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Cum-Fake Transactions in Scandinavian Countries

An empirical study of ADRs from 2010 to 2019

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Abstract

In this thesis, we investigate cum-fake transactions in Scandinavian countries. The period of the study, covering nine years, is 2010-2019. Cum-fake trading has recently been in the media spotlight. Banks and brokers were abusing pre-released ADRs, and ultimately some of them were fined and sanctioned by the Securities and Exchange Commission. Cum-fake trading relies on a set of timed transactions around the ex-dividend day where the goal is to receive illegitimate dividend withholding tax credit for shares they do not possess and have not paid any taxes.

We perform two main analyses of ADRs based on Scandinavian companies. Cum-fake trading would result in a high short volume close to dividend distribution. With this as a basis, we analyze short volumes—the second analysis uses bi-weekly short-interest volume. We also study abnormal volumes for Germany and Great Britain separately to supplement our main study on Scandinavian companies.

By analyzing the trading volume around the dividend distribution, we find an increase in volume for Scandinavian companies, and even after the SEC sanctions. The SEC sanctions in 2016 do not seem to have any effect on the trading patterns.

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Contents

List of figures

List of tables

Chapter 1 Introduction

In 2018, one of the biggest scandals related to dividend taxation was revealed. Through clever and complex preplanned trading, the participants took advantage of inefficient, unsynchronized tax systems in Europe to claim tax reimbursements wrongfully or altogether avoid withholding taxes (CumEx-files, 2018). The discovered practices were named cum-ex and cum-cum. The first practice, cum-ex is characterized by investors claiming multiple reimbursements of dividend withholding taxes. Cum-cum, on the other hand, is designed to avoid dividend withholding taxes. The calculated losses due to cum-ex and cum-cum amounted to billions in tax revenue.

The practices mentioned in the Cumex-files have since been prohibited, and new tax legislations have been enacted to combat them. A new tax fraud scheme has recently gained traction in the media. This practice, named cum-fake, shares a close similarity to cum-ex, but instead of claiming multiple tax reimbursements, cum-fake trading is claiming tax reimbursements without paying taxes in the first place. Finding evidence for cum-fake trading is the main objective of this thesis.

Cum-fake trading is executed by investors trading ADRs prior to dividend distribution, with the intention of tricking the tax authorities to claim a tax reimbursement for shares that they did not own, did not receive any dividends, and did not pay any dividend withholding taxes (Bräuer, 2018). Cum-fake trading is illegal, as they purposely claim withholding tax refunds without paying any taxes. ADRs are papers that represent a foreign equity share on American financial markets. ADRs enable Americans to trade outside of the US market and also allow Europeans to access the US capital market without going through the hurdle of listing directly (Lenz, 2019).

The Securities and Exchange Commission, hereafter referred to as SEC, found that several banks and brokers improperly handled pre-release ADRs (Security and Exchange Commission, n.d). The pre-release ADRs are used to bridge the gap between the settlement periods and do not have

any underlying equity. Banks can issue pre-release ADRs if the underlying stock has not arrived at the depositary bank. The SEC found that banks, right around the dividend day, were issuing and lending pre-release ADRs without actually acquiring the underlying asset (Securities and Exchange Commission, 2018f).

We aim to bring insight into the topic of cum-fake by empirically analyzing the Scandinavian ADR market trading behavior. We are also analyzing ADRs that originates from Germany and Great Britain. Cum-fake trading may have had the most significant impact in Germany. Therefore, it is interesting to compare the results with Scandinavian ADRs. Great Britain does not have withholding taxes on dividends (PwC, 2020). Hence, cum-fake trading should be non-existent for British ADRs. Our research will look at the short volume of ADRs from 2010 to 2019, and we will perform an event study to find empirical evidence for cum-fake transactions.

We are building our theoretical basis from studies and articles mainly conducted on cum-ex and cum-cum and build upon the tax-motivated trading strategies that have hindered the European economic growth. That is why we are inspired to investigate this new and unfamiliar subject. The cum-strategies, mentioned in this thesis, might be confusing, and it is easy to mix them. We will clarify the different cum-strategies in this thesis. To our knowledge, there has not been conducted any similar research on this topic before, and we hope this thesis motivates others to research further on cum-fake trading.

This thesis is structured into five chapters. In the second chapter, we will present the theoretical framework of our thesis. Chapter 2 will also give the necessary background information needed to understand cum-fake transactions and understand our research approach and analysis. In chapter 3, we detail the methodology implemented, present our hypothesis, and the data collected. In chapter 4, we will present our empirical results, and finally, we will give our conclusion in chapter 5.

Chapter 2 Theoretical framework

In this chapter, we present the theoretical framework for our analysis. We will start by reviewing relevant literature. Secondly, we will describe what ADRs and pre-released ADRs are, and which essential role they play in the cum-fake scheme. After explaining ADRs, we will go to the subject of taxation. The cum-fake transaction is based upon taking advantage of dividend taxation and mainly dividend withholding taxation. Hence it is an important part of the theoretical framework. After presenting the necessary background information to understand cum-fake transactions, we will describe how the cum-fake transaction is done. This part of the thesis will explain which types of transactions are made by the three participants needed to trick tax authorities in European countries.

Next, we will briefly show two settlements for abusive handling of ADRs, the first one for JPMorgan and their role as a depositary bank, and the second one for ICBCFS and their role as a broker. Lastly, we will look at two more commonly known cum-schemes, cum-ex, and cum-cum.

2.1 Literature review

In this section, we will review relevant literature to undertake our hypothesis. There has not been, to our knowledge, conducted any empirical studies on cum-fake trading before. Therefore, there is a lack of literature on this topic. However, this thesis generally contributes to the existing literature on financial market behavior, more specifically on the trading of equities around the ex-dividend days and cum-fake trading.

Buettner et al. (2018) explores a form of withholding tax non-compliance that caused a substantial loss in tax revenue in many European countries, one of the biggest tax fraud scandals

in Europe. Buettner et al. (2018) investigated the trading of stocks near the ex-dividend day, more specifically on the cum-ex effect on German stocks from 2009 to 2015. They found out that, number of stocks traded increase significantly around the ex-dividend day before the German tax reform in 2012, which stopped illegitimate withholding tax refunds. Our thesis will contribute to this literature by researching cum-fake trading, instead of cum-ex.

Dasilas (2009) examined the Greek market between 2000 and 2004 for the ex-dividend stock price and abnormal trading volume. He found out that there was increased trading volume across two days, ex-dividend date, and cum-dividend date. The increase in abnormal volume was positively associated with high dividend yield and negatively associated with transaction costs. Dasilas (2009) investigated that the price drop on ex-dividend day was not the full amount of the dividend, even though the Italian market did not have differential tax treatment of capital gains and dividends. Dasilas (2009) found strong evidence for dividend capturing strategies around the ex-dividend day. Koski and Scruggs (1998) also examined ex-dividend abnormal volume behavior. They found the same evidence of significant abnormal volume around ex-dividend days from the New York Stock Exchange. The evidence suggests higher abnormal trading volume for high yield, which is in line with Dasilas' findings of the Greek market.

