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Private Benefits of Control in the Technology, Media and Telecommunication Sector

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ABSTRACT

Recent literature suggests that private benefits of control are higher in the media industry than else where, as, at least inderctly, the controlling shareholders of a media company have the power to direct information. But with the explosion of the New Media, which established a new way of sharing communication&information, the landscape of the industry has been clearly revoluzionaized. The purpose of this paper is to analyze the private benefits of control in the enlarged Technology, Media and Telecommunication sector by analyzing the dual class share structure adopted by 69 companies over the last 18 years. In particularl, this paper will show that the voting premium has been falling and experiencing some abnormal breaks during the period. As showed in the second part of the analysis, among the 20 factors analyzed, liquidity, development of the financial markets, regulatory quality and investor protection are the best determinants of this phenomenon.

Keyworkds: Private Benefits of Control, TMT, Structural Breaks, Factor model

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Introduction

For many years economists have been concerned by the so called “agency problem”, by which in big corporations there are conflict of interest arising from the separation of security ownership from the firm’s investment and financing decision (Lease, McConnel, Mikkelson, 1983). Indeed, as noted by Adam Smith in 1776 and then reinforced by the following literature,

“*the directors of a company, being the managers rather of the other people money then of their own” will always have an incentive it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own.”*

Adam Smith

But even if these costs are real and their level could depend, among other factors, from the statutory regulation and the common law (Jensen, 1976) (which are factors *as themselves* not under the control of the common investors), it should to be noted that it is usual to see large premia attached to the estimated value of private companies or to takeover valuations, in order to reflect the professed “value of control” (Damodaran, 2005). That is because, as also noticed by Zingales (1995), corporate shareholders who hold large blocks of shares seem to have always been experiencing disproportionate amount of benefits. In contrast to the financial gains deriving from the ownership of a company (dividends, capital gains, synergies premia during a takeover) which are usually proportionate to the fraction of possession, there are also “non-financial benefits” deriving, on one hand, from the possibility to actually govern the company, for example by influencing, and even changing, the management (Damodaran, 2005) and, on the other hand, from the mere possibility of gaining “fame and influence” (Djakonov, McLiesh, Nenova, Shleifer, 2003).

"Who controls the past controls the future. Who controls the present controls the past."

George Orwell

These words, pronounced by Winston while reading a political slogan of the Party in the worldwide famous British novel *1984*, refer to the power of Media on society, and even if written in the first half of the 20th Century, are even more true and relevant in the present day. In fact media not only provides information, but exposes it to the public and it is able to influence public opinion by changing the way in which news are presented. And although there has always been large disagreement for who should control the media, and yet their power, there has been a common agreement on the fact that because of this intrinsic characteristic of such industry the private benefits of control must be considerably higher than in other industries (Djankov et al, 2003).

In addition, while in Orwell's times the sector was structured with giant newspapers and radio companies controlling the overall information, at the present time we are experiencing the acceleration of globalization and the consequential explosion of the Internet and the "New Media", having the characteristics of being manipulated, networkable, dense, compressible and interactive (Flaw, 2008). This change has led to the rise of a new form of socialized communication, "the mass self-communication" (Castells, 2007), that in turn brought to a revolution of the media sector which has become deeply and intrinsically interconnected with such sectors as Technology and Telecommunications (Google could indeed be the perfect example of firm which operating in all three areas).

The purpose of this paper is to analyze the evolution of these Private Benefits of Control (from here also defined as "PBoC", or as more commonly defined voting

premium, “VP”), in the Telecommunication, Media and Technology sector (from here “TMT”), and to investigate are the determinants driving the process.

In particular, the TMT sector shows the highest number of corporates with a “dual-class share structure”, meaning two classes of shares usually carrying the same financial rights (and the dividends are often similar if not identical), but with one class usually carrying more votes than the other. Therefore, among the different possible methods present in the literature to study the voting premium, this paper studies the price difference between the higher voting rights class and the lower one, considering it as a quantitative proxy of the benefits of control for each firm. Similar research can be found either at a global or regional level (Valero, 2008 or Muravyev, 2011) or at a narrow-sector level (Herter, 2012), but never, the best of my knowledge, have the two studies (across time and across factors) yet been performed on such a wide sample. Specifically the purpose of investigation is to analyze the change over time of the voting premium with the intention of identifying possible structural breaks (i.e. point of change) which could have been caused for example by the introduction of the new media business model, or by the dot-com bubble or again by an economic crisis. But, since the voting premium is calculated using two different securities present on the market, in addition to this time-series analysis, different factors are analyzed in order to have a better understanding of what has been driving this premium over the years. In the choice of these factors, previous literature has been considered, arriving at a sample which varies among liquidity, profitability, corporate structure, micro and macro variables and sector specific indicators.

The importance of understanding this phenomenon (i.e. what the premium is and how it is generated) is especially vital if analyzed from the perspective of the corporate finance choices that have to be faced during the lifecycle of a company,

from beginning to end. As first instance, it has to be noticed that the presence of private benefits in favor of the entrepreneur is now a standard feature of the entrepreneurial financial model when at the beginning of the life of a firm it is needed to raise resources. Examples are Aghion and Bolton (1992), which consider that the owner can have both pecuniary and non pecuniary return while usually the lender is interested in the monetary return only, or Dekel and Wolinsky (2011), who, following the more prominent work of Harris and Raviv (1988) and Blair, Golbe, and Gerard (1989), and focusing on the effect on efficiency of allowing votes to be traded separately from shares, showed that there are parameters for which the separated trading could increase shareholders' profit. Subsequently, if things go well, it is likely that a big established firm decides to raise more cash through an IPO. Also at this stage models that when going public in an environment with poor legal protection of outside shareholders asses the importance of corporate control are now quite common, and, in particular, it has been shown that in countries with better investor protection more funds are raised by the firms (Shleifer and Wolfenzon, 2002). Similarly, the importance of evaluating the magnitude of the voting premium is central not only for the financing decision but also for the investing/disposal decisions, i.e. in the market of corporate control. In fact it is not uncommon that the control shareholders of a company require a premium over the "ongoing" valuation of the firm, which in some parts can represent the synergies but in others just the power to decide. For example, even the EU Takeover Directive, by prescribing that the various specifics of the offers can be class specific, in fact allows a distinction in price for the securities which carry higher voting rights (Takeover Bid Directive, 2004). In addition, Hoffman and Burchardi (1999) also showed how a mandatory bid requirement reduces the potential control value of voting stock by restricting the ratio of control to cash-flow rights. Finally, even at the end of the life cycle, when discussing the

undesirable argument of possible bankruptcy, it has been shown that the PBoC are safeguarded by the choice of long term refinancing vs. the short term one, notwithstanding the greater efficiency of the latter (Benmelech, 2007).

The paper is thus organized as follows. In the second section a summary of the previous literature is presented. In particular both the previous papers on the private benefits of control and the different methods used for their estimation are discussed, with particular attention to the methodology adopted in this one. The following section is devoted to the discussion of the different hypotheses, both on the evolution of the voting premium as well as on its possible determinants. In particular, the reasons for their choices, together with the possible drawbacks, are explained in the chapter. In section number four the methodological approach exploited for the analysis is presented. First the theoretical model used to study the possible structural breaks is defined, followed by the panel-data model adopted to test different hypothesis on the factors. Within chapter five the data collected and used for the analysis are described, together with the critical discussion of the obstacles encountered: the unprecedented sample, containing about 20 different gathered daily factors for 69 companies over 18 years (i.e. 7 million data points) has been manually built, raising the chance of potential pitfalls that may undermine the results. Finally, in section number 6 the results are discussed, while in section number 7 a conclusion is drawn and the possibilities for further studies are introduced.

Literature Review

The underlying topic faced in this paper, i.e. the private benefits of control and their determinants, has been carefully analyzed from many different sides both with a theoretical approach as well as an empirical one. In order to shed some light on the

enormous scope of is body of research the section is organized as follow: firstly an overview on the literature on the voting premium in general is given, followed by a deeper analysis on those papers which consider the dual-class share as cardinal method for their investigation. Then a brief outline on the TMT related works, with particular attention to the New Media, is presented.

Private Benefits of Control

"The power of shareholders to replace the board is a central element in the accepted theory of the modern public corporation […]. This power, however, is largely a myth."
Lucian Bebchuck

"If control allows the entrepreneur to enjoy private benefits, it also allows the VC to enjoy them."
Memeth Barl & Eren Inci

As on many other elaborated matters (and someone could argue even on the less elaborated ones) not everybody agrees, there are different ways of seeing the PBoC which are spread over a wide range. On one side of the spectrum it is possible to find economists who don't agree with an undoubted presence of some benefits deriving from the control of a company and, among them, the quoted Bebchuck is definitely one of the more convincing. In fact in his paper he argues that, not do only more intangible (and less accepted) private benefits of controls do not exist, but specifically that the power of the control shareholders to change the management of a company is largely overvalued and shouldn't be represented in a premium over "common" shareholders. As supportive proofs to his statement, he shows that the incidence of electoral challenges within companies has been very low during the 1996-2005 decade and that the defensive tactics available to the board (which may even act without judicial review for its action) lower the remaining "control power" (Bebchuck, 2006). Instead, on the other hand of this range of opinions, it is possible to find firm

supporters of the presence of PBoC, among whom there are even those who think that the control of the firms not only allows entrepreneurs to derive private benefits, but it also allows other controlling parties to do so. This is the view of Barlo and Inci (2010), who demonstrated that, all in strict Nash Equilibria, entrepreneurs who value private benefits more often choose banks than venture capitals, since the former are passive loan providers while the latter usually assume considerable control of the firm in their portfolio, which not only enhances their profits (Barlo and Inci, 2010) but also enhances their reputation in fund-raising and their probability of attracting promising projects (Gompers, 1996).

