

Welfare Effect of Closing Loopholes in the Dividend-Withholding Tax: The Case of Cum-Cum and Cum-Ex Transactions

Elisa Casi, Evelina Gavrilova, David Joseph Murphy and Floris Zoutman
Norwegian School of Economics (NHH) and NoCeT

August 24, 2022 - EEA-ESEM Congress

- **Foreign portfolio equity investments** are a fundamental component of global capital markets as foreign investors owned around \$19.9 trillion in stocks around the world (IMF, 2015)
 - On the one side, **attracting them is a key policy objective**
 - On the other side, they pose serious **challenges from a tax collection perspective**
- Around the world, countries tax foreign investors using withholding taxes
 - Most OECD countries have them, even countries who do not (e.g. UK) are discussing introducing it
 - Yet withholding taxes are far from an ideal system
 - **Reforming the system is key priority for the EU** (part of the 2020 EU action plan for fair and simple taxation)

"The biggest tax robbery in the European history"

Christoph Spengel, expert witness at the EU parliament hearing

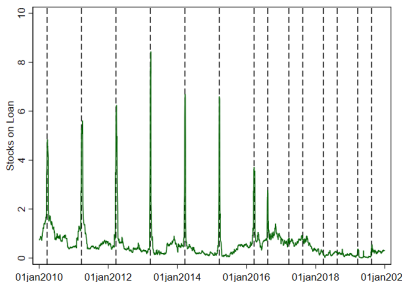


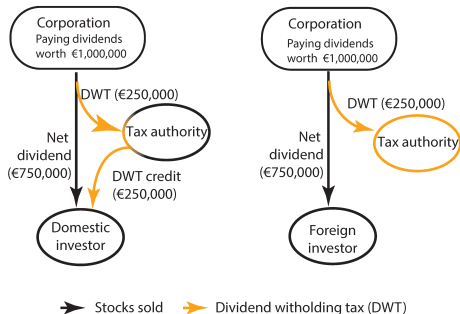
Figure 1: Novo Nordisk - Stocks on loan as a share of the public float

- We investigate the effect of reforms aimed at countering dividend withholding tax (DWT) arbitrage
- Our focus is on **Danish reform enacted in 2016**, and compare Denmark to its Nordic neighbors (Finland, Norway and Sweden)
- We address the following research questions:
 - **What is the effect of increased enforcement on the DWT arbitrage?**
 - **What are the welfare implications of increased enforcement on tax revenue, foreign portfolio investment, and dividend policy?**
- We extend our analysis to 15 Western-European economies

- **Tax enforcement literature:** we offer evidence not only on the direct consequence of stricter enforcement on taxpayer compliance (as the literature did so far, see Slemrod (2019)) but also on the overall welfare effect
- **Arbitrage mechanisms around dividend payments** (e.g. Lakonishok and Vermaelen, 1986; McDonald, 2001; Dhaliwal and Li, 2006; Henry and Koski, 2017): we quantify the extent to which arbitrage around the ex-dividend date is driven by tax vs non-tax arbitrage
- Previous papers on DWT arbitrage only document the existence, see Dixon et al 2021 for the US, or only use transaction data and have no welfare analysis, see Buettner et al 2020 for Germany
- We document the existence DWT arbitrage using **lending data for 15 EU countries** and we provide a comprehensive analysis of the effect the countermeasure, accessing for the first time **granular tax revenue data**

Dividend Withholding Tax

- DWT represents a salient cost for investors: for example, it can be as high as 30% in Europe

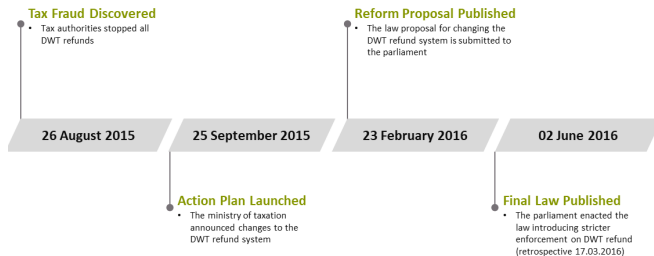


- DWT arbitrage strategies permit foreign investors to remove such costs or even to exploit the system to turn such cost in extra returns

Dividend Withholding Tax Arbitrage

- Cum-cum transactions:
 - a foreign investor enters into an agreement with a domestic bank to lend its shares shortly before the dividend record date
 - the owner and acquirer **exploit the different tax treatment** for capital income of resident taxpayers and non-resident taxpayers
- Cum-ex transactions:
 - shares are sold short before the dividend record date but delivered after the dividend record date
 - such transactions can **trigger a tax reimbursement twice** even though the tax is effectively paid only once
- Both transactions involves lending and borrowing of stocks, reflected in our main variable: **short interest** = the number of stocks on loan divided by the public float

