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The Dutch Discount: Evidence from a Propensity Score Matching Model

This thesis makes use of a Propensity Score Matching approach that provides evidence against the existence of the Dutch discount.

Thesis
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Abstract

The purpose of this study is to estimate the effect of the Dutch institutional environment on its listed companies' market values, relative to foreign-listed peer companies. In proving evidence in favour of or against the Dutch Discount, I compare Dutch listed companies with their peers on stock exchanges in the US, UK, Germany and France. Two statistical approaches are used in this thesis. The first approach estimates the effect of being a Dutch listed company on market value in comparison to a non-Dutch listed company, based on propensity score matching. The second approach uses Difference-in-Difference in combination with propensity score matching to gain unbiased effect estimates by estimating the average treatment effects of Dutch listed companies for a situation in which the trend over time is the same between the treated and non-treated groups in the absence of the treatment. Overall, the findings of this study disprove the existence of a Dutch discount. Even though a simple OLS-approach hints the existence of the Dutch discount, both my PSM-models indicate the non-existence of a Dutch discount. Even more so, my findings suggest a premium for the Dutch sample, relative to the common law country samples (US & UK). Therefore, my findings contradict results of the empirical study of La Porta et al. (2002).

Inhoudsopgave

1 Introduction

Rules of corporate governance balance the interests of the various stakeholders to a company, one of which being the relationship between managers and shareholders. All over the world specific laws, directives, regulations and even extensive corporate governance codes have been enforced by market regulators, courts and market participants themselves (La Porta et al., 1999). In the absence of such effectively enforced rights, management and controlling shareholders would have less incentive to ensure repayment of both creditors and shareholders' investments (La Porta et al., 1999). With respect to the agency problem, corporate governance can be used to change the rules under which management operates and thus it protects shareholders' interests. Subject to discussion in today's world, is the wide use of differing anti-takeover measures (hereafter ATMs) as a form of corporate governance provisions. Extensive research can be found on the effect of ATMs on company value (e.g. Comment & Schwert, 1995; Karpoff & Walkling, 1996; De Jong et al., 2001; Cohen & Wang, 2013).

Especially Dutch listed companies render itself to be an interesting topic for valuation analysis. The Dutch institutional environment allows for a wide variety of ATMs. The Dutch institutional environment is characterized by its stakeholder model and its principle of long-term alliance between various stakeholders to the company (Dutch corporate governance code, 2016). This Dutch stakeholder model is characterized with lower shareholder rights when compared to common law countries like the US and UK (La Porta et al., 1999). The Dutch institutional environment and its favourability towards ATMs could have a downward pressure on company's stock values. For quite some time, the phenomenon of the Dutch Discount has been subject of discussion in the news (Molenaar, 2017), as well as the academic literature (Kabir et al., 1997; Duffhues & Kabir, 2008; Timmermans, 2017) and even parliamentary papers regarding the sale of shares in ABN Amro Bank N.V. by the Dutch state (Kamerstukken II, 2014/2015). The Dutch Discount can best be described as a phenomenon in which foreign investors appraise Dutch listed companies (Dutch companies listed on the EURONEXT Amsterdam) lower than similar companies listed on exchanges in other countries. This is supposed to be due to the Dutch institutional environment and its favourability towards ATMs – some of which not existing in other countries (such as the UK, Germany, the US and France) (Timmermans, 2017). As other countries also allow for ATMs, the question is what makes the Dutch institutional environment different from other countries with respect to its possibility for ATMs.

In measuring the difference of institutional environments between countries on company values, it should be that bit of extra favourability and possibility towards ATMs that result in lower/higher company values. In essence, evidence against or in favour of the Dutch discount could be retrieved by estimating the effect of the Dutch institutional environment on the stock price for Dutch listed companies. In this thesis, I describe, discuss and statistically examine if and to what extent Dutch listed companies – as a result of its institutional environment – are valued lower by the market in comparison to their peers. In estimating the effect of the Dutch institutional environment, I make use of the propensity score matching method as described by Rosenbaum & Rubin (1983) to prove or disprove the Dutch discount phenomenon.

My research question entails:

Are market values for Dutch listed companies significantly lower in comparison to similar companies listed on other (foreign) stock exchanges?

In proving evidence in favour of or against the Dutch Discount, I compare Dutch listed companies with their peers on stock exchanges in the US, UK, Germany and France. Ideal would be the situation that the Dutch listed company is exactly the same as and completely interchangeable with its foreign peers that are used to compare with. This, however, is not possible and therefore I make use of a method, capable of estimating the difference in firm value based on the best possible matches between Dutch listed companies and foreign listed companies. In this study I match on characteristics such as size, industry, profitability, general ATMs and capital structure. In addition, I examine to what extent this can be explained by the unique differences in the Dutch institutional environment and its legal setting that consists of Dutch company law and all its additives in comparison to the US, Germany, the UK and France.

Furthermore, the decision to use foreign listed companies on stock exchanges in the US, Germany, the UK and France is based on them representing two common law systems (US & UK) and two civil law systems (Germany & France). Referring to La Porta et al. (1999), common law countries – in general – have the strongest shareholder protection, whereas civil law countries have the weakest shareholder protection. To the best of my knowledge – in order to find evidence in favour of or against the Dutch discount – a study into the valuation of Dutch listed companies, while making use of a cross-country propensity score matching method, has never been done before. Therefore, this study makes a valuable contribution to the academic literature in the realm of cross-country institutional effects on company valuation.

Overall, the findings of this study disprove the existence of a Dutch discount. Even though a simple OLS-approach hints the existence of the Dutch discount, both my PSM-models indicate the non-existence of a Dutch discount. Even more so, my findings suggest a premium for the Dutch sample, relative to the common law country samples (US & UK). Therefore, my findings reject and oppose my hypotheses, and consequently contradict results of the empirical study of La Porta et al. (2002).

The structure of this thesis is as follows. In chapter 2, I will elaborate on the theoretical framework with respect to literature on the effect of inter-company differences in governance settings, between country differences in institutional environments on company valuation and develop my hypotheses on the basis of comparative company law. Chapter 3 is entirely devoted to assessing the dataset and explain the variables in the study. With respect to my methodology in chapter 4, I will first explain the propensity score matching (PSM) approach to identify the characteristics of public Dutch companies. Second, I estimate the magnitude of a possible lower valuation of the public Dutch companies in comparison to their foreign peers. In doing so, I distinguish between public Dutch companies and companies listed on foreign stock exchanges of the US, Germany, the UK and France. The empirical results of this study will be presented in chapter 5. A critical reflection of this study is added in chapter 6. The implication of my findings and the conclusion of this study into the Dutch discount will be included in chapter 7.

2 Theoretical Framework

Sufficient literature can be found on why managers raise ATMs. Two – well know – theories are the management entrenchment theory and the shareholder's interest theory (DeAngelo et al., 1983; Mahoney et al., 1993). According to the shareholder's interest theory, such ATMs force potential bidders to negotiate with sitting boards that take in mind all stakeholders to the company in focussing on long-term strategies (DeAngelo et al., 1983; Mahoney et al., 1993). Therefore, these negotiations could ensure shareholders to receive higher premia on their shares (Gillan, 2006). Such measures, however, may also undermine the market for corporate control as a result of irremovable management, hence the management entrenchment theory (Gillan, 2006; Jarrell et al., 1988). Empirical literature on the relationship between corporate governance and company value can usually be divided between – on the one hand – research on the differences between countries and their effect on stock returns or – on the other hand – the inter-company differences within a country (Bauer et al., 2003).

2.1 Inter-Company Studies on Governance and Company Value

Examples of research on inter-company differences within countries are De Jong et al. (2001) for the Netherlands, Gompers et al. (2003) for the US, Drobetz et al. (2004) for Germany and Black (2002) for Russia (Bauer et al. 2003). In short, these studies find an overall positive relationship between corporate governance standards with strong shareholder rights and public company valuation. With respect to the impact of ATMs on target company stock returns, empirical research provides inconsistent results (DePamphilis, 2015). In early empirical research Karpoff & Walkling (1996) and Field & Karpoff (2002) find that ATMs have no statistically significant impacts on shareholder returns. Comment & Schwert (1995) suggest that – on average – ATMs have a slightly negative affect on shareholder returns and consequently company value. In more recent empirical literature, Cohen & Wang (2013) find that ATMs (in particular staggered boards) lower company value. Most research on the effect of ATMs on company value use event-study methodology. In doing so, they investigate whether abnormal security returns occur upon the announcement of an event. However, this event being the announcement of an ATM, composes some problems. In such studies new ATMs may be driven by simultaneous conditions within the company (Coates, 2000; Gompers et al., 2003). Also, this methodology renders itself less useful in estimating the effect of – the already established – governance system on company value in comparison to other countries.[1]

2.2 Cross-Country Studies on Institutional Settings and Company Value

For a study into the differences in institutional environments between countries and its effects on company value, an observational study between countries is more suitable (e.g. La Porta et al., 1997; 1999; 2002). With respect to the differences of investor protection between countries, extensive literature can be found in the realm of cross-sectional analyses. Research done by La Porta et al. (2002) hints a negative relation between shareholder protection environments – which favours ATMs – and company value. Countries with institutional environments characterized by high shareholder protection systems, enable for corporate governance favouring shareholders' rights. Countries with institutional environments characterized by low shareholder protection, however, enable for corporate governance favouring ATMs and consequently management entrenchment. La Porta et al. (2002) provided an extensive analysis of the differences in governance standards between 27 different countries. In their research La

[1] With "already established", I mean to highlight the situation in which specific events – such as ATM announcements or changes in company law (i.e. state takeover laws) – do not occur. In this situation, there would not be an event to investigate.

porta et al. (2002) find evidence that companies in countries with better shareholder protection have higher Tobin's Q than do companies in countries with lower protection. On average, they find that common law systems have better shareholder protection settings than civil law systems (La Porta et al., 1997). Furthermore, by using a sample of 49 different countries, La Porta et al. (1997) show that countries with high shareholder protection have more valuable capital markets than do countries with low shareholder protection (which have smaller and narrower capital markets). In this regard, Moerland (1995) proposes a clear distinction between market-oriented corporate systems and network-oriented corporate systems, that differ with respect to corporate economic behaviour and the way agency conflicts are resolved. The market-oriented system has well developed financial markets and mostly prevails in the US and UK (Moerland et al., 1995). These markets are characterized by dispersed ownership (low ownership concentration) and active markets for corporate control (Moerland, 1995). With respect to network-oriented markets, the amount of publicly listed companies is smaller, the level of ownership concentration is relatively higher and the market for corporate control is less active due to the differences in institutional environments (Moerland, 1995). Countries characterized by the network-oriented markets are the Netherlands, Germany, France and Belgium.

2.3 Dutch Companies

As mentioned before, especially Dutch listed companies make an interesting topic in valuation analysis. This is due to its institutional environment that allows for a wide variety of ATMs. In addition, the entire Dutch governance system is characterized by its stakeholder model and therefore it is not fixated on a shareholder model with an emphasis on value creation for (only) its shareholders. According to the first principle of the Dutch corporate governance code, the managing board in collaboration with the supervisory board, are responsible for balancing the – often conflicting – interests of various stakeholders to the company (Dutch corporate governance code, 2016). Moreover, these interests should be balanced while ensuring the continuity and long-term value creation of the company and its alliance with various stakeholders. These stakeholders include not only shareholders and other capital providers, but also employees, suppliers, customers, and other beneficiaries to the company.

2.3.1 Inter-Company Studies on Governance and Dutch Company Values

Over the years, Dutch listed companies have become famous for their ingenious use of ATMs in protecting itself against activist shareholders and hostile takeovers (Kabir et al., 1997;

Duffhues & Kabir, 2008). Due to this attention, the question arises whether Dutch companies have a bad reputation of being too protective against hostile bids in the international capital markets. Kabir et al. (1997) examine the valuation impact of ATMs and ownership structure on Dutch companies. Their sample consisted of 44 new ATMs (relating to the issuance of preferred shares) during a period of six years between 1984 and 1990 (Kabir et al., 1997). Their findings indicate both a positive and negative effect of ATMs, therefore providing proof for the shareholder's interest theory as well as the management entrenchment theory (Kabir et al., 1997). These two opposing findings relate to the two different phases that can be distinguished in ATMs. The first phase being the instalment of the ATMs (announcement) relating to the managers being able to bargain for higher premia in takeover bids (Kabir et al., 1997). The other phase being the (actual) execution (i.e. issuance of preferred shares) and the elimination of the takeover attempt (Kabir et al., 1997). In addition, their findings provide evidence for less use of ATMs (in particular the issuance of preferred shares) when ownership is more concentrated (Kabir et al., 1997).

In later and more elaborating work, Roosenboom & Van der Groot (2005) use a Poisson regression and an OLS regression to find that the use of ATMs has a negative effect on IPO company value. More specific, they find evidence that managers use ATMs to protect their private control benefits at the expense of non-management pre-IPO owners (Roosenboom & Van der Groot, 2005). Therefore, their findings of the instalments of ATMs anticipating an IPO, support the management entrenchment theory (Roosenboom & Van der Groot, 2005).

Another research that contributes to the literature on inter-company governance on Dutch companies is the paper by Chirinko et al. (2004). Their findings indicate a strong positive relation between the absence of investor protections and company performance (Chirinko et al., 2004). Apparently, these findings indicate that – in the absence of equity market constraints imposed by shareholders' activism and interference – Dutch company performance is enhanced. These findings seem to be more in line with the shareholder's interest theory.

2.3.2 Cross-Country Studies on Institutional Settings and Dutch Company Value

While many inter-company studies exist, that estimate the short-term effect of governance settings and ATMs on market values for Dutch listed companies, models in these studies cannot proof or disprove the existence of a Dutch discount (Kabir et al., 1997; Chirinko et al. 2004; Roosenboom & Van der Groot 2005; Duffhues & Kabir, 2008). The used methodologies in

these studies do not accurately capture the average effect on market values for listed companies relating to the differences between governance systems (and its provisions relating to ATMs), while all other characteristics to the firm are held equal. Although empirical literature can be indifferent about the effects of ATMs on company value, none of the papers assessed in the previous paragraph directly compare Dutch listed companies with similar foreign listed companies by matching on company characteristics first. In order to provide evidence against or in favour of the Dutch Discount, I (directly) compare Dutch listed companies with their peers, while controlling for certain characteristics such as size, industry, profitability, general ATMs and capital structure. In doing so, I can examine the effect of differences in institutional environments between the countries regarding differences in possibilities for ATMs. In assessing the impact of Dutch ATMs on company performance in comparison to foreign companies, one has to control for the general ability of companies to defend itself against hostile threats. With this I mean to highlight the general ATMs that are available to all companies; both domestic and foreign. For example, the existence of structure regime requirements in the Netherlands does not exist in other countries. All of these differences in institutional environments relating to ATMs render itself hard to measure accurately. No governance indicators are available on specific ATMs as not every country allows for them. In this thesis, I make use of the propensity score matching method as described by Rosenbaum & Rubin (1983) to prove or disprove the Dutch discount phenomenon. In effectuating this, I (implicitly) assume that significant differences in market values for my Dutch sample relative to my foreign samples can be explained by the differences in institutional environments between each country and its possibilities for ATMs that I cannot control for (or match on).

2.4 Comparative Company Law & Hypotheses Development

In essence, the Dutch governance system can be characterized by (i) a board-oriented division of corporate control, with strategy decisions being an exclusive duty of the management board, under supervision of the supervisory board, (ii) the freedom to structure the governance of a company within the limitations of mandatory law (e.g. Dutch Civil Code), (iii) the possibility of installing ATMs and (iv) the extent to which the managing and supervisory board are accountable to the shareholders (De Brauw, 2017). More specific, this last principle relates to the extent to which shareholders, through the use of disciplinary measures, can effectively exercise their rights, to monitor and enforce the proper execution of duties by the managing and supervisory board (De Brauw, 2017). On the other hand, ATMs are instruments that prevent a legal entity from obtaining effective control over a company and its connected undertakings by

acquiring shares (Van Olffen, 2000). Below, I compare the possibilities for adopting ATMs in governance systems between the countries in my study. In doing so, I assess to what extent Dutch ATMs differ from its foreign equivalents and to what extent each governance system facilitates conflicts between the board of the company and its shareholders in adopting ATMs (board neutrality).

2.4.1 Dutch ATMs

A wide variety of ATMs exist that can be divided in a number of ways. For the purpose of this study I make a division between ATMs that are continuously active (these ATMs are not installed or activated in response to a particular threat) and ad hoc ATMs that latently exist and that are activated in sight of a threat (Assink & Slagter, 2013).[2] The latter entails (ad hoc) ATMs such as the possibility for the board to invoke a response time, adoption of poison pills, the search for white knights, Pac-man defences, the sale of crown jewels and macaroni defences. For ATMs that are continuously active, one can think of the structure regime requirements, shark repellents (e.g. staggered board and plurality voting vs. majority voting), protective preference shares (or blank check preferred stock), depository receipts (certificates) and priority stock.

Below, I will assess a number of Dutch ATMs that characterizes the Dutch takeover system and the way in which shareholders to the company can get frustrated in exercising their rights and enforcing their will upon the board. In doing so, I mostly review continuously active ATMs. These ATMs are the provisions that result in a possible structural discount of Dutch listed companies, relative to foreign listed companies. Ad hoc ATMs render itself to be perfect variables in empirical studies, while making use of event studies methodologies. In this study, however, I am not interested in estimating the particular short-term effect of adopting an ad hoc ATM. With the methodology used in this study, I try to estimate the overall difference in market values for Dutch listed companies compared to foreign listed companies, while controlling for firm specific characteristics. These firm specific characteristics include accounting ratio's and governance indicators, some of which continuously active ATMs. The unique ATMs that exist in the Dutch legal system do not exist in all other foreign countries, therefore including these unique Dutch ATMs in my model is impossible. Nevertheless, a significant underperformance

[2] Depamphilis (2015) refers to a gross separation of pre-offer and post-offer ATMs. These expressions, however, implicitly assume the existence of a threat; either in the future, present or past. As mentioned before, the Dutch institutional environment allows for the use of ATMs that can be raised independently of any posing threat. Therefore, these expressions do not adequately consider the wide variety of ATMs.

of market values for Dutch listed companies could suggest the detrimental impact of unique Dutch ATMs.

