixed effects and the rest of the Nordics as the control group. The main research question I aim to address is therefore, how the Norwegian tax increase on net wealth in the year 2022 affected total tax revenue in the country. The primary mechanism through which the tax increase is expected to influence tax revenue is through out-migration responses due to the higher levy. The data used in this project is public data collected from Eurostat and the World Bank. All results from the estimation are non-significant at all traditional levels. I find a modest and insignificant ATET of -0.192 pp on the total tax revenue following the levy increase. I also find similar results when estimating the effect using other tax revenue streams as dependent variables with the share of revenue from corporation taxes decreasing with -0.126 pp. The share of revenue from income and wealth taxes instead increased with 0.524 pp.

This paper fills an important gap in the literature by looking at the effects on aggregate tax revenue following the tax increase, as opposed to estimating effects on the firm and individual level as is the focus for much previous research on the topic. This paper is also based on public data sources which improves its reproducibility.

2. Background

Norway has a long history of wealth taxation, a tax going back to the late 1800s. In 2022, following the election of the social democratic party, Arbeiderpartiet, this tax reached new highs with the tax increase being motivated by social welfare and equality (Canepa & Solsvik, 2025). The reform met a lot of resistance and is still a hot topic for debate in the country (Garside, 2025), especially after some of the country's wealthiest spoke out declaring the tax unfair as well as creating a hostile environment for investment and for billionaires (Canepa & Solsvik, 2025). Citing the tax increase many of these business owners avoided the taxation by moving to other countries with a lower tax rate (Neate, 2023). Out of the 400 richest Norwegians, 67 of them are today registered as living abroad (*Kapitals liste over Norges 400 rikeste,* n.d.).

One of the most common moving destinations was Switzerland, because of its tax treaty with Norway (*Kapitals liste over Norges 400 rikeste,* n.d.). The treaty implies that individuals that move to Switzerland are exempt from tax liability in Norway from day one, as opposed to three years after migration which is the standard with other countries (Canepa & Solsvik, 2025).

2.1 Understanding the tax

2.1.1 Tax calculation and level

The net wealth tax is a tax on all assets held by an individual, e.g. stocks, housing, bank deposits etcetera that has yet to be sold (The Norwegian Tax Administration, n.d.). This is calculated by adding the total value of all assets after deducting the value from valuation discounts and debts as described in Equation 1 below.

$$Wealth = Assets - Valuation\ Discounts - Debts \quad (1)$$

As can be seen in Table 1, the level of taxation varies with the size of wealth, and as of today individuals with a net wealth under NOK 1.9 million are not taxed at all. The revenue from the collected tax is split between the municipality and the state, and after 2024 a gradually larger proportion of the income goes to the state instead of the municipality.

Today an individual with a net wealth between NOK 1.9 million and 21.5 million is taxed 0.35% to the municipality of residence and 0.65% to the state, totalling 1%. An individual with a net wealth above NOK 21.5 million is taxed the same rate in the municipality but a higher, 0.75% rate to the state. The highest possible taxation on wealth is therefore 1.1% of the total wealth.

As can be seen in Table 1 the rates remained unchanged under the more conservative government but show a clear increase in 2022 after the election of the social democratic government. The largest increase in taxation was for the wealthiest of individuals who saw a larger increase in both the municipality and state tax rates compared to other payers of the tax.

Also note that the only changes in the percentage tax rate after 2022 is the distribution of where the income ends up, i.e. who is taxing, the total tax rate stays the same. The thresholds for taxation has also moved upwards over time.

Table 1. Summary of wealth taxation thresholds and rates in Norway 2019-2026

Year	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Wealth taxation thresholds in millions of NOK (*threshold for highest rate*)	1.5	1.5	1.5	1.7 (*>20*)	1.7 (*>20*)	1.7 (*>20*)	1.76 (*>20.7*)	1.9 (*>21.5*)
Municipality tax rate (%)	0.7	0.7	0.7	0.7	0.7	0.7	0.525	0.35
State taxrate (%) (*highest rate*)	0.15	0.15	0.15	0.25 (*0.4*)	0.3 (*0.4*)	0.3 (*0.4*)	0.475 (*0.575*)	0.65 (*0.75*)
Max taxation level (%) (*highest rate)*	0.85	0.85	0.85	0.95 (*1.1*)	1 (*1.1*)	1 (*1.1*)	1 (*1.1*)	1 (*1.1*)

Notes: In parentheses is the higher level of taxation that was implemented in 2022, both the minimum level of wealth needed to be taxed at the higher rate, and the rate of taxation – After 2022 – above 20 million – 0.4%, in 2025 – above 20.7 million – 0.575%, in 2026 – above 21.5 million (0.75%). Source: The Norwegian Tax Administration (Skatteetaten)

Valuation Discounts. As previously mentioned in Equation 1 the taxable wealth is calculated using valuation discounts, including high discounts for the individuals primary dwelling (75%), units in equity funds (20%), commercial property (20%), agricultural and forestry property (30%) and lower ones for secondary dwelling (0%). The purpose of the discount is to reduce taxation for some assets as to not over tax regular individuals who for example have inherited an expensive house or many hectares of land. In practice, this means that it's not the total value of ones assets that are taxed, but a reduced level, it is this reduced

level that has to be over the thresholds for taxation. (The Norwegian Tax Administration, n.d.)