The present paper would probably place itself in the middle of the assortment, as, starting from the fundamental agency theory, it develops around the hypothesis that these benefits are present and investigates how they manifest in the markets and what their drivers are. In fact the PBoC, usually defined as "influence over who is elected on the Board of Directors or in the CEO position, the power to build business empires, and the ability to transfer assets on nonmarket terms to related parties or consume perquisites at the expense of the firm" (Nenova, 2002) or "non-financial benefits, such as fame and influence" (Djakonov et al, 2003), have been proven to exist with different approaches and data, even from a legal perspective (Dodd and Warner, 2003; Johnson et al., 2000). But with regard to financial approaches to the issue, two methods have been identified within the literature: study of block trades and study around the companies which present a dual or multiple class shares structure.

The pioneers of the former methodology were Barclay and Holderness (1989), who, by analyzing 63 blocks trades at the turn of the eighties, found that these blocks were typically priced at substantial premiums to the post-announcement date. The premium found, with an average of 20%, that benefits are not distributed

homogenously to shareholders in proportion to their holdings, but are instead secured by the large-block shareholders thanks to their voting power. It has also been shown to be directly proportionate to some factors such as firm size, performance, leverage and cash holdings. With the same approach, it has also been demonstrated that the control premium is higher in “market oriented” countries with respect to the “bank oriented” ones (i.e. UK & Canada vs Japan, France, Italy and Germany) and that it is usually higher in “domestic transactions” than in “cross-border transactions” (Hanouna, Sarin and Shapiro, 2001). Similar studies suggest also that higher PBoC are associated with less developed capital markets and more concentrated ownership, and that other dominating factors are legal and extra-legal mechanism of investor protection, tax enforcement and media pressure (Dick and Zingales, 2004). Specifically the latter has more been deeply analyzed by Giannetti and Braggion (2013), whose results, even if achieved by applying a different methodology, suggest that negative news coverage is followed by a reduction in the voting premium (i.e. lower return for voting shares than for non-voting shares). In terms of figures, while Hanouna et al. (2001) found a 30% average premium for the US, Dick and Zingales (2004) found a 14% average across 39 countries, but within a range spanning from a +65% to a -4%. In particular the last negative evidence is interesting, as far as it means that, as previously pointed out by Lease et al. (1981), there are also costs to corporate control. In addition, two subsequent modifications of the B&H model are worth mentioning. The first one was proposed by Albrquerque and Schroth (2008), who following the theoretical work of Burkart, Gromb and Panunzi (2000), found evidence that the occurrence of block premia and block discounts depends on the controlling block holders’ ability to fight a potential tender offer for their targeted stocks. They also assessed US average PBoC between 3.2% and 3.7% of firm’s equity value, close to the average of 4% estimated by the two

predecessors. The second modification was proposed by Barak and Lauterbach (2010) in order to extend the methodology to partial control-transfer block trades and to account for buyers' previous holdings in the company.

The bridge between B&H and the other diffused methodology (i.e. about the analysis of dual-class share structure) is then provided by the work of Dittman (2004). Studying a sample of German companies, he showed that the block-trading methodology stumbles in some gaps where the takeovers are not frequent and too small, and that they are more likely to target only voting shares rather than also non-voting shares, so that takeover premia evidently not only mirror the voting premium but also other factors. This is one of the reasons for why the second methodology has been chosen to address the questions raised in this paper, and it will be now more deeply discussed in the following section.

Dual-Class Share Structure

"According to standard financial theory any two securities that provide identical payoffs (i.e. identical future consumption opportunities) in all states of nature must have equal current value, whether markets are perfect or imperfect, complete or incomplete or whether investors have homogenous or heterogeneous beliefs."

Ronal C. Lease

But do Lease's arguments still hold after many studies, such as DeAngelo and DeAngelo (1985), Meggison (1990), Zingales (1995) have found that superior voting shares usually trade at a premium? All else being equal, meaning identical rights for future dividends and capital distribution, as well as same seniority in case of liquidation, except for the number of votes attached shouldn't be that premium be a sort of reflection of future private benefits? In fact the first evidence of the violation of the rule one share-one vote can be traced back to ancient Rome, when the *res-publicani* issued different shares to the wealthy people and to the wider public (Chancellor, 1999). A good summary of the theoretical principles behind the violation

of such a rule is provided by Burkart and Lee (2007). They argue that in general the one share-one vote structure is not optimal: deviations mitigate the free-riding problem promoting takeovers, exacerbating the conflict of interest between majority and minority shareholders, and reducing the power and the incentives to extract private benefits at the expense of security benefits (i.e. they are still present but more clearly defined given the presence of two different securities which "recognize" them). The review on the empirical work around the deviation from the one share-one vote structure has instead been presented by Adams and Ferreira (2007). Firstly, it must be noticed that empirical findings are not as homogenous as the theoretical background provided. Actually results vary due to different environments, firms and methodologies, and an example of this is different views on ownership proportionality. Indeed the authors claim that which proxy is used to measure voting rights is critical for the definition of the model, as well as the functional form chose, the set of control variables (e.g. country dummies and investor protection) and the endogeneity concern (fixed vs variable effect)[2]. Specifically, the first remarkable results were found by DeAngelo and DeAngelo (1985) who showed the dual-class structure was optimal in order to allow insiders to maintain the control of the firm while at the same time to raise more capital through a fractioned free float (a median of 56.9% vs. 24% of the common stock cash flows). While Zingales (1995) argued that the difference in the price between the different shares is also partially explained by the probability of a vote to be cardinal in a control's contest and the magnitude of the PBoC obtainable by controlling the company, Kunz and Angel (1996) emphasize the importance of mechanisms for shareholders' protection and of the ownership concentration, finding that because of these factors the average voting premium is higher in the Swiss Market than in the US. Subsequently, Nenova (2003) had the first

[2] These considerations have been taken into account in the development of the model adopted in the paper.

shot at trying to summarize the previous findings in a complete factor model analysis: with a sample of more than 600 companies in 18 countries she found that law enforcement, investor protection, takeover regulations and corporate charter provision explain around 68% of the variance of the premium, and at the same time introduced a new fundamental factor to be analyzed, liquidity. This was exactly the factor which provided to Neumann (2003) a justification for his results. He found that in Denmark the premium was negative for several firms over a long period, and that the number even tripled during the sample period. Similarly results were found by Ødegaard (2006) when analyzing the companies with a dual-class shares structure listed on the Oslo Stock Exchange. Similar to the Danish market the sample average of the voting premium was also negative in Norway, but when regulatory restrictions on foreign ownership expired, it became positive and more affected by corporate governance mechanisms and liquidity of the securities. Given the increasing importance of liquidity within the literature on PBoC, Lee (2012) decided to focus only on this aspect. And indeed his findings showed that superior voting shares are less liquid than inferior ones, suggesting that information asymmetry between controlling shareholders and outside investors is severe because the former are likely to maintain power. Also, more importantly, his results suggest that the true value of PBoC is larger than the observed value after taking liquidity discount into consideration. Finally, for the sake of the intention of this paper, it is worth mentioning the investigations on the topic conducted by Valero (2008) within the Mexican market, and Herter (2012) within the Media industry. The former, adopting an innovative structural-break model (but with results in line with the above cited work), found that the negative average of the voting premium in one of the five sub-periods analyzed between 1991 and 2004 in Mexico derived from an increased illiquidity of the superior voting shares with respect to the inferior ones. The latter instead

performed a factor model analysis, finding evidence on the importance of liquidity and stock market size as determinants of the voting premium. Both studies have been critically analyzed, exploited and enhanced in order to try to achieve the scope of the present paper.

Media, New Media and TMT

"The fact that everywhere in the world people have seen the last Spielberg's movie or that they dress like Madonna, or that they pull to the basket as Michael Jordan."
Alessandro Baricco

Everyone can admit that in this passage Baricco well describes how "media", in the broadest of definitions, affects our society today. Because, even if the line above directly refers to "globalization", it is beyond doubt that the medium through which the globalization process happens are the media, and especially the "New Media". Indeed the new "one-to-many" style of communication is revolutionizing all industries with a process that has been defined "remediation" (Bolter and Grusin, 2000). The patrons of such idea argue that all the new media achieve their cultural significance precisely by paying homage to, rivaling, and refashioning the early media, in order to approach all aspects of our society. Giant firms as Facebook and Google are becoming at the same time generates and provides of communication and information. And interestingly these two firms, as well as other tech giants such as LinkedIn, Groupon and Zynga have adopted a dual-class share structure when IPO. Why is this becoming so common? Damodaran (2011) in one of his weekly articles noted that the founders of these tech companies decided to use the same technique which has been adopted only by the traditional media companies as the New York Times or the Washington Post: issue ordinary one vote common shares to the public and retain those share with higher voting power. In this way the founders were able to control the company and take advantage of all the private benefit of control

implied. And all of this becomes even more relevant if we consider the argument of Djankov et al. (2003) that PBoC in the media industry "must be considerably higher than those from controlling a firm of comparable size in, say, bottling industry". To have a sense of the significance of these words, it is worth noting that Demsetz and Villalonga (2001), when testing their model to asses if firm performance and ownership were related to the voting premium, they included a dummy variable to control whether the companies were in the media sector or not. They did so in order not to have a distortion in their results since they recognized the uniqueness of the media industry. In fact Demsetz and Lehn (1985) previously had defined the media industry to have what they call "amenity potential", which "refers to the characteristic of the good produced by the firm that allows for creation of non-profit related utility for owners of the firm". In other words, private benefits of control. But clearly the larger voting premium that is now faced in the industry is just the visible outcome of the evolution which the corporate governance of media firm has been going through in the last years. Indeed, given the relevant function and exposure of the media companies to society (DellaVigna and Kaplan (2007) demonstrated a connection between news corporations and public elections), the suitable ownership/management model for these firms has been the center of a large discussion in the literature from the first wave of initial public offerings for media companies which occurred in the 1960s and 1980s (Picard 2005). Basically the debate developed around two schools of thought. Many think that the media market should be a liberal market with ownership dispersed among the public. Gentzkow and Shapiro (2006) argue that competition lowers the biases and increases the quality of information, since it is more difficult for dispersed shareholders to influence or guide the news. Others think instead that, information being a public good, the market should be strictly regulated, and in extreme cases are even theoretically in

favor of a state-run industry in order to maximize the welfare, as for example is happening in China (Lawerence and Martin, 2012). But while the latter is probably on the path of extinction, it is interesting to note that also in some of the most liberal countries, such as Canada and New Zealand (Rosenberg, 208) where companies are required by law to be in the hands of the citizens, the control is still retained by few, through a dual-class share structure. Closing the circle, the supremacy of few controlling shareholders over the multitude translates in higher private benefits.