Response Time

Beginning with the possibility for the board to invoke a response time, this can – in practice – be considered to act as an ATM (De Brauw, 2017). Under the best practice provisions 4.1.6 and 4.1.7 of the Dutch Corporate Governance Code, it is possible for the board to invoke a 180 days response time in reaction to shareholders seeking a change in the company's strategy. As mentioned before, the managing board has discretionary freedom relating to the strategy of the company. Therefore, in order to effectively change an already chosen strategy of the company, a resignation of certain managing board and or supervisory board members is often necessary. The managing board can use the response time for consultation, consideration of possible alternatives and to negotiate with the activist shareholder(s) (De Brauw, 2017). Although this ATM can be regarded as an ad hoc ATM, the possibility for the board to invoke response time does contribute to the well protected corporate climate that is present in the Netherlands. When comparing this particular ATM to the foreign countries is this study, not one allows for a form of delay or cooling down period similar to the one described above.

Structure Regime Requirements

De Jong et al. (2001) emphasize the important role of Dutch corporate governance standards on Dutch company values. In particular they point out the importance of shareholder voting and electing rights, and in particular who controls these voting rights with respect to company values (De Jong et al., 2001). Important limitations for shareholders of large Dutch listed companies, relative to foreign listed companies, can be found in the Dutch Civil Code. When Dutch companies reach a certain size for a period of three years, they are legally obliged to adhere to the structure regime requirements. According to articles 2:153 in conjunction with 2:154 (or 2:263 in conjunction with 2:264) of the Dutch Civil Code, this certain size is met when a company's revenue exceeds 16 million euro's, the company has at least 100 people working on Dutch soil, and a Works Council has been appointed – for a period of three years. Due to the structure regime, a supervisory board needs to be incorporated which takes important rights away from the shareholders of the company. For example, solely the supervisory board can – apart from nominating its own members – appoint the members of the managing board.[3]

[3] According to article 2:158 (or 2:268) of the Dutch civil code, the supervisory board can nominate its own members on which consequently the shareholders appoint each individual member. Note that only the supervisory board can nominate its own members and therefore absorb an important tool of controlling the company. According to article 2:162 (or 2:272) the supervisory board can appoint the managing board of the company.

In addition, the shareholders to the firm cannot decide on resignation of specific members of the supervisory board. This right is reserved for judges of the Amsterdam Court of Appeal, specialised in corporate litigation (article 2:161 or 2:271 of the Dutch Civil Code).[4] These structure regime requirements relate to those ATMs that are unique to the Dutch institutional environment. This is because, apart from a voluntary decision to adhere to these requirements, a large Dutch company can also be forced to adhere to the structure regime requirements when above mentioned characteristics are met. In this last case (compulsory structure regime requirements), the Dutch company is forced to incorporate the ATM instead of voluntary installing one. According to articles 2:153 and 2:263 section 3, exemptions can be made for the application of the structure regime requirements. Companies that can benefit from these exemptions are companies that operate in an international concern. Companies that are fully exempted from the structure regime requirements have their operations mostly outside of the Netherlands, their need for capital is met only for a part on the Dutch capital market and the majority of its employees is employed outside of the Netherlands (Van Solinge et al., 2009).

Protective Preference Shares

Adding to this list, protective preference shares are the most common type of ATM used in the Netherlands (Kakebeeke & Engel, 2017). Protective preference shares render itself to be an excellent ATM, because of a number of reasons. For one, these preference shares do not have to be paid in full and (by law) only 25% of its face value needs to be paid upon issuance (Timmermans, 2017). Therefore, financing the purchase can be expected to be relatively cheap as the remaining amount only needs to be paid upon request of the company issuing the preference shares (Timmermans, 2017). In addition, cumulative preference shares come in quite handy when negotiating bank loans to finance the purchase. The interest on the loan is usually paid by the dividends on the cumulative preference shares and the repayment of the principal amount is paid upon repurchase of the shares by the company (Timmermans, 2017).

The underlying strategy for protective preference shares in the Netherlands is to provide a certain *stichting* (its board being friendly to that of the company issuing the shares) with call options on preference shares prior to a hostile bid (Timmermans, 2017). The *stichting* is a Dutch legal entity (similar to a foundation) that exists for a specific purpose (recorded in its charter or by-laws), with limited liability for its board and other affiliates, but with no members or share

[4] According to articles 2:161a and 2:271a of the Dutch Civil Code, shareholders to the company can however decide to cast a vote of no-confidence in the entire supervisory board. This vote of no-confidence will then result in immediate resignation of the entire supervisory board. The Amsterdam Court of Appeal, specialized in corporate litigation, will then temporary appoint a new supervisory board.

capital (Dutch Civil Code article 2:285 et seq.). With respect to its purpose, the *stichting* (hereafter foundation) can provide protection of the board's policy and strategy in the company. Even though the foundation is an independent operating legal entity, every act of the foundation needs to be in line with its specific purpose and the board of the foundation is responsible for carrying out this purpose (De Brauw, 2017). The foundation receives – upon exercising the call option – an amount of preference shares equal to the amount of normal stock outstanding (De Brauw, 2017). In doing so, the foundation can gain control of the company, even if a hostile bidder would succeed in acquiring 100% of the outstanding normal stock (De Brauw, 2017).[5] Since Dutch law allows the issuance of preference shares to be delegated to the management board for a period of five years, many Dutch companies have adopted protective preference shares as an ATM (De Jong et al, 2001; Timmermans, 2017).

ATMs as the one discussed above, do not exist as such in the UK, France or Germany (Timmermans, 2017). Under Dutch law, the board can obtain an authorization to issue protective preference shares from the general meeting of shareholders for a maximum period of five years (Timmermans, 2017). In essence, protective preference shares have a lot in common with *blank check preferred stock* which is often used in the US. However, in the Netherlands protective preference shares deviate a bit from the standard *blank check preferred stock* by means of an ATM. The underlying strategy for *blank check preferred stock* entails that the charter of the company facilitates in a blank check authority for the board to issue shares (up to a max of 20% of outstanding stock) and to assign rights to these shares, whenever the board decides this is needed (Timmermans, 2017). For the issuance of shares, exceeding the 20% boundary, US federal law dictates that approval of the General meeting of shareholders is needed (Van Ginneken, 2010; Timmermans, 2017). When comparing these two ATMs, *blank check preferred stock* renders itself to be easily incorporated even without authorisation of the General meeting. Apparently, more than 93% of S&P 1500 companies have *blank check preferred stock* authorizations in 2018 and therefore this ATM can be considered to be one of the most common types of ATM in the US (Papadopoulos et al., 2018).

[5] A similar type of protective preference shares that deviates slightly from the one mentioned above, is one that offers protection on an affiliates-level. The Dutch listed company Fugro can be regarded as the most protected company that is listed on the Dutch stock exchange (Kakebeeke & Engel, 2017). Besides certification of ordinary shares and the possibility for Fugro to issue cumulative protective preference shares, protective preference shares can also be issued by two of Fugro's subsidiaries to a foundation registered on Curacao (Fugro annual report, 2017).

Certificates

Certificates of stock, effectively splitting economic rights and voting rights, can act as an ATM. The underlying strategy entails a foundation issuing certificates relating to the stocks that the foundation has in her possession (De Brauw, 2017). In essence, the foundation controls the voting rights associated with the shares and the holders of the certificates hold the economic (cash flow) rights to the shares and therefore are entitled to its dividends. According to article 2:118a of the Dutch Civil Code, holders of certificates can ask the foundation for a proxy vote in the general meeting of shareholders. This ATM will not prevent a bidder from launching a tender offer for the certificates of stock. However, even if successful, no effective control of the company would be attained as all voting rights would still remain at the foundation. Even though the Dutch corporate governance code prescribes that certificates should not be used as ATMs; deviating from the Dutch corporate governance code on the basis of exemptions made in article 2:118a is justified under clear explanation why (De Brauw, 2017). Certificates of stock usually go by the name *depository receipts of stock* in foreign countries such as the US. However, the use of certificates by means of an ATM in the Netherlands does not relate to the depository receipts as used in the US, UK, France or Germany.

Priority Stock

Special control rights attached to priority shares can be used to centre control and act as an ATM for listed companies. Besides specific approval rights for the issuance or repurchase of shares, priority shares can also have attached control rights relating to the composition of the managing board and supervisory board (Van Solinge, 2009). Examples can be found in rights to do a binding nomination of board members after which shareholders can only appoint from the selection of nominees provided by the priority shareholder(s) and rights to suspend or fire board members (Van Solinge, 2009). Priority shares are often used by listed companies; however, it does not provide full protection. According to the Dutch Civil Code (articles 2:133/243 in conjunction with 2:141/252) the binding nature of nominations can be bypassed when at least 2/3rd of the casted votes object and this majority also represents more than half of the paid-in capital. Special control rights attached to priority shares is a well know ATMs that can be used in the US, UK, Germany and France as well.

Staggered Board

Electing board members can happen according to a certain rotational plan in which directors are grouped into classes serving different terms in length. This ATM is quite conventional in the Dutch governance system as managing board members are elected for a period of max four years, after which reappointments can occur for an additional max of four years (Dutch

corporate governance Code, 2016). Therefore, not the entire managing board is up for election at the end of each term. With respect to the supervisory board members, best practice provision 2.2.1 denotes that first elections are bound to a max of four years as well and additional re-election of max four years and max two years respectively (Dutch corporate governance code, 2016). However, according to Dutch mandatory law, the general meeting of shareholders has the right to suspend and dismiss the entire board at all times. Therefore, by means of an effective ATM, the staggered or classified board provision does not have the desired effect in the Netherlands as it would have in other (foreign) countries.

2.4.2 Board Neutrality in Adopting ATMs

Apart from the wide possibilities of ATM available around the world – a majority of which I have not assessed in this thesis – perhaps more important is the board's autonomy in actually adopting ATM at the right time. The board neutrality rule in the Euro-area prevents directors of a company in takeover situations to engage in actions that may result in blocking the offer of a bidder without obtaining previous shareholders' approval (Siems & Cabrelli, 2017). Its main purpose is to protect shareholders of a target company from ATMs, taken by their directors. In the EU, the board neutrality rule was incorporated in the EU Takeover Directive (article 9 Directive 2004/25/EC). Its implementation, however, is not mandatory and therefore a lot of member states opted-out of implementation.[6] Of the countries examined in this study, only the UK incorporated the board neutrality rule in its mandatory law while France, Germany and the Netherlands opted-out of implementing the board neutrality rule (Siems & Cabrelli, 2017). Therefore, public companies in France, Germany and the Netherlands can choose for themselves to adhere to the board neutrality rule after implementation in their by-laws.

Netherlands

The main rules regarding ATMs in the Netherlands developed over the years and are contained in case law. In general, the use of ATMs is permissible if they are necessary in safeguarding the continuity of the company and the interests of its stakeholders; all of which depends on specific circumstances (De Brauw, 2017). The managing board and the supervisory board have discretionary freedom in choosing the best strategy for the company (De Brauw, 2017). The

[6] In addition – apart from the possibility from opting out of the implementation of the board neutrality rule – the EU Takeover Directive granted member states discretion in deciding the point in time when neutrality obligations could become imminent (Siems & Cabrelli, 2017). In the UK system, neutrality obligations become pertinent when directors have reasons to believe a takeover is imminent (Siems & Cabrelli, 2017). Both Germany and France consider the moment when the bid is made public as the neutrality rule trigger point (Siems & Cabrelli, 2017). For these countries, however, this trigger point only has an impact as long as the board neutrality rule is actually incorporated in its by-laws.

division of powers between the boards and the shareholders of the company results from the 1955 Supreme Court *Forumbank* judgment that states that the board is not prohibited to deviate from shareholders' instructions or desires relating to the strategy of the company.[7] The managing board – under supervision of the supervisory board – decides on matters of strategy and therefore determines the strategic direction of the company and its affiliated undertakings (De Brauw, 2017). In addition, the 2007 Supreme Court *ABN AMRO* judgement rules that the decision whether or not to support and recommend a public takeover is reserved for the board alone.[8] Even though the board has an obligation to account for their decision to the shareholders ex post, there is no duty for the board to consult or inform the shareholders ex ante (De Brauw, 2017). Under Dutch law, there is no general prohibition on directors adopting ATMs after becoming aware of imminent takeover threats (or after a public bid has been made). The use of ad hoc ATMs is allowed under the Dutch supreme Court *RNA* judgment.[9] The *RNA*-standard dictates the lawfulness of ATMs, provided that the provision is temporary and proportionate in nature and if it is likely that the continuity of the company's policy or the interest of the company or its stakeholders is threatened (Van Ginneken, 2010; Timmermans, 2017). Other ATMs that are continuously active (such as protective preference shares, depository receipts or certificates of shares and priority stock) cannot – by their nature – be subject to the standard set out in the *RNA* judgement (Van Solinge, 2009; Davies et al., 2013). In assessing the lawfulness of ATMs in the Netherlands it all comes down to whether or not the board succeeds in making a good faith argument that the hostile takeover was against the best interest of the target company and all its stakeholders (Pacces, 2012).

UK

The board neutrality rule represents an important principle in the British corporate governance system. The general thought is that adoption of ATMs is a provision that should be initiated by the shareholders and therefore is a matter on which the market can and should decide upon. Only in situations other than a public bid, the board is allowed to adopt ATMs, because in these situations the board neutrality rule has not (yet) become pertinent (Timmermans, 2017). Still, however, less possibilities for ATMs in the UK exist in comparison to the Netherlands (Cahn & Donald, 2018). The UK governance system renders itself less fruitful for provisions such as protective preference shares or blank check preferred stock, because rights to issue new shares together with granting rights to receive additional shares is subjected to authorization of the

[7] (Dutch) Supreme Court *Forumbank* (1955), ECLI:NL:HR:1955:AG2033.
[8] (Dutch) Supreme Court *ABN AMRO* (2007), ECLI:NL:HR:2007:BA7970.
[9] (Dutch) Supreme Court *RNA* (2003), ECLI:NL:HR:2003:AF2161.

shareholders to the company (Timmermans, 2017). Effective ATMs that can be taken by the board in the UK system can be found in the range of changing a company's capital structure by making it more leveraged and selling crown jewels – these actions finding place before a takeover bid has become imminent (Siems & Cabrelli, 2018).

US (Delaware) [10]

Siems & Cabrelli (2017) show that the legal system of the US (Delaware) does not set neutrality rules for the boards of directors of public companies and that directors face constraints in the adoption of ATMs relating to their fiduciary duties to the company. According to the Delaware General Corporation Law (DGCL, §141(a)), all affairs relating to the business of the company are to be managed by or under the direction of the board of directors. This includes the strategy of the company. As a manager of a company, the director of that company has two primary duties: a duty to the company and its enterprise(s) (duty of care) and to the company and its shareholders (duty of loyalty) (Siems & Cabrelli, 2018). Delaware courts may assess whether the adoption of ATMs is based on 'rational business objectives' (Siems & Cabrelli, 2017). Since takeover bids present the threat of directors' potential self-interest to remain in power, Delaware courts will engage in an enhanced judicial review of decisions to adopt ATMs (Siems & Cabrelli, 2017; Cahn & Donald, 2018). First, the courts assess whether the directors reasonably perceived a threat to the company and its shareholders. Second, the courts assess whether the ATMs taken in response to the threat is 'reasonable in relation to the threat posed'.[11] Even though the *Unocal* judgement states that the directors' powers to defeat any perceived threat is not absolute, in general, Delaware courts rarely find adopted ATMs to be unreasonable (Siems & Cabrelli, 2017; Cahn & Donald, 2018).

France

In France, managers and directors are held to a duty of care in case of a *Société à responsabilité limitée* (SARL), *Société par actions simplifiée (SAS)* and the *Société anonyme* (SA).[12] Their mission is to determine the general strategy of the company and to make sure that it is implemented. According to article L. 225-35 of the *Code de Commerce*, the board of directors can deal with any issue that pertains to the company's activity, as long as it falls within the

[10] All fifty US states have their own state and local laws; in addition, federal law creates standards relating to corporate governance provisions and trade in company stock (Van Ginneken, 2010). As state laws differ relating governance subjects and most major listed companies are incorporated under the Delaware General Corporation Law, I follow Van Ginneken (2010) and Siems & Cabrelli (2017) in assessing governance differences between the Netherlands and the US state of Delaware.
[11] (Delaware) Supreme Court *Unocal Corp v Mesa Petroleum Co* (1985), 493 A 2d 946.
[12] Commercial Code, Art L 225-251.

company's object. According to article L. 332-32 of the *Code de Commerce* there is no obligation for directors to obtain authorisation of the general meeting prior to adopting ATMs; this includes seeking alternative bidders. Provided that the adoption of ATMs falls within the scope of powers assigned to the board directors and is in accordance with the company's social interest (*intérêt social*), the board can do so without prior authorisation of the general meeting (Cahn & Donald, 2018). The social interest of the company should be construed broadly. This (stakeholder) model includes – besides the interest of the company itself – the interests of the shareholders, the employees the clients and third parties to the company (Siems & Cabrelli, 2017). ATMs are subject to wide scrutiny under French company & securities law and directors can be held liable in damages for taking action that a court deems contrary to the company's social interest (Siems & Cabrelli, 2017). These actions can even be taken in situations in which shareholders authorised the particular ATMs. Actions of such occur if – apart from attempting to prevent a hostile takeover – no valid business reason is seen to be underlying the implementation of the ATMs (Siems & Cabrelli, 2017).