Exit tax. If an individual chooses to leave Norway to reside in another country an exit tax is triggered. In 2026 the rate is 37.8% on all unrealized capital gains above NOK 3 million. (The Norwegian Tax Administration n.d.)

Reporting. Norway has a third-party reporting system[1] which in practice means that The Norwegian Tax Administration (Skatteetaten) is responsible for checking the net wealth of all Norwegian individuals (The Norwegian Tax Administration, n.d.).

2.2 Who is moving and where?

As previously mentioned some of the individuals affected by the tax have out-migrated from Norway to avoid taxation. Since this is the main mechanism through which the tax revenue is expected to change it is important to also understand why and where the affected by the tax are moving.

A study from Princeton looks at the aggregate effects from migration of these wealthiest individuals following the 2022 Norwegian wealth tax increase (Blandhol, 2025). Using a DiD approach Blandhol (2025) shows that the out-migration of individuals with wealth exceeding NOK 100 million increases with ca 2% following the tax increase, using individuals with a wealth between NOK 15-25 million as a control group. Further, more than 40% of these individuals are firm owners and she argues that there is a clear decrease in the revenue of a business with an owner who out-migrates. In other words the largest increase in out migrating individuals are concentrated among high-wealth individuals.

Another paper looking at the migration responses in Sweden and Denmark connected to wealth taxes estimate that a 1 percentage point increase in the top wealth tax rate leads to a ca 2% decrease in the number of wealthy taxpayers via out-migration (Jakobsen et al., 2024).

As to where the out-migrating individuals are moving, a large part of them have moved to Switzerland, another country with a wealth tax. According to Blandhol the reason is the tax treaty between Norway and Switzerland where it was beneficial for Norwegians to move to Switzerland in particular (Blandhol, 2025). In 2025, out of the 67 wealthiest 400 Norwegians, 29 are said to reside in Switzerland (*Kapitals liste over Norges 400 rikeste,* n.d.).

[1] The alternative for this is a self-reporting system which is used in Colombia and Switzerland.

3. Literature review

Previous research on the topic of taxation on net wealth has been conducted. These mostly focus on individual data to estimate migration patterns which is then used to calculate aggregate effects following the policy changes.

Previous research point towards the largest out-migrating response coming from the wealthiest of individuals. Using a DiD model Blandhol (2025) estimate the out-migration responses in the case of the Norwegian tax increase, finding an approximate increase of 2% for individuals with a wealth greater than NOK 100 million. Jakobsen et al. (2024) conducted research on aggregate economic implications in the cases of wealth taxation in Sweden and Denmark, two countries which both historically have had taxation on net wealth. Using administrative data and a two-step DiD and event-study approach, the paper shows that a 1pp increase in the levy led to a 2% decrease in the wealthiest of taxpayers.

The literature is generally split on the long-run equilibrium effects of a wealth tax, although the impacts tend to be small. Blandhol (2025) also estimates the effects of the 2022 Norwegian net wealth tax increase on the long-term aggregate output using a dynamic equilibrium model on matched individual level data on migration, wealth, income and more. She estimates the effects following the tax to result in a 1.3% decrease in the long-term aggregate output. She also estimates that if an exit tax is used alongside the wealth tax, the aggregate output will instead increase by 0.18% in the long-term. Jakobsen et.al (2024) also look at long-term effects on macro-economic factors. They find that even though there was a substantial initial impact from wealth taxation on revenue and workers following tax evasion and tax related migration, the long-term effects are small, a reduction of 0.02% employment, 0.07% in investments, and, 0.10% in value added, following a 1pp increase in net wealth tax. They explain these small effects with other companies picking up the market shares, workers and investment opportunities left behind by out-migrating business owners.

Whether or not the wealth tax pays for itself is a topic for mixed opinions. The European country where taxation of net wealth has the highest contribution to total tax revenue is Switzerland, according to OECD data. Using individual-level data and by leveraging a tax cut in the canton of Lucerne and exploiting differences in its levy, with Bern, Brülhart et al. (2022) estimate that the elasticity on net wealth taxation in the country is as high as 43% after 6 years following a 1pp decrease in the levy. However, they find that the tax cuts do not pay for themselves and of the increased wealth reporting almost half can be contributed to

more honest reporting of wealth. The other half is mostly driven by equal parts migration and increased property values. On the topic of lost revenue, Jakobsen et.al (2024) also find that for every USD of wealth tax revenue, USD 0.22 are lost via migration responses, they also estimate that USD 0.54 is lost as a consequence of tax avoidance, savings, investments and evasion.

How the tax is collected and how the reporting system is designed is also crucial for its effectiveness. The Swiss system differentiates itself from the Norwegian one in some major ways, firstly the tax is set on the canton level and there is no national net wealth tax. Secondly, they have a self-reporting approach meaning that all individuals are responsible for reporting their wealth. Findings from OECD show that an average of 30% of all employees in tax administration work with ensuring correct taxation (*Compliance management: Tax Administration 2025,* 2025). At the same time, research from Colombia show that the introduction or increase of a wealth tax led to instant under reporting of wealth to be exempt from taxation (Londoño-Vélez & Avila-Mahecha, 2024).