Hypotheses Development

"Don't confuse hypothesis and theory. The former is a possible explanation; the latter, the correct one. The establishment of theory is the very purpose of science."
Martin H. Fischer

After having analyzed the relevant previous literature, I now present the relevant hypotheses to be tested. First of all, as previously noted, to study the PBoC the analysis is conducted on the firms having in place a dual class share structure, rather than on the block trades. The main reason is that the time series dimension of the voting premium allows studying it over time and gives the possibility to detected relevant breaking points, which could be then reconnected to some special events. This would clearly be impossible if the analysis had been be conducted throughout the analysis of the premium paid for block trades, which occur at specific points in time and which could hardly tell something about an unusually high or low price. Secondly, with regard to the choice of the TMT industry, many aspects for the choice (example the globalization or the boom of New Media) have been mentioned, but it is worth repeating that the media the industry has historically shown the highest PBoC because of, among of other factors, the power of controlling information. And to understand how wide the media industry is nowadays, it is worth noting that among those who have been classified as the top 30 media companies in the world, we have

diversified technology companies like Google (n1), Yahoo (15) and Facebook (27, Digital Strategy Consulting, 2013).

With these two background assumptions in mind let's now proceed with the development of the time-series and the factors hypotheses.

Hypotheses on the average voting premium as a time series

First of all, clearly the most relevant information the investors would like to know with respect to the voting premium is its size, or better the correspondent monetary value attached to the private benefits of control. It has already been noted that in the industry analyzed the voting premium is demonstrably higher than in other industries, but the theory of market efficiency suggests that as time passes it should lower more and more. In fact given the development of the markets and the increasing choice possibilities for the investors the voting premium should reduce. In fact, following the reasoning of Van Rooij et al. (2011) less informed people tend to invest less in stocks and even less in companies with dual class share structures so that *viceversa* should do it more when are more informed, driving the difference in price of the two classes down. Also given the increasing competition in the market, and the development of a new social media type communication, which is driven by users rather than by owners, the private of benefits of control should be reducing through time.

Hypothesis 1: The average voting premium is expected to be positive within the sector analyzed and it has overall been lowering during the time period analyzed.

But the lowering process shouldn't be expected to be smooth and constant over time until reaching zero. A normal level of premium it is necessary given the fact that the different classes of shares have different intrinsic characteristics (and some of them will be investigated as factors). Consequently it is expected that during the time span analyzed the voting premium has experienced some structural breaks in its "performance" which could have been driven by either internal or external factors. For

example, the quotation of the New Media with such a structure (i.e. Google) could have led to a reshaping of the industry, or the issuance of new regulation could have seriously affected the premium traded.

Hypothesis 2: There are several structural breaks in the voting premium average process over the time span investigated, possibly caused by either internal or external factors.

Hypotheses on the determinants of the voting premium

Once the development of the private benefits of control over time is understood, it is now convenient to investigate what could have driven this process. In the choice of the determinants to investigate, previous literature as well as new ideas have been taken into consideration. The factors have been divided between company specific factors, i.e. intrinsic characteristic of each security or firm in the sample, and external factors, meaning specific factors for each different country in which the firms in the sample operate.

Firm specific factors

Size of the Firm

As already mentioned in the literature review section, many think that the value of the voting power relays on the fact that there are some shareholders which, as they are in control (e.g. can change the management), will eventually be paid more in the case of a takeover. Lee (2011) and Zingales (1995) argue that bigger firms are more difficult to acquire, so that the value really achievable by the control shareholder is lower.

Hypothesis 3: The bigger the firm, the lower the voting premium

Liquidity of the shares

Liquidity is another common factor analyzed within the previous literature (Lee, 2011; Valero, 2008; Neumann, 2003). In line with what argued in the above paragraph, PBoC generate a monetary value if shareholders are likely to have the chance to benefit from it sooner or later. In the case of dual class shares structures, it means that the shareholders holding the superior voting class must have the possibility to sell their shares, so that the markets will really price the voting premium and reward the control. Consequently, the price of the instrument will be affected not only by this value (and clearly the value of the company itself) but also from the other usual factors that affect market instruments, among which the main one is probably liquidity. In fact a low liquidity will reduce the possibility of the shares to be sold on the market, so that the voting premium will be counterbalanced by a possible liquidity discount on the superior voting class (even becoming negative, Valero, 2008) or enhanced by the discount on the inferior voting one (but is worth noticing that almost always the superior class is the less liquid one). Keeping this in mind and looking at the previous literature, two variables are used to capture the effect, bid-ask spread and turnover, both applied to both the classes. In particular, bid-ask spread is the difference between the price at which the investor can sell it stock to the market maker (ask) and the higher price (bid) at which it can buy from him. Accordingly the higher the spread, the less liquid is the stock. The second one, the turnover ratio, is the ratio between the total number of shares traded over a period of time and the average number of shares outstanding during the period. The higher the ratio the more liquid the stock since it means the investors can sell it on the market quickly and effortlessly.

Hypothesis 4: The wider the bid-ask spread of SV shares, the lower the voting premium

Hypothesis 5: The higher the turnover of SV shares, the higher the voting premium

Hypothesis 6: The wider the bid-ask spread of IV shares, the higher the voting premium

Hypothesis 7: The higher the turnover of SV shares, the lower the voting premium

Free float

The ownership structure clearly affects the size of the PBoC. Indeed if for example the shareholding is much dispersed, the value extractable by the control shareholders (which will probably just have a small advantage in control) is likely to be small in comparison of the value extractable by the main shareholder in a very concentrated structure. Also, as argued by Herter (2012), it is appropriate to assume that when the ownership is highly concentrated, buying inferior voting stocks is less appealing if you don't believe in the abilities of the majority owner. A way to measure the ownership concentration is to look at the free float, which is the percentage of stock directly available on the market and not hold by insiders or institutional investors. A higher free float it is evidence of a less concentrated ownership.

Hypothesis 8: The higher the free float of SV shares, the lower the voting premium

Hypothesis 9: The higher the free float of IV shares, the higher the voting premium

Dividends paid

If in exchange for the lack of control, the shareholders holding the inferior voting class receive higher dividends, then the PBoC for the major shareholders are clearly counterbalanced, so that the voting premium (i.e. the spread) between the two classes will be lower (Lee, 2011). Rephrasing it, the minor shareholders are receiving the corresponding PBoC in actual money, so that the two classes should end up in having the same value.

Hypothesis 10: If the IV shares pay higher dividends than SV shares, the voting premium will be lower

Return on equity

The return on equity ("ROE"), which clearly represents the return a shareholder is experiencing (higher ROE means higher net income, which will probably be reflected in higher future dividends and capital gain appreciation deriving from this), it is also a comprehensive profitability measure which the market looks at to have an idea on how the company is performing with respect to the peers (a better ROE indicates a better performance, i.e. an higher profitability, with respect to competitors). For this reason, while it can be argued that the holders of the IV shares, who usually don't have the power to influence the direction of the company, look at the ROE just as an indicator of their future profitability (higher return of equity will increase the demand of IV shares, thus lowering the voting premium (Herter, 2012)), one could assume that not only the same reasoning could be applicable to the SV class too, but also that an higher ROE is evidence of being a better company to be controlled, hence giving the major shareholders a greater possibility to harvest their PBoC.

Hypothesis 11: The higher the ROE, the higher the voting premium

Leverage

Shareholders being the residual claimants, it can happen that in case of bankruptcy they remain with nothing, with all the residual value going to debt holders. This is the reason why in highly levered companies, the control exercisable by the shareholders is lower. Therefore, following the reasoning of Hoffman (1999), when the leverage is high, even if there is a controlling shareholder, the PBoC are reduced by the dominant position of the lenders, who, gaining from their seniority, are the ones really addressing the direction of the company.

Hypothesis 12: The higher the leverage, the lower the voting premium

External factors

GDP growth

GDP growth it is usually associated with improvements in living standards and overall economic conditions. But it has to be considered that it is usually higher for developing countries rather than for the rich established ones. For this reason, even if used as a control variable for the different countries, it can be associated with a higher activism in the financial markets, making all the instruments more traded. Also, as a country develops, more instruments become available, so that inferior voting stocks result to be less appealing.

Hypothesis 12: The higher the GDP growth, the higher the voting premium

Stocks traded

The relative volume of stocks traded could probably be safely used as a proxy for the overall development of the financial markets. And this development is usually associated (Rooij et al., 2011) with the financial literacy of the investors. As for the fact that the less informed an investor is, the less likely he will invest in complex instruments (and companies with dual class shares structures are clearly more complicated (risky) than the ones with plain vanilla ownership), it is assumable that the prices of two very similar instruments will be fairly similar. Also, as mentioned in the paragraph above, in well-developed financial markets, given the more options available, investors are less likely to invest in restricted shares.

Hypothesis 13: The higher the volume of stocks traded, the higher the voting premium

Corruption

A higher level of corruption is usually associated with a lower degree of transparency within the borders of a country. It is claimable that this lack of regulatory quality would also advantage the controlling shareholders because they would probably be able to extract a higher level of PBoC. An immediate example for the TMT industry is when a major owner of media companies is able to largely affect and address public opinion in order to realize his personal goals.