Germany

Even though Germany opted-out of implementing the board neutrality rule, it seems as if they effectuated a synthetic rule in their takeover law (WpÜG). According to § 33 and 33a WpÜG the management board of a German target company must not take any actions which could prevent the success of the offer (Cahn & Donald, 2018). Exemptions to this restriction can be found in the search for a competing bidder (white knight), actions authorised by a shareholder resolution, actions approved by the supervisory board of the target or actions that a prudent manager of a company not subject to a (hostile) takeover would have taken (Cahn & Donald, 2018). According to Allen & Overy (2019), these exemptions mostly allow for ATMs such as the issuance of new shares from authorised capital, disposal of treasury shares to an anchor-shareholder, disposal of *crown jewels* and the acquisition of treasury shares to increase the voting power of friendly shareholders and to reduce the number of shares available to the bidder.

2.4.3 Hypothesis development

Research by La Porta et al. (2002) indicate a negative relation between shareholder protection environments and company's market value. Countries with institutional environments characterized by high shareholder protection systems, enable for corporate governance favouring shareholders' rights. Countries with institutional environments characterized by low shareholder protection, however, enable for corporate governance systems allowing for a wide

variety of ATMs. Each legal system in this study has accommodated their regulatory choices in line with their own preferences for attending to the possibility of strong conflicts of interests relating to takeover offers. As the UK and US represent two common law countries, I should expect – based on La porta et al. (2002) – that these countries on average have higher market values for their listed companies when compared to the Dutch listed companies. The small assessment of each country's governance system relating to the adoption of ATMs in paragraphs 2.4.1 and 2.4.2, indicates that the US governance system and the possibility to invoke ATMs has more in common with the Dutch governance system than it does with the UK. UK law strictly prohibits management's interference in takeover bids all together; as their only role is to act as an information pathway from and to the shareholders. The UK prefers to regulate protection into its bid rules, rather than placing it in the hands of the board of a company (Cahn & Donald, 2018). The US (Delaware) deviates from this view and entrusts the board with a duty to the company and its shareholders; this includes the protection of the company and its affiliated business. Under US law, the ability to adopt ATMs is delegated to the board in their position of fiduciary management to the company (Cahn & Donald, 2018). Even though the use of ATMs in the US is just as common as it is in the Netherlands, I expect the difference in possibilities for ATMs for Dutch listed companies to result in lower market values on average. This leads me to the following two hypotheses:

Hypothesis 1: Dutch listed companies' market values are on average lower than similar US listed companies.

Hypothesis 2: Dutch listed companies' market values are on average lower than similar UK listed companies.

Furthermore, the two civil law countries differentiate quite a bit from each other as well. In France, managers and directors are held to a duty of care when assessing their actions in takeover situations. There is no obligation for directors to obtain authorisation of the general meeting prior to adopting ATMs. Boards of German listed companies, however, should not take any actions which could prevent the success of the offer – as a "synthetic board neutrality rule" dictates (Cahn & Donald, 2018). Therefore, only a small number of ATMs are available for the German listed companies. This leads me to the following two hypotheses.

Hypothesis 3: Dutch listed companies' market values are on average lower than similar French listed companies.

Hypothesis 4: Dutch listed companies' market values are on average lower than similar German listed companies.

3 Dataset & Variables

3.1 Dataset

The Dataset is mostly comprised from the Thomson Reuters Eikon database (hereafter Eikon). The original sample of Dutch companies consist of over 121 companies over a six-year period; from the beginning of 2012 to the end of 2017. However, as shown in Table 1 in Appendix A, the Eikon dataset contains a lot of missing values (at least over 80%) for governance indicators on Dutch listed companies. The missing values are due to the fact that Eikon does not track all listed companies on governance indicators. For these missing values on governance indicators of my Dutch sample, I hand-picked information from annual reports. After complementing the Eikon sample with hand-collected information from annual reports and filtering on duplicates or merged and delisted companies within my time-period, the final Dutch sample consists of approximately 82 Dutch listed companies for which my governance indicators have no missing values. These 82 Dutch listed companies amount to 492 observations in total.

Furthermore, the (control group) samples of the US, UK, Germany and France consist of 11,661 listed companies (7,363; 2.378; 1,024 and 896 respectively). These 11,661 companies amount to 69,966 observations in total. Missing values for governance indicators are presented in table 2 in Appendix A. I did not hand-pick missing values for the governance indicators for the control group samples of the US, Germany, the UK and France, because of time restrictions. These samples are of sufficiently large size to use in this study (see Table 2 in Appendix A).

In complementing the Eikon dataset, I merged the US sample with additional CompStat data on CUSIP codes which I accessed through WRDS. The CompStat dataset provides more data on governance indicators. Therefore, I will be able complement my data on governance indicators for my US sample to some extent. Summary statistics on my governance indicators after merging with the CompStat dataset are shown in Table 1 below.

Table 1: Descriptive Statistics of Governance Indicators (Eikon + CompStat)

Variables	(1) Missing	(2) Total	(3) Missing %	(4) Mean	(5) Median	(6) Min	(7) Max	(8) Std. Dev.
Governance indicators								
Board Size	50,963	70,458	72.33	9.354091	9	1	33	2.862058
Staggered Board	57,086	70,458	81.02	.3897697	0	0	1	.4877162
Golden Parachute	57,728	70,458	81.93	.7986646	1	0	1	.4010138
Priority Stock	56,584	70,458	80.31	.0628514	0	0	1	.2427042

Notes: This table shows the summary statistics for the entire dataset (comprised of samples from the Eikon and CompStat database), consisting of Dutch, UK, US, French and the German listed companies. Total denotes the number of observations of all firms over a six-year period from the beginning of 2012 to the end of 2017.

In addition, in solving for missing values for governance indicators per company, I assumed that no change has been made for my governance indicators per company until one occurs that has been documented for in my dataset. Consequently, after no changes can be made to replace missing values for my governance indicators, I assumed the size of the board or the presence (or absence) of an ATM to be the same as the subsequent year. In using this method, I complement the first assumption and supplement my dataset with the second assumption only when my first assumption did not result in any changes made. As show in Table 2, this assumption drastically improved my dataset as all missing values amount to approximately 70% of the total sample.

Table 2: Descriptive Statistics of Governance Indicators (Eikon + CompStat) after Assumption

Variables	(1) Missing	(2) Total	(3) Missing %	(4) Mean	(5) Median	(6) Min	(7) Max	(8) Std. Dev.
Governance indicators								
Board Size	50,035	70,458	71.01	9.317436	9	1	33	2.855093
Staggered Board	49,437	70,458	70.17	.442272	0	0	1	.4966681
Golden Parachute	49,620	70,458	70.42	.8317977	1	0	1	.3740548
Priority Stock	48,258	70,458	68.49	.0409009	0	0	1	.1980651

Notes: This table shows the summary statistics for the entire dataset, consisting of Dutch, UK, US, French and German listed companies. Total denotes the number of observations of all firms over a six-year period from the beginning of 2012 to the end of 2017.

As shown in Table 3, apart from missing values on governance indicators, a lot of missing values arise for my dependent variables (market to book ratio, Tobin's Q, shareholder's returns and price earnings ratio) as well as my independent accounting variables (return on sales, return on assets, total assets and capital structure). Especially missing data for dependent variables could impose concerns in my empirical research. Apart from the mechanisms leading to missing data, additional concerns relate to validity of a study when a lot of data is missing without being anticipated for (Little & Rubin, 2002). Two possible solutions to account for my missing data are listwise deletion or imputation (Allison, 2010). The basic principle for imputation involves generating plausible values for the missing data, based on their own sample variability, and then regress the analysis as if no data was missing (Allison, 2010). In this study, I make use of an imputation-based procedure in which I fill in the missing values by a constant (year specific) sample mean, thereby enhancing the foreign samples on which can be matched on to the total number of observations. In addition, I make use of the listwise deletion method in which I only make use of complete cases for the full six-year period in running my regression. Table 3 shows the number of missing values and descriptive statistics per variable, before imputation adjustments.

Table 3: Descriptive Statistics of Transformed Variables before Imputation adjustments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Missing	Total	Missing %	Mean	Median	Min	Max	Std. Dev.
Dependent variables								
lnMB	27,455	70,458	38.97	-6.36101	-6.46251	-18.2542	3.086449	1.08106
lnPE	44,896	70,458	63.72	2.176935	2.607962	-28.9116	19.41186	2.712309
lnReturn	9,772	70,458	13.87	4.422649	4.764649	-4.60517	17.15891	3.20778
lnTobin's Q	23,927	70,458	33.96	-7.21947	-7.17369	-18.7278	4.033355	1.358678
Independent variables								
lnROS	37,435	70,458	53.13	-2.08329	-2.05904	-11.9250	7.494807	1.317709
lnROA	37,755	70,458	53.59	1.55452	1.697449	-4.60517	11.61824	1.170339
lnDA	29,824	70,458	42.33	2.830552	3.164208	-4.60517	17.7581	1.579993
lnTA	17,653	70,458	25.05	12.33669	12.48329	0	21.87239	2.845116

Notes: This table shows the summary statistics for the entire dataset, consisting of Dutch, UK, US, French and the German listed companies. Total denotes the number of observations of all firms over a six-year period from the beginning of 2012 to the end of 2017.

Table 4 shows the changes to the descriptive statistics after imputation adjustments. Noticeable are the lower standard deviations, compared to Table 3. A problem with imputation-based approaches is the underestimation of variances, which leads to biases in other parameters that

depend on the variance (Haitovsky, 1968; Allison, 2010). Although this could lead to biased estimates for my model, I use this imputation-based approach by means of complementing my study and solve for the missing values in my dataset. Therefore, the results obtained with the imputation-based model function as a rather suggestive way of supporting or opposing my findings obtained without solving for missing values. Due to this approach my Dutch sample can be compared to more foreign listed companies in obtaining my results.

Table 4: Descriptive Statistics of Transformed Variables after Imputation Adjustments

Variables	(1) Missing	(2) Total	(3) Missing %	(4) Mean	(5) Median	(6) Min	(7) Max	(8) Std. Dev.
Dependent variables								
lnMB	0	70,458	0	-6.36101	-6.46251	-18.2542	3.086449	.8476407
lnPE	0	70,458	0	2.17777	2.208736	-28.9116	19.41186	1.634377
lnReturn	0	70,458	0	4.420407	4.471139	-4.60517	17.15891	2.977141
lnTobin's Q	0	70,458	0	-7.21819	-7.16502	-18.7278	4.033355	1.105823
Independent variables								
lnROS	0	70,458	0	-2.08176	-2.08258	-11.9250	7.494807	.9022981
lnROA	0	70,458	0	1.554921	1.550549	-4.60517	11.61824	.7974959
lnDA	0	70,458	0	2.832697	2.856095	-4.60517	17.7581	1.200149
lnTA	0	70,458	0	12.34948	12.41952	0	21.87239	2.466191

Notes: This table shows the summary statistics for the entire sample consisting of Dutch, UK, US, French and the German listed companies. Total denotes the number of observations of all firms over a six-year period from the beginning of 2012 to the end of 2017.

3.2. Variables

3.2.1 Dependent Variables

For my dependent variable, I used four different proxies for company's market value. These market-based measures reflect all expectations of the market for the company's future earnings and ability to create shareholder's value (Carter et al., 2010). For my first proxy, I follow Kaplan et al. (1997), Bauer et al. (2003), Gompers et al. (2003), La Porta et al. (2002) and Duffhues & Kabir (2008) in using Tobin's Q. This proxy is calculated by dividing the company's market value by its total assets (TA) and denotes the relation between a company's market value and its replacement costs (Masa'deh et al., 2015). For my second proxy for company value, I follow Roosenboom & Van der Groot (2005) in using market to book ratio (MB). This is the value that would be attributable to each ordinary share if the assets and liabilities of the company were sold or settled (Masa'deh et al., 2015). MB is calculated by dividing company's market

value by (common) shareholder's equity and considers the under- or overvaluation of a company. The third proxy is price to earnings ratio (PE). This ratio can be seen as a measure of market confidence in the shares of the company (Masa'deh et al., 2015). It is calculated by dividing the (current) market price per share by the earnings per share. Lastly, as a fourth proxy, I follow Comment & Schwert (1995), Kabir et al. (1997), Field & Karpoff (2002), Chirinko et al. (2004) and Duffhues & Kabir (2008) in using shareholder's stock returns. This proxy shows a theoretical growth in value of a share over a specified period. The calculation includes dividend pay-outs and assumes that these dividends are re-invested to purchase additional units of equity.

3.2.2 Independent Variables

In matching the companies, I only use accounting ratios (instead of market ratio's) as independent variables. I do this because market ratios reflect aggregate expectations of all market participants following a particular stock (Masa'deh et al., 2015). Therefore, the effect that I am estimating could be incorporated in the market ratios. In matching on profitability, I use two ratios. The first variable is Return on Assets (ROA) and measures the return by using assets to produce income. This ratio can be used to assess company's operating performance relative to investments made without considering whether the company used debt or equity capital to finance their investments (Stickney, 1996; Duffhues & Kabir, 2008). The ratio measures the relationship between the net profit before interest and tax, and the total assets (Crosson et al., 2008). The second variable is Return on Sales (ROS), also referred to as the net profit margin. This ratio provides an indication of how successful a company's management is in creating profits from its sales. It is calculated by dividing net profit before interest and tax by sales (Walton, 2000; Duffhues & Kabir, 2008).

While matching, I want firms to be almost interchangeable on specific characteristics. Therefore, I should also characterize on ATMs. The most widely used ATMs by Dutch listed companies are certification of stock, issuance of preference shares and priority stock (Kakebeeke & Engel, 2017). These variables are all dummy variables. Eikon provides indicators for priority stock, shark repellents, poison pills, staggered boards and golden parachutes. For the poison pill variable, Eikon provides an indicator for historical poison pill used. This can be a shareholder rights plan, macaroni defence, etc. However, Eikon provides information on governance indicators for only a number of public listed companies per country. And still, with respect to the poison pill and shark repellent indicators, a lot of data is missing

(above 90%). Regarding governance indicators provided by the CompStat database, indicators on staggered boards, board size, poison pills, golden parachutes, priority stock, blank check preferred stock, and limited ability to amend charters/by-laws are available. However, these indicators regard only the US sample in my study and cannot be used to complement for other country samples in my study. Therefore, because of data restrictions, I will only use governance indicators on board size, priority stock, golden parachutes and staggered boards while matching between all countries. For golden parachutes the Eikon database provides an indicator, whether the company has one or other restrictive clauses related to changes of control (compensation plans relating to severance packages and accelerated pay-out). With respect to staggered boards, Eikon provides an indicator whether directors are grouped in terms of different length. Regarding priority stock, Eikon provides indicators on companies that have priority shares outstanding. Controlling for board characteristics seems opportune as well as Carter et al. (2010) provides findings that suggest that the size of a company's board to have a positive effect on firm performance. While empirical literature is somewhat indifferent about the effect of board independence on firm performance, most literature agrees on the effects of board size on company performance (Carter et al. 2010; Kalsie & Shrivastav, 2016). Therefore, I will control for the effects of board size. While Abidin et al. (2009) found evidence that a higher proportion of independent non-executive directors on the board has a positive impact on firm performance. Some studies, however, find no evidence for significant effects (e.g. Johl et al., 2015; Bhagat & Black, 2002). Because of reasons of data availability and the disagreement in the empirical literature, I did not control for board independence in this study.

Capital structure has been the subject of many empirical studies in which researchers try to estimate the effect on company's financial performance all over the world (e.g. Capon et al., 1990; Margaritis & Psillaki, 1993; Abor, 2005; Salteh et al., 2009). The capital structure of a company refers to the way in which a company finances its operations through a mix of debt and equity capital. Booth et al. (2002) and Fama & French (2002), indicate a negative relationship between financial leverage and company's performance. To account for differences in capital structures, I use total debt divided by total assets to act as a proxy for leverage (DA). In addition, I also used year and industry dummies. My sample consists of panel data, and therefore I want to match each company with a similar company in a specific year. Also, while, matching I will force companies to be in the same industry to control for industry specific effects. Furthermore, I will use a control variable for company size as measured in the natural log of total assets. This matching variable is incorporated to match on certain size effects of companies. In the literature it is defended that the size of the firm has a positive effect on firm

performance due to the realisation of economies of scale and market power (Richard, 2000; Labelle et al., 2015). In addition, larger companies have easier access to external funds and thus are able to attract more capital to fund their operations and increase their profits (Labelle et al, 2015).

3.3 Analysis of Data

3.3.1 Sample Statistics

As previous tables showed statistics for the entire sample of countries, I will pay attention to each individual country in this paragraph. Starting with the Dutch sample, Table 3 in Appendix A, shows descriptive statistics (untransformed) for the Dutch listed companies in my dataset. Except for Tobin's Q, all my dependent variables suffer from high variation in their values. As these variables indicate proxies for company value and reflect aggregate market expectations, I notice a large difference in company values for Dutch listed companies (ranging from 3497.32 for PE and 5.66e+07 for shareholder's stock returns). This could partly be explained by the high variances for the performance measures (ROS and ROA), capital structure (DA) and the size of each company (TA). The variance in governance indicators is much lower when compared to my accounting variables, which hints a smaller effect on the differences in values for my proxies for company valuation in comparison to the accounting variables. These high variances could also be due to the presence of outliers and influential cases in the Dutch sample, as the minimum and maximum values for my proxies as well as my accounting variables lay wide apart.