The policy of changing the wealth tax levy is expected to have effects on other forms of tax revenue as well. This is something that Blandhol (2025) also estimates. Using the equilibrium model she estimates a long-run increase of 17.20% tax revenue from labour income because of reduced transfers following the reform. She also estimates a 0.76% increase in the tax revenue from corporation taxation in the long-run.

How to avoid tax flight is also a topic where researchers disagree. A study from OECD (2018) show that taxation of net wealth varies in its effectiveness depending on the design of the tax system as a whole in a country. They argue that it is most effective when accompanied with other taxes on capital, such as inheritance tax and taxes on gifts. Further they argue that it is only the wealthiest that should be taxed and at a moderate rate as to avoid tax flight. An alternative solution for the problem of tax flight is presented by Gabriel Zucman (2024) who proposes an internationally coordinated minimum tax of 2% on all billionaires in the participating countries. The purpose of this being to tax the wealthiest in said countries and to complicate tax evasion. He also proposes that exit taxes play an important role when understanding the effectiveness of net wealth taxation.

This paper contributes to the existing literature by estimating changes in tax revenue on the aggregate level. By employing a Differences-in-Differences approach and using the remaining Nordic countries as controls I estimate the effects from the policy on the aggregate level, both for total tax revenue as well as

two specific taxation categories[2]. This approach has not been used before in the case of the Norwegian net wealth tax increase and this paper fills that gap in the literature.

[2] Income and wealth tax, as well as, Corporation tax

4. Data and Method

4.1 Data

The data used for this paper is yearly panel data spanning from 1995 to 2024 and was collected from Eurostat and the World bank. Data was collected on the five Nordic[3] countries.

For the main estimation the data collected were the variable of interest, the dependent variable, *Tax revenue as percentage of GDP*, as well as a couple of control variables. These variables were, *GVA[4] from mining and quarrying*, *Unemployment rate,* and, *Exchange rate to USD*. For secondary estimations data on *Corporation taxes as % of GDP, Income and wealth tax as % of GDP*, where collected[5]. For all these estimations the same control variables were used.

Table 2. Information on all variables collected for the estimations in this paper.

Variable	Variable type	Source	Transformations	Comments
Tax revenue as percentage of GDP	Dependent	Eurostat[6]	No	For primary estimation
Corporation taxes as % of GDP	Dependent	Eurostat[7]	No	For secondary estimation
Income and wealth tax as % of GDP	Dependent	Eurostat[8]	No	For secondary estimation
GVA from mining and quarrying	Control	Eurostat[9]	Missing value for Iceland in 2024, manually added at appropriate level	Includes GVA from oil and gas
Unemployment rate	Control	Eurostat[10]	Converted to yearly average from monthly data	Missing values for Iceland, not added
Exchange rate to USD	Control	World Bank[11]	Converted to its natural logarithm (ln)	None

[3] The Nordic countries are Norway, Sweden, Denmark, Finland and Iceland
[4] Gross Value Added
[5] Capital tax as % of GDP was also collected but because of a value of zero for Norway this variable was excluded in further estimations.
[6] gov_10a_taxag - Eurostat - Tax as % of GDP (general government)
[7] gov_10a_taxag - Eurostat – Taxes on income or profits of corporations as % of GDP (general government)
[8] gov_10a_taxag - Eurostat – Current taxes on income, wealth etc. as % of GDP (general government)
[9] nama_10_a64 - Gross Value Added and income by detailed industry - percentage of total
[10] une_rt_m - Eurostat - Unemployment
[11] PA.NUS.FCRF - World bank - Official exchange rate (LCU per US dollar, period average)

4.1.1 Cleaning and rationale

The chosen variables were then cleaned and processed to fit the goal of this paper, see Table 2. The years outside of 1995 and 2024 were dropped because of missing datapoints in the dependent variables.

There were also some missing data points for Iceland in the variables *GVA from mining and quarrying,* and, *Unemployment rate*. In the case of the GVA (Gross Value Added) only the year 2024 was missing, and to further increase the validity of the results this value was manually added. The reason for taking the manual approach being that the value had been unchanged over the whole the dataset apart from the years 1997-1999 which made it reasonable to assume that it was unchanged for the year 2024 as well. The missing values for *Unemployment rate* were not altered in any way.

Some further improvements of the data included converting the monthly data on *Unemployment rate* to yearly data by calculating a yearly average. This was important because of all other variables using yearly data. The variable *Exchange rate to USD* was also converted to its natural logarithm (ln) to simplify interpretation of the results.

4.2 Descriptive Statistics

Descriptive statistics for all variables used in this project can be seen below in Table 3.