Hypothesis 14: The higher the level of corruption, the higher the voting premium

Hypothesis 15: The higher the regulatory quality, the lower the voting premium

Voice and accountability

In addition to the variables of the previous paragraph, also the power of the citizens to contribute in the government decision making (e.g. electing their representatives, having the possibility to manifest their ideas) and identify the people responsible for every action is strictly correlated with the degree of action available for the individuals. Clearly as the decision making power is in the hands of few non-identifiable people, the room for the exercise of private power becomes wider.

Hypothesis 16: The higher the level of voice and accountability, the lower the voting premium

Press freedom

With particular attention to the media industry, the freedom of press is undoubtedly a variable to take into consideration. In particular it can be argued that where the freedom of press is higher competition will be higher because more firms will be attracted by the industry. But this will also lower the profit for each player, and therefore (in line with what was claimed in the ROE paragraph) the PBoC should be lower. In addition, it is worth noting that a lower press freedom means higher power

in the hands of the state and less in the hands of the shareholders, who therefore will see reduced their voting premia.

Hypothesis 17: The higher the level of press freedom, the lower the voting premium

Investor protection and governance mechanism

Given the purpose of this paper is to analyze the benefits the shareholders gain from having a demanding influence on the governance of the company (i.e. control), some variables regarding better management practices and minority protections are included in the analysis.

The first one is the disclosure requirements the shareholders are required to fulfill when they operate with their shares. Indeed, it can be thought that some of the PBoC derive from the fact that the majority shareholders can for example exercise control through non-transparent holding structures, or extract some values from market malpractices as white whales or related party transactions. Given this, it is then clear that the holders of the restricted voting share class are protected when the disclosure is higher, because the voting premium extractable is reduced.

Hypothesis 18: The higher the level of disclosure, the lower the voting premium

Together with the previous measures, all the protections of the minority shareholders will affect the PBoC of the major shareholders in a negative way. Example are the mandatory bid, the passivity and the breakthrough rules of the EU Takeover Code, which, together with qualified quorum requirements, limit the power of the of the control/voting shareholders.

Hypothesis 19: The higher the level of investor protection, the lower the voting premium

In addition to the mentioned rules, the possibility for the shareholders to pursue legal ways to defend their rights against other shareholders or against directors (e.g for

their misconduct) is clearly in favor of minorities, which therefore will find some additional protection.

Hypothesis 20: The higher the possibility for shareholders to pursue lawsuits, the lower the voting premium

Finally, with respect to the governance of a company, the systems to align shareholders' and management's interests in order to reduce the principal-agent problem have always been considered central in the financial literature. Foremost among is giving shares to the directors in order to align their interests with the ones of the shareholders. As the liability of the directors increases, the protection of the minority shareholders (assuming that the management is chosen by the controlling investors) increases. In conclusion, it is worth noticing that this *modus operandi* gains additional relevance with respect to the sample analyzed in this paper since, as argued in the introduction, most of the times the superior voting rights class share is retained by the founders of the company who, especially in the early stages, are also the directors.

Hypothesis 21: The higher the director liability for self-dealing, the lower the voting premium

Methodology

"I think you can have a ridiculously enormous and complex data set, but if you have the right tools and methodology then it's not a problem."

Aaron Koblin

In this section, the theoretical background for the model adopted to test the above hypothesis is presented. As previously explained, the investigation regarding the PBoC is carried out by examining the spread between classes of shares with different voting rights, because this method allows both time-series and cross-sectional analysis. For this reason and the goals of the study, two different models

have been chosen: a structural breaks analysis and a panel data model, with factor specified by the author.

Measuring the Voting Premium

Even excluding the block trade methodologies (in which the premium is clearly represented by the difference in the price pay to the majority shareholders for their stakes with respect to the one paid to the minorities), the methodologies adopted in the literature when analyzing dual class share structures vary a little. First was Levy (1982) defining the voting premium ("VP") as:

$$VP = \frac{(P_A - P_B)}{P_B \times (\frac{n_A}{n_B} - 1)} \quad (1)$$

where *A* are the superior voting shares, *B* the inferior, P_A and P_B the two prices and n_A and n_B the different number of votes. Zingales (1995) followed a similar method, with just an adjustment to the denominator:

$$VP = \frac{(P_A - P_B)}{(P_B - rP_A)} \quad (2)$$

where *r* the relative number of votes of an inferior voting share versus a superior voting one.

This percentage device is implemented also in the approach followed by Valero (2208), which is the one adopted in this paper. The voting premium for a firm at time *i* is defined as:

$$VP_{it} = \frac{(P_{it}^{s} - P_{it}^{i})}{(P_{it}^{i})} \quad (3)$$

Where P is the price of superior voting shares and P is the price of the inferior voting shares. Then the average premium for firm i during the period [t_1-t_2] is given by:

$$VP_{i,t_1-t_2} = \sum_{t_1}^{t_2} \frac{(VP_{it})}{(t_2 - t_1)} \quad (4)$$

At this point, two different approaches are taken in order to carry on the analysis. On one hand, in order to prepare the field for the structural break analysis first the weekly average of the daily value per firm is calculated, and then the average for every week across firms, in order to create a consistent time series. On the other hand, for what regards the panel data model instead, the yearly average of the daily value per firm is firstly taken, followed by the average across all years in the sample (this clearly has to do with the fact that while the first analysis is across company, the second is done on a company specific basis thanks to the flexibility of the panel data).

Structural Breaks

As first goal of this paper it is to analyze the voting premium over time, to understand its characteristics and its evolution, and given the large timespan studied, during which many different events could have affected its magnitude a structural break analysis is conducted to the weekly mean of the voting premia, in order to better define the sub-periods to analyze. In particular, taking into consideration the possibility of several breaks, the Bai and Perron (1998, 2003, adopted also by Valero, 2008) methodology is followed, so that the test will by itself identify the number of breaks and their location. Consider the follow multiple linear regressions with *m* breaks (and the dependent variable is allowed to have *m* + 1 regimes):

$$y_t = x_t'\beta + z_t'\delta_j + u_t \qquad t = T_{j-1} + 1, \dots, T_j \quad (6)$$

For $j = 1, \dots, m+1$ and using the convention that $T = 0$ and $T_{m+1} = T$.

A special case of the general pure structural breaks model is adopted. Consider the follow linear regression with *m* breaks (*m* + 1 regimes):

$$y_t = z_t\delta_j + u_t \qquad t = T_{j-1} + 1, \dots, T_j \quad (7)$$

For $j = 1, \dots, m+1$. In the empirical application the y_t is the dependent variable at time t, u_t is the disturbance term at time t; (T_1,…, T_m) are the break points which are treated as an unknown. The purpose is then to estimate the unknown regression coefficients δ, together with the break points $(T_j)s$. The method of estimation considered is that based on the leas-square principle. For each set of break dates (T_1,…, T_m), the associated least-square estimate of δ_j are obtained by minimizing the sum of squared residuals

$$S_T(T_1, \dots, T_m) = \sum_{i=1}^{m+1} \sum_{t=T_{i-1}+1}^{T_i} [y_t - z_t' \, \delta_i]^2. \quad (8)$$

In the present paper, given the interest only in the mean of the voting premium series, the model only has a constant as a regressor, $\{z_t\} = 1$, becoming

$$y_t = z_t \delta_j + u_t \qquad t = T_{j-1} + 1, \dots, T_j \quad (9)$$

For $j = 1, \dots, m+1$. Then to decide whether or not structural breaks exist and to determine the number of structural changes, BP (and Valero) proposed three different tests.

The first one is a test of no break versus a fixed number of breaks. It consist of a *supF* type test with no structural breaks (*m=0*) as the null hypothesis against the alternative of some fixed number of breaks (*m=k*). Let (T_1,…, T_k) be a partition such that $T_i = [T\lambda_i]$ $(i = 1, \dots, k)$. Let *R* be the conventional matrix such that $(R\delta)' = (\delta_1' - \delta_2', \dots, \delta_k' - \delta_{k+1}')$. Define

$$F_T^*(\lambda_1, \dots, \lambda_{1k}; q) = \frac{1}{T}\left(\frac{T-(k+1)q}{kq}\right) R'\hat{\delta}\left(R\hat{V}\left(\hat{\delta}\right)R'\right)^{-1} R\hat{\delta} \quad (10)$$

where $\hat{V}\left(\hat{\delta}\right)$ is an estimate of the variance covariance matrix of $\hat{\delta}$ that is robust to serial correlation and heteroscedasticity; i.e. a consistent estimate of

$$V(\hat{\delta}) = p \lim T(\bar{Z}\bar{Z})^{-1}\bar{Z}\Omega\bar{Z}(\bar{Z}\bar{Z})^{-1}. \quad (11)$$

The statistic F_T^* is simply the conventional *F*- statistic for testing $\delta_1 = \cdots = \delta_{k+1}$ against $\delta_1 \neq \delta_{k+1}$ for some *i* given the partition (T_1,…, T_k). The *supF* type test statistic is then defined as

$$F_T^*(k; q) = sup_{(\lambda_1,\ldots,\lambda_k)\in\Lambda} F_T^*(\lambda_1, \ldots, \lambda_k; q) \quad (12)$$

where

$$\Lambda_t = \{(\lambda_1, \ldots, \lambda_k); |\lambda_{i+1} - \lambda_i| \geq \epsilon, \lambda_1 \geq \epsilon, \lambda_k \leq 1 - \epsilon\} \quad (13)$$

for some positive arbitrary number ε.