Also, clearly noticeable in Table 3 in Appendix A, are the high skewness (up to 19.26 for MB) and kurtosis values (up to 389.19 for MB), as these variables have not been transformed to their logarithmic functions yet. Especially my dependent and independent variables give high levels for variance, skewness and kurtosis. The positive skewness levels for the variables MB, PE, Return, Tobin's Q, DA and TA indicate a longer tail towards the right of the distribution (right skewed). For these variables the sample average takes a much higher value than it should according to a normal distribution. The same goes for the (left skewed) performance indicators ROS and ROA, which take a lower average value than they should in order to be normally distributed. My high kurtosis levels indicate how sharp my central peak is, relative to the normal bell-shaped curve as seen in a normal distribution. To account for these high skewness levels and kurtosis levels, I transform the variables to their natural logarithmic form in order to use them in my analysis. The resulting (much lower) variance, skewness and kurtosis levels can be

seen in Table 5. Because the logarithmic function of negative values results in omitted values in my model, a few observations are lost in my model (as seen under N). However, omitting these observations results in variance skewness and kurtosis levels to be improved to great extent.

Relating to governance indicators for the Dutch sample, approximately 83% of the companies in my study had staggered boards during the six-year period. Adding to this, approximately 46% of the Dutch sample had some sort of restrictive clauses related to changes of control (e.g. compensation plans relating to severance packages and accelerated pay-out) and 24% had priority stock outstanding during the six-year period. Sizes of the boards of directors varied between 1 and 14 members, while most companies installed a size of either 5 (20%), 6 (24%) or 7 (19%) members.

Table 5: Descriptive Statistics of the Dutch sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Min.	Max.	Median	Variance	Skewness	Kurtosis
Dependent								
lnMB	440	-6.40368	-10.3877	1.684545	-6.45427	.9586722	2.638026	21.22725
lnPE	321	2.904471	-.795042	6.802117	2.607962	.6635871	.1394729	6.698173
lnReturn	456	5.867203	-2.20728	11.08977	4.764649	7.645547	-.754885	3.362678
lnTobin's Q	450	-7.45409	-11.2259	-.100610	-7.17369	1.538315	.5738074	8.887606
Independent								
lnROS	384	-2.50784	-6.72945	.8172399	-2.05904	1.377775	-.138675	3.699491
lnROA	379	1.407348	-1.71480	5.282035	1.697449	1.265576	-.679676	3.691525
lnDA	431	2.910006	-4.60517	6.102447	3.164208	1.36356	-2.44669	12.96244
lnTA	488	13.71075	1.94591	20.87768	12.48329	9.108879	-.364303	3.636289
Governance Indicators								
Board Size	492	6.628049	1	14	6	4.808417	.7816934	4.419581
Staggered B.	492	.8313008	0	1	1	.1405254	-1.76936	4.130645
Gold	492	.4613821	0	1	0	.2490148	.1549344	1.024005
Prior. St.	492	.2398374	0	1	0	.1826867	1.218606	2.485

Notes: All dependent and independent variables are transformed to their natural logarithmic function. This table shows the summary statistics for the Dutch listed companies in my dataset. N denotes the number of observations of Dutch listed companies over a six-year period from the beginning of 2012 to the end of 2017. Gold denotes whether the company has one or other restrictive clauses related to changes of control (compensation plans relating to severance packages and accelerated pay-out). Prior. St. relates to the company having outstanding priority stock with special control rights.

Noticeable in the foreign samples is the large sample bias of the US (Table 4 in Appendix A) when compared to the UK (Table 5 in Appendix A), French (Table 6 in Appendix A) and

German samples (Table 7 in Appendix A). The number of observations in the US sample resemble a much larger dataset than the other foreign samples. The French and German samples act as the smallest foreign samples in my study as only 534 observations are available for restrictive clauses relating to changes of control (Golden Parachutes) in the French sample and 612 in the German sample, relative to 16,920 for the US sample and 2,280 for the UK sample. Because the US resembles a much larger part of the entire foreign sample, my findings would be biased towards the US if I would not estimate the PSM-model while using separate models for each foreign country in my study. Therefore, I will estimate the differences in company values of Dutch and US-, UK-, French- and German listed companies; each in a separate PSM-model.

When comparing the foreign samples, large differences in governance indicators occur. Of the US listed companies in this study, approximately 48% had staggered boards during the six-year period. Adding to this, approximately 95% of the US sample for governance indicators had some sort of restrictive clauses related to changes of control and only 3% had priority stock outstanding during the six-year period. Sizes of the boards of directors varied between 1 and 33 members, while most companies installed a size of either 7 (13%), 8 (16%), 9 (19%) or 10 (14%) members.

Relating to the UK sample, only 6% had staggered boards during the six-year period. In addition, approximately 23% of the UK sample for governance indicators had some sort of restrictive clauses related to changes of control and only 7% had priority stock outstanding during the six-year period. Sizes of the boards of directors varied between 2 and 21 members, while most companies installed a size of either 7 (16%), 8 (18%) or 9 (17%) members.

Furthermore, approximately 90% of the French sample had staggered boards during the six-year period. Adding to this, approximately 29% of the French sample for governance indicators had some sort of restrictive clauses related to changes of control and only 5% had priority stock outstanding during the six-year period. Sizes of the boards of directors varied between 4 and 27 members, while most companies installed a size of either 10 (12%), 12 (11%) or 13 (12%) members.

Lastly, of the German sample for governance indicators, approximately 19% had staggered boards during the six-year period. Adding to this, approximately 54% of the French sample for governance indicators had some sort of restrictive clauses related to changes of control and only

7% had priority stock outstanding during the six-year period. Sizes of the boards of directors varied between 2 and 30 members, while most companies installed a size of either 6 (10%), 12 (22%) or 20 (12%) members. With a variance of over 27%, the German sample has – by far – the most dispersed companies' board sizes.

3.3.2 Outliers and Influential Cases

The descriptive sample statistics for all samples in this study show high variance, skewness and kurtosis levels, as seen in Tables 6 to 10. In order to expose possible outliers and influential cases in this study, I will assess each sample separately. First, the extremes for each variable in each sample are investigated. After which, the samples are both numerically and graphically tested for observations that strongly influence my results.

Beginning with the Dutch sample, the high variance and extreme values for my dependent variable shareholder's returns especially tend to stand out in Table 5. In addition, the high variance and extreme values for my proxy for company size (Total Assets) also indicate the possibility of outliers and influential cases. When investigating both the minimum value for Tobin's Q and Total Assets (TA), it becomes clear these values both relate to company-ID number 17. Adding to this, the minimum value for both shareholder's returns (Return) and return on sales (ROS) belong to the same company-ID number 4681. As a second step I use numerical Cook's Distance to expose possible influential cases with high residuals that have a negative effect on the robustness of the model outcome (Cook, 1977). The Cook's Distance indicates the difference between beta's estimated with and without an individual observation i (Cook, 1977). By measuring the effect of deleting specific observations, Cook's Distance gives an indication of the effect of an individual observation on the model outcome. A general rule of thumb in assessing critical Cook's values comes down to $D_i > 4/N$, in which N denotes the number of observations and i indicates separate observations for each company in my sample. If the $D_i > 4/N$ boundary is surpassed, the observation can be considered as a possible influential case and should be (graphically) investigated further. The highest D_i values, that surpass the above-mentioned boundary for my dependent variables, relate to company-ID numbers 17, 4680, 4719 and 4669.

Even though, Cook's Distance estimates the effect of a specific observation on the model outcome, individual cases for which the model fits badly (e.g. have large residuals) can be either outliers or influential cases. The difference between these two is that influential cases change

the slope of the model, while outliers change the intercept. Therefore, apart from the indication gained from the numerical Cook's Distance, I investigate as a third step the graphical plots to expose influential cases in my model. From Graph 1 in Appendix B, we can conclude that the company-ID numbers 4680 and 4719 are outliers to the model, but do not result in a significant change to the slope of the model.[13] Therefore, these observations are not regarded as influential cases. For the company-ID numbers 17 and 4669, however, I notice a significant change in the slope of the model and therefore these observations are regarded as influential cases to the outcome of the model for the Dutch sample. Observations for company-ID numbers 17 and 4669 are deleted for the purpose of this study.

Regarding the foreign samples – again – high variances and extreme values tend to stand out in Tables 7 to 10. This indicates the presence of outliers and possible influential cases in my US-sample. The highest D_i values in the US sample, that surpass the boundary for multiple dependent variables, relate to company-ID numbers 95, 10178, 8499, 10971, 4991 and 11296. After inspecting the graphical plot in Graph 2 in the Appendix B, I conclude that company-ID numbers 95, 10178 and 11296 are outliers to the model. Company-ID numbers 8499, 10971 and 4991 are influential cases that significantly change the slope of the intercept for my model. Therefore, observations for the company-ID numbers 8499, 10971 and 4991 are deleted from the US sample.

For the UK sample, especially company-ID numbers 2105, 2595, 2876, 3369, 4089 and 2977 surpass the boundary for multiple dependent variables and should therefore be graphically investigated. Graph 3 in Appendix B shows that company-ID numbers 2105, 2977 and 3369 are outliers to the model. Company-ID numbers 2595, 2876, 3369 and 4089 have a significant effect on the slope of the model and are influential cases. For the purpose of this study company-ID numbers 2595, 2876, 3369 and 4089 are deleted from the UK sample.

Company-ID numbers 2062, 1850, 3979, 1548, 2002, 1901, 1882, 1746 and 1551 in the French sample have the highest values that surpass the boundary for multiple dependent variables. After inspection of the graphical plots in Graph 4 in Appendix B, I can conclude that Company-ID numbers 3979, 2002, 1901, 1746 and 1551 do not significantly change the slope of the model and therefore are not regarded as influential cases. Company-ID numbers 2062, 1850, 1548 and

[13] As mentioned before, mostly the minimum and maximum values for shareholder's returns are remarkable and therefore I will pay attention to the graphical plots for only shareholder's returns as a dependent variable in assessing influential cases.

1882, however, are influential cases. Therefore, observations with company-ID numbers 2062, 1850, 1548 and 1881 are therefore deleted from the French sample.

Company-ID numbers in the German sample that surpass the boundary for multiple dependent variables are 619, 657, 1008, 1078, 1056, 753, 679 and 203. Company-ID numbers that, according to Graph 5 in Appendix B, have a significant effect on the slope of the model are 1056, 203, 657 and 1008. Observations of these influential cases are deleted from the French sample. Other outliers to the model that do not have a significant effect on the slope of the model are left in the French sample.

3.1.3 Multicollinearity

Collinearity occurs when two or more independent variables are correlated with each other. This becomes a problem when high correlation leads to an increase of the estimated coefficients, resulting in an increase of the standard errors in the model (Kumar, 1975). In assessing the level of multicollinearity in my model, I investigate (ex ante regression) pairwise correlations of my variables in the correlation matrix provided in Table 6. In addition, I will assess the value inflation factors (VIF) (ex post regression) in Table 1 in Appendix C.

Beginning with the pairwise correlations, high negative correlation between two of my dependent variables is noticeable. This comes as no surprise, considering both proxies have company's market value incorporated in their equations. Tobin's Q is calculated by dividing company's market value by total assets and MB is calculated by dividing company's market value by (common) equity book value. Therefore, the significant high positive correlation (76.42%) is explainable and does not pose as a problem for my model as these variables are used in separate regressions. The same goes for the significant moderate positive correlation (54.74%) for my dependent variables shareholder's returns (Return) and price earnings ratio (PE). Furthermore, the independent variable ROA seems to be significantly correlated with two of my dependent variables and one of my independent variables. The correlation matrix shows a moderate positive correlation with Tobin's Q (56.71%) and a low positive correlation with MB (33.36%). The moderate correlation between ROA and Tobin's Q could be explained by the fact that both variables have company's total asset value incorporated in their equations. The low positive correlation between ROA and MB could be explained by a linear dependency between (common) equity book value (used in calculating MB) and the value of total assets of a company (used in calculating ROA). The same assumption could be made for the (significant)

low negative correlation (-41.60%) between Tobin's Q and the independent variable TA. In addition, the matrix shows a (significant) low positive correlation of 34.24% between ROA and ROS. This correlation in itself should not pose a problem to the model as it is far from reaching the critical 70% boundary at which high correlation between independent variables can result in bias of your calculations regarding the individual predictors in the model (Hinkle et al., 2003).

As the correlation matrix can only identify collinearity between two variables in my model, I will use a method capable of detecting multicollinearity by looking at the extent to which a given independent variable can be explained by other independent variables in the model (Yoo et al., 2014). Table 1 in Appendix C shows the VIF-values for the independent variables, ex post regression against each dependent variable in my study. Not one VIF-value exceeds the critical value of 5 and the mean VIF-values for all my dependent variables is approximately 1.51. Therefore, I can conclude that there's no multicollinearity present in my model.

Table 6: Correlation Matrix

	(1) lnBM	(2) lnPE	(3) lnReturn	(4) lnTobin's Q	(5) lnROS	(6) lnROA	(7) lnDA	(8) lnTA	(9) Board Size	(10) Stag. Board	(11) Gold	(12) Prior. St.
lnBM	1.0000											
lnPE	-0.0743***	1.0000										
lnReturn	-0.0203***	0.5474***	1.0000									
lnTobin's Q	0.7642***	-0.0078	-0.0072	1.0000								
lnROS	-0.0531***	-0.0544***	0.0254***	-0.0008	1.0000							
lnROA	0.3336***	-0.0481***	0.0245***	0.5671***	0.3424***	1.0000						
lnDA	0.0553***	-0.0225**	-0.0153**	0.0318***	0.0476***	0.0465***	1.0000					
lnTA	-0.0855***	-0.1927***	0.0367***	-0.4160***	0.0954***	-0.2505***	-0.0158**	1.0000				
Board Size	-0.0640***	-0.0417***	0.0293***	-0.2652***	-0.0183**	-0.1888***	0.0065	0.5518***	1.0000			
Stag. Board	0.0258***	0.0339***	-0.0522***	0.0288***	-0.0668***	-0.0578***	-0.0246**	-0.2016***	-0.0682***	1.0000		
Gold	0.0609***	0.0062	-0.0962***	0.0570***	-0.0066	-0.0286**	0.0267***	-0.0655***	-0.0072	0.1290***	1.0000	
Prior. St.	-0.0186*	-0.0034	0.0314***	-0.0068	0.0125	0.0191	-0.0048	0.1079***	0.0629***	-0.0287***	-0.0884***	1.0000

Notes: *, **, *** indicate significance at a 5%, 1% and 0.1% level, respectively. In assessing this matrix, I interpret boundary levels up to the 30% bound (little if any correlation), between the 30% and 50% bound (low correlation), between the 50% and 70% bound (moderate correlation), between the 70% and 90% bound (high correlation) and above the 90% bound (very high correlation) for the correlation coefficients shown.

4 Methodology

In comparing Dutch listed companies with similar foreign companies a number of endogeneity problems occur. Companies that are listed on the Dutch stock exchange, might be fundamentally different from companies that are listed on foreign stock exchanges. This problem is known as the selection bias (Caliendo & Kopeinig, 2008). Due to this problem it becomes hard to directly compare the outcomes for the group of companies that is listed on the Dutch stock exchange and the group that is listed on differing foreign stock exchanges. The matching approach, as suggested by Rosenbaum & Rubin (1983), can be used as a solution to minimize the selection bias in non-experimental studies. The idea is to match the treated group observations with non-treated observations in all relevant pre-treatment characteristics x (Caliendo & Kopeinig, 2008). I do this, based on their propensity scores. Propensity scores model the relationship between the treated or non-treated and confounding factors that influence both the treated and non-treated (Rosenbaum & Rubin, 1983). Stuart et al., (2012) argue mainly three benefits to propensity score matching (PSM). For starters, Rubin (2007) and Rosenbaum (2010) described, the process of developing propensity scores is done without the use of the dependent variable of company value; therefore the "design" of the study is separated from the "analysis". Additionally, the use of PSM leads to more robust findings as propensity scores reduce extrapolation and the overall dependence on the model (Ho et al., 2007). Finally, by using propensity scores, the entire set of independent variables is reduced into a "scalar summary" of the independent variables' information (Stuart et al., 2012). In comparison to other adjustment methods, PSM is therefore not limited to a number of variables (Stuart et al., 2012). Below, I will assess the methodology of the propensity score matching method, used in this study.

4.1 Propensity Score Matching

In this study, I estimate the effect of being a Dutch listed company on company value in comparison to a non-Dutch listed company, based on PSM. In the PSM-model, I compare the outcomes between treated and control group observations. The treated observations consist of Dutch listed companies. The control group consist of non-Dutch listed companies (companies listed on stock exchanges in the US, UK, Germany and France). Treatment (D) is a binary variable that determines if the observation is a Dutch listed company or not; $D = 1$ for the Dutch listed companies and $D = 0$ for the control observations. As mentioned before, the control observations represent companies that are listed on foreign stock exchanges. The

probability of undergoing treatment is estimated through a probit model for each year. Once propensity scores are estimated, I match each company in the treated group with control group observations, based on propensity scores.

The first step in propensity score matching, is estimating a probit model for the propensity of observations to be assigned into the treated group ($D = 1$) (Rosenbaum & Rubin, 1983). The independent variables affect the likelihood of being assigned to the treated group (Rosenbaum & Rubin, 1983). In estimating this probit model, D is the dependent variable and x represents the independent (or matching) variables (see Equation 1). In my model, the propensity score is the predicted probability of being a Dutch listed company, given certain characteristics (x). These certain characteristics represent accounting variables (ROS, ROA, DA and TA), industry dummy variables, year dummy variables and governance indicators (board size, golden parachutes, priority stock and chartered boards).

$$p(x) = prob(D = 1|x) = E(D|x) \quad (1)$$

The second step, is to match the observations from the treated and control group, based on their propensity scores. In doing so, several matching methods are available: e.g. *kernel, nearest neighbour* and *radius* (Schafer & Kang, 2008). The goal is to find the best possible matches for each of the observations in the treated group with the control group. Apart from the matching method, I can choose to match with common support so that I can restrict matching only based on the common range of propensity scores (Jonathan et al., 2017). This option leaves out observations outside the common support. In my model I use common support that drops treatment observations whose propensity score is higher than the maximum or less than the minimum propensity scores of the control group. Therefore, treatment observations that would be located at the tails of the distribution for the control group are dropped.