Table 3. Descriptive table over all variables used in this thesis

VARIABLES	Number Of Observations	Mean	Standard Deviation	Min	Max
GVA from mining and quarrying	150	4.927	8.780	0.100	37.70
Exchange rate to USD	150	24.92	40.17	0.680	138.0
Unemployment rate	142	6.217	2.359	2.700	15.03
Taxes as % of GDP	147	36.53	6.508	27.80	49.80
Corporation taxes as % of GDP	147	3.839	2.787	0.800	18.30
Income & Wealth taxes as % of GDP	147	20.33	5.131	13.60	33.30
Capital taxes as % of GDP[12]	137	0.336	1.319	0	15.50

The statistics on *GVA from mining and quarrying* is very telling for the importance of its inclusion in the estimation. The large standard deviation as well as the low Min-value compared to the high Max-value shows that some countries have a much larger value for this variable than others. The country with the highest values is of course Norway with its large oil and gas industry.

Further, the descriptive table also showcases the importance of the inclusion of the natural logarithm for *Exchange rate to USD*[13] with a large span between the Min and Max values. The low value represents the exchange from Euro to USD in the case of Finland, and the high value is the exchange from Icelandic Crowns to USD.

The table also showcases the differences in revenue from the different types of taxes between the countries. *Corporation taxes as % of GDP* is a small revenue stream for some governments and a much larger one for others. The same is true for *Capital taxes as % of GDP*.

[12] The Min value of *Capital taxes as % of GDP* is zero, which is the reason for its exclusion on further estimations. The value is zero for Norway and for the purpose of this paper it is therefore pointless to include.
[13] The table shows the statistics for the variable before it was coverted to its natural logarithm

4.3 Method

The control countries chosen for this project are as mentioned the rest of the Nordics, one treatment country, Norway, as well as four control countries, Sweden, Denmark, Finland and Iceland. The reason for this approach is the assumption of similarities in unobservables, i.e. variables that are difficult or impossible to individually control for and includes cultural aspects, taxation systems and more. Although they are similar in many ways, it is important to note that the *GVA from mining and quarrying* includes value added from oil and gas[14]. This is an essential variable because of the economic composition in the different Nordic countries, where Norway is heavily reliant on its income from these industries and the other countries are not. Data from the Norwegian statistical database SSB show that more than 10% of the total tax revenue was directly linked to the extraction of petroleum in 2025.

To properly estimate the effects of the treatment on the dependent variable a simple OLS specification may not credibly identify the causal effect. Concerns regarding endogeneity and macroeconomic shocks following Covid-19 and the Russian invasion of Ukraine risk confounding the estimation and biasing the results. To address these concerns, a model with fixed effects to absorb the common effects from shocks as well as minimize concerns regarding biases, was chosen.

A natural choice when conducting a policy analysis with such concerns present, is a Differences-in-Differences (DiD) regression with fixed effects and relevant control variables to construct a credible counterfactual. The DiD approach needs panel data and estimates the average effect of a treatment (e.g. policy) on the treatment unit, compared to one or more control units.

In the case of this project the treatment is the tax increase implemented in the treatment country, Norway, in the year 2022. The effect is then compared with countries which have not been affected by the treatment, the Nordic control countries. For the estimation strategy to work as intended some assumptions have to hold. These are discussed further in the following section.

Below is the equation from the main estimation model used in this project,

$$TotalTaxRevenue_{it} = \beta_0 + \beta_1(Norway_i \times 2022orAfter_t) + \gamma \mathrm{Z}_{\mathrm{it}} + \alpha_i + \lambda_t + \varepsilon_{it} \qquad (2)$$

[14] Note that this variable also captures GVA from other mining and quarrying sources and therefore isn't specifically targeting oil and gas.

where $TotalTaxRevenue_{it}$ is the dependent variable, β_0 is the constant, $\beta_1(Norway_i \times 2022orAfter_t)$ is a dummy interaction variable between the two dummies *Norway* (1 if Norway, 0 otherwise) and *2022orAfter* (1 if ≥2022, 0 otherwise). γZ_{it} is a vector of the control variables and includes *GVA from mining and quarrying*, *Unemployment rate,* and, *Exchange rate to USD.* α_i is country fixed effects, λ_t is time fixed effects and ε_{it} is the error term.

For further estimations using the secondary dependent variables the following estimation models where used,

$$CorpTaxRevenue = \beta_0 + \beta_1(Norway_i \times 2022orAfter_t) + \gamma Z_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (3)$$

$$Income\&WealthTaxRevenue_{it} = \beta_0 + \beta_1(Norway_i \times 2022orAfter_t) + \gamma Z_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (4)$$

where main the model stays the same but with two new dependent variables for Corporation taxes as % of GDP, $CorpTaxRevenue_{it}$, and Income and Wealth taxes as % of GDP, $Income\&WealthTaxRevenue_{it}$.

Because of the concerns regarding potential endogeneity, confounding related to shocks as well as potential autocorrelation because of observations likely not being independent in the case of longitudinal data on tax revenue, a DiD model with two-way fixed effects as well robust and clustered standard errors was a necessity. Because of these reasons the estimations were conducted using the *xtdidregress*-command in STATA. The command estimates the ATET (Average Treatment Effect on the Treated) from a panel data set and was particularly useful in this project because of its inclusion of TWFE (i.e. both unit and time fixed effects) as standard. It also includes robust and clustered standard errors on the country level without further specification.