The second one is the double maximum tests. If the interest is not to pre-specify a particular number of breaks, BP designed two tests with the null hypothesis of no structural breaks against the alternative of an unknowns number of breaks given some upper bound M. The double maximum tests are labelled the *UDmax* and the *WDmax.* The first one is an equal weighted version defined by

$$UDmax\ F_T^*(M; q) = \max_{1\leq m\leq M} sup_{(\lambda_1,\ldots,\lambda_k)\in\Lambda} F_T^*(\lambda_1, \ldots, \lambda_k; q). \quad (14)$$

The second one applies weights to the individual tests such that the marginal p-values are equal across values of *m.* To be more precise, let be $c(q, \alpha, m)$ the asymptotic critical value of the test $sup_{(\lambda_1,\ldots,\lambda_k)\in\Lambda} F_T^*(\lambda_1, \ldots, \lambda_k; q)$ for a significance level of α. The weights are then defined as $a_1 = 1$ and for $m > 1$ as $a_m = c(q, \alpha, 1)/c(q, \alpha, m)$. This version is denoted

$$WDmax\ F_T^*(M; q) = \max_{1\leq m\leq M} \frac{c(q,\alpha,1)}{c(q,\alpha,m)} sup_{(\lambda_1,\ldots,\lambda_k)\in\Lambda} F_T^*(\lambda_1, \ldots, \lambda_k; q). \quad (15)$$

Finally there is a test of μ vs. μ +1 breaks. BP proposed a sequential methodology of tests labelled $supF_T(\mu + 1|\mu)$ that consist of up to (μ +1) tests, beginning with the null

hypothesis of no structural change versus the alternative hypothesis of one structural change. To conclude for a rejection in favour of the model with (μ +1) breaks, the overall minimal value of the sum of squared residuals of this model must be smaller than the overall minimal value of the sum of squared residuals of the μ break model. The procedure repeats until it is not possible to reject the null hypothesis. The break date thus selected is the one associated with this overall minimum.

Panel Data Model

In the case when there are data comprising both time series and cross sectional elements such dataset is known as a panel of data or longitudinal data. Importantly, a panel data keeps the same individuals or object and measures some quantity about them over time. Econometrically, the setup at the basis of this paper is

$$y_{it} = \alpha + \beta x_{it} + u_{it} \tag{16}$$

where the dependent variable y_{it} will be the voting premium, α is the intercept term, β is a (k x 1) vector of parameters to be estimated on the explanatory variables, whose observations are collected in the (1 x k)[3] matrix x_{it}, with *i* standing for the number of companies included in the model, *t* rainging from 1 to 18 and u_{it} as an error term. Consequently, the various firms taken into account represent the cross-sectional part of the analysis, whereas the considered period 1996-2013 adds the time-series effect to the analysis. The simplest way to proceed is then to pool all the data in a single equation, which would be estimated using the usual OLS. Obviously this simple way to proceed involves some severe limitations: the model assumes that the average value of the variables and the relationship between them are constant over time and across all of the cross-sectional units in the sample. Therefore, it would

[3] Here *k* represents the number of slope parameters to be estimated, which is equal to the number of explanatory variables in the regression model

be visibly possible to estimate separate time-series regression for each of objects or entities, or separate cross-sectional regressions for each of the time periods but these two ways wouldn't take into consideration any common structure in the series of interest or some common variation over time. One of the best approach to benefit in full of the structure of the data it would be to use the seemingly unrelated regression (SUR) framework proposed by Zellner (1962), but the applicability of the technique is limited because it can be employed only when the number of time-series observation per cross-sectional unit (*T x i*) is at least as large as total number of units N, and also the variance-covariance matrix (*NT x NT*) of the errors has to be estimated. Thus there are two approaches that are usually employed in financial research: fixed effects and random effects. The latter, which is also sometimes known as the error components model, proposes different constant intercept terms for each entity assumed to arise from a common intercept α plus a random variable ϵ_i that varies cross-sectionally but is constant over time. Obviously for that to work the ϵ_i (with zero mean and constant variance) have to be independent from the individual observation error term and more importantly from the independent explanatory variables. But this is very difficult to happen in empirical application so that for this reason, and given that the purpose of this paper is specifically to study the relationship between the dependent variable and the explanatory variables chose, the former fixed effect model is adopted. As the one before, this model allows the intercept in the regression to differ cross-sectional but not over time, but then all of the slope estimates are fixed. In practice, by decomposing the error term the model becomes

$$y_{it} = \alpha + \beta x_{it} + \mu_i + v_{it} \quad (17)$$

where μ_i is a specific unobservable individual effect and v_{it} the 'remainder disturbance' which varies over time and entities. The former could be thought of as including all the variables that could affect the dependent variable but which do not vary over time, for example in our model the country of the headquarters of the companies or the slightly different sector in which it operates. Considering this, the specific model for the purpose of this paper becomes

$$VP_{it} = \alpha + \beta_{\log(MV)}\log(MV)_{it} + \beta_{\text{bassv}}\text{bassv}_{it} + \beta_{\text{turnsv}}\text{turnsv}_{it} + \beta_{\text{basiv}}\text{basiv}_{it} + \beta_{\text{turniv}}\text{turniv}_{it} + \beta_{\text{ffsv}}\text{ffsv}_{it} + \beta_{\text{ffiv}}\text{ffiv}_{it} + \beta_{\text{divdummy}}\text{divdummy}_{it} + \beta_{\text{ROE}}\text{ROE}_{it} + \beta_{lev}\text{lev}_{it} + \beta_{GDPg}\text{GDPg}_{it} + \beta_{stocks}\text{stocks}_{it} + \beta_{corrup}\text{corrup}_{it} + \beta_{regq}\text{regq}_{it} + \beta_{vanda}\text{vanda}_{it} + \beta_{pressf}\text{pressf}_{it} + \beta_{discl}\text{discl}_{it} + \beta_{dirliab}\text{dirliab}_{it} + \beta_{shs}\text{shs}_{it} + \beta_{invp}\text{invp}_{it} + v_{it} \quad (18)$$

in which it is possible to recognize the different variables to be tested in order to address chapter three hypotheses. The summary of the variable is:

Factors	Expected influence on VP	Abbreviation
Logarithm of firm's MV	Negative	log(MV)
Bid Ask Spread SV	Negative	bassv
Turnover SV	Positive	turnsv
Bid Ask Spread IV	Positive	basiv
Turnover IV	Negative	turniv
Free float SV	Negative	ffsv
Free float IV	Positive	ffiv
Dividend dummy	Negative	divdummy
ROE	Positive	ROE
Leverage	Negative	lev
GDP growth	Positive	GDPg
Stocks traded	Positive	stocks
Corruption	Positive	corrup
Regulatory quality	Negative	regq
Voice and accountability	Negative	vanda
Press freedom	Negative	pressf
Disclosure ind.	Negative	discl
Directors liability ind.	Negative	dirliab
Shareholders suits ind.	Negative	shs
Investor protection ind	Negative	invp

More details on the collection of the variable, together with some basic statistics are presented in the following section. But finally, before getting into the empirical analysis conducted, it is worth mentioning couple of theoretical issues which have to be taken into consideration when dealing with panel data model: the *balanceness* of the model and the *multicollinearity* among variables. The first one refers to the fact that the aim when performing this kind of study should be to have every data point, i.e. the same number of time-series observations for each cross-sectional unit. In practice this can be quite tough given the wide range of information investigated. In the present paper indeed, only few factors date back to 1996, but by analysing different regression it appears that the result don‘t change significantly, so the more general findings are presented. Secondly, while some sense of dependence among real world finance indicators is unavoidable, high level of correlation may considerably harm the results. Because of this some precautions are taken, grouping the different factors in the different regressions by considering their correlation, in a way that mitigates this issue.

Data

“You can have data without information, but you cannot have information without data”

Daniel Keys Moran

The database for the analysis includes more than 20 daily gathered factors for 69 companies over the past 18 years (1996-2013). This implies that more than 7 million data points are included, increasing the robustness of the model. The downside of such a database is that not all the data points are present for all the companies, both across time and factors (the database isn’t perfectly balanced). But given the size of

the sample, the limited number of such gaps and the fact that individual regressions and cross-country analyses are conducted, the statistical errors deriving from having a slightly unbalanced panel are reduced.

Given the scope of the paper a top-down approach is adopted in order to identify the relevant companies. Firstly the sector is narrowed down to include all the companies in the Technology, Media and Telecommunication sector. To do this, Thomson Reuters Datastream (hence “Datastream”) is firstly approached by selecting Media, Software and Computers Services, Technology, Fixed and Mobile Telecommunications. Thousands of companies where then analysed in order to identify the suitable ones. First requirements were having a dual class share structure and both classes traded on the stock market. Clearly, as pointed out in introduction, more companies than the ones analysed, even relevant as Google or Facebook, have different class of shares with different voting rights, but at the moment the superior voting class is usually retained privately by the top management or the founders. It is worth noticing that, even if this could underpin the results, it could be considered a future field of application for the findings of this paper (i.e. valuation of those shares in case of transfer). At this point, a further analysis on the quality of information is performed. In the sample a variety of countries is represented, which means they are subjected to different regulations and disclosure requirements. Therefore for all the companies selected, not all the factors were available. Examples are the number of votes, the spreads, the leverage and so on. Therefore, in order not to reduce the robustness, the companies which were lacking of most of the information were eliminated. Clearly this was a balanced process because at the same time the descriptive power of the analysis needed to be maintained (i.e. a sample containing companies only from one country highly transparent, US or Canada, would have indeed a biased sample). Of this process, it

is worth noticing, the measures adopted when selecting companies whit more than one class. In this case, mainly the number of comparable days and liquidity were the reasons for the choice. Finally, some subjective adjustments were made in order to eliminate the effect of extraordinary events (i.e. mergers, restructurings, de-listing, etc.)

The resulting final database is composed by 69 companies from 16 different countries. The most represented ones are US (26) and Canada (14). Also Europe is quite represented, with Nordic countries above the others (mainly Sweden and Finland, 11 in total) and Italy (5). In addition, emerging countries as Brazil or Singapore are included as well, increasing the descriptive power of the analyses.