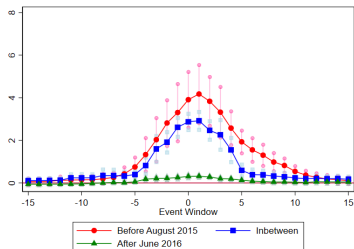
The Danish Reform



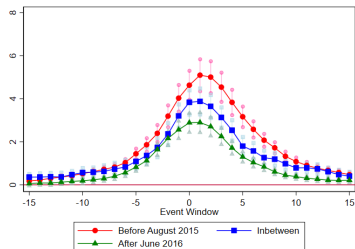
- Denmark introduced a **reform effective from March 17, 2016**:
 - Credit for the DWT can only be obtained upon the submission of beneficial ownership documentation
 - In case of lending agreement, only the lender is recognized as beneficial owner of the shares
- We study the effect of the reform for the **sample period 2010-2019**, on:
 - On DWT arbitrage
 - On welfare

The Effect of the Reform on DWT Arbitrage

- We use:
 - Security lending data from Markit and dividend date from Compustat
 - Triple difference-in-difference event study: 1. Regular trading days and event days which lie in a 31-day window centered around the ex-dividend date 2. Denmark versus Finland/Norway/Sweden 3. Before and after the 2016 reform.



a. Denmark



b. Control Group

Figure 2: The figure plots the excess stocks on loan as a percentage of the public float by event time where $\tau = 0$ is the ex-dividend date.

The Effect of the Reform on Tax Revenue

- We use:
 - The difference between the annual gross DWT receipts and reimbursement obtained by the tax authorities
 - Synthetic DiD comparing the net DWT revenue from Denmark and the one from a synthetic control, which is weighted average of Finland, Norway and Sweden

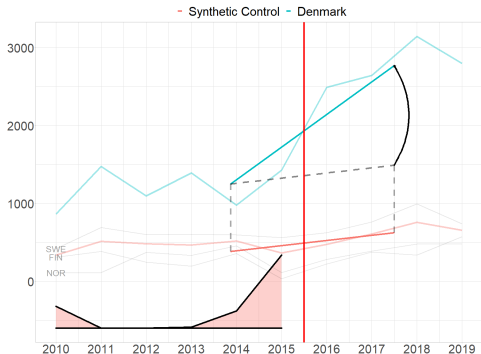


Figure 3: The figure shows the causal effect of the Danish reform on net DWT revenue estimated through synthetic DiD, following Arkhangelsky et al. 2021 AER

The Effect of the Reform on Foreign Portfolio Investment

- We use:
 - Equity holdings of OECD residents from the IMF Coordinated Portfolio Investment Survey
 - Synthetic DiD comparing the foreign equity investment in Denmark and the one in a synthetic control, which is weighted average of Finland, Norway and Sweden

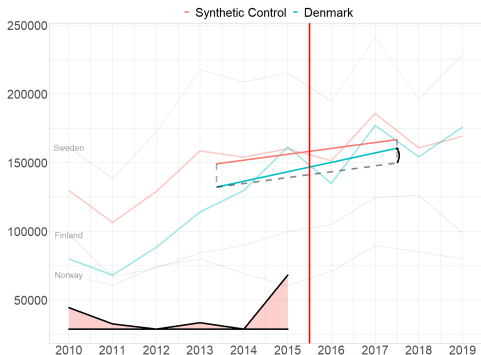


Figure 4: The figure shows the causal effect of the Danish reform on foreign equity investment estimated through synthetic DiD, following Arkhangelsky et al. 2021 AER

The Effect of the Reform on Dividend Policy

- We use:
 - Dividend yield, which is the ratio of total annual dividend divided by the mean stock price during the year from Compustat
 - Regression-based event study comparing changes in dividend policy of Danish companies to the one of Finnish, Norwegian and Swedish companies



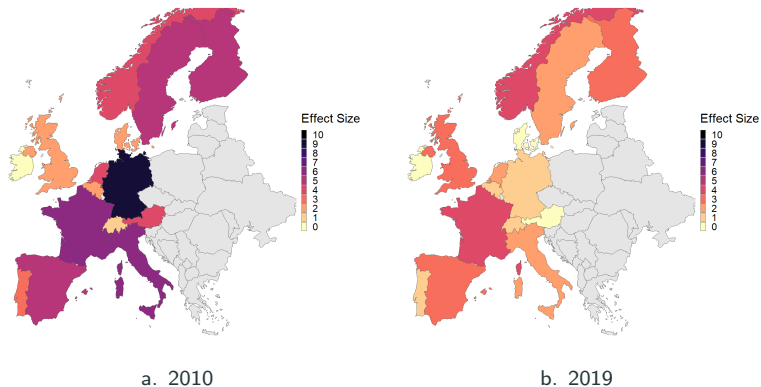
Dividend Yield

Figure 5: The figure shows an event study comparing the average dividend yield of Danish companies (treatment) to the one of Finnish, Norwegian and Swedish companies (control).