4.3.1 Assumptions

The DiD method relies on a couple of assumptions:

SUTVA. Firstly the assumption of Stable Unit Treatment Value Assumption, SUTVA, assumes that the dependent variable in the control units are not affected by the treatment in the treated unit.

In the case of this project this means that it is assumed that the increase in the net wealth tax in Norway had no effect on the tax revenue (as % of GDP) in the control units, the rest of the Nordics. The argument against the validity of this assumption is that the wealthiest, affected by the tax, might move to the control countries, especially since they are similar in culture, close in distance and have no wealth tax. Looking at data on the 400 wealthiest Norwegians we can see that 67 of 400 do not live in Norway (*Kapitals liste over Norges 400 rikeste,* 2026). Of these almost half, 29 persons, live in Switzerland, one live in Sweden, one in Denmark and zero in either Finland or Iceland. This implies that of the wealthiest, and therefore the ones that are to affect the tax revenue the most, are not in any major way moving to the control countries used in this estimation. They are in larger quantity instead moving to Switzerland which is left out of the control group. Consequently it is reasonable to presume that the SUTVA assumption holds. [15]

Parallel-trends. The second assumption is the parallel-trends assumption. To test for causal effect following the policy change the treated country is compared to one or more control countries. These countries should all show parallel pre-trends, i.e. parallel trends before the policy change, which would suggest parallel trends after the policy implementation. For the parallel-trends assumption to hold it is important that the chosen control countries are a good fit. The remaining Nordic countries where partly chosen as control countries for this project because of their similarities in many economic markers. These similarities often make the countries seen and discussed as one system or unit in international contexts (IMF, 2021). The assumption of parallel-trends is un-testable with the closest available test being a pre-trends test which show if there are parallel pre-trends or not. A failed pre-trends test suggests that the parallel trends assumption fails.

The main threats to the pre-trends test and as an extension, the parallel trends assumption, are variables such as unobservable consequences from Covid-19 and shocks to oil prices following the Russian invasion of Ukraine. Covid is not controlled for in this pre-trends tests, but the control variables used in the main estimation are included in the test meaning that the result is conditional on the control variables.

The results from conducting a pre-trends test to further increase the validity of the parallel trends assumption show a Prob > F = 0.1636. With the threshold for the

[15] It is also worth noting that even if there was spill-over this would amplify the effect of the estimation. Considering the small and non-significant result following the estimation, it further increases the confidence in this assumption.

pre-trends test being 0.05 this implies an encouraging result that there are parallel pre-trends on the 95% confidence level.

To visualize the pre-trends and change in the dependent variable (Total tax revenue as % of GDP) over time a graph was plotted, both including and excluding the control variables, see Figure 1 below. There is a stark difference to be noted between the two graphs, with the largest effect coming from the control variable correlated with oil and gas revenue.

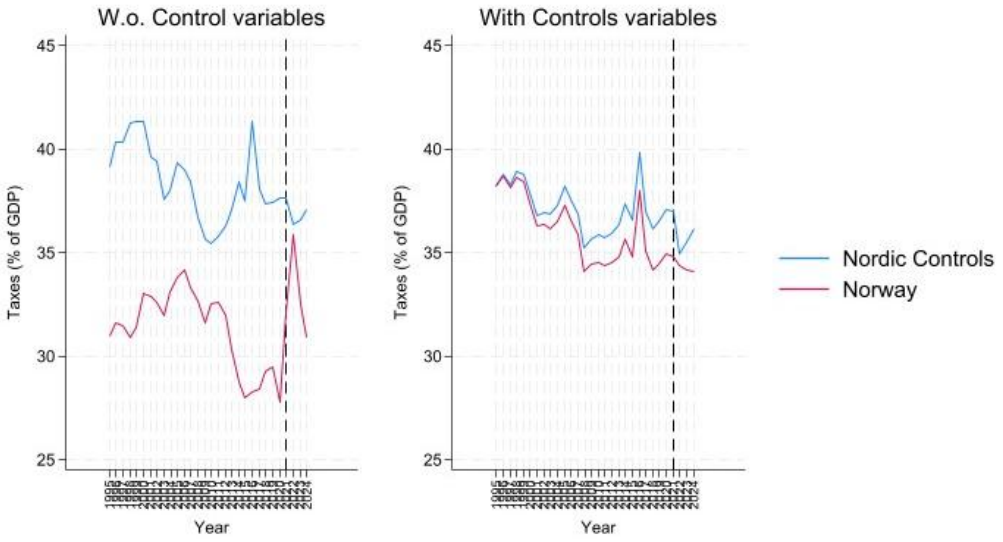

Figure 1. Graphical diagnostics for parallel trends.

Notes: The figure shows the results from the pre-trends test with control variables using the dependent variable Total tax revenue as % of GDP. Note that the dotted line going up from the x-axis indicates the year of treatment, 2022.

Anticipation effect. Another threat to the validity of the estimation is an anticipation effect. The anticipation effect entails that the dependent variable is affected by the treatment before the treatment actually takes place. In the case of this estimation such an effect could take place if individuals affected by a possible tax increase would out-migrate from Norway before the actual tax increase. This would affect the tax revenue (dependent variable) before the year of treatment and biasing the results.