Finally, there is a quite wide range of different voting power of the instruments. The most common structure is one vote for the superior voting class vs. none votes for the inferior one, but also ten vs. one is fairly common. Less common structures worth mentioning are one vs. one tenth, twenty vs. one or ten and one with the addition of special rights (i.e. number of board members chosen) vs. plain vanilla votes.

Below it is possible to find a summary of all the companies in the sample

	Expanded Name	Country	SV Class	IV Class
1	Abacus Technology	South Africa	One	None
2	Alliance Atlantis Communications	Canada	One	None
3	Alma Media	Finland	One	One tenth
4	AMX	Mexico	One	None
5	Ascom	Switzerland	One	None
6	Astral Media	Canada	One	None
7	Canwest Global Communication	Canada	One	None
8	CBS	United States	One	None
9	Chum	Canada	One	None
10	Cogeco	Canada	Twenty	Ten
11	Comcast	United States	Special rights	None
12	CTC	Chile	One + Special Rights	One

13	Daily Mail	United Kingdom	One	None
14	Discovery Communications	United States	Ten	One
15	Dow Jones and Company	United States	Ten	One
16	Ericsson	Sweden	One	One tenth
17	Fonorola	Canada	One	None
18	Freescale Semiconductor	United States	Ten	One
19	Gartner	United States	One	None
20	General Communications	United States	Ten	One
21	Gray Television	United States	Ten	One
22	Gvic Communications	Canada	One	None
23	Gyldendal	Denmark	One	None
24	IDT	United States	One	None
25	Ilkka	Finland	Twenty	One
26	Industrial and Financial Systems	Sweden	One	One tenth
27	Lee Enterprises	United States	Ten	One
28	Liberty Global	United States	Ten	One
29	Liberty Intact	United States	Ten	One
30	Liberty Media Starz	United States	Ten	One
31	Liberty Media	United States	Ten	One
32	Mcdata	United States	One	Tenth
33	Meredith	United States	Ten	One
34	Metro International SDB	Sweden	One	None
35	Modern Times Group	Sweden	Ten	One
36	Mondadori	Italy	One	None
37	Nelson Thomas	United States	Ten	One
38	Newfoundland Capital	Canada	One	None
39	News	United States	One	None
40	Olivetti	Italy	One	None
41	Onenergy	Canada	Ten	One
42	Option	Belgium	One	None
43	Philippines Telegraph and Telephone	Philippines	Ten	One
44	Playboy Enterprises	United States	One	None
45	Postmedia Network	Canada	One + Special Rights	One
46	QAD	United States	One	None
47	Quebecor	Canada	Ten	One
48	Radio One	United States	One	None
49	Readers Digest	United States	One	None
50	Rogers Communications	Canada	One	None
51	Sanoma	Finland	Twenty	One
52	Seat Pagine Gialle	Italy	One	None
53	SEC	Luxembourg	Ten	One
54	Shaw Communications	Canada	One	None
55	Singapore Telecom	Singapore	Ten	One

56	Starz	United States	Ten	One
57	Switchcore	Sweden	One	None
58	TELE2	Sweden	Ten	One
59	Telecom Italia	Italy	One	None
60	Telecom Italia Mobile	Italy	One	None
61	Telemig Celular On	Brazil	One	None
62	Telint	Mexico	One	None
63	Telmex	Mexico	One	None
64	Telus	Canada	One	None
65	Transferator	Sweden	One	One tenth
66	Twenty-First Century Fox	United States	One	None
67	Vaahto Group	Finland	One	None
68	Viacom	United States	One	None
69	Wiley John and Sons	United States	Ten	One tenth

Before moving to the analysis and result sections, it is worth also to mention the process used to collect the different proxies used to test the hypothesis on the factors, as developed in section 3. It is worth noticing that for the data available daily (I.e. the size, the liquidity measures and the free float) the average over the year is taken in the same manner as for the voting premium (see chapter 4 for further reference), while the dividends, the return of equity and the leverage (being accounting and not market data) were available only on a yearly basis.

With regard to the companies' related factors, mainly the data derive from Datastream. Firstly for the size of the company the market cap downloaded from the database is used. In particular, following the suggestion of Lee (2011), the logarithm of the daily value is taken in order to smooth the time series and reduce the impact of outliers. Then, concerning the liquidity measures, they derive from some raw data also downloaded by the mentioned source. The bid ask spread is the ratio between the difference of the ask price and the bid price over the middle point of the two. Instead the turnover, which is considered by volume and not value, is the ratio between the total number of shares traded over a period and the average number of shares outstanding for the period. The two methodologies apply for both the classes

of shares analyzed. The free float, a proxy for the shareholder structure of each company, is downloaded by the Datastream as well, and it is the percentage of shares readily available on the market, i.e. the number of stocks calculated by subtracting closely-held shares and restricted stock from a firm's total outstanding shares over the total number of outstanding shares (as, by definition, calculated in percentage). For reference, it is worth mentioning that closely-held shares are those owned by insiders, major shareholders and employees, while restricted stock refers to insider shares that cannot be traded because of a temporary restriction such as the lock-up period after an initial public offering. Subsequently, to capture the dividends paid a dividend dummy is calculated. The variable is a proxy taking the value of one or zero depending on the inferior voting class having higher dividends than the higher voting class or not (Lee, 2011). The return of equity (ROE) is instead calculated by Datastream in the usual way, meaning the net income of each financial year divided over the average equity of the period. This, as explained before, it gives the return for the shareholders. Finally the leverage variable is calculated by the used database as total debt / total equity for any given year.

With regard to the external factors different databases have been used to collect the data. GDP growth and stocks traded have been downloaded from the World Bank databases, specifically from the "World Development Indicators" (WDI). As the first it clearly represents the percentage growth in the GDP of each country in a given year, the second it is defined as values of stocks traded over the GDP value (clearly an higher value will signify an higher relative development of the financial market in that country). In addition, the three successive factors, "Corruption", "Regulatory quality" and "Voice and accountability", are as well three indices published by the World Bank but within the "Worldwide Governance Indicators" section. A range from -1 to 2.5 is reported for each one of the indicators, where a lower value is reported for "poor

performing" countries (e.g. a low value in "corruption" indicates the wide diffusion of corruption in the country, or a high value in "regulatory quality" indicates the virtue of the country). All the five indicators are available for every year and every company in the database. "Press Freedom" it is probably the most famous indicator with such a scope, deriving from a survey published every year by "Reporter without Borders" since 1980. The index is based on a score from 0 to 100, with three different sections, 0-30 / 31-60 / 61- 100, with the lower the score the more freedom in the press. As per curiosity there are some countries in the sample considered "partly free" (second bound), as for example Mexico or Italy in some years. Again, the relevant data points are present for every year and every country in the database. Finally the last four indicators which all fall below the "investor protection and governance mechanism" category are taken from the World Bank too, and range from 0 to 10 with the higher value signifying better protections or better governance mechanisms. Of these fours the "Investor Protection Index" represents the strength of the mechanism put in place in a country to protect the shareholders, while the other three, "transparency of related-party transactions" (extent of disclosure index), "liability for self-dealing" (extent of director liability index) and "shareholders' ability to sue officers and directors for misconduct" (shareholder suits index) represent three other dimensions of "investor protection". The data come from a questionnaire administered to corporate and securities lawyers and are based on securities regulations, company laws, civil procedure codes and court rules of evidence. Overall, the ranking on the strength of investor protection index is the simple average of the percentile rankings on its component indicators. This methodology was developed by Djankov, La Porta and others (2008).

Results[4]

"There are two possible outcomes: if the result confirms the hypothesis, then you have made a valid measurement. If the result is contrary to the hypothesis, then you have made a discovery"

Enrico Fermi

Results on the average voting premium time series hypothesis

As beginning of this section it is indeed useful to provide a summary table for the Voting Premium of the sample (as calculated by 4 on a weekly basis):

	Max	75° Percentile	Average	Median	25° Percentile	Min	% Obs.>0	N° of Obs.
VP daily	62,3%	8,2%	**6,9%**	6,0%	4,3%	-2,4%	99,7%	4697
VP weekly	46,3%	8,2%	**6,9%**	6,0%	4,4%	-1,1%	99,3%	936
VP annual	13,5%	7,6%	**6,9%**	6,3%	4,6%	2,1%	100,0%	18

The first thing that can be noticed from the above tab is the normalizing effect of the formula. While on a daily basis (and even if each data point is the average of 72 different companies) there is some variance in the data and some outliers are present (e.g. 62% premium seems indeed quite high), on an annual basis the data are more concentrated around the mean. It is worth to highlight the presence of negative numbers in the daily and weekly series. As noted in the literature section, this shouldn't be a surprise given that other studies have proven that due to liquidity reasons, the inferior voting shares can be traded at a higher price than the higher voting premium shares for some time. But, as expected, these negative values disappear in the annual data series: on the long period, the Private Benefits of Control prevail over the liquidity and other issues than can happen in the short term.

In addition the first tab verifies the first half of hypothesis of the paper, for which given the presence of PBoC, the Voting Premium (i.e. the spread between the prices of the higher voting shares and of the inferior ones) was expected to be on average positive

[4] Eviews 8® used for the calculation.

(the second half will be answered in the following lines through the structural breaks analysis).

Before implementing the structural break analysis, it is necessary to provide evidence about the stationarity of the series (Average Voting Premium weekly). To confirm it, different tests have been performed: the Augmented Dickey- Fuller ("ADF") (1979, Table 1), the Elliot et al. ("ERS") (1996, Table 2) , the Phillips-Perron ("PP") (1988, Table 3), the Kwiatkowski-Phillips-Schmidt-Shin ("KPSS") (1992, Table 4) and the tests of Ng and Perron ("MZa, MZt, MSB, MPT") (2001, Table 5). In performing the tests only a constant was included and the number of lags was automatically selected by the Schwarz Information Criterion ("SIC"). In addition the correlogram of the series is shown in table 6 of the appendix.