As our thesis investigates that the abnormal short volume of ADRs could be an indication of cum-fake trading, there is a possibility that a higher abnormal short volume around the cum-dividend day could be due to non-tax motivated dividend capturing strategies[1].

[1] Dividend capturing strategies involve dealers and brokers who try to profit from the difference in price between cum-dividend stocks and ex-dividend stocks.

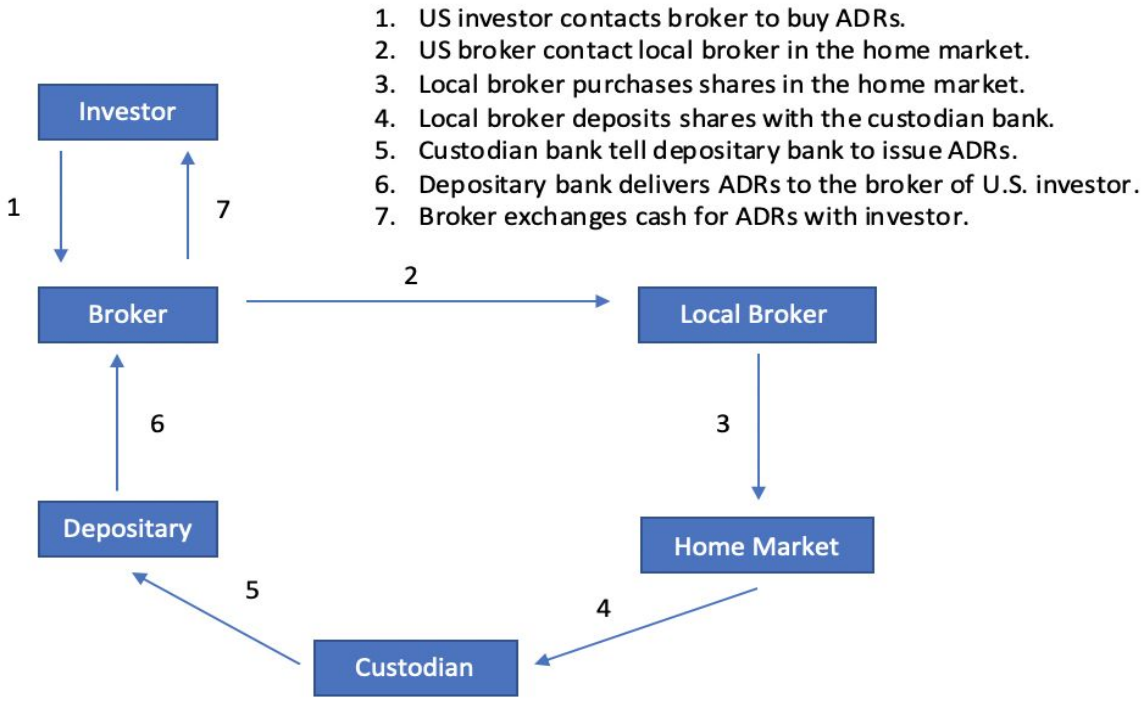
2.2 American depositary receipts

In order to understand cum-fake transactions, it is essential to know what American Depositary Receipts (ADR) and pre-released ADRs are. Trading with pre-released ADRs is the fundament of cum-fake transactions.

ADRs were first introduced in the USA in 1927. The purpose of the ADR is to make it easier for a U.S. investor to invest in stocks outside of the U.S. and thereby have an optimized diversified investment portfolio (Aggarwal, Dahiya, and Klapper, 2005). The ADR gives companies outside the U.S. access to the U.S. capital market, whether for raising capital or creating a trading presence. The ADR represents a foreign stock or a fraction of a foreign stock, and a custodian bank outside the U.S. deposits the underlying asset. The ADR is traded on American stock exchanges or over-the-counter (OTC) and is therefore quoted in USD. Hence investors do not need to purchase foreign currency or create an account in an overseas brokerage to purchase foreign stocks (Securities and Exchange Commission, 2012).

Figure 1 shows how an ADR is created. The first step is for a U.S. investor to contact a broker to buy ADRs. The broker would then have to get a local broker from the country the underlying stock originates. The local broker then buys shares of the foreign company on the home market stock exchange, and afterward, the shares are deposited in a custodian bank, which is a foreign branch of a bank that operates in the U.S. as well as in the country the stock originates. The custodian bank will then instruct the U.S. branch of the bank to issue ADRs on behalf of the shares held in the custodian bank. The U.S. bank is called the depositary bank, and it will then issue ADRs to the broker, and the broker would then forward them to the investor. This example shows how the depositary bank issues ADRs to a broker and the broker hands them over to the investor (Gande, 2001).

Figure 1: How ADRs are created



Source: Own contribution inspired by Gande (2001)

A pre-released ADR is the same as an ordinary ADR, except that the custodian bank does not yet have custody of the underlying stock. The traditional reasoning for issuing pre-released ADRs has been to address timing disparities between the settlement periods. Once the pre-released ADRs are issued, they are identical to other ADRs from the same depositary bank and can be traded freely. Traditionally pre-released ADRs should be closed within a few days, meaning that the underlying stock should be acquired and deposited in the custodian bank. However this was not the case in a lot of pre-released ADRs JPMorgan issued in the timeline 2011 to 2014 (Securities and Exchange Commission, 2018f), more on the abusive usage of pre-released ADRs discovered by the SEC will be described in chapter 2.5.

The fact that pre-released ADRs and ADRs are identical and that pre-released ADRs could be outstanding for more than a few days creates a situation where the total number of shares appears

to be higher than it should be. The German tax authorities have, in the past, paid dividend withholding tax credits to investors who should not have been able to claim because of vulnerable automated systems (Bräuer, 2018).

2.3 Withholding tax and taxation of dividends

Corporations assembled as a limited company are taxed once at the corporate level, and if the after-tax profits are distributed to the shareholders as dividends, it is taxed as individual income. For legal persons, the dividend payment can be subject to taxation, but most likely not because inter-corporate dividends are exempt from taxation (Schreiber, 2013). Most tax systems try to mitigate this double economic taxation of corporate profits (Schreiber, 2013).

When the dividend receiving shareholder resides outside of the source of the income, it can be subject to a dividend withholding tax (Schreiber, 2013). In Norway, companies are obliged to withhold a tax on dividends paid out to foreign shareholders (Skatteetaten, n.d). The withholding tax rate is 25% but can get a lower rate depending on what treaty Norway has with that country. (Skatteetaten, n.d).