Beginning with *kernel matching*, this model uses all the weighted outcomes for observations of the control group for each observation of the treated group (Vandenberghe & Robin, 2004). The closer it is in propensity score, the higher the weight. The weights are very high for observations that are close in terms of propensity scores and very low for observations that are further away in terms of propensity scores. Another option is *nearest neighbour matching* in which for each observation i, a control observation j is selected that has the closest x (Caliendo & Kopeinig, 2008). In other words, as shown in Equation 2, I use the observation in the control

group that has a propensity score that is closest to the score of an observation in the treated group.

$$\min || \ p_i - p_j \ || \tag{2}$$

Instead of only looking at the nearest propensity score, with *radius matching* one includes all the observations with propensity scores within a certain radius of the propensity score of the observation of the treated group (Vandenberghe & Robin, 2004). For each observation i, a control observation j is selected that is located within a radius r, as seen in the equation below. This matching method lends itself to be a very useful estimator in situations in which, for some treatment group observations, many matches are available in the control group sample while for others very few matches are present in the control group sample (Davies & Kim, 2003). Furthermore, Davies & Kim (2003) argue that estimation techniques such as *kernel matching* have better testing power and produce tighter confidence when there are only few matched pairs available. Consequently, they find evidence for *nearest neighbour matching* to be the best approach in estimating market microstructures.

As my foreign sample is sufficiently large and is able to provide enough possible matches for my Dutch listed companies, I use the *nearest neighbour matching* method for the purpose of this study. Apart from the most common 1:1 (read one-to-one) nearest neighbour match, I will make use of a *k*-nearest neighbour matching method in which five control observations are matched per treated observation (1:5 nearest neighbour).

4.2 Counterfactual Situation

In finding the effects of being a Dutch listed company, I compare the outcome y between the treated and control observations, with respect to their propensity scores. In my model, outcome y represents the five proxies for my company value: Tobin's Q, Market to Book ratio, PE ratio and shareholder's stock returns.

$$y = \begin{cases} y_1 \ if \ D = 1 \\ y_2 \ if \ D = 0 \end{cases} \tag{3}$$

In providing evidence for the Dutch Discount, I want to compare the outcome of the treated group with the outcome of the treated group if they were not treated (Caliendo & Kopeinig, 2008). In doing so, I estimate the outcome y of a Dutch listed company with outcome y of a Dutch listed company if they were not actually incorporated under Dutch law. This problem

can be described as a counterfactual situation (Rosenbaum & Rubin, 1983). The problem occurs, because the companies in the treated group are listed on the Dutch stock exchange and it is impossible to remove this treatment of being a Dutch listed company in my analysis. To adhere to this problem, I will find the best possible matches using control observations and consequently use their outcomes in measuring treatment effects. For each treated observation i (public Dutch company), I need to find matches of control observation(s) j (public companies listed on foreign stock exchanges) with similar characteristics (Shipman et al., 2017). Those similar characteristics are the variables explained in chapter 4, and also consist of ATM indicators. The purpose of this, is that I am not trying to estimate the effect of different ATMs on company value. This, unfortunately, is not possible due to reasons of data availability. In this research, I am trying to estimate the difference between Dutch firms and foreign firms that are (almost) exactly alike. The possible differences in firm value between each Dutch firm and their (foreign) peer-firms (Dutch Discount) can then be assessed. As a treatment variable, I use five different dummy variables, each dummy variable indicating a 1 for Dutch listed companies and a 0 for either US, UK, French, German or all foreign listed companies.

4.3 Treatment Effects

The average treatment effect (ATE) is the difference between the outcomes of treated and control observations. In essence, this is a simple t-test between the outcomes for the treated and control groups (Shipman et al., 2017).

$$\Delta = y_1 - y_0$$

$$ATE = E(\Delta) = E(y_1|x, D = 1) - E(y_0|x, D = 0) \quad (4)$$

ATE can be biased in observational studies – such as this one – if treated and control observations are not similar (Shipman et al., 2017). Therefore, I should measure the average treatment effect of the treated instead. The average treatment effect of the treated (ATET) is the difference between the outcomes of the treated and the outcomes of the treated observations if they had not been treated (Shipman et al., 2017).

$$ATET = E(\Delta|D = 1) = E(y_1|x, D = 1) - E(y_0|x, D = 1) \quad (5)$$

The first term is the average company value of Dutch listed companies. The second term in the equation is a counterfactual which is not observable and can only be estimated. It shows the outcome of the treated if they had not been treated and thus have y_0 as their outcome. Or in

other words, it tries to estimate the average company value of Dutch listed companies if they were not actually incorporated under Dutch company law and listed on the Dutch stock exchange (Euronext). It is impossible to remove the treatment in the treated group; however, we can find matches in the control group and use their outcomes as if they were the outcomes for the treated group if they were not treated. After matching on propensity scores, I can compare the outcomes of the treated and control observations and thus get an adequate estimation for the counterfactual (Shipman et al., 2017). Thus, the equation becomes

$$ATET = E(\Delta|p(x), D = 1) = E(y_1|p(x), D = 1) - E(y_0|p(x), D = 0) \quad (6)$$

4.4 Difference-in-Difference

Because my data consist of panel data, the difference-in-differences model can be used to get a more adequate estimation (Caliendo & Kopeinig, 2008). Difference-in-difference (hereafter DiD) models are quite commonly used in evaluating policies or even programs (e.g. a study into the effect of the implementation of new corporate takeover laws). By using DiD I gain unbiased effect estimates by estimating the ATET for a situation in which the trend over time is the same between the treated and non-treated groups in the absence of the treatment (Stuart et al., 2014; O'Neill et al., 2016). The difference-in-difference model can be presented as:

$$ATET = E(\Delta_a - \Delta_b|D = 1) = E\big((y_{1a} - y_{0a}) - (y_{1b} - y_{0b})\big|x, D = 1\big) =$$
$$E(y_{1a} - y_{1b}|x, D = 1) - E(y_{0a} - y_{0b}|x, D = 1) \quad (7)$$

The first term in Equation 7 refers to the differences in outcomes before and after the treatment for the treated group. This term could be biased if time trends are present. The second term uses the differences in outcomes for the control group to eliminate this possible bias. Using two period data, I can control for general increases or decreases in company values (Fricke, 2017). While working with panel data there generally are two types of selection bias which is across time and across group. Selection bias across time can occur when a group itself changes in composition across time (Stuart et al., 2014). Imbens & Wooldridge (2009), mention the crucial aspect if groups differ with respect to variables that are also related to their trends across time. PSM is a method that is used in this study to minimize the selection bias. DiD is a method that is used to minimize the time trend bias. Together they make for a valid model to use in this study.

5 Empirical Results

5.1 OLS

The purpose of this study is to estimate the effect of the Dutch institutional environment on its listed companies' market values, relative to foreign-listed peer companies. In order to gain some preliminary (suggestive) results ex ante the PSM-model, I estimate the effect of the Dutch sample with an OLS-regression. Although these results inevitably suffer from endogeneity problems, the model provides a rather simple approach to investigating the effect of the Dutch institutional environments on its listed companies' values in comparison to foreign samples. Table 7 shows the empirical regression results for each dependent variable. The regressions for MB and Tobin's Q consist of 11,465 and 11,818 observations and a goodness of fit, measured by the adjusted-R^2, of 0.2642 and 0.6352, respectively. Both regression results for the dummy variable "Dutch treatment" suggest the presence of a Dutch discount. The variable "Dutch treatment" indicates a dummy variable for which all Dutch listed companies take on a value of 1 and all foreign listed companies take on a value of 0. In interpreting my regression coefficients this means that the mere representation of a Dutch listed company in regression (4), results in a decrease of 0.24838% in Tobin's Q value. Regression (1) also suggest the presence of a Dutch Discount as the coefficient for "Dutch treatment" has a significant and negative effect on MB. In interpreting these results, I conclude that the mere representation of a Dutch listed company in regression (1), results in a decrease of 0.24655% in MB (i.e. a decrease of 0.2465447% in market's perception of the company's value). The regressions for PE and shareholder's returns, although significant, show a lesser goodness of fit as the adjusted-R^2 equals 0.0305 for PE and 0.0334 for shareholder's returns. Both regressions (2) and (3) indicate contradictory results to the estimates in regressions (1) and (4). Regressions (2) and (3) do not indicate the existence of a Dutch discount on listed companies, but rather a premium on Dutch listed companies' market values when compared to all foreign samples. However, as both regressions show a low goodness of fit, they should not be used for suggestive interpretation purposes.

Table 7: OLS regression – Suggestive Effect of the Dutch Institutional Environment

	(1)	(2)	(3)	(4)
Variables	lnMB	lnPE	lnReturn	lnTobin's Q
Dutch Treatment	-.2401926	1.327565	2.222854	-.2484812
	(-5.48)***	(7.07)***	(11.01)***	(-6.55)***
lnROS	-.0392777	-.2171707	-.1576989	.0035952
	(-4.10)***	(-4.70)***	(-3.43)***	(0.44)
lnROA	.3241181	-.1780291	.2616299	.4704351
	(31.90)***	(-3.62)***	(5.57)***	(54.29)***
lnDA	.0617976	.0426177	-.029892	-.0873985
	(9.63)***	(1.51)	(-1.00)	(-16.04)***
lnTA	.0003317	-.2082559	.002752	-.0898931
	(0.06)	(-8.56)***	(0.11)	(-19.55)***
Board Size	.0106484	.0387544	.0801169	.0042497
	(3.67)***	(3.04)*	(5.85)***	(1.70)*
Stag. Board	-.0131185	-.0035742	-.3688689	-.0266008
	(-0.93)	(-0.05)	(-5.42)***	(-2.19)*
Gold	.116099	-.0376149	-.8566862	.1951282
	(6.67)***	(-0.48)	(-10.30)***	(12.95)***
Prior. St.	-.0512635	.0664757	.1550318	.0776559
	(-1.75)	(0.51)	(1.06)	(3.08)**
Industry	YES***	YES**	YES*	YES***
Year	YES***	YES	YES	YES***
N	11,465	8,010	10,796	11,818
Adj. R^2	0.2642	0.0305	0.0334	0.6352

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N denotes the number of observations. Dutch treatment indicates a dummy variable for which all Dutch listed companies take on a value of 1 and all foreign listed companies take on a value of 0.

5.2 PSM Estimates

Moving on to the PSM-model, Table 8 shows the presence of a Dutch discount (ATET) in regressions (1) and (4). In regression (1) the 1:1 and 1:5 nearest neighbor match (hereafter NN) both imply that the mere representation of a Dutch listed company results in a significant and negative effect of 0.34118% and 0.28831% on MB. This implies a negative effect of 0.34118% and 0.28831% on the market's perception of the value of the company. In regression (4), the significant and negative ATET-coefficients imply a discount of 0.39241% (1:1 NN) and 0.31654% (1:5 NN) on Tobin's Q values for Dutch listed companies relative to the foreign samples. On the contrary, Table 8 shows the presence of a premium (ATET) on Dutch listed companies in regressions (2) and (3).

Table 8: Dutch sample compared to the entire foreign sample

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET	-.34118011	-.28831161	.939404338	.974115347	2.09951779	2.08310146	-.39240720	-.31653559
	(-4.20)***	(-4.61)***	(3.06)***	(5.27)***	(7.20)***	(9.65)***	(-4.41)***	(-4.36)***
N-control	6,272	6,272	4,263	4,263	6,146	6,146	6,613	6,613
N-treatment	272	272	217	217	282	282	279	279

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group. ATET shows the average treatment effect for the treated (Dutch listed companies) in my main (transformed) model.

One reason for these conflicting results could be found in the composition of the observations available for each dependent variable. As each dependent variable differs in sample size due to missing values, the amount and selection of companies that is used in each regression deviates slightly. A possible solution for this problem is to use imputation adjustments to solve for missing values. By using this method, we make sure to include the entire sample of Dutch and foreign listed companies. As shown in Table 1 in Appendix D, the model with imputation adjustments does not change the conflicting results of regressions (1) and (4), implying a Dutch discount. The contradicting regressions (2) and (3) suggest a Dutch premium. Therefore, I conclude that these conflicting results are not due to the composition of the available observations per dependent variable.

Another reason for the conflicting results could lay in the difference in composition of the observations that relate to each specific country. As mentioned before, the US sample is regarded as the largest sample in this study. Therefore, the US sample can bias the results significantly in favor of or against the Dutch discount with respect to specific regressions (1) and (4) or (2) and (3) in Table 8. In table 9, I assess the PSM-model between the Dutch and US samples. Clearly, noticeable are – again – the significant and conflicting results for regressions (1) and (4) (implying a Dutch discount) and regressions (2) and (3) (implying a Dutch premium). In regression 4, both the 1:1 NN and 1:5 NN estimate the presence of a significant discount of 0.25033% and 0.28212% respectively. For regression (1), only the 1:5 NN is significant and indicates a discount of 0.20140% for Dutch listed companies, relative to US listed companies. On the contrary, regressions (2) and (3) indicate significant positive premia

for Dutch listed companies. Regression (2) estimates a premium of either 0.97795% (1:1 NN) or 1.08798% (1:5 NN) for Dutch listed companies. In addition, regression (3) estimates a premium of 2.6007% (1:1 NN) or 2.83359% (1:5 NN) on Dutch listed companies, relative to US listed companies. These findings do not support *hypothesis 1,* as they oppose each other.

Table 9: Dutch sample compared to the US sample

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET	-.11034322	-.20140157	.977950873	1.08798398	2.6007064	2.83358546	-.25032965	-.28211599
	(-1.24)	(-2.61)***	(3.34)***	(6.15)***	(6.09)***	(9.02)***	(-2.31)*	(-3.40)***
N-control	4,322	4,322	2,865	2,865	4,340	4,340	4,635	4,635
N-treatment	260	260	191	191	274	274	259	259

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group. As all the ATET-coefficients are significant and the control group observations resemble a sufficient size to use in nearest neighbor matching, it is unnecessary to include a model with imputation adjustments to increase the sample size.

When comparing the Dutch sample with the UK sample, only ATET-coefficients for regressions (2), (3) and (4) are significant and can be used to draw conclusions on. ATET outcomes of regressions (2) and (3) prove the presence of a Dutch premium, relative to UK listed companies. Outcomes for regression (4) provides proof of the existence of a Dutch discount. As two of my proxies for listed company's market value tend to disprove the Dutch discount, relative to only one that provides proof for the Dutch discount, these findings suggest that the discount does not exist when compared to the UK. Moreover, Table 10 provides evidence of not only the absence of a Dutch discount (relative to the UK), but the evidence of a premium for Dutch listed companies relative to the UK listed companies. Based on regression (2) the premium would range anywhere from 2.25621% (1:1 NN) to 1.77977% (1:5 NN). Regression (4) estimates a range of 3.32704% (1:1 NN) to 3.32704% (1:5 NN). These findings indicate the direct opposite of *hypothesis 2.*

Table 10: Dutch sample compared to the UK sample

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET	-.11080642	-.30530291	2.25621356	1.77976654	3.32703768	3.37521017	-.37361477	-.36666474
	(-0.49)	(-1.63)	(3.17)***	(2.51)**	(4.54)***	(5.42)***	(-1.69)	(-1.92)
N-control	1,196	1,196	813	813	1,169	1,169	1,258	1,258
N-treatment	265	265	165	165	271	271	265	265

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group. Even when using the model with imputation adjustments, outcomes for regression (1) does not pass the 5% significance level and therefore it is unnecessary to include these findings in table 17.

Outcome coefficients for the comparison between the Dutch and German samples in Table 10 are significant for regressions (2) and (3), providing evidence of a Dutch premium relative to German listed companies. When increasing the number of available observations in the control group to match on (imputation adjustment model), significance levels for ATET coefficients for Tobin's Q do not pass the 5% significance level. The model with imputation adjustments does pass the 5% significance level in regression (1) for the 1:5 NN and estimates a discount of 0.34004%. However, both ATET-coefficients for regression (2) and (3) indicate a significant positive effect on PE and shareholder's returns, respectively. Therefore, my findings mostly suggest that the Dutch discount does not exist when compared to German listed companies. Moreover, findings in Table 18 show the presence of a premium for Dutch listed companies, relative to German listed companies. These findings, therefore, directly oppose *hypothesis 4.*

Relating to the French sample in Table 2 in Appendix D, not one outcome coefficient for the ATET is significant. Although regressions (1), (2) and (4) hint a Dutch discount, the ATET-coefficients shown in Table 2 in Appendix D do not provide valid estimates that can be used for interpretation in this study. Even when increasing the number of available observations in the control group by using the model with imputation adjustments, ATET-coefficients (ATET-*IA*) remain insignificant. Therefore, my findings indicate no structural discount in companies' market values for Dutch or French listed companies when compared in my PSM-model. As no significant discount or premium is shown, this indicates that the Dutch listed companies on average, do not deviate from similar French listed companies' market values. The insignificant results do not support *hypothesis 3,* as I expected a (significant) lower value for Dutch listed companies, relative to French listed companies.

Table 18: Dutch sample compared to the German sample

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET	.000873477	-.14531224	2.79769191	2.30563979	2.96019806	2.78615435	-.14178590	-.26650369
	(0.00)	(-1.01)	(4.79)***	(5.93)***	(5.82)***	(7.13)***	(-0.50)	(-1.15)
N-control	212	212	177	177	219	219	215	215
N-treatment	204	204	167	167	213	213	207	207
ATET-*IA*	-.21348694	-.34003665	1.90525887	1.60874338	2.764931	2.4506722	-.35507608	-.39833792
	(-1.14)	(-2.51)*	(4.71)***	(6.61)***	(6.28)***	(6.95)***	(-1.48)	(-2.08)*
N-control	291	291	291	291	291	291	291	291
N-treatment	321	321	321	321	321	321	321	321

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group.