Results of the tests are shown in the below table:

	ADF[a]	ERS[a]	PP[a]	KPSS[b]	Mz_a[a]	Mz_t[a]	MSB[a]	MPT[a]
Average VP	-3,43**	3,26*	-3,44**	0,74	-13,80**	-2,58**	0,18**	1,78**

[a] The null hypothesis is unit root. [b] The null hypothesis is stationarity. * and ** indicates rejecting the null hypothesis at the 5% and 1% level respectively.

The results of all tests suggest that the series Average Voting Premium (weekly) is a stationary process.

Once confirmed the stationarity of the series, it is possible to conduct the Bai and Perron analysis (2003) as described in the methodology session. Since they argued that when m>2 the method becomes computationally excessive, the weekly average instead of the daily data is analysed. The tests are conducted by allowing a maximum of 5 breaks, using a trimming of 0.15, which means that given the sample size is n=936 each partition has a minimum of 140 observations. A summary of the

results is presented below, while detailed output of each test can be founded in the appendix section.

Tests						
$SupF_T(1)$	$SupF_T(2)$	$SupF_T(3)$	$SupF_T(4)$	$SupF_T(5)$	UDmax	WDmax
32.77*	**63.49***	**41.74***	**32.39***	**29.25***	**63.49***	**72.95***
SupF(2|1)	SupF(3|2)	SupF(4|3)	SupF(5|4)			
5.25	**0.79**	**0.84**	**7.68**			

Number of breaks selected				
Global	Double Max	Sequential	LWX	BIC
5	2	1	5	5

Estimated structural break dates					
μ_1	μ_2	μ_3	μ_4	μ_5	μ_6
0.1303 (0.00)	0.0720 (0.00)	0.0340 (0.00)	0.0670 (0.00)	0.1113 (0.00)	0.0408 (0.00)
$\hat{T}_1$	$\hat{T}_2$	$\hat{T}_3$	$\hat{T}_4$	$\hat{T}_5$	
13-Oct-97	26-Jul-99	14-May-01	05-Nov-07	17-Aug-09	

* Significant at the 5% level. P-values are in parenthesis.

The SupFT(k) tests in the first row are all significant at 5% level, which it means that it is possible to reject the null hypothesis of no structural breaks (i.e. there is at least one break in the series). The second test suggested by Bai and Perron, the Double Maximum tests (labelled UDmax and WDmax) also indicate the existence of two structural breaks. The final test μ vs. μ +1 breaks suggests the presence of only one break, as the F-statistic SupFT(2|1) is not higher than the critical value (Table 9 in the Appendix section), which means that the null hypothesis of one break cannot be rejected in favour of the hypothesis of two breaks. The same reasoning applies for SupFT(3|2), SupFT(4|3), SupFT(5|4), which have value smaller than one (it is also worth noticing that none of this value is significant at a 5% level).

Given the different results of the three tests, also the Bayesian Information Criterion (BIC) by Yao (1988) and the Schwarz Criterion (LWZ) by Liu et al. (1997) are performed. They both select five numbers of breaks. The estimated means values of

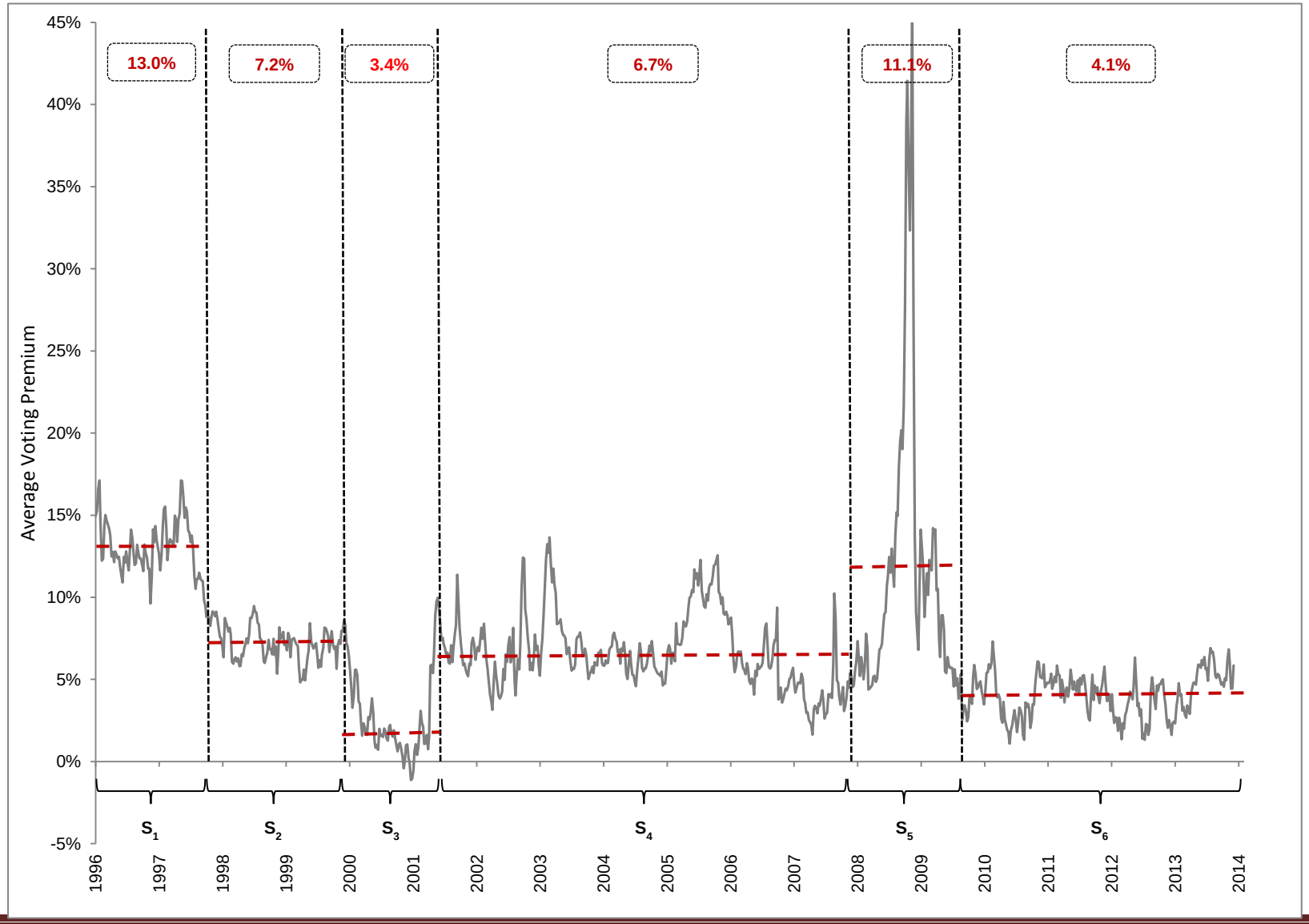
each period are 13.0%, 7.2%, 3.4%, 6.7%, 11.1%, 4.1% (all statistically different from zero).

Figure 1 presents the graph of the average voting premium series and estimated values for the mean of the six sub-periods estimated with the BP and Information Criteria methodologies. It appears evident from the graph that from 1996 to 2013 there has been a reduction of the voting premium (last subset (S_6) shows a consistent lower average than S_1. This confirms hypothesis one and the reasoning behind it. Besides this, it is probably worth digging a little more in the evolution of the series as if not the exact date but at least the period in which the structural breaks have been identified are significant. As shown in the graph, there has been a constant and consistent reduction of the average voting premium in the TMT sector from 1996 until 2001 (becoming even negative just after the beginning of the new millennium). After this, there is a bounce back to an average of 6.7%. It is interesting to notice how this recovery coincides with the boom of the New Media, which, as argued in the Literature section, started to largely adopt the dual class shares structure (the bounce of the voting premium just after 2004, i.e. Google IPO, could confirm the theory). Later on, the big financial crisis of 2008 affected also the size of the voting premium, whose average in the S_5 (c. 2 years) rose to an incredible 11.2%. The most likely explanations are probably the shrink of the liquidity present into the market and the increased value derived from having the control of a company. It is clear that in bad times having the ability to control the direction of a firm is incredibly valuable for shareholders also in the light that if transactions happened in those years were likely to be very big transactions involving prominent firms (i.e. more premium and value for the controlling shareholders). The same effect (even if reached from a different perspective) is reached if it is assumed that given the bad market conditions, controlling shareholders were willing to retain high voting

shares waiting for better times to sell them (i.e. higher premium, higher multiples): this sentiment would have reduced the liquidity of the high voting premium, and hence probably increased the voting premium.

To conclude the section, despite the average voting premium in the TMT returned to more normal market level after the crisis (current S_6 average at 4.1%), it is worth noticing that the time series analysed has been subject to important swings in the past and that therefore further analysis on the possible determinants of the voting premium are needed.

Figure 1. Average Voting Premium Structural Breaks Analysis



Results on the determinants of voting premium hypothesis

As previously highlighted, the purpose of the second part of the analysis carried out in the paper is to identify which are the factors that affect the Private Benefits of Control, and hence the Voting Premium. As in the hypotheses development section it is clear that many factors can have an effect on the size of the PBoC and this large number is reflected in the regression (18) which could be considered the base for the results presented. However, despite the large number of different companies and countries included in the database, this large number of factor can carry the *multicollinearity* issue previously descripted. This not only will enhance the descriptive power of the results (there are no doubts that some country specific factors may be highly correlated, e.g. the level of growth of the economy clearly affects the development of the financial markets and may also play a role in the development of good market practises and anti-corruption measures) but also the robustness of the result from an econometric perspective. In fact, one of the main hypotheses lying below the ordinary least square regression method is the independence of the factors.