One of the benefits of having a withholding tax is that the remitter, in this case, the dividend-paying corporation, is not the taxpayer. Withholding tax contributes to reducing the incentive to evade taxes (Buettner, et.al, 2018). According to Buettner, et al. (2018), withholding tax creates a discrepancy between the remitter and the taxpayer and conduces tax compliance. Most of the OECD countries have implemented withholding tax on dividends, but some countries only levy withholding tax on foreign shareholders, this includes Norway (skatteetaten, 2019). In Norway, the withholding tax rate is 25%, Sweden has 30%, Denmark has 22 %, and Germany has 26.375%[2]. Table 1 presents the withholding tax rate of Scandinavian countries and Germany. Great Britain does not have a withholding tax on dividends and is therefore not included.

[2] 5.5 % solidarity surcharge applies, bringing the rate up to 26.375%.

Table 1: Withholding tax rates of Scandinavian countries and Germany

Jurisdiction	Dividends	Notes
Germany	25%	5.5% solidarity surcharge also applies. Qualifying payments to EU companies may be exempt under EU directives.
Norway	0% / 25%	No tax withheld on dividends paid to qualifying corporate shareholders residents in EEA
Denmark	0% / 15% / 22%	Qualifying payments to EU companies may be exempt under EU directives. 27% withholding tax is generally levied on dividends, but companies can reclaim 5%.
Sweden	0% / 30%	Qualifying payments to EU companies may be exempt under EU directives.

Source: Deloitte, 2020

2.3.1 Dividend distribution process

The Corporation's general assembly approves the board of director's recommendation, of when and how much to pay out in a dividend. If a company has generated a profit, it generally has two ways to distribute the money, it can retain the profit or pay it out as a dividend to its owners, the shareholders. When the board of directors declares the dividend, with the approval of the general assembly, the stock is trading "cum" dividend. The declaration can be several months before the actual payment. Cum date is the last day one can purchase the stock cum-dividend, as it usually takes a couple of days for the ownership of the stock to be transferred, this period is called the settlement period. It usually takes two days for the stock transfer. The settlement period is an essential step in the cum-fake trading strategy, as the sale of a share or ADR is not settled immediately. That is, the transfer of the share does not happen simultaneously.

The settlement cycle in Europe is usually T+2, and this means that it takes two business days to settle after the trade. For example, a sale on Monday will settle on Wednesday. Norway had the T+3 period before switching to T+2 in 2014 (Oslo Børs, 2014). This move was made to harmonize the settlement periods across Europe. The ex-date is the first day the stock officially trades without the declared dividend entitlement, ex meaning without. Following the T+2 settlement period, two days after the cum date, the record date will be the day when the dividend entitled shareholders would be registered. If one buys a stock on ex-date, that person will not receive dividends as it would not be registered as owner on the record date, the investor must buy the stock two days before the record day, that is, the cum day. The record date will be decided simultaneously with the payment date at the general assembly.

Figure 2: Dividend distribution process

Source: Own contribution

2.3.2 Withholding tax refund

Generally, withholding tax can be refunded if one has paid too much taxes, or there is a tax treaty between the two countries for reduced or no withholding taxes. Some types of investors are exempt from tax. The parent-subsidiary directive states that inter-corporate dividends in the EEA area, if they fulfill the requirements, are exempt from withholding tax (Schreiber, 2013). The rates differ depending on the tax treaties between two jurisdictions. In the EU, double taxation is mitigated at the shareholder level (Schreiber, 2013).

Table 2 is an example of how one mitigates economic double taxation with withholding tax and using a shareholder relief system. The corporation in the example is based in EU country A and

has generated a profit of 100 and decides to distribute its profit to its shareholders. The Shareholders reside in EU country B. For the sake of simplicity, let us say that the corporate tax is 25%, the income tax is 36%, and the tax treaty allows us to remit 100% of the withholding tax. The profit after tax is subject to a withholding tax of 25%. The net dividend of 56.25 received by the shareholders is subject to income tax. The withholding tax credit of 18.75 is credited against the income tax liability. The shareholder relief system credits the withholding tax against the income tax at the shareholder level, making the net tax payment 1.5 for the shareholder.

Table 2: Example of a shareholder relief system

1	Profit before tax	100.00
2	Corporation tax (25%)	25.00
3	Profit after taxes	75.00
4	Withholding tax (25%)	18.75
5	Net dividend received/Shareholders taxable income	56.25
6	Income tax (36%)	20.25
7	Withholding tax credit/refund	18.75
8	Net tax payment	1.5
9	Net income	54.75
10	Total tax burden	45.25

Source: Own contribution, inspired by Schreiber (2013)

2.4 Cum-Fake transaction

The goal of the cum-fake transaction is to receive a dividend withholding tax credit. The tax credit is given based on a stock that does not exist, and a dividend payment you did not receive nor paid dividend withholding taxes. Vulnerable automated tax systems in Germany have made this possible (Bräuer, 2018).

Figure 2 illustrates how the cum-fake scheme could be executed. It is important to separate transactions executed cum-dividend and ex-dividend. A stock is cum-dividend when it can be traded with a declared dividend. The stock is cum-dividend until one settlement period before the record date (NASDAQ, 2020a). Stocks that are traded without a declared dividend are called ex-dividend. For a stock to be ex-dividend, trade with the stock has to settle one day after the record date (NASDAQ, 2020b).

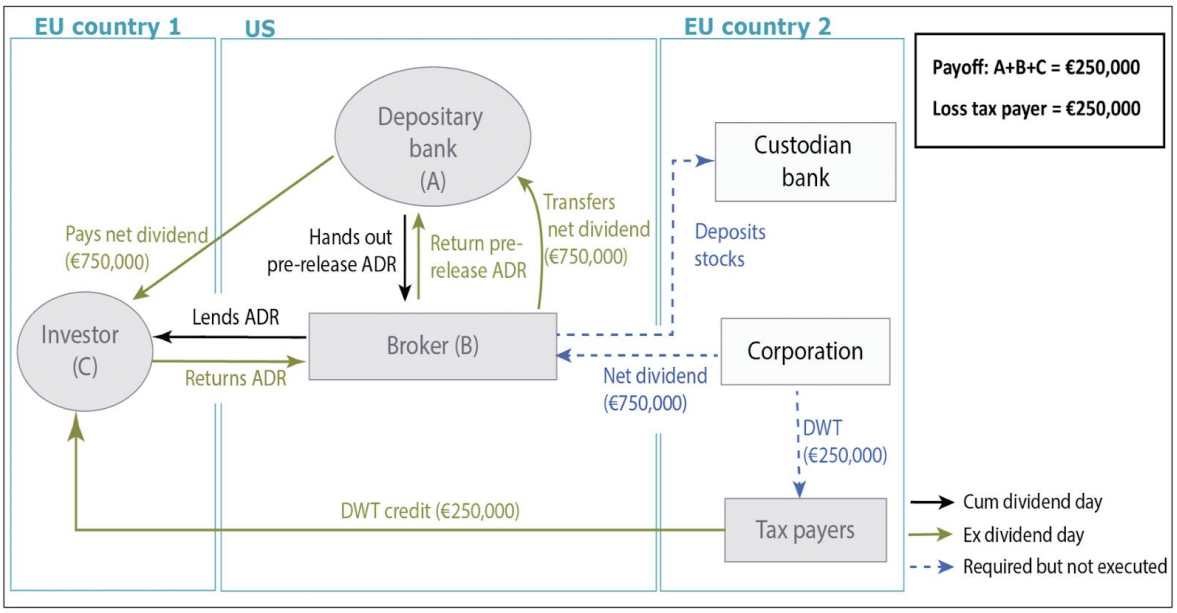
The cum-fake scheme involves three parties, a depositary bank and a broker in the U.S., and an investor in a different country than the ADR originates from. On cum-dividend day, the depositary bank issues a pre-released ADR to the broker, the broker does not acquire the underlying asset. Hence the pre-released ADR remains open, and the broker lends it to an investor. At this point, foreign tax authorities can not tell the difference between the pre-released ADR and normal ADRs.