Because of the nature of the policy implementation being reliant on if the workers party (Arbeiderpartiet) would take power, as well as having enough support in parliament to write the proposal into law, an anticipation effect on any noticeable scale is highly unlikely.

To test for the anticipation effect a Granger causality test was conducted showing a result of Prob > F = 0.1520 indicating no anticipation effect on the 95% confidence level. In practice this means that there is no evidence that the tax

revenue as a percentage of GDP in Norway began diverging from the Nordic control countries before 2022 and the year of the tax increase.

To visualize, the results were plotted using 95% confidence intervals in a granger plot. This can be seen below in Figure 2.

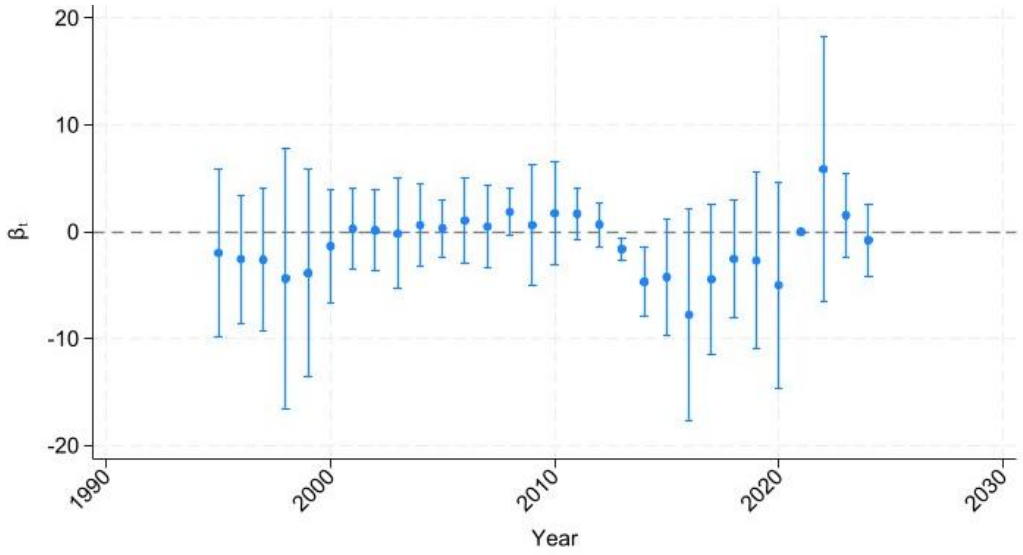

Figure 2. Graphical diagnostics for anticipation effects.

Notes: This figure shows the anticipation effect of the tax implementation on the dependent variable Total tax revenue as % of GDP. Note that the interval should cross the line corresponding to 0 on the y-axis, indicating no anticipation for that given year.

5. Results

In this section both descriptive statistics and results as well as the econometric results from all estimations performed in this project will be showcased.

5.1 Econometric results – Main estimation

The results from the main estimation can be seen in below in Table 4 and is the output using the *xtdidregress*-command in STATA. The main outcome of interest is the ATET which comes out to be non-significant on all levels and taking the value of -0.192 with a standard error of 0.984. The P-value from the estimation is 0.854 meaning that the null-hypothesis cannot be rejected, indicating that the result is not statistically different from zero.

Table 4. Main estimation results

VARIABLES	Results
ATET on Total tax revenue as % of GDP	-0.192
	(0.984)
GVA from Mining and Quarrying	0.364***
	(0.0761)
Unemployment rate	-0.442
	(0.498)
Exchange rate to USD (ln)	0.454
	(1.055)
Constant	38.30***
	(2.536)
P-value	0.854
Observations	142

Robust standard errors in parentheses
*** p<0.01, **p<0.05, * p<0.1

Notes: The number of observations are 142 (instead of 145 which is the natural number of observations considering data on five countries over 29 years) because of the missing observations for unemployment rate in Iceland. Both country and year fixed effects were used for this estimation.

The only variables that shows any significance are the control variable *GVA from Mining and Quarrying* and the constant, both of which are significant on the 1% level.

The small effect from the treatment on the dependent variable of *Total tax revenue as % of GDP* suggests either, or both, that there isn't enough power in the estimation and/or that there actually is close to zero effect. In the case of limitations in the power, a larger data sample would be necessary to accurately estimate the effect of the treatment. Because of the small number of observations after the year of treatment, a total of ten with two being from the treatment country, it is most likely an issue with too little power. This does however not exclude the possibility of the effect actually being close to zero.

5.2 Econometric results – other dependent variables

In this section the results from alternative estimations using other dependent variables than the main variable of interest will be showcased. The other variables chosen for these further estimations were *Corporation taxes as % of GDP* as well as *Income and wealth taxes as % of GDP*.

Corporation taxes as % of GDP. The results from the estimation using Corporation taxes as % of GDP can be seen below in Table 5. The main outcome variable shows a non-significant result of -0.126 suggesting a small but negative effect from the tax increase on the tax revenue from corporations. The standard error is 0.740 suggesting a large uncertainty in the result. The p-value is 0.873 suggesting the null hypothesis not being rejectable, i.e. the result is not significantly different from zero.