Evidence from 15 EU countries

- DWT enforcement measures adopted so far across Europe can be broadly categorized as follows:
 - Germany (2016), Belgium (2019) and France (2019): minimum holding period
 - Austria (2019), Belgium (2019) and Germany (2012): additional documentation

Figure 6: Excess stocks on loan in 15 European countries



Notes: The figure shows the size of the effect on the ex-dividend day for the excess stocks on loan

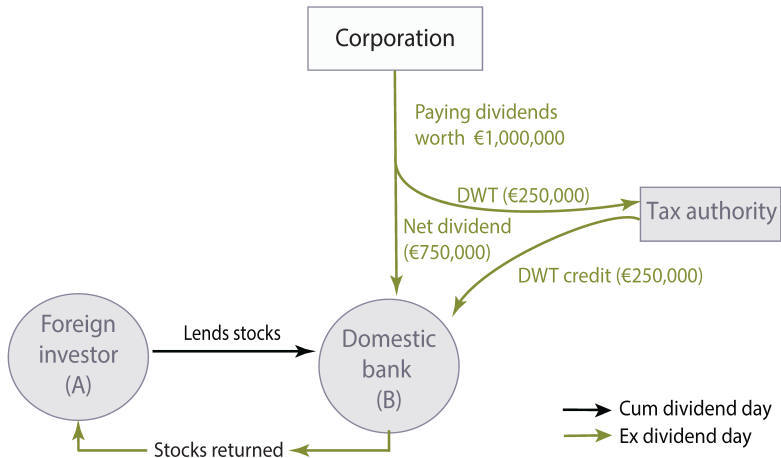
- Prior to reform, strong evidence for DWT arbitrage across Europe
- Reforms in Denmark is successful at curbing cum-cum and cum-ex transactions
- Increase of 1.3 billion USD in tax revenue with no evidence of negative behavioral responses

Thank you!

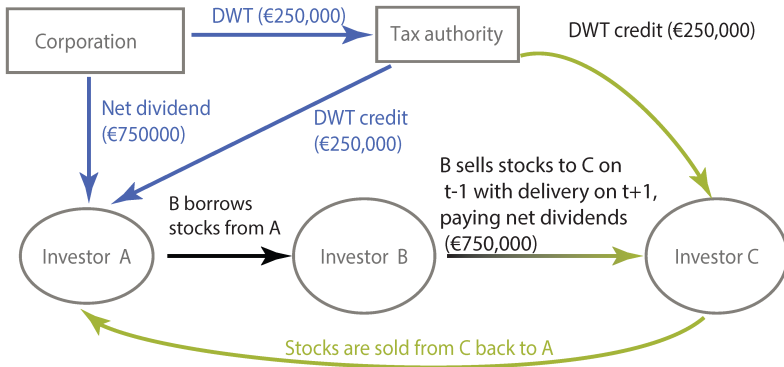
Elisa Casi-Eberhard

<https://www.nhh.no/en/employees/faculty/elisa-casi/>
elisa.casi@nhh.no

Cum-Cum Transactions



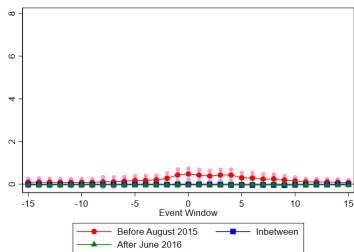
Cum-Ex Transactions



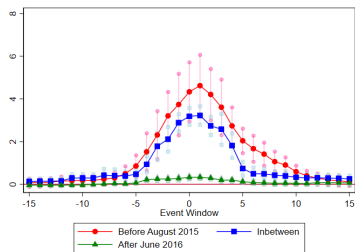
- Events happening at time point $t-1$
- Events happening at time point t
- Events happening at time point $t+1$

Heterogeneity Tests

Figure 7: Heterogeneity in excess stocks on loan with respect to market capitalisation for Denmark



a. Bottom Quartile

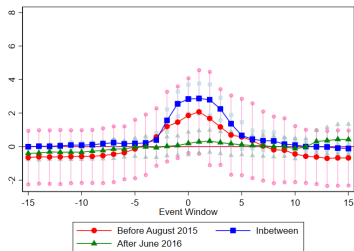


b. Top Quartile

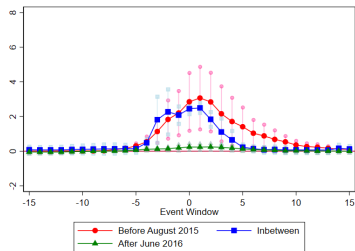
Notes: The Figure plots the excess stocks on loan as a percentage of the public float by event time - where $\tau = 0$ is the ex-dividend date - and by quartile of market cap.

Heterogeneity Tests

Figure 8: Heterogeneity in excess stocks on loan with respect to dividend yield for Denmark



a. Bottom Quartile



b. Top Quartile

Notes: The Figure plots the excess stocks on loan as a percentage of the public float by event time - where $\tau = 0$ is the ex-dividend date - and by quartile of dividend yield.