On the ex-dividend day, the broker transfers an amount equivalent to the net dividend to the depositary bank. This transaction is a fake dividend transaction because the underlying stock is not acquired, and the broker has not received any dividend from the corporation. The depositary bank pays the net dividend to the investor. The investor gives back the ADR to the broker, and the broker returns the pre-released ADR to the depositary bank, closing the pre-released ADR. The SEC found that most of the pre-released ADRs issued by JPMorgan were closed by the

pre-released ADR returning to JPMorgan, not by the underlying stock being in the custody of the custodian bank (Securities and Exchange Commission, 2018f).

The last part of the cum-fake scheme is for the investor to apply for a tax credit. Figure 2 presents an example where the dividend is € 1 000 000 and the withholding tax is 25%, which gives a net dividend of € 750 000 and a tax credit of € 250 000. The tax credit is divided between the three parties in the form of lending fees for the pre-released ADRs.

Figure 3: Cum-fake transaction



Source: Floris T. Zoutman

2.5 Abuse of pre-release ADRs

The U.S. Securities and Exchange Commission's (SEC) primary mission is to protect investors and maintain a fair and efficient marketplace. The Commission performs its task by interpreting and enforcing federal securities law as well as creating new and amending existing laws. They are also supposed to oversee inspections of securities firms, brokers, and other financial institutions (Securities and Exchange Commission, 2013). If cum-fake transactions are happening, using ADRs, it would be the SEC's responsibility to stop it.

The SEC has not addressed problems with cum-fake transactions by using the phrase cum-fake. However, they have brought enforcement actions down on 15 depositary banks and brokers as well as four individuals for improper handling of pre-released ADRs. These enforcement actions have resulted in combined settlements of almost 432 million dollars since 2017. The 19 settlements have in common that the bank, broker, or individual who are charged for improper handling of ADRs, neither admits nor denies the findings by the SEC. However, they are willing to pay the settlement (Securities and Exchange Commission, n.d).

JPMorgan paid the largest settlement paid by a depository bank for mishandling pre-released ADRs. The settlement consisted of $71 million in ill-gotten gains, $14.4 million in prejudgment interest, and $49.7 million in penalties, making the combined settlement $135 million. The settlement occurred because of the way JPMorgan handled their pre-released ADRs. One of the SEC findings was that between November 2011 and June 2014, JPMorgan had over 14 600 pre-released ADR transactions, in which over 7000 of those transactions were outstanding for over five days, 1300 of those transactions were outstanding for over 30 days, and 400 of those transactions were outstanding for over 100 days. Furthermore, almost all of the transactions were closed by the pre-release ADR broker delivering back the pre-released ADR rather than the underlying stock being delivered to the custodian bank (Securities and Exchange Commission, 2018f). For the ADR to be pre-released, there should be a deal in place between the custodian

bank and a pre-release broker to receive the share, and the pre-release should only be open for a few days (Lenz, 2019).

The SEC also found that certain personnel at JPMorgan knew that the pre-release broker and its counterpart were using the pre-released ADRs for activity outside of the pre-release agreement. For example, the pre-release brokers would lend out ADRs, and personnel at JPMorgan did nothing to stop this from happening, which could be an indication that JPMorgan or at least some part of JPMorgan were in on what seems to be a cum-fake transaction (Securities and Exchange Commission, 2018f).

The largest settlement paid by a broker for mishandling pre-released ADRs was paid by The Industrial and Commercial Bank of China Financial Services (Securities and Exchange Commission, 2019b). The settlement consisted of $24 million in ill-gotten gains, $4.4 million in prejudgment interest, and $14.3 million in penalty making the total settlement close to $43 million (Securities and Exchange Commission 2019b). The SEC found that ICBCFS obtained pre-release ADRs from depositary banks, which did not own the original share, nor did its counterparties. Hence ICBCFS should have known that they were inflating the total number of outstanding shares. The inflated number of outstanding shares led to abusive practices such as dividend arbitrage and inappropriate short selling (Jaeger, 2019).

It is not clear how much damage to the taxpayers, cum-fake transactions have caused. The SEC has found that banks and brokers have gained over $279 million from cum-fake transactions, but this only covers what cum-fake transactions have caused in damages by using ADRs. Other types of depositary receipts could have been a part of cum-fake transactions, such as GDR (Global depositary receipts), but GDR is not in the jurisdiction for the SEC (Lenz, 2019). Table 3 presents the SEC findings of illegal gains, including interest from cum-fake transactions and what the banks and brokers had to pay in settlement.

Table 3: Profits and penalties because of illegal pre-release ADR transactions.

Financial institute	Profits with interest	Total settlement
BNY Mellon	$ 33 629 232	$ 54 187 555
Citibank	$ 25 162 752	$ 38 750 260
DBTCA	$ 51 055 828	$ 73 284 829
JPMorgan Chase Bank	$ 85 448 821	$ 135 177 679
ABN AMRO CC	$ 407 067	$ 586 420
Banca IMI Securities Corp.	$ 20 411 021	$ 35 411 021
BMO Capital Markets Corp.	$ 2 764 703	$ 3 964 703
Cantor Fitzgerald & Co.	$ 447 911	$ 647 911
Deutsche Bank Securities Inc.	$ 1 150 513	$1 648 266
ICBCFS	$ 28 443 930	$ 42 835 192
ITG Inc.	$ 16 915 396	$ 24 450 468
Jefferies LLC	$ 2 743 955	$ 3 995 540
Merrill Lynch	$ 5 173 087	$ 8 064 476
SG Americas Securities LLC	$ 569 329	$ 819 329
Wedbush Securities, Inc	$ 5 674 713	$ 8 109 249
Total	**$ 279 998 258**	**$ 431 932 898**

Source: Securities and exchange commission: 2017a-b, 2018a-f, 2019a-f, 2020

2.6 Cum-Cum and Cum-Ex

The Cum schemes mentioned in this thesis might get mixed up. We want to clarify the difference between these three cum-strategies briefly.