The correlation matrix of the factor is then presented in Figure 2. It may be appreciated that few values are lower than -0.5 or higher than +0.5, which shows a limited extent of dependencies. The higher values can be found in the bottom right corner of the table, where the Disclosure index, the Directors' liability index and the Shareholders suits index looks to be highly correlated with the investor protection index. This should be not surprise as (in the same way previously highlighted by Herter) the indices are produced by the same information provider, which may have a consistent view of the virtue of each country, and the investor protection index is derived from those three indices combined. In light of this, the mentioned three indices will be dropped from the analysis to increase the inferential power of the

model without losing information as hypothesis 16,18 and 19 can be confirmed or not by the confirmation of hypothesis 17, tested through the investor protection index.

In addition it is worth highlighting the high correlation between Corruption and Regulatory Quality. Clearly, as in the previous case, given the fact that these factors are gathered from the same source, the high correlation should be expected (and it might be appreciated that a good level of regulatory quality in a country usually leads to a decrease in the corruption level). But on the contrary of what done before, it is not possible to drop one of the two variables because of the absence of a combined one, therefore it will just be taken into consideration when performing the regressions grouping the factors in different ways (this will also enhance the robustness of the result). Further, these two factors as well as Voice and Accountability show a decent negative correlation with the Press Freedom index. It may be misleading at a first look, but it is worth remembering that the press Press Freedom index is built in such a way that high scores are given to the poor performing countries. This should be borne in mind when reading the results, because as according to Hypothesis X we should expect a negative effect from this factor on the voting premium, we should expect a positive sign in the output table.

Finally, a first sense of the results it may be derived from looking at the first column. Voting Premium seems to have a higher correlation with some of the variables, mainly liquidity variables for the company's specific factors, and Stocks Traded, Corruption, Regulatory Quality and Press Freedom for the country's specific ones.

Figure 2. Pairwise correlation matrix among dependent and independent variables

	VP	log(MV)	bassv	turnsv	basiv	turniv	ffsv	ffiv	divdummy	ROE	lev	GDPg	stocks	corrup	regq	vanda	pressf	discl	dirliab	shs	invp
VP	1.0000																				
log(MV)	-0.1380*	1.0000																			
bassv	-0.1353*	-0.0506	1.0000																		
turnsv	0.0647	0.1115	-0.0622	1.0000																	
basiv	-0.0730	0.0130	0.0505	-0.0467	1.0000																
turniv	-0.0123	0.5490	-0.0877	0.2724	-0.1381	1.0000															
ffsv	-0.1019	0.0321	0.1007	0.1712	0.0856	0.2948	1.0000														
ffiv	-0.1134	0.2073	-0.1945	0.1874	0.0178	0.1251	-0.1149	1.0000													
divdummy	-0.1049	-0.0609	-0.0520	-0.0317	-0.0455	-0.0739	0.0057	-0.0859	1.0000												
ROE	-0.0288	0.2267	0.0334	-0.0141	-0.0428	0.1238	-0.0192	-0.0542	0.0030	1.0000											
lev	-0.0390	0.0854	0.0003	0.0223	-0.0681	-0.0005	-0.0540	0.1139	0.0558	0.2912	1.0000										
GDPg	-0.0964	0.2435	-0.0619	-0.0984	0.0951	0.0852	0.0991	-0.1305	0.0047	0.1494	-0.0329	1.0000									
stocks	0.1889*	-0.0954	-0.1076	-0.0980	-0.1985	-0.0730	-0.1790	0.2012	-0.1081	-0.1014	0.0772	-0.1853	1.0000								
corrup	0.1959*	-0.2401	0.1542	-0.2895	-0.0331	-0.4485	-0.1863	-0.1834	0.1153	0.0521	-0.0593	0.0521	-0.1309	1.0000							
regq	0.2696*	-0.2597	0.1381	-0.2209	-0.0772	-0.4727	-0.2337	-0.0806	0.0891	0.0148	-0.0189	-0.0171	0.0880	0.913318*	1.0000						
vanda	0.1347	-0.4170	0.1582	-0.0581	-0.0129	-0.5698	-0.3392	0.0642	0.1054	-0.0536	-0.0284	-0.2052	-0.0716	0.6795	0.6492	1.0000					
pressf	-0.1766*	0.4408	-0.0792	0.1128	0.0860	0.5586	0.3600	-0.1356	-0.0403	0.0758	0.0079	0.1968	-0.2265	-0.6117*	-0.6351*	-0.9247*	1.0000				
discl	0.0436	0.0401	0.1506	-0.0454	-0.0321	0.0749	0.0318	-0.1550	0.1049	0.0800	-0.0050	0.0310	-0.1552	0.0124	0.1366	-0.2585	0.3723	1.0000			
dirliab	0.0272	-0.1653	0.1089	-0.2407	-0.0799	-0.2503	-0.2001	-0.0394	0.1239	0.0331	-0.0126	0.0371	0.5247	0.1877	0.3183	0.0068	-0.1308	0.3505	1.0000		
shs	0.1114	-0.3481	0.1084	-0.0915	-0.3157	-0.3853	-0.2926	0.1015	0.1134	-0.0626	-0.0095	-0.0879	0.4815	0.4932	0.6581	0.3789	-0.4872	0.1581	0.7554*	1.0000	
invp	0.0665	-0.2169	0.1505	-0.1820	-0.1753	-0.2673	-0.2150	-0.0299	0.1466	0.0175	-0.0138	-0.0060	0.4199	0.3030	0.4698	0.0836	-0.1564	0.5400*	0.9417*	0.8471*	1.0000

The independent factors are then tested for their significance in affecting the yearly average voting premium evolution. As highlighted in the literature session, previous papers carry similar but narrower analyses are Herter (2012), Lee (2011), Dyck and Zingales (2002). Some of the following results will confirm their findings; other will suggest the opposite reasoning.

According to Figure 3, ten different regressions have been tested in attempt to find the most significant determinants of the private benefits of control. Across the ten different regressions, factors have been grouped in different ways both keeping into account the “area” of the factor (i.e. company specific, liquidity, country specific and media related) and the correlation analysis carried out before. It is worth noticing that for this reason never Corruption and Regulatory quality are almost analysed together, and regression number 6 is probably the central one to look at as all the “duplicated” factors are eliminated, resulting in highly significant estimates for the ones which at the end of the discussion will be identified as principal determinants of the PBoC. Moreover the R2 of the regression show all the values to be between 0.6 and 0.3, highlighting the reliability of the results.

The first hypothesis to be tested is with regard to the size of the firm. While the coefficient looks negative as per the assumption, based on the reasoning that bigger firms should be more difficult to acquire hence the achievable value for the controlling shareholders should be lower (Lee, 2011 and Zingales, 1995), the coefficient are only in two cases significantly different from zero, hence I conclude that the size of the firm cannot be considered as a determinant of the PBoC as no relationship seems to exist.

With regard to the liquidity of the two classes of shares, it seems that as previous studied showed (e.g. Valero, 2008) it can be strongly considered a factor affecting

the size of the voting premium. The only related minor issue is the choice of the correct factor. While for the high voting shares the bid-ask spread seems to be more significant, for the lower voting shares the turnover has more stable correlation with the voting premium rather than the spread. But considering the liquidity as one great factor (among which the spread of the superior voting should be taken as a proxy) it appears to confirm the hypothesis previously stated, meaning that lower liquidity for the superior voting shares reduces the voting premium because of liquidity discount attached to them, while for the lower voting shares it works vice versa.

Concerning the ownership structure, analysed by the free float proxy, some unexpected results are found. While the free float for superior voting shares shows insignificant results, the free float of the inferior class seems to have a relationship with the voting premium, but on the contrary with regard to hypothesis 9, the sign of the coefficient is negative. While it was hypothesised that a more diluted ownership of the inferior voting shares should have increased the PBoC as the controlling shareholders would have an “easier” life in influencing the decisions, here the analysis suggests the opposite. But at a closer look, it could be supposed that the liquidity factor included in a free float indicator is prevailing. In other words, as the free float increases, the shares are more liquid hence in this case a higher liquidity of the inferior voting class confirms once more a decrease in the voting premium. But in this case the issue of not being able to link the ownership structures with the voting premium remains.

With regard to the dividend dummy, the results appear to confirm the intuition. A higher economic remuneration for the holders of the low voting shares reduces the size of the PBoC. However only few companies in the sample have been paying higher dividends to the lower voting class (four in totals), hence the results cannot be generalized.

With regard to the last two company related factors, ROE and leverage, the findings are never significantly different from zero (differently for what stated by Hoffman, 1999) hence no final conclusion can be drawn.

With regard to the country specific factors, the growth in GPD doesn't seem to affect the size of the voting premium (probably the wideness of such economic indicator plays a role in that) but the level of stocks traded significantly affects the dependent variable analysed. The latter therefore confirms the idea of Rooij et al. (2011) for which in well-developed financial markets, people tend to invest less in restricted shares or at least choose easier structures in which to invest (same result was also confirmed by Herter, 2012).

With regard to the next three factors, Corruption, Regulatory Quality and Voice and Accountability, despite the fact that, as commented before, they are highly correlated with each other, only the Regulatory Quality index seems to have a strong relationship with the Voting Premium. But, even more surprisingly, this relationship seems to work in the opposite direction than the one expected. Indeed in countries were the regulation is better defined and there is more transparency the voting premium is higher. Even if this finding contradicts the reasoning for which in less regulated countries the shareholders should have more power and be able to derive more private benefits from the control, it can be argued that in these countries the more power and control of some of the shareholders is not reflected in the market (i.e. they don't need legally higher voting rights to control a company, they just do it), while in the well regulated countries this power is "officially" recognized by the market and priced in the securities.

The coefficient of the variable specifically related to the media industry unfortunately is not showed to be significantly different from zero. This does not allow drawing a

conclusion on the possible relationship with the PBoC in the industry, and it may reflect one of the flaws of using such a wide sample of companies: some of them are not 100% media related and therefore might not be affected by the level of press freedom. But it is also worth mentioning that given the New Media explosion, there are no more defined boundaries in what can be published or transmitted, as now information is continuously shared via the Internet by anyone at any time.

Finally, the last