Table 5. Results using Corporation tax revenue as the dependent variable

VARIABLES	Results
ATET on Corporation tax revenue as % of GDP	-0.126
	(0.740)
GVA from Mining and Quarrying	0.560***
	(0.0575)
Unemployment rate	0.100
	(0.151)
Exchange rate to USD (ln)	-0.0633
	(0.453)
Constant	0.187
	(0.957)
P-value	0.873
Pre-trends test	0.1935
Anticipation effect[16]	0.5899
Observations	142

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: The number of observations are 142 (instead of 145 which is the natural number of observations considering data on five countries over 29 years) because of the missing observations for unemployment rate in Iceland. Both country and year fixed effects were used for this estimation.

The effect is as mentioned non-significant, again pointing towards limitations with regards to sample size after the treatment implementation. The pre-trends test estimate a Prob > F = 0.1935 suggesting strong pre-trends and strengthening the parallel-trends assumption for this estimation. The granger causality test, testing for anticipation also shows convincing results of Prob > F = 0.5899 strengthening the assumption of no anticipation effect.

Income and Wealth taxes as % of GDP. The results from the estimation using Income and Wealth taxes as % of GDP can be seen below in Table 6. The dependent variable shows a non-significant effect of 0.524 with a large standard error, 1.401. The interpretation of these results are that the treatment is associated with a 0.524 pp increase in the income and wealth revenue as % of GDP. The effect is small and highly uncertain but the positive effect differentiates itself from

[16] Granger Causality test

the other two estimations. The p-value comes out to 0.727 suggesting that the null-hypothesis cannot be rejected.

Table 6. Results using Income and Wealth tax revenue as the dependent variable

VARIABLES		Results
ATET on Income and Wealth tax revenue as % of GDP		0.524 (1.401)
GVA from Mining and Quarrying		0.448*** (0.0950)
Unemployment rate		0.134 (0.340)
Exchange rate to USD (ln)		0.0418 (0.973)
Constant		17.35*** (1.310)
P-value		0.727
Pre-trends test		0.8592
Anticipation effect[17]		0.0760
Observations	142	142

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: The number of observations are 142 (instead of 145 which is the natural number of observations considering data on five countries over 29 years) because of the missing observations for unemployment rate in Iceland. Both country and year fixed effects were used for this estimation.

The pre-trends test results show a Prob > F = 0.8592 indicating strong pre-trends and strengthening the parallel-trends assumption. The granger causality test, testing for anticipation effect shows a weaker result of Prob > F = 0.0760 but still indicating no anticipation effect.

A table of all the most central findings in the estimations conducted in this paper can be found below, see Table 7.

[17] Granger causality test

Table 7. All results from the estimations conducted in this paper

Dependent variable	ATET	Standard error	P-value	95% Confidence interval		Pre-trends	Anticipation effect
Total taxes as % of GDP	-0.192	0.984	0.854	-2.923896	2.539047	0.1636	0.1520
Corporation taxes as % of GDP	-0.126	0.7397188	0.873	-2.179815	1.927762	0.1935	0.5899
Income and wealth taxes as % of GDP	0.524	1.400822	0.727	-3.365107	4.413505	0.8592	0.0760

Notes: All estimations use the same method and control variables and are therefore the same in every aspect except for the dependent variable.

5.3 Robustness checks

To check for robustness and ensure validity in the estimations and assumptions some tests were conducted. These include the previously mentioned tests for pre-trends and anticipation effects as well as a falsification test.

5.3.1 Falsification test

A falsification (or placebo) test is used to provide additional evidence on the validity of the assumptions required to conduct a DiD approach. It is also an important component to ensure that the treatment is the actual reason for any causal effect.

In its essence a falsification test tests if a causal effect from the treatment on the treatment country is true or if it is caused by biases in the estimation. This can be conducted in two main ways, firstly by assigning the treatment to a different time period than the actual time of treatment, or, by assigning the treatment to a non-treated unit. If the results show a significant effect it suggests that the estimation is biased and that the parallel-trends assumption does not hold.

In this project the second approach is used, i.e. assigning treatment to a non-treated country. In practice this means that the interaction term (the DiD term) is an interaction between the variable *2022orAfter* and the dummy variable for the selected country. The same estimation method using the same model and tests of anticipation and pre-trends are also applied. The results from all estimations can be seen in Table 8 for all the same dependent variables used in the main specification, as well as for all control countries used in the specification.

The results from the test can be seen in Table 8. It shows four significant results (all significant on the 1% level) in the following cases; *Income and wealth taxes as % of GDP for Sweden* with an ATET of -2.276, *Corporation taxes as % of GDP for Denmark* with an ATET of 1.205, *Corporation taxes as % of GDP for Finland* with an ATET of -1.153, and, *Income and Wealth taxes as % of GDP for Iceland* with an ATET of 1.878.

These results indicate that these variables significantly diverge from the control countries after the year of 2022 which is highly problematic for the parallel-trends assumption. In its essence this means that there are still some excluded variables that confound my results which highly weakens the parallel trends assumption for these specific variables.[18]

[18] It is although important to note that for all of these, at least one of the tests for pre-trends and anticipation fail at the 5% level.