Cum-cum trading is a set of timed transactions of stocks near the dividend days. The foreign owner of the share sells or lends his stock cum-dividend to a domestic credit institution. After the ex-date, the original owner repurchases the stock without the dividend entitlement. This set of transactions were done in order to avoid the withholding tax. This trading took place because the domestic investor could get a full refund of the withholding tax, while the foreign investor could only get a partial or no refund (Spengel, 2016).

Cum-ex trading is not just to receive a refund, but to receive multiple reimbursements of the same dividend. Banks, brokers, and investors abused a loophole in the tax system so that all of them could claim a tax refund for the same dividend. The stock would change hands rapidly around the dividend cut-off date to confuse the tax authorities on who was the (real) owner of the share, and thus, all of them could claim a refund (Rahman, 2019).

Chapter 3 Research approach

For the first part of the chapter, we present the research question. Secondly, we will go further in detail of how we managed our data sampling and selection. We will also detail our econometric framework and explain our choice of regression model and method.

3.1 Research question

This thesis aims to analyze cum-fake transactions and find empirical evidence for cum-fake transactions in Scandinavian countries. We are analyzing short volume and short-interest volume of ADRs for Scandinavian companies, to find evidence for cum-fake transactions.

The investor needs to lend pre-released ADRs from the broker right before the dividend distribution. The lending transaction will either be reported as short-interest volume or short volume. Short volume is a measure of how many shares have been sold short over a period of time, while short-interest is the number of outstanding shorted shares who have not been closed or covered at a specific moment in time (Merrit, 2019). A share is shorted when it is sold without the seller's ownership of the share, hence the seller needs to borrow the share before selling it[3].

To assist us in solving the main objective of the thesis, we are analyzing the data based on two hypotheses.

Hypothesis 1: Short-interest and short volume for ADRs are higher before dividend distribution.

[3] Short selling is traditionally used for investors to earn money while betting against the share. The investor borrows a share, then sells it in the market, and after a period of time, he needs to buy back the share to give it back to whom he lent it from. The profit or loss will be the difference between what he sold the share for and what he repurchased it for (Bodie, Kane & Marcus, 2013).

The first hypothesis relates to the general increase in shorting activities of ADRs around the dividend distribution, which can have the purpose of tax evasion or tax avoidance. Our assumption is that shorting activities with ADRs are significantly higher right before the dividend distribution. If the first hypothesis is correct, it could be an indication of cum-fake transactions in Scandinavian countries.

Our second hypothesis relates to the fact that the SEC started to give fines in 2017 to banks who handled pre-released ADRs wrongfully. Our second hypothesis is, therefore:

Hypothesis 2: The short-interest and short volume for ADRs are higher around dividend distribution before 2017, compared to after.

The second hypothesis is based on our assumption that the SEC's fines have stopped investors, brokers, and banks from engaging in cum-fake transactions, because of the increased risk, the penalties impose on the three parties. Our second hypothesis will clarify if the SEC's penalties have affected the behavior of the financial participants.

3.2 Data management

For the analysis, we are using two different datasets. The first dataset is of the daily short volume of ADRs, and the second one is of the bi-weekly short-interest volume of ADRs. We are going to perform two different regressions on the two datasets. Because of this, we need to manage the datasets differently. We start by presenting the data management process. After that, we detail the descriptive statistics for the final dataset.

3.2.1 Short volume

The data used for our first analysis is collected from the FINRA and the Compustat database. We have retrieved daily transactional short volumes of ADRs for the first part of the analysis. The

timeline of the data is from 2010 to 2019. Since our analysis is an event study with the cum-dividend day as the event, we also needed the record date for the dividend payment to the ADRs. To receive an ADR with dividend rights, the ADR needs to be traded one settlement period before the record date.

The research question of this thesis is specific to Scandinavian countries, we are also going to compare the results with German and British countries. The dataset for this study is divided into three separate sets, one, the main dataset, with Scandinavian companies, the two other, secondary datasets, for German- and British companies. Therefore we exclude all ADRs where the underlying assets originate from different countries. We also excluded companies that did not pay dividends in this period. The reason for this is because the event study measures the effect dividends have on the short volume, and without a dividend payment, there is no event to measure the effect off.

There were several instances where companies had an extraordinary dividend within 15 tradings days of the ordinary dividend. The extraordinary dividend created several issues of how to handle the data because our estimation window is a 31day window: [-15, 15] where 0 is the last day the ADR could be traded cum-dividend. By including the extraordinary dividend, we would have two estimation periods overlapping each other. The overlap would cause future issues of how the estimation window should be determined since the estimation window consists of observations 15 days prior and past the cum-dividend day.

The overlapping estimation windows could be solved by shortening the estimation window in the instances where the extraordinary and ordinary dividends overlapped. This solution would have created a lot of work, and it is not perfect for our research method. Since there were only five instances of overlapping estimation windows in the Scandinavian dataset, we decided to exclude the extraordinary dividends when they occurred within the estimation window to an ordinary dividend payment.

When excluding the extraordinary dividend payment, we could remove the observation from our data or ignore the event and keep the trading volume from that day. We chose the latter. Given that the first hypothesis is correct, and the short volume increases on the cum-dividend day, it could impact the results when we remove the event and keep the volume. This could weaken the evidence for our first hypothesis. Since extraordinary dividends were only occurring five times within the estimation window to the ordinary dividend in the Scandinavian dataset, we see this as a minor issue to the research.

3.2.2 Short-interest volume

We obtained the data sample of the short-interest volume of Scandinavian companies from Compustat - Capital IQ and OTC markets. All firms are required to report their short-interest positions twice a month to FINRA (FINRA, n.d). The following section presents how the data is managed.

For the analysis of the short-interest volume, we are using all observations of Scandinavian companies with dividends. There is no estimation window. The reason for not using an estimation window is that there are a lot fewer observations between dividend distributions because the data is bi-weekly. Hence if we were to use an estimation window, the window would be very narrow. The bi-weekly short-interest volume data contains the same companies, to get an accurate comparison as possible, as with our daily short volume data, and are managed precisely the same way with regards to extraordinary dividends.

3.2.3 Descriptive statistics

After the data management process, the final dataset of short volume for Scandinavian ADRs consists of 45 dividend-paying companies, divided by 9 Norwegian, 23 Swedish and 13 Danish companies. The total number of dividend payments for these companies is 336 dividends, and the total number of observations is 10 413 for the timeline 2010 - 2019. For the German and British short volume dataset, the total number of dividends is 249 and 1075, respectively.

The bi-weekly short-interest data sample contains 45 dividend-paying companies, totaling 391 dividends, and resulting in a total of 6491 observations. The companies' timeline is from 2011 to 2019, but it varies between the companies since some of them began trading as ADR later. One of the reasons there are fewer dividends in the daily short volume dataset of Scandinavian ADRs, compared to the bi-weekly short-interest dataset, is because the estimation window for the daily dataset requires 31 observations between dividend distributions, this was not the case for all dividends. Table 4 summarizes the dividend distribution in the sample.

Table 4: Dividend distribution Scandinavian ADRs 2010-2019

No. of	Daily short volume		Bi-weekly short-interest	
dividends	ADRs	Per cent	ADRs	Per cent
1	4	8.9%	1	2.2%
2	2	4.5%	2	4.4%
3	3	6.7%	0	0%
4	5	11.1%	5	11.1%
5	2	4.5%	4	8.9%
6	2	4.5%	1	2.2%
7	3	6.7%	0	0%
8	5	11.1%	16	35.6%
9	3	6.7%	1	2.2%
10+	16	35.6%	15	33.3%
Total	45	100%	45	100%

In table 5, we report the summary statistics for the short volume and short-interest. The first section of the table presents statistics of logged short volume for Scandinavia, Germany, and Great Britain. The second and third section presents the summary statistics for pre and post-2017. The last section presents statistics for short-interest.

Table 5: Summary statistics of logged short volume and short-interest

	Mean	Std dev	Observations
Short volume 2010 – 2019			
Scandinavia	8.749	2.241	10 413
Germany	8.763	1.954	7 678
Great Britain	9.331	2.555	33 176
Pre sanctions (< 2017)			
Scandinavia	8.640	2.344	5 899
Germany	8.792	1.869	4 960
Great Britain	9.337	2.515	23 198
Post sanctions (> 2017)			
Scandinavia	8.892	2.091	4 514
Germany	8.711	2.100	2 718
Great Britain	9.317	2.648	9 978
Short-interest			
2010 – 2019	8.958	2.981	6 491
Pre sanctions	8.784	3.167	4 210
Post sanctions	9.278	2.571	2 281

3.3 Econometric framework

To answer the research question of this thesis, we are performing two different regression models with two different datasets. The first part of the analysis is an event study with panel data of Scandinavian companies trading in American stock exchanges and OTC as ADRs. We will use regression with binary variables and clustering of standard errors. Our panel data is unbalanced, which means that not all observations have the same time-periods. The unbalanced panel data should not be a problem, as long as the missing years do not correlate with the idiosyncratic errors (Wooldridge, 2016).

3.3.1 Regression model

In this part of the thesis, we will present our regression models. We make use of two main models to make inferences about our hypothesis, daily abnormal volume model, and bi-weekly abnormal volume model. We will start by explaining the regression model for daily short volume, followed up with the bi-weekly short-interest regression model.

3.3.1.1 Daily short volume regression model

The model for the short volume aims to capture abnormal trading volume within the estimation window. The model is defined by the equation:

$$Log\,(volume+1)_{i,\,d} = \beta_0 + \beta_1 E_d + \beta_2 P_d + \beta_3 E_d P_d + \varepsilon_{i,\,d}$$

For this model, we make use of the natural logarithm of the volume as the dependent variable, $Log\,(volume+1)_{i,\,d}$, is based on the daily short volume of ADRs on distribution i on day d. Due to the wide gap between the firms, we needed a stable dependent variable. The natural logarithm would smooth out the outliers in the dataset to identify the abnormal volume between the periods. Thus we ended up with a log-level regression model where the independent

variables are binaries, and the dependent variable is logged. We add one when taking the natural logarithm to deal with any potential zeros in our data.

The first independent variable, E_d, is a binary variable equal to one for observations on the cum-dividend day. The second independent variable, P_d , is a binary variable equal to one for the observations prior to 2017. The last variable, $E_d P_d$, is a binary variable equal to one for cum-dividend days prior to 2017. The estimation window for the daily short volume is [-15, 15], where d=0 is the cum-dividend day. β_1 will capture abnormal trading in the short volume on the cum-dividend day and thereby provide evidence for or against the first hypothesis. β_2 will capture abnormal trading prior to 2017, and β_3 will capture abnormal trading at cum-dividend days prior to 2017, and consequently provide evidence for or against the second hypothesis.

3.3.1.2 Bi-weekly regression model

The regression model for the bi-weekly short-interest volume aims to capture abnormal trading around the cum-dividend day. The regression model is defined by the equation:

$$Log\ (volume\ + 1)_{i,\,t} = \beta_0 + \beta_1 E_t + \beta_2 E_t P_t + \varepsilon_{t,\,i}$$

Since the short-interest dataset does not have daily observations, but bi-weekly, companies report their short-interest positions at the beginning and in the middle of each month. Most of the observations do not occur on the cum-dividend day. We chose to capture the abnormal volume by having a binary indicator for the observation before and after the cum-dividend day. For example, if the ADRs cum-dividend day is the ninth of April, that means we would have a binary indicator for the observation first of April and the fifteenth of April.

We have taken the natural logarithm of the short-interest volume as the dependent variable, applying the same method used in the first regression model. E_t is a binary indicator that equals one if the observation is either right- before or after a cum-dividend day. β_1 will, therefore capture the abnormal trading in the short-interest volume around the cum-dividend day for the whole period. P_t is a binary indicator that equals one for observations prior to 2017. $E_t P_t$ will capture the abnormal volume around the cum-dividend day for observations prior to 2017. β_2 is the coefficient capturing the magnitude of the abnormal trading. β_1 and β_2 will, therefore, provide evidence for or against the first and second hypotheses.

3.3.1.3 Fixed effects and clustering of standard errors

Variables that are constant across entities but vary over time in a panel data can lead to omitted variable bias, this leads to biased estimators, and we can fix this by including some entity or time fixed effect. We do not need to add time fixed effects, because the number of events is so large that the timing of the event is essentially random. Omitted variable bias occurs when the independent variable correlates with the other independent or dependent variables. We have panel data, and the panel has unobservable effects that correlate with the explanatory variable (Wooldridge, 2016). To isolate these time-invariant effects, we introduce entity fixed effects to capture the unobservable individual stock-specific characteristics. Unbalanced panel data regression with fixed effects models should not be more problematic than a balanced panel. Our regression tool, Stata, will make the adjustments required (Wooldridge, 2016).