5.3 Difference-in-Difference Estimates

As mentioned before, the normal PSM-model could suffer from a time trend bias for specific country samples. It could very much be that regression outcomes for Tables 8 to 11 show significant positive/negative influences on the average company's market value as a result of representing a Dutch listed company, while actually these outcomes are due to the difference in time trends between each country sample. By using DiD, I gain unbiased effect estimates if the trend over time would have been the same between the treated and non-treated groups in the absence of the treatment (Stuart et al., 2014).

In comparing the Dutch sample with the US sample, Table 12 shows significant and positive results for all regressions. Both the 1:1 NN and 1:5 NN for each regression shows significant positive premia on Dutch listed companies, relative to US listed companies. For these regressions the Dutch premia is estimated to range between 1.64623% – 1.53021% for regression (2), 0.78578% – 1.10204% for regression (3), and 0.23130% – 0.19328% for regression (4). In addition, the 1:1 NN for regression (1), also indicates a significant positive premium on Dutch listed companies, relative to US listed companies. Based on these findings, I can conclude that the Dutch discount does not exist when comparing Dutch listed companies to US listed companies. Therefore, I reject *hypothesis 1* as my evidence suggest the absence of a Dutch discount. Moreover, results of the PSM-model in Table 19 indicate the presence of a Dutch premium instead of a discount. For the UK sample, only regressions (2) and (3) provide

significant positive results, indicating the presence of a Dutch premium as well. Estimates for regression (2) indicate a premium between 2.35936% and 1.93274% for Dutch listed companies, relative to UK listed companies. Therefore, I reject *hypothesis 2* as my evidence suggest the absence of a Dutch discount. Regression (3) indicates a premium for Dutch listed companies, ranging from 1.20933% to 1.27501%. When comparing the Dutch sample to the German and French samples, no regression provides significant estimates on ATET. Therefore, these findings reject *hypotheses 3* and *4* by ruling out the presence of a Dutch discount or Dutch premium, relative to German or French listed companies.

Table 12: PSM-model for DiD results

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET-US	.181010759	.114640666	1.64623323	1.53020928	.785781642	1.10203729	.231292932	.193277498
	(2.21)*	(1.61)	(5.48)***	(9.14)***	(4.32)***	(8.36)***	(2.97)**	(3.27)***
N-control	3,560	3,560	1,531	1,531	3,503	3,503	3,819	3,819
N-treatment	242	242	160	160	244	244	239	239
ATET-UK	.147684158	-.20242197	2.35936896	1.93274367	1.20933429	1.27501358	.179170257	-.08106657
	(0.67)	(-1.40)	(3.83)***	(3.78)***	(3.16)***	(3.85)***	(1.19)	(-0.62)
N-control	1,040	1,040	607	607	1,004	1,004	1,063	1,063
N-treatment	227	227	113	113	238	238	224	224
ATET-FR	-.00202053	-.08964351	.83048068	-.53546506	.236315171	.287930366	.069481011	.145557987
	(-0.02)	(-1.02)	(0.84)	(-1.00)	(1.64)	(1.94)	(0.67)	(1.30)
N-control	323	323	151	151	313	313	338	338
N-treatment	137	137	124	124	134	134	137	137
ATET-Ger	-.12933930	-.10642866	.243332632	.308879222	.675660591	.041046469	-.07658593	-.05835892
	(-0.95)	(-0.95)	(0.99)	(1.45)	(1.69)	(0.18)	(-0.67)	(-0.54)
N-control	201	201	150	150	213	213	201	201
N-treatment	187	187	162	162	192	192	187	187

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group.

6 Discussion

The effects of the different governance systems are estimated as the difference in company values, all other characteristics to the firm held equal. A few possible problems and limitations of my model can be found in the assumptions implicitly made by the method of estimation. Estimation techniques – such as the underlying model – make assumptions in order to estimate effects. I anticipate several problems relating to the data and model.

An important limitation for the PSM-method, regards the assumption that the treatment should not indirectly affect the control observations (Caliendo & Kopeinig, 2008). Literature refers to this problem as general equilibrium effects (Bryson et al., 2002). My results could become biased if the daughter company of a Dutch listed company is also listed on foreign stock exchanges in the US, Germany the UK and France. These cross-listings of companies could entail that the treatment effect is also present in the control group. In essence, this can result in matching Dutch listed companies with their own stocks listed on foreign stock exchanges of the US, Germany, the UK or France. To account for this problem, I deleted all duplicates for companies that have stocks listed on multiple stock exchanges.

It is important, however, that the sample size for Dutch listed companies does not get too small. Deleting observations in the sample for Dutch listed companies can eventually result in a lower external validity, because findings will be less representative for all Dutch listed companies and therefore less generalizable. My final Dutch sample consists of 80 listed companies and represents a sufficiently large sample of all Dutch listed companies (above 60%). The samples for my foreign countries, however, have either missing values on governance indicators for particular years or simply no data at all. Statistics on missing values for governance indicators for the entire sample, show that approximately 80% of the data on foreign companies is missing. Even after my assumption-driven adjustments to the data on governance indicators, missing values still amount to approximately 70% of the entire dataset. Not only the incompleteness of the foreign samples has an impact on the validity of this research, in addition could the assumption-driven adjustments to the foreign sample in itself also be considered a questionable approach.

In addition, Bryson et al. (2002) notices that small sample sizes present three important problems relating to the method itself. Firstly, they mention that any common support problems will worsen. Due to small sample sizes holes can appear within the common support, resulting

in even more observations of the treated group to drop out (Bryson et al., (2002). Due to this, the treatment effects will be retrieved for an even smaller set of Dutch listed companies. With a large enough sample size, however, it is still possible to estimate the impact of treatment on the treated group – even when companies for the treated group and control group are quite different (Bryson et al., 2002). Secondly, smaller samples increase the variance of estimated effects (Bryson et al, 2002; Davies & Kim, 2003). Consequently, this makes identification and estimation of significant effects more difficult (Bryson et al., 2002). Thirdly, because fewer matches are available, incentives to accept distant matches increase. This can lead to possible bias. Therefore, estimated effects may be sensitive to the choice of the type of matching that is used (Bryson et al., 2002). Although nearest neighbor matching is a widely used and most reliable matching method in empirical studies, the assumptions underlying each matching method differ and therefore various matching methods should be assessed that best fits each data sample (Davies & Kim, 2003).

Furthermore, variables that affect assignment to treatment and outcome but that are not present in the regressions cannot be accounted for in matching (Garrido et al., 2014). The success of a matching estimator (such as propensity scores) depends on the availability of observable data to adequately estimate a valid propensity score for each company (Smith & Todd, 2001). Because non-present variables could result in hidden bias latent to the matching procedure, it becomes pertinent to incorporate as much matching variables as possible, (Smith & Todd, 2001; Shadish et al., 2002). With respect to my study, a number of governance indicators could not be incorporated in the matching process because of data availability. A large limitation of this study can be found in the accessibility of important databases with adequate governance indicators for a wide number of companies. One can think of indicators in the range of board independence and certificates of stock and additional ATMs in the range of poison pills, blank checked preferred stock, limited ability to amend by-laws (or charters) and majority vote requirements. I did gain some data on these governance indicators via the CompStat database, however these indicators are not available for the Dutch, German, UK and French companies. A wider and more complete dataset would enable for more variables in my model that affect a company's market value. Consequently, any hidden bias will be better controlled for.

Lastly, O'Neill et al. (2016) states that the most critical assumption made in the DiD-model is often unrealistic in many settings. The assumption (known as the parallel trend assumption) prescribes that DiD provides unbiased ATET when, in the absence of treatment, the outcomes for the treated and control groups would have followed the same trends over time (Abadie,

2005; Stuart et al., 2014; O'Neill et al., 2016). The parallel trend assumption could for example be violated because of quantitative easing by the EU during the time period of this study. This would result in a biased estimation of the causal effects. O'Neill et al. (2016) proposed an alternative assumption: "that potential outcomes are independent of treatment status, conditional on past outcomes". Three methods – alternative to DiD – are the synthetic control method, a lagged dependent variable approach (LDV) and matching on past outcomes (O'Neill et al., 2016). Of these three methods, O'Neill et al. (2016) show that the LDV-method provides the most efficient and least biased estimates for cases in which the parallel trend assumption is violated. Further analysis of the Dutch discount phenomenon could be effectuated via the use of the LDV-method instead of DiD.

7 Concluding Remarks

The purpose of this study is to estimate the effect of the Dutch institutional environment on its listed companies' market values, relative to foreign-listed peer companies. The Dutch discount suggests that Dutch listed companies suffer lower market values – relative to their foreign peers – as a result of a Dutch institutional environment characterized by ATMs. Although the OLS-results inevitably suffer from endogeneity problems and sample biases, the model itself provides a rather simple approach to investigate the effect of the Dutch institutional environments on its listed companies' values in comparison to foreign samples. In interpreting the results for the OLS-estimation, I conclude that the mere representation of a Dutch listed company in two of my regressions show a significant discount for Dutch listed companies, relative to all foreign listed companies. This OLS-model hints the existence of a Dutch discount and therefore two statistical approaches have been used in this study. The first approach estimates the effect of being a Dutch listed company on market value in comparison to a non-Dutch listed company, based on PSM. The second approach uses DiD in combination with PSM to gain unbiased effect estimates by estimating the ATET for a situation in which the trend over time is the same between the treated and non-treated groups in the absence of the treatment (Stuart et al., 2014). The following conclusions can be drawn from this study.

For my PSM-model without DiD, the comparison between the Dutch and US listed companies suggest both a premium for my proxies PE and shareholder's stock returns as well as a discount for MB and Tobin's Q (Table 19). Therefore, these findings both support and oppose *hypothesis 1,* as I expected Dutch companies to have lower market values on average. In comparing the Dutch and UK samples, my findings indicate a premium for proxies PE and shareholder's stock

returns for Dutch listed companies, relative to UK listed companies (Table 10). These findings directly oppose *hypothesis 2.* When comparing Dutch listed companies with German listed companies, Table 11 also shows a premium for Dutch listed companies. These findings directly oppose *hypothesis 4*, as I expected Dutch listed companies to have lower market values, relative to similar German listed companies. Findings for the comparison between the Dutch and French samples, indicate insignificant estimates (Table 2 in Appendix D). These findings do not provide support for *hypothesis 3*, as I expected Dutch listed companies to have a lower market value in comparison to French listed companies.

Relating to the DiD-model, statistical evidence for the existence of the Dutch discount is either weak and insignificant or opposed because my findings suggest a Dutch premium instead. The PSM model paired with DiD indicates the absence of a Dutch discount for all comparisons with foreign samples. Moreover, my findings indicate the presence of a Dutch premium on Dutch listed companies (Table 12). Estimates for the comparison of the Dutch and US samples indicate a premium on all proxies for market value. Estimates for the UK comparison suggest a premium on proxies PE and shareholder's stock returns for Dutch listed companies.

To the best of my knowledge this study into the valuation of Dutch listed companies, while making use of a cross-country propensity score matching method, has never been done before. Therefore, this study makes a valuable contribution to the academic literature in the realm of cross-country institutional effects on company valuation. Overall, the findings of this study reject my four *hypotheses* and therefore disprove the existence of a Dutch discount. Even though my simple OLS-approach hints the existence of the Dutch discount, both my PSM-models indicate the non-existence of a Dutch discount. Even more so, my findings suggest a premium for the Dutch sample, relative to the common law country samples (US & UK). Therefore, my findings reject and oppose *hypotheses 1 and 2,* and consequently contradicts the findings in the empirical study of La Porta et al. (2002).

A few limitations to this study could render this thesis to have a low validity. For one, a number of governance indicators for the foreign samples could not be incorporated in the model due to data availability. This limitation to my study could result in hidden bias and therefore a lower internal validity. Secondly, the assumption driven adjustments made to the governance indicators in the model can be regarded as a rather questionable approach to solve for missing values for specific years. This approach could render observations for specific years to differ from the real world and thus result in a lower external validity. Although this study is not

without its limitations, the underlying models can be regarded as a valid estimator for market valuation analysis in a cross-country comparison over time. Nevertheless, there still exist opportunities for further enhancements.

Focusing on mostly the Dutch and US samples, future research into the Dutch discount could achieve higher validity when increasing the number of governance indicators as matching variables in the model. The KLD-database together with the CompStat-database can provide a wide set of information on governance indicators for US listed companies (e.g. board independence, gender diversity and additional ATMs in the range of poison pills, blank checked preferred stock, limited ability to amend charters or by-laws and majority vote requirements). The sample for all Dutch listed companies renders itself to be small enough to adequately hand-pick observations for the KLD and CompStat governance indicators. A wider and more complete dataset would enable for more governance indicators in the model that could affect market value. Consequently, any hidden bias will be better controlled for which results in a more valid study. In addition, other matching methods could be used. In this thesis I used nearest neighbor matching as it is widely used and a most reliable matching method in empirical studies (Davies & Kim, 2003). However, other matching methods could indicate different outcomes as the assumptions underlying each method differ. According to Davies & Kim (2003), each matching method should be assessed separately in order to best fit the different sample comparisons. Furthermore, a more elaborating analysis of the Dutch discount phenomenon could be effectuated via the use of the LDV-method instead of DiD for cases in which the parallel trade assumption is violated (e.g. due to quantitative easing by central banks).

Appendix A: Missing Values & Descriptive Statistics

Table 1: Missing values for Dutch sample

Variables	(1) Missing	(2) Total	(3) Missing %
Board Size	589	726	81.13
Staggered Board	595	726	81.96
Golden Parachute	653	726	89.94
Priority Stock	589	726	81.13

Notes: Total denotes the number of observations for 121 Dutch listed companies over a six-year period.

Table 2: Descriptive Statistics for Governance indicators (Eikon Sample)

Variables	(1) Missing	(2) Total	(3) Missing %	(4) Mean	(5) Median	(6) Min	(7) Max	(8) Std. Dev.
Governance indicators								
Board Size	56,644	70,458	80.39	9.703851	9	1	33	2.976165
Staggered B.	57,152	70,458	81.11	.3876447	0	0	1	.4872311
Gold	57,794	70,458	82.03	.7999842	1	0	1	.4000276
Prior. St.	56,650	70,458	80.40	.0624276	0	0	1	.2419393

Notes: This table show the summary statistics for the entire dataset consisting of Dutch, UK, US, French and the German listed companies. Total denotes the number of observations of all firms over a six-year period from the beginning of 2012 to the end of 2017.

Table 3: Descriptive Statistics of the Dutch sample (untransformed)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Min.	Max.	Median	Variance	Skewness	Kurtosis
Dependent								
MB	450	.0182688	-.140667	5.39	.001548	.0692141	19.25922	389.1854
PE	321	27.93213	.4515625	899.75	13.21783	3497.32	11.37504	156.6036
Return	462	3282.534	0	65497.98	107.775	5.66e+07	3.97427	22.42028
Tobin's Q	450	.0042976	.0000133	.9042857	.0007663	.0020822	17.66976	340.3122
Independent								
ROS	459	-.239999	-105.25	2.264242	.0682002	26.86423	-18.6827	371.5515
ROA	470	1.779894	-308.57	196.77	2.48	582.3917	-4.15785	78.27336
DA	474	25.0139	0	446.95	16.64	749.0627	8.042383	120.5682
TA	488	2.93e+07	7	1.17e+09	261593	1.51e+16	6.326534	47.4205
Governance Indicators								
Board Size	492	6.628049	1	14	9	4.808417	.7816934	4.419581
Staggered B.	492	.8313008	0	1	0	.1405254	-1.76936	4.130645
Gold	492	.4613821	0	1	1	.2490148	.1549344	1.024005
Prior. St.	492	.2398374	0	1	0	.1826867	1.218606	2.485

Notes: All variables are untransformed to their natural logarithmic function. This table shows the summary statistics for the Dutch listed companies in my dataset. N denotes the number of observations of Dutch listed companies over a six-year period from the beginning of 2012 to the end of 2017. Gold denotes whether the company has one or other restrictive clauses related to changes of control (compensation plans relating to severance packages and accelerated pay-out). Prior. St. relates to the company having outstanding priority stock with special control rights.

Table 4: Descriptive Statistics of the US sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Min.	Max.	Median	Variance	Skewness	Kurtosis
Dependent								
lnBM	24,948	-6.22462	-18.2542	2.457048	-6.33412	1.155887	.6265723	9.849636
lnPE	14,537	2.176935	-28.9116	19.41186	2.515127	8.81125	-.984401	6.344953
lnReturn	37,231	4.242608	-4.60517	17.15891	4.72473	11.30234	-.667452	3.460634
lnTobin's Q	27,681	-7.17289	-18.7278	4.033355	-7.10171	2.106027	.159534	6.709073
Independent								
lnROS	19,908	-2.09092	-11.9250	5.906587	-1.97427	1.341633	-.703711	6.288461
lnROA	19,285	1.492451	-4.60517	11.61824	1.631199	1.434688	-.024898	6.749676
lnDA	25,177	2.980668	-4.60517	17.7581	3.30064	2.436203	-.891176	7.988538
lnTA	31,886	12.76952	0	21.87239	13.10099	7.939572	-.699814	4.267844
Governance Indicators								
Board Size	15,795	9.209623	1	33	9	6.041721	.8367349	6.584402
Staggered B.	16,582	.4819081	0	1	0	.2496877	.072415	1.005244
Gold	16,920	.9510047	0	1	1	.0465975	-4.17871	18.46165
Prior. St.	17,538	.0289657	0	1	0	.0281283	5.617246	32.55345

Notes: All dependent and independent variables are transformed to their natural logarithmic function. This table shows the summary statistics for the US listed companies in my dataset. N denotes the number of observations of Dutch listed companies over a six-year period from the beginning of 2012 to the end of 2017.