Table 8. All findings from the falsification test

Dependent variable (Country)	ATET	Standard error	P-value	95% Confidence interval	Pre-trends	Anticipation effect
Total taxes as % of GDP (Sweden)	-0.825	0.531	0.195	-2.3 0.65	0.4392	< 0.001
Corporation taxes as % of GDP (Sweden)	-0.339	0.409	0.454	-1.4738 0.7959	0.4848	< 0.001
Income and wealth taxes as % of GDP (Sweden)	-2.276***	0.313	0.002	-3.1458 -1.4053	0.1429	< 0.001
Total taxes as % of GDP (Denmark)	-0.693	0.507	0.244	-2.1002 0.7148	0.0021	0.2094
Corporation taxes as % of GDP (Denmark)	1.205***	0.203	0.004	0.6424 1.7681	0.0364	< 0.001
Income and wealth taxes as % of GDP (Denmark)	0.698	0.712	0.383	-1.28 2.675	0.0008	0.0093
Total taxes as % of GDP (Finland)	0.950	0.449	0.102	-0.2982 2.1972	0.4755	0.2228
Corporation taxes as % of GDP (Finland)	-1.153***	0.361	0.033	-2.1545 -0.1505	0.0174	0.0079
Income and wealth taxes as % of GDP (Finland)	-0.594	0.790	0.494	-2.7867 1.5984	0.0885	0.0145
Total taxes as % of GDP (Iceland)	0.739	0.794	0.405	-1.4646 2.9422	0.5366	0.0323
Corporation taxes as % of GDP (Iceland)	0.422	0.458	0.409	-0.85 1.6933	0.234	< 0.001
Income and wealth taxes as % of GDP (Iceland)	1.878***	1.328	0.007	0.843 2.9123	0.1866	< 0.001

6. Conclusion

6.1 Discussion

Across all the results from the estimations in this thesis a common theme is small and non-significant effects from treatment, as well as large standard errors with high p-values.

Since the findings of this paper have limited statistical power the main conclusion that can be drawn is that the Norwegian wealth tax increase of 2022 cannot be statistically proven to have any effect on the total tax revenue using the DiD specification used in this paper. This means that the findings should be interpreted as inconclusive with regards to the effect of the policy on tax revenue on the aggregate level, i.e. the null hypothesis cannot be rejected.

The small effects on the macro level show similarities with findings from previous research discussed in this paper. Most noticeably in the estimations conducted by Blandhol (2025) who estimates a long-term effect of the tax increase to be a 1.3% decrease in the aggregate output and a 0.18% increase when taking the exit tax into account. My point estimate of the tax increase is a 0.192 pp decrease, although this is not distinguishable from zero. It is important to note that tax revenue and aggregate output are two different things meaning that a one-to-one comparison is inappropriate.

The estimation with the only positive result, also non-significant, of 0.524 pp comes from using the income and wealth revenue as the dependent variable. This result differentiates itself from the other estimations but follows the same direction as previous research from Blandhol (2025), who estimates an increase in labour income tax revenue of 17.20% in the long-run.

The small decrease in taxes collected from corporations (-0.126 pp), although non-significant, is directionally consistent with previous research. Findings from Jakobsen et al. (2024)[19] indicate that the long-term effects from the tax increase has a minimal effect on investments and the activity of corporations with a larger effect closer to the time of initial treatment. If the activity of corporations declines, even slightly, this could have an effect on the tax revenue coming from that category. Jakobsen et al. also find that the initial impact of the taxation is larger than the long-run effects. If this is transferable to the findings in this thesis

[19] This study is conducted using Swedish and Danish data but this is considered to be transferable in this case because of the same reasons for these countries being chosen as good control countries, i.e. similiar unobservables.

it could suggest that the revenue might possibly rebound in the long-term when investments and market shares are picked up by corporations staying in Norway. This argument is also supported by Blandhol (2025) who estimates a corporate tax revenue increase of 0.76% in the long-run.

6.2 Limitations and Future research

The limited number of observations post treatment highly restricts the power of the estimation. In practice this means that a small effect is highly challenging to accurately estimate using the data and approach used in this project. To statistically and accurately detect any effect, the sample would need to be larger. The small and insignificant result can possibly also be traced back to the limited size of the policy and the small group of people that were significantly affected by it. Even though it is a wealthy and powerful group of people that are affected the most, it is after all a quite small part of the population. Since the levy increase was modest it is possible that it would have limited behavioural responses from affected taxpayers, further reducing the likelihood of these changes being observable on the aggregate level.

Further, the highly significant results for four of the dependent variables when conducting the falsification test is also a threat to the two secondary estimations. These cast doubt on the strength of the parallel-trends assumption for these variables which in turn limits the validity of the results from these estimations.

For future research, the question of why these variables show these tendencies would be necessary to investigate. There is possibly some omitted variable bias that could be fixed by including more control variables. There is also a possibility that the significant results for the control countries are being driven by changes in the Norwegian revenue, something that could be tested for by excluding Norway in future estimations.

A potential fix for the issue of available data after the treatment is also a topic for future research. Monthly data could be a potential fix, but at the same time, some types of taxes are only collected on a yearly basis making such data difficult to compile.

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