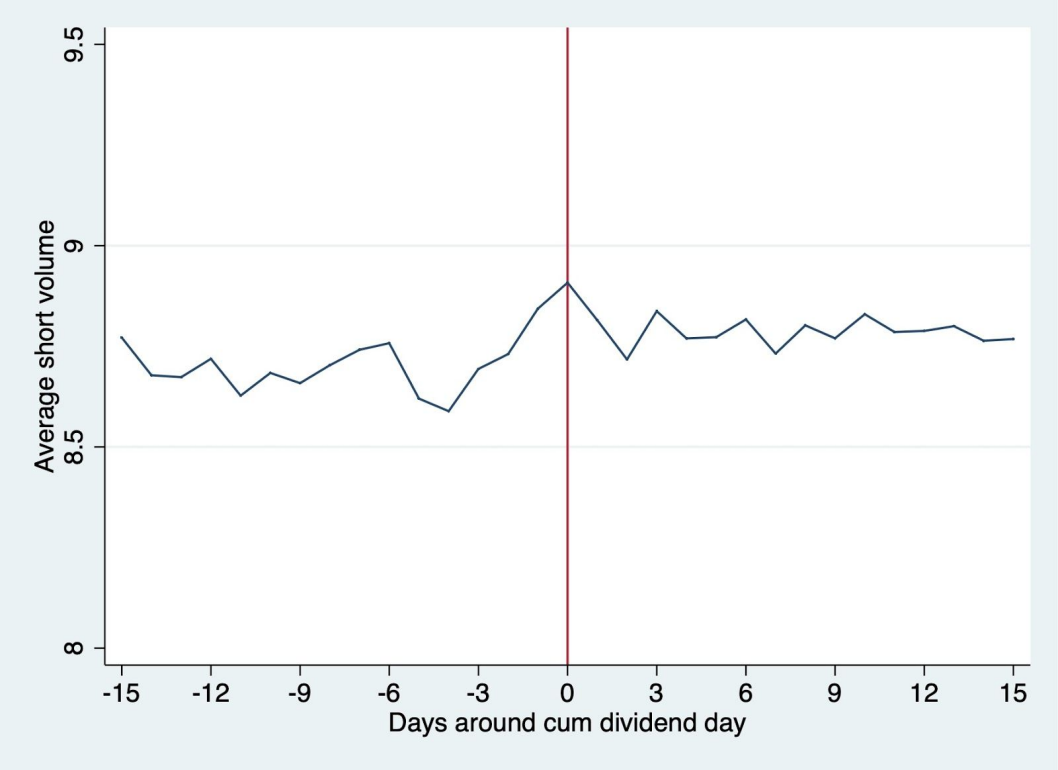
Some correlations between grouped observations can occur. Cameron & Miller (2013) argue that including entity fixed effects normally controls for some part of the within-cluster error correlation, and clustered robust standard errors should be used in the model. Without controlling for clustering in the standard errors, OLS models can give smaller standard errors than they should be. Therefore confidence intervals will be too narrow, t-statistics too large, and p-values too low (Cameron & Miller, 2013). For the regressions, we include clustering on a company level. There is no clear definition of the right amount of clusters or the right level to cluster on

(Cameron & Miller, 2013). Cameron & Miller (2013) points out that too few clusters can cause the OLS to overfit the residuals, compared to the true error term. However, there is no clear definition of what is too few, it can range from less than 20 to less than 50, depending on the situation. When clustering on the company level, the model will have 45 clusters, which should take care of the issue with too few clusters.

Chapter 4 Empirical analysis

In this chapter, we present the results of our empirical analysis. We start this chapter by presenting figure 4, a graphical illustration of the daily average short volume of Scandinavian ADRs. The x-axis is our estimation window [-15, 15]. The red line represents the cum-dividend day, and also the last day the cum-fake transaction can be executed. Figure 4 shows that the average trading volume peaks on the last cum-dividend day. This peak will be further discussed in chapter 4.1, where we analyze the regressions on the short volume of Scandinavian ADRs. Afterward, we will analyze regressions on the bi-weekly short-interest volume.

Figure 4: Average trading volume



Notes: The x-axis is centered on the cum-dividend day. The y-axis displays the average logged short volume. The figure is meant for illustration purposes only because the short volume is not adjusted for entity-fixed effects.

4.1 Empirical analysis of daily short volume

4.1.1 Scandinavian countries

The main objective of the thesis is to analyze trading patterns of Scandinavian ADRs to get evidence for or against cum-fake transactions with Scandinavian companies. Based on the theoretical part of this thesis, we believe an increase in the short volume of Scandinavian ADRs at the cum-dividend date is an indication of cum-fake transactions in Scandinavia. We want to check if we find evidence for the trading pattern to change in 2017 compared to the years prior. We believe there would be a change in the trading pattern from 2017 because the SEC started to give fines to banks and brokers for abusive actions with ADRs. We believe that if the short volume drops in 2017 and the years after, there is stronger evidence for cum-fake transactions with Scandinavian companies.

Table 6 presents the results of the first regression model. The coefficient of the first variable E_d, captures the abnormal volume at the cum-dividend day, β_1 is .294, and is significant at a 1% level. The result suggests that short volume is significantly higher on cum-dividend days. This is in accordance with the first hypothesis, and it could be an indication of cum-fake transactions with Scandinavian ADRs.

The coefficient of the second variable P_d, captures abnormal volume for observations prior to 2017, β_2 is equal to -.467. The coefficient implies that there are significantly fewer trades in the years before 2017, at a 1% level. The coefficient to the third variable $E_d P_d$, capture abnormal volume for cum-dividend days prior to 2017, β_3 is -.227. The result indicates that the short volume is significantly lower at cum-dividend days prior to 2017, at a 5% level. This contradicts our second hypothesis because it assumes that SEC sanctions would decrease short trades at the cum-dividend day, after 2016.

Table 6: Regression on short volume of Scandinavian ADRs

	(1)
E_d	0.294
	(3.20)
P_d	-0.467
	(-2.73)
$E_d P_d$	-0.227
	(-2.02)
Constant	9.009
	(92.60)
Observations	10413
R^2	0.026
Fixed effects	Yes
Clustering	Yes

t statistics in parentheses

4.1.2 Great Britain and Germany

For the last part of the short volume analysis, we are going to compare the results of the Scandinavian ADRs with British and German ADRs. ADRs that originate from Great Britain is especially interesting because there is no dividend withholding tax. Dividends from British companies are always paid in gross (PwC, 2020). Since there is no withholding tax in Great Britain, it is impossible to execute a cum-fake transaction by using British ADRs. In addition to British ADRs, we want to analyze German ADRs. To our acknowledgment, Germany is the only country where there is proof of tax refunds being reimbursed wrongfully because of ADRs (Bognanni, 2019*)*.

We have used the same variables in these models as we used for the short volume of Scandinavian ADRs; the data is also collected and managed in the same manner. The reason for the similar treatment of the three datasets is that we want the comparison to be as accurate as possible.

The results of the regression of German ADRs are presented in table 7. The coefficient to the variable E_d, shows a low increase in short volume on the cum-dividend day. However, the increase in short volume is not significant. The coefficient to the variable, P_d, shows significantly lower short volume for the years prior to 2017, this results is similar to what we found on the Scandinavian regression. The last variable $E_{d,} P_d$, indicates higher short volume on cum-dividend days for the years prior to 2017. This is in accordance with our second hypothesis, but the result is not significant. We were surprised by the results on German ADRs, because of their history with cum-schemes, we expected Germany to have the highest increase on the cum-dividend day.

The regression of the British ADRs are presented in table 7. The results show an insignificant decrease in short volume at cum-dividend days. Similar to Scandinavian and German short volume, the volume is significantly lower for British ADRs in the years prior to 2017. However, there is a significantly higher volume on cum-dividend days prior to 2017.

Collectively the results from the supplemental regressions of British and German ADRs were somewhat mixed. We expected the German results to be more aligned with the first and second hypotheses, and we expected the British results to contradict our hypotheses.

Table 7: Regression on short volume of Scandinavian, German and British ADRs.

	(1)	(2)	(3)
	Scandinavia	Germany	Great Britain
E_d	0.294	0.0182	-0.0187
	(3.20)	(0.12)	(-0.33)
P_d	-0.467	-0.504	-0.488
	(-2.73)	(-2.95)	(-4.04)
$E_d P_d$	-0.227	0.0966	0.158
	(-2.02)	(0.56)	(2.30)
Constant	9.009	9.086	9.669
	(92.60)	(82.36)	(114.60)
Observations	10413	7678	33176
R^2	0.026	0.028	0.026
Fixed Effects	Yes	Yes	Yes
Clustering	Yes	Yes	Yes

t statistics in parentheses

4.2 Empirical analysis of bi-weekly short-interest data

Table 8 gives the regression results adjusted for fixed effects and clustering of standard errors on the company level. Our objective remains the same as with our daily data. We aim to see if there is an abnormal volume of short-interest around the cum-dividend day.

The coefficient to the variable E_t , shows an increase around the cum-dividend day, and it is statistically significant at the 10% level. The variable E_tP_t captures the abnormal short-interest volume around the cum-dividend day prior to 2017, in this regression, we also find a lower short-interest volume prior to 2017, statistically significant at a 5% level, as we did with the other regressions.

The results are somewhat mixed. A possible explanation for the coefficient is that we have fewer observations in the post period. 208 dividend payments pre 2017 and 174 dividend payments post 2017. There is a lack of observations in the post-period, so possibly there is some outlier that could impact the results. These results are not entirely according to our theory and hypothesis.

Table 8: Regression of the bi-weekly data on short-interest

	(1)
E_t	0.257
	(1.89)
E_tP_t	-0.577
	(-2.46)
Constant	8.965
	(1036.58)
N	6491
R^2	0.003
Fixed Effects	Yes
Clustering	Yes

t statistics in parentheses

First and foremost, the regression results from the bi-weekly short-interest volume are consistent with the regression results from our daily short volume. Further enhancing our inference about the first hypothesis. There are minor differences in the results, even though the same companies are present in both data samples. An explanation for this could be that the regression of bi-weekly volume uses two binary indicators around the cum-dividend day. In contrast, the daily short volume uses one to capture abnormal volume. Another explanation for the difference is that not all companies have the same time period in both samples. Lastly, the short volume has fewer dividends than the short-interest volume of Scandinavian ADRs.

Another critical factor is that short-interest and short volume are two different types of data, and there are naturally differences between them. We could not find evidence, in the daily nor the bi-weekly datasets, to support our second hypothesis.

4.3 Limitations of our thesis

We will summarize the possible limits of our data analysis. Our analysis suggests that there might have been cum-fake trading in Scandinavian countries, however, it is not a clear indication. Cum-fake trading may not have had as big of an impact as the other cum scandal known as cum-ex and cum-cum.

Our daily short volume dataset is retrieved from big trading venues, such as NASDAQ and NYSE. As cum-fake is illegal, as the parties do not pay any dividend taxes but receive refunds, they may not want to be transparent in their transactions and may be trading in other venues. This makes it challenging to capture all data.

Our dataset is asymmetrical and has a limited time period, it covers 9 years, from 2010 to 2019. Our analysis of the decrease in volume from the end of 2016 may be hindered by the fact that we have only 3 years of data, compared to 6 years, in the post period.

We have chosen to concentrate our analysis on lending agreements, i.e. short transactions. We see an increase in ADR lending agreements, but pure sales (spot) transactions could also be a part of this cum-fake transaction. If we had included spot transactions in our analysis, we could make a more confident conclusion of cum-fake transactions.

Chapter 5 Conclusion

In this thesis, we investigated the possibility of cum-fake transactions in Scandinavian companies, and whether the SEC sanctioning has achieved its intended effect. This was done by analyzing the short volume of ADRs with Scandinavian companies as the underlying asset. The basis of the analysis was a data set of 9 years, from 2010 to 2019. From this, we performed two different analyses, analyzing the daily short volume and the bi-weekly short-interest data.

In order to make an inference of possible cum-fake transactions in Scandinavian countries, the following hypothesis was developed:

Hypothesis 1: Short-interest and short volume for ADRs are higher before dividend distribution.

Hypothesis 2: The short-interest and short volume for ADRs are higher around dividend distribution before 2017, compared to after.

Our findings are somewhat mixed; the relationship between dividend cut-off date and short volume is positive and statistically significant. Although the empirical evidence argues for the first hypothesis, we can not conclude that cum-fake transactions are occurring in Scandinavia solely on this evidence. We also wanted to compare the results with similar regression models of British and German ADRs, however, we did not get statistically significant results.

We theorized that the volume would be higher around the dividend date prior to 2017. The results from our analysis contradict the second hypothesis, this came as a surprise because it is the opposite of what we expected. We can not conclude that penalties from the SEC have changed the trading pattern of Scandinavian ADRs.

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Appendix

Variable definitions

Table 9 presents all variables used in the empirical analysis with the corresponding definition. The variable is listed in column (1) and column (2) presents a description of the variable, while column (3) and (4) lists the tables they are used in and the source of the variable.

Table 9: Variable definitions

Variable (1)	Description (2)	Table (3)	Source (4)
$Log\ (volume + 1)_{i,\,d}$	Natural logarithm of daily short volume plus one, of ADRs.	5-7	Compustat and FINRA
E_d	Binary indicator equals to one if the date is a cum-dividend day, zero otherwise. Captures abnormal short volume for cum-dividend days.	6-7	Own contribution
P_d	Binary indicator, equals to one if the date is prior to 2017, zero otherwise. Captures abnormal volume prior to 2017.	6-7	Own contribution
$E_d P_d$	Binary indicator, equals to one for cum-dividend days prior to 2017, zero otherwise. Captures abnormal volume for the cum-dividend days, prior to 2017.	6-7	Own contribution
$Log\ (volume\ + 1)_{i,\,t}$	Natural logarithm of bi-weekly short-interest volume plus one of ADRs.	5, 8	Compustat and OTC Markets
E_t	Binary indicator, equals to one for the first observation before and after a cum-dividend day. Captures abnormal	8	Own contribution

	volume around cum-dividend day.		
$E_t P_t$	Binary indicator, equals one for the first observation before and after cum-dividend day if the observation is dated prior to 2017. Captures abnormal volume around the cum-dividend day before 2017.	8	Own contribution