Table 5: Descriptive Statistics of the UK sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Min.	Max.	Median	Variance	Skewness	Kurtosis
Dependent								
lnMB	9,813	-6.54103	-14.2520	.98962	-6.72053	1.199777	.3245599	8.541668
lnPE	5,188	2.105269	-15.5338	13.78166	2.515127	6.523596	-.791306	5.587259
lnReturn	12,355	4.984908	-4.60517	14.70406	4.72473	9.502167	.0824377	3.672739
lnTobin's Q	10,234	-7.11123	-14.6527	1.396657	-7.10171	1.326904	.1407231	8.231518
Independent								
lnROS	6,569	-1.77184	-10.1024	7.494807	-1.97427	2.616984	.4484585	4.57278
lnROA	6,855	1.868788	-4.60517	6.508799	1.631199	1.207619	-1.01427	5.808572
lnDA	7,587	2.533186	-4.60517	12.65524	3.30064	2.61387	-1.09019	6.753676
lnTA	11,569	11.39365	0	21.68127	13.10099	7.044894	.0337334	3.692576
Governance Indicators								
Board Size	2,753	8.588812	2	21	9	6.069962	.7189538	4.024809
Staggered B.	2,635	.0637571	0	1	0	.0597148	3.571081	13.75262
Gold	2,280	.2311404	0	1	0	.1777925	1.27554	2.627003
Prior. St.	2,766	.0694143	0	1	0	.0646193	3.388339	12.48084

Notes: All dependent and independent variables are transformed to their natural logarithmic function. This table shows the summary statistics for the UK listed companies in my dataset. N denotes the number of observations of Dutch listed companies over a six-year period from the beginning of 2012 to the end of 2017.

Table 6: Descriptive Statistics of the French sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Min.	Max.	Median	Variance	Skewness	Kurtosis
Dependent								
lnMB	3,910	1.06955	-11.5871	.5210953	-6.66512	1.06955	.0270032	7.023278
lnPE	2,602	2.400586	-8.92624	12.46844	2.501067	6.345465	-.210527	3.502267
lnReturn	4,941	4.992771	-3.21888	12.88655	4.929787	4.819794	.0406682	3.54646
lnTobin's Q	4,098	-7.57665	-13.2240	2.253395	-7.54559	1.561065	-.429389	7.652704
Independent								
lnROS	2,982	-2.43956	-8.46219	5.033646	-2.50699	1.662413	.3557972	5.457067
lnROA	3,011	1.328718	-3.91202	6.792187	1.465568	1.102095	-.774415	5.250455
lnDA	4,106	2.610073	-4.60517	9.226503	3.006424	2.344173	-2.01294	8.644733
lnTA	4,477	12.05181	0	21.45123	11.71765	7.669636	.4822176	3.079926
Governance Indicators								
Board Size	653	13.16998	4	27	13	13.31615	.5661231	3.540168
Staggered B.	668	.9071856	0	1	1	.0843261	-2.80651	8.876504
Gold	534	.2940075	0	1	0	.2079565	.9042784	1.81772
Prior. St.	678	.0530973	0	1	0	.0503523	3.986152	16.88941

Notes: All dependent and independent variables are transformed to their natural logarithmic function. This table shows the summary statistics for the French listed companies in my dataset. N denotes the number of observations of Dutch listed companies over a six-year period from the beginning of 2012 to the end of 2017.

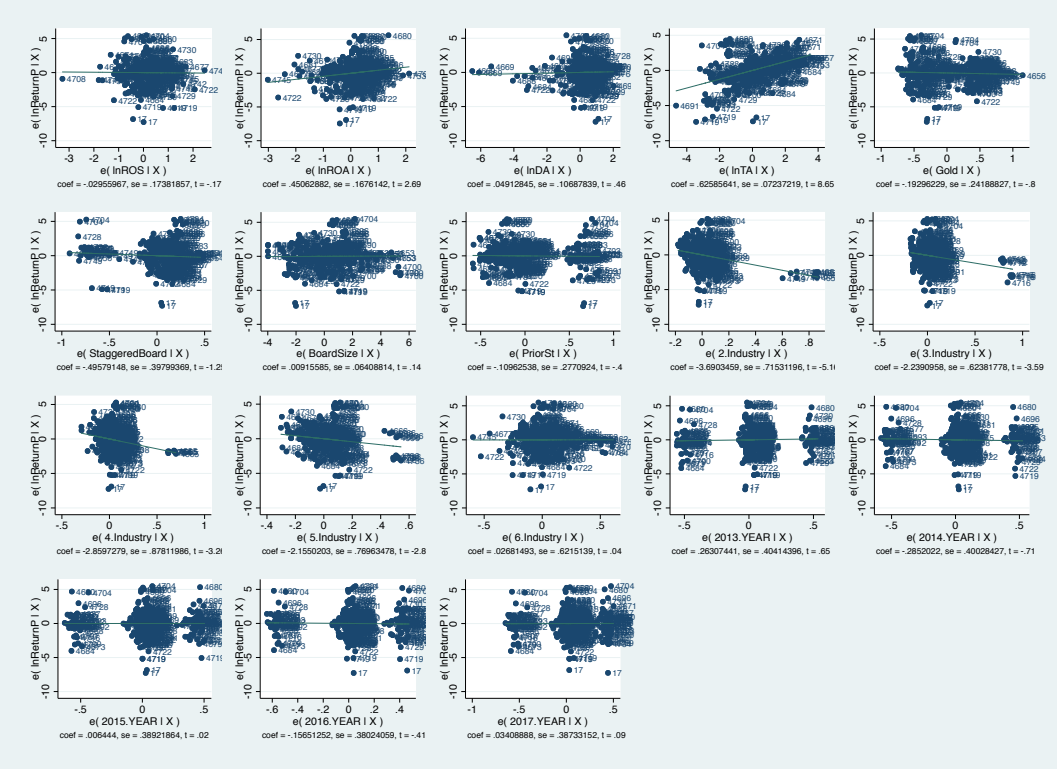
Table 7: Descriptive Statistics of the German sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	N	Mean	Min.	Max.	Median	Variance	Skewness	Kurtosis
Dependent								
lnMB	3,892	-6.50746	-3.08645	12.78515	-6.54848	1.002064	.2134426	11.10652
lnPE	2,914	2.739902	-8.83183	10.84934	2.909621	2.697708	-1.68095	10.58336
lnReturn	5,703	3.770484	-4.60517	14.6663	4.302442	8.572344	-.722452	3.430874
lnTobin's Q	4,068	-7.42297	-15.1983	-.003665	-7.32979	1.484937	-.808977	8.071095
Independent								
lnROS	3,180	-2.29357	-8.22650	7.463424	-2.40236	2.117552	1.130609	9.020654
lnROA	3,173	1.484667	-4.60517	8.564451	1.656322	1.300111	-1.01605	6.432893
lnDA	3,333	2.634836	-4.60517	8.212964	3.054473	2.549584	-1.84584	7.353539
lnTA	4,385	11.8153	.6931472	21.41872	11.62459	8.047204	.3013994	3.343915
Governance Indicators								
Board Size	730	12.76438	2	30	12	27.06649	.1284097	2.212581
Staggered B.	644	.1909938	0	1	0	.1547555	1.572214	3.471857
Gold	612	.5408497	0	1	1	.2487377	-.163947	1.026879
Prior. St.	726	.0743802	0	1	0	.0689427	3.244195	11.5248

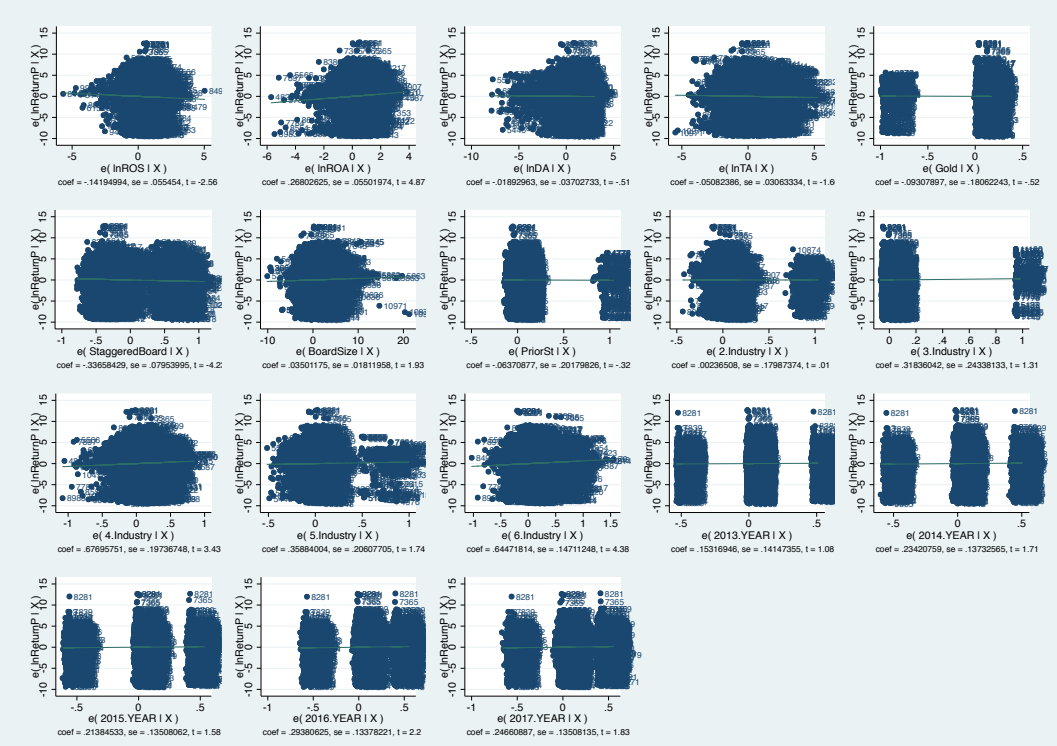
Notes: All dependent and independent variables are transformed to their natural logarithmic function. This table shows the summary statistics for the Dutch listed companies in my dataset. N denotes the number of observations of Dutch listed companies over a six-year period from the beginning of 2012 to the end of 2017.

Appendix B: Graphical Plots

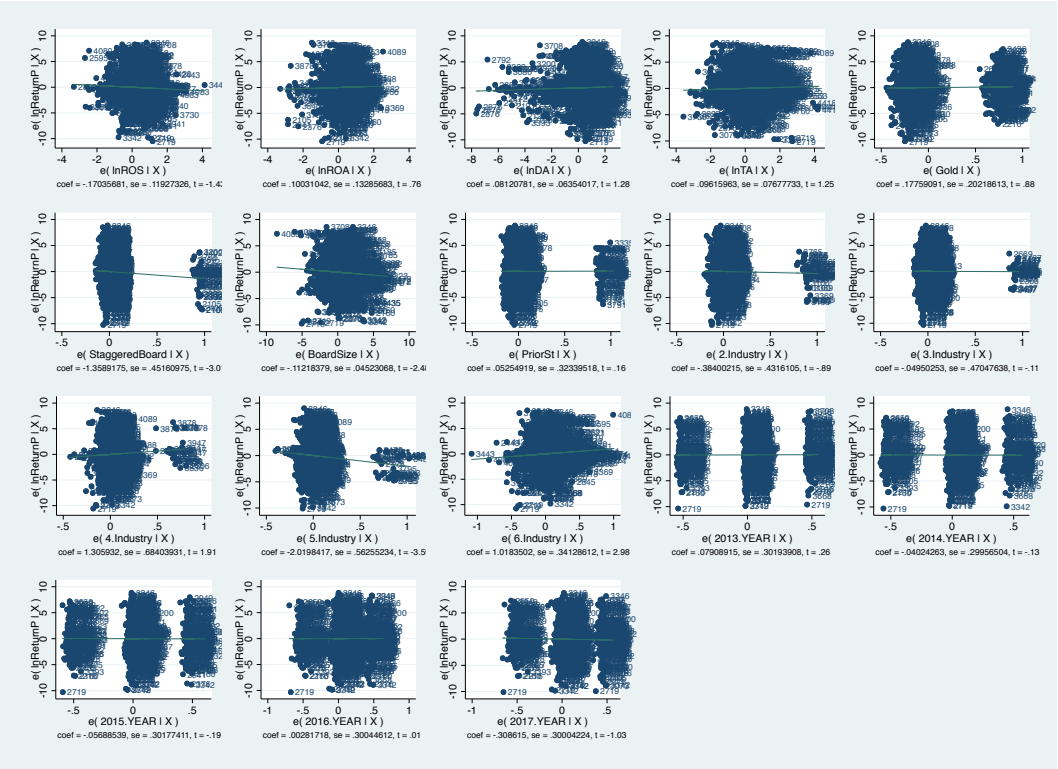
Graph 1: Dutch sample Shareholder's Returns



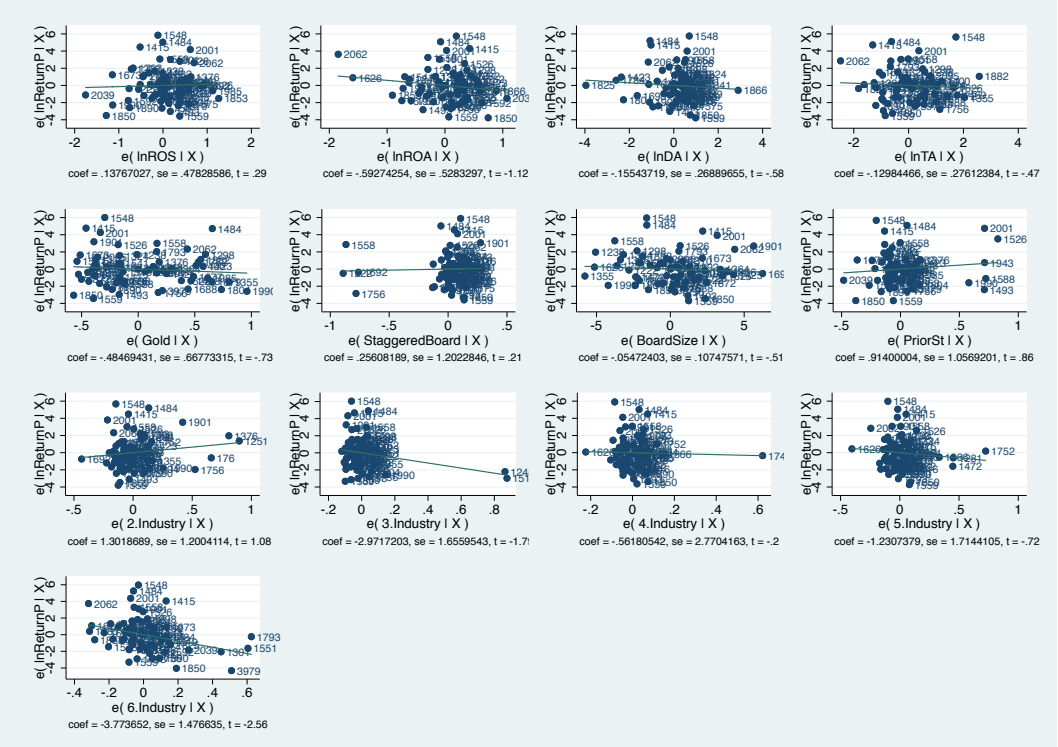
Graph 2: US sample Shareholder's Returns



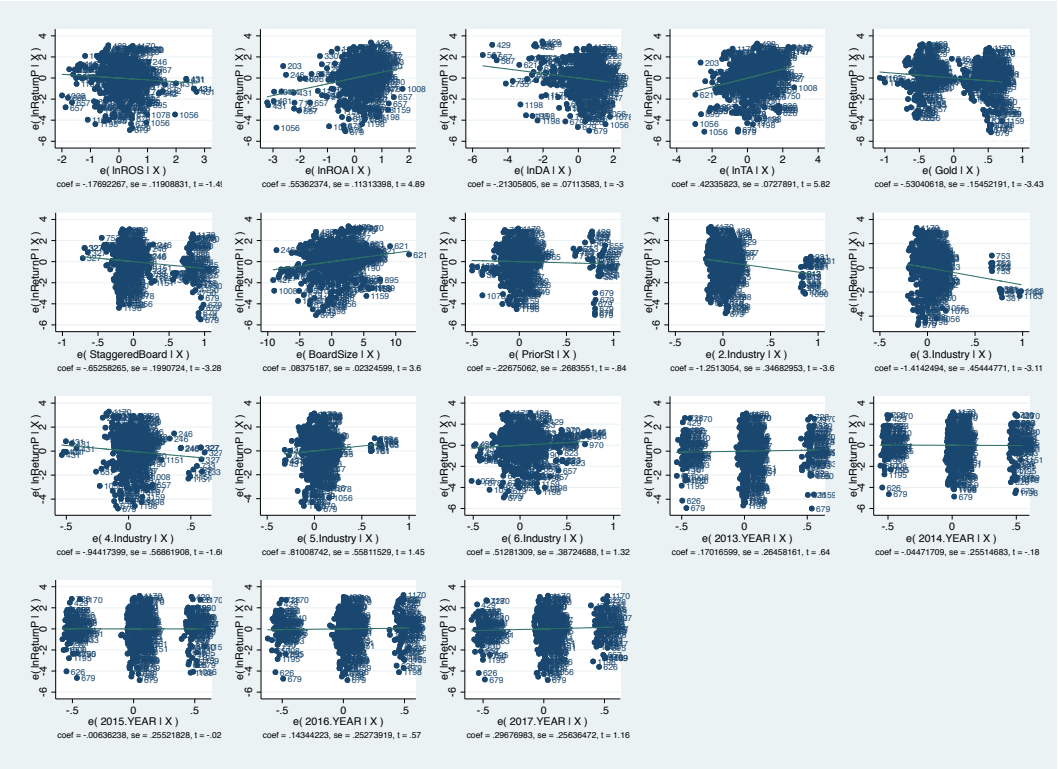
Graph 3: UK sample Shareholder's Returns



Graph 4: French sample Shareholder's Returns



Graph 5: German sample Shareholder's Returns



Appendix C: Value Inflation Factor (VIF)

Table 1: Value Inflation Factor

	(1) lnBM		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	VIF	**1/VIF**	**VIF**	**1/VIF**	**VIF**	**1/VIF**	**VIF**	**1/VIF**
lnROS	2.04	0.489560	2.11	0.473210	2.04	0.489311	2.03	0.491969
lnROA	2.24	0.446246	2.41	0.414819	2.19	0.456919	2.24	0.446328
lnDA	1.23	0.813600	1.20	0.832971	1.21	0.827174	1.22	0.818506
lnTA	1.77	0.564137	1.80	0.556190	1.76	0.567212	1.76	0.568390
Board Size	1.59	0.629295	1.58	0.631248	1.58	0.633612	1.58	0.631468
Stag. Board	1.10	0.909311	1.10	0.905962	1.10	0.908840	1.10	0.911223
Gold	1.06	0.945100	1.07	0.935666	1.06	0.941862	1.06	0.944591
Prior. St.	1.04	0.964352	1.04	0.963218	1.04	0.963200	1.04	0.965565
Mean VIF	**1.51**		**1.54**		**1.50**		**1.50**	

Notes: Left out of this table are dummy variables for industry, year and country. The country dummy denotes a 1 for all Dutch listed companies and a 0 for all foreign listed companies. In assessing this table, I interpret a VIF above 5 as critical and problematic. Consequently, in assessing the TOL-values (1/VIF), I interpret a TOL-value under 0.2 as problematic.

Appendix D: PSM Estimates

Table 1: Dutch sample compared to the entire foreign sample with imputation adjustments

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET	-.23467139	-.17815530	.523506203	.477981585	1.55596984	1.58313872	-.32301569	-.26796874
	(-3.79)***	(-3.73)***	(4.36)***	(5.69)***	(6.22)***	(8.77)***	(-4.32)***	(-4.26)***
N-control	12,874	12,874	12,874	12,874	12,874	12,874	12,874	12,874
N-treatment	475	475	475	475	475	475	475	475

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group. ATET shows the average treatment effect for the treated (Dutch listed companies) in my main (transformed) model.

Table 2: Dutch sample compared to the French sample

	(1) lnMB		(2) lnPE		(3) lnReturn		(4) lnTobin's Q	
	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*	1:1 *NN-m*	1:5 *NN-m*
ATET	-.15617749	-.17834893	-.68943851	-.96895351	.502525796	.447084052	-.19296588	-.10905157
	(-1.00)	(-1.45)	(-1.00)	(-1.74)	(1.13)	(1.09)	(-1.16)	(-0.64)
N-control	329	329	243	243	331	331	342	342
N-treatment	163	163	177	177	149	149	157	157
ATET-*IA*	-.12907554	-.21986876	-.06560344	-.22481891	.331110388	-.14529271	-.2542341	-.22479677
	(-0.75)	(-1.67)	(-0.20)	(-0.79)	(0.62)	(-0.34)	(-1.05)	(-1.10)
N-control	395	395	395	395	395	395	395	395
N-treatment	225	225	225	225	225	225	225	225

Notes: The first number in each cell denotes the regression coefficient. The values in parentheses beneath each coefficient are the absolute t-values. *, **, *** indicate the significance at a 5%, 1% and 0.1% level, respectively. N-control denotes the number of control observations available within common support thresholds that can be matched on. N-treatment denotes the number of treatment observations that will matched on. 1:1 (one-to-one) NN-m and 1:5 (one-to-five) NN-m denotes the number of nearest neighbor matches per observations in the treatment group. ATET shows the average treatment effect for the treated (Dutch listed companies) in my main (transformed) model. ATET-*IA* shows the average treatment effect for the treated in the model with imputation adjustments made.

Bibliography

Abadie, A., (2005). Semiparametric Difference-in-Differences Estimators. *Review of Economic Studies,* 72(1), 1-19. Retrieved from https://economics.mit.edu/files/11869.

Abidin, Z., Kamal, N., & Jusoff, K., (2009). "Board structure and corporate performance in Malaysia". *International Journal of Economics and Finance,* 1(1), 150-164.

Abor, J., (2007). The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *Journal of Risk Finance,* 6, 37-48.

Allen & Overy (2019). A guide to public takeovers in Germany. Retrieved from http://www.allenovery.com/SiteCollectionDocuments/Guide%20to%20public%20takeovers%20in%20Germany%20(email).pdf.

Allison, P.D., (2010). *Missing data.* Thousand Oaks, CA: Sage. Retrieved from https://statisticalhorizons.com/wp-content/uploads/Allison_MissingData_Handbook.pdf.

Assink, B.F., & Slagter, W.J., (2013). *Compendium Ondernemingsrecht,* Deventer: Kluwer.

Bhagat, S., & Black, B.S., (2002). The Non-Correlation between Board Independence and Long-Term Firm Performance. *Journal of Corporation Law*, 27, 231-273.

Bauer, R., Guenster, N., & Otten, R., (2003). Empirical evidence on Corporate governance in Europe: The effect on stock returns, company value and performance. *Journal of Asset Management*, 5 (2), 91-104.

Black, B. (2001). 'Does Corporate Governance Matter? A Crude Test Using Russian Data', *University of Pennsylvania Law Review,* 149, 2131–2150.

Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V., (2001). Capital Structures in developing countries. *Journal of Finance,* 1, 87-130.

Bruno, S., & Ruggiero, E. (Eds.), (2011). *Public companies and the role of shareholders, National models towards global integration.* Deventer: Kluwer.

Bryson, A., Dorsett, R., & Purdon, S., (2002). The use of propensity score matching in the evaluation of active labour market policies, LSE Research Online Documents on Economics, *London School of Economics and Political Science, LSE Library,* Retrieved from https://EconPapers.repec.org/RePEc:ehl:lserod:4993.

Cahn, A., & Donald, D. (2018). Comparative company law: *Text and cases on the laws governing corporations in germany, the uk and the usa* (second ed.). Cambridge, United Kingdom: Cambridge University Press.

Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys, 22*(1). 31-72.

Capon, N., Farley, J., & Hoenig, S., (1990). Determinants of financial performance: a meta-analysis. *Management Science,* 36(10), 1143-1159.

Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance. *Corporate Governance: An International Review*, 18(5), 396–414.

Coates, J., "Takeover Defenses in the Shadow of the Pill: A Critique of the Scientific Evidence," Texas Law Review, 79(2), 271-382.

Cohen, A., & Wang, C., (2013). How do Staggered Boards Affect Shareholder Value?: Evidence from a Natural Experiment. *Journal of Financial Economics,* 110(3), 627-641.

Comment, R., & Schwert, G. W. (1995). Poison or placebo: Evidence on the deterrence and wealth effects of modern anti-takeover measures. *Journal of Financial Economics,* 39, 3-43.

Cook, R.D., (1977). Detection of Influential Observations in Linear Regression. *Technometrics,* 19(1), 15-18.

Crosson, S., Belverd E., Needles, B., & Powers, M., (2008). *Principles of accounting*. Boston: Houghton Mifflin.

Davies, R., & Kim, S., (2003): "Matching and the Estimated Impact of Interlisting," Discussion Paper in Finance, 2001(11), ISMA Centre, Reading.

Davies, P., Hopt, K.J., Nowak, R., Solinge, G. van (Eds.), (2014). *Corporate boards in law and practice. A comparative analysis in Europe*, Oxford 2013.

DeAngelo, H., & Rice, E.M. (1983). "Anti-takeover charter amendments and stockholder wealth." *Journal of Financial Economics,* 11, 329-259.

De Brauw, C., (2017). *Overnames van beursvennootschappen, Serie vanwege het Van der Heijden Instituut, nr. 143,* Deventer: Kluwer.

De Jong, A., DeJong, D. V., Mertens, G. & Wasly, C. E. (2001) 'The Role of Self-Regulation in Corporate Governance: Evidence from the Netherlands', *Journal of Corporate Finance*, 11(3), 473-503.

Duffhues, P., & Kabir, R., (2008). Is the pay-performance relationship always positive? Evidence from the Netherlands, *Journal of Multinational Financial Management*, 18, 45-60.

Dutch corporate governance code, Principles of Good and best practice provisions, December 2016, The corporate governance committee. Retrieved from https://www.mccg.nl/?page=5178.

Drobetz, W., Schillhofer, A., & Zimmermann, H, (2004) 'Corporate Governance and Expected Stock Returns: Evidence from Germany', *European Financial Management*, 10, 267–293.

Elliott, B., & Elliott, J., (2005). Financial Accounting and Reporting (9 edition), UK: Financial Times Prentice Hall.

Fama, E., & French, K., (2002). Testing trade-off theory and pecking order predictions about dividends and debt. *Review of Financial Studies,* 15, 429-444.

Fugro annual report, (2017). Retrieved from https://static.beursgorilla.nl/pdf//jaarverslagen/fugro-jaarverslag-2017.pdf

Fricke, H. (2017), Identification Based on Difference-in-Differences Approaches with Multiple Treatments. *Oxford Bulletin of Economics and Statistics*, 79(3), 426-433.

Garrido, M.M., Kelley, A.S., Paris, J., Roza, K., Meijer, D.E., Morrison, R.S., & Aldridge, M.D, (2014). Methods for constructing and Assessing Propensity Scores. *Health Services Research.* 49(5), 1701-1720.

Garvey G., & Hanka, G. (1999). "Capital structure and corporate control: the effect of anti-takeover statutes on company leverage." *Journal of Finance*, 54, 519-546.

Gillan, S.L., (2006). Recent Developments in Corporate Governance: An Overview. *Journal of Corporate Finance*, 12(2006), 381-402.

Ginneken, M.J. van, (2010). *Vijandige overnames; De rol van de vennootschapsleiding in Nederland en de Verenigde Staten*, Deventer: Kluwer.

Gompers, P. A., Ishii, J.L., & Metrick, A., (2003). Corporate Governance and Equity Prices. *The Quarterly Journal of Economics*, 118, 107-156.

Haitovsky, Y., (1968). Missing data in regression analysis. *Journal of the Royal Statistical Society Series*, B(30), 67-82.

Hinkle, D.E., Wiestma, W., & Jurs, S., (2003). *Applied Statistics for the Behavioral Sciences (*5th ed.). Boston, Mass: Houghton Mifflin.

Ho, D., Imai, K., King, G., & Stuart, (2007). Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference. *Political Analysis,* 15(3), 199-236.

Jarrell, G.A., Brickley, J.A., & Netter, J.M., (1988). The market for corporate control: the empirical evidence since 1980. *Journal of Economic Perspectives*, 2(1), 49–68.

Johl, S.K., Kaur, S., & Cooper, B.J., (2015). Board Characteristics and Firm Performance: Evidence from Malaysian Public Listed Firms, *Journal of Economics Business, and Management*, 3(2), 239-243.

Kamerstukken II, 2014/2015. Retrieved from https://zoek.officielebekendmakingen.nl/kst-31789-64.html.

Kakebeeke, P., & Engel, E., (2017). De toverdoos van beschermingsconstructies. *Financieel Dagblad*. Retrieved from https://fd.nl/ondernemen/1196534/de-toverdoos-van-beschermingsconstructies.

Kalsie, A., & Shrivastav, S. (2016). Analysis of Board Size and Firm Performance: Evidence from NSE Companies Using Panel Data Approach. *Indian Journal of Corporate Governance*.

Kaplan, S., & Zingales, L., (1997). Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? *The Quarterly Journal of Economics,* 112(1), 169-216.

Karpoff, J. M., & Walkling, R. A. (1996). Corporate governance and shareholder initiatives: Empirical evidence. *Journal of Financial Economics*, 42, 365-395.

Kumar, T.K., (1975). "Multicollinearity in regression Analysis", The Review of Economics and Statistics. *MIT Press,* 57(3), 365-366.

Labelle, R., Francoeur, C., & Lakhal, F. (2015). To Regulate Or Not To Regulate? Early Evidence on the Means Used Around the World to Promote Gender Diversity in the Boardroom. *Gender, Work & Organization*, *22*(4), 339–363.

La Porta, R., Lopez-de-Silanes, & F., Shleifer, A. (2008). "The economic consequences of legal origins." *Journal of Finance,* 46, 285-332.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny R. (2002). "Investor Protection and Corporate Valuation". *The Journal of Finance*, 3(58), 1147-1170.

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., & Vishny, R., (1999). Investor protection and corporate governance. *Journal of Financial Economics*, 58(2000), 3-27.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R., (1997). Legal determinants of external finance. *Journal of Finance,* 52, 1131-1150.

Little, J.A., Rubin, D., (2019). *Statistical Analysis with Missing Data*, 3rd Ed, Wiley. Retrieved from https://b-ok.cc/ireader/4978566.

Mahoney, J.M., & Mahoney J.T. (1993). "An empirical investigation of the effect of corporate charter anti-takeover amendments on stockholder wealth." *Strategic Management Journal*, 14(1), 17-31.

Margaritis, D., & Psillaki, M., (1993). Capital structure, equity ownership and firm performance. *Journal of Banking and Finance,* 34(3), 621-632.

Masa'deh, R., Tayeh, M., Jarrah, I., & Tarhini, A., (2015). Accounting vs. Market-based Measures of Company Performance Related to Information Technology Investments. *International Review of Social Sciences and Humanities.* 9(1). 129-145.

Molenaar, J., (2017). Beleggers vrezen de 'Dutch discount'. *Financieel Dagblad.* Retrieved from https://fd.nl/beurs/1203074/beleggers-vrezen-de-dutch-discount.

Olffen, M. van, (2000). *Beschermingsconstructies in de 21ste eeuw, Serie vanwege het Van der Heijden Instituut, nr. 64,* Deventer: Kluwer.

O'Neill, S., Kreif, N., Grieve, R., Sutton, M., & Sekhon, J.S., (2006). Estimating causal effects: considering three alternatives to difference-in-differences estimation. *Health Services & Outcomes Research Methodology,* 16, 1-21. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4869762/.

Overkleeft, F.G.K., (2017). *De positie van aandeelhouders in beursvennootschappen, Uitgave vanwege het instituut voor Ondernemingsrecht, nr. 103.* Retrieved from https://www.navigator.nl /document/ id07e28bd4762e4ae3809e6a083c1eb57e?ctx=WKNL_CSL_2402.

Passes, A., (2012). *Rethinking corporate governance. The law and economics of control powers.* London: Routledge.

Papadopoulos, K., Kalb, R., Valderrama, A., & Sorhaindo, J., (2018). U.S. Board Study: Board Accountability Practices Review. *Institutional Shareholder Services (ISS).* Retrieved from https://www.issgovernance.com/file/publications/board-accountability-practices-review-2018.pdf.

Petrova, M., & Shafer, T.M. (2019). Post-Acquisition Performance: A Propensity Score Matching Approach.

Richard, O. C. (2000). Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of Management Journal*, 43(2), 164–177.

Roosenboom, P., & Van der Groot, T., (2005). The effect of ownership and control on market valuation: Evidence from initial public offerings in The Netherlands. *International Review of Financial Analysis*, 14(1), 43-59.

Rosenbaum, P., & Rubin, D., (1983). The central role of the propensity score in observational studies for causal effects, *Biometrika,* 10(1), 41-55.

Salteh, H., Ghanavati, V., & Khosroshahi, M., (2009). Capital Structure and Firm Performance: Evidence from Tehran Stock Exchange.

Shadish, W.R., Cook, T.D., & Campbell, D.T., (2002). *Experimental and Quasi-experimental Designs for Generalized Causal Inference.* Boston: Houghton Mifflin.

Schafer, J.L., & Kang, J., (2008). Average causal effects from nonrandomized studies: a practical guide and simulated example. *Psychological Methods,* 13(4), 279–313.

Schwert, G. (2000). Hostility in takeovers: In the eyes of the bidder? *Journal of Finance*, 55, 2599-2640.

Siems, M., & Cabrelli, D. (Eds.), (2018). *Comparative company law: A case-based approach* (2nd ed.). Oxford: Hart.

Smith, J., & Todd, P., (2001). Reconciling Conflicting Evidence on the Performance of Propensity Score Matching Methods. *The American Economic Review,* 91(2), 112-118.

Solinge, G. van, Nieuwe Weme, M.P., & Maeijer, J.M.M., (2009). *Asser 2-IIa NV en BV- Oprichting, vermogen en aandelen.* Retrieved from https://www.navigator.nl/ document / inodf fbc201 c98cc2 df65 dc99ef d2 27 aa 8ed?ctx = WKNL_ CS L_1235.

Shipman, J., Swanquist, Q., & Whited, R., (2017) Propensity Score Matching in Accounting Research. *The Accounting Review,* 92(1), 213-244.

Stickney, C., (1996). Financial Reporting and Statement Analysis: A Strategic Perspective, Fort Worth, Texas: Dryden Press.

Stuart, E.A., Huskamp, H.A., Duckworth, K., Simmons., J., Song, Z., Chernew, M., & Barry C.L., (2014). Using propensity scores in difference-in-difference models to estimate the effect of policy change. *Health services & outcomes research methodology*, *14*(4), 166–182.

Timmermans, R., (2017). *Bescherming van beursvennootschappen door uitgifte van preferente aandelen*, *Serie vanwege het Van der Heijden Instituut, nr. 147.* Deventer: Kluwer.

Vandenberghe, V., & Robin, S., (2004).Evaluating the effectiveness of private education across countries: a comparison of methods. *Labour Economics*, 11(4), 487-506.

Walton, P., (2000). Financial Statement Analysis: An International Perspective, London: Business Press.

Yoo, W., Mayberry, R., Bae, S., Singh, K., Peter He, & Lillard, J.W., Jr (2014). A Study of Effects of Multicollinearity in the Multivariable Analysis. *International Journal of Applied Science and Technology,* 4(5), 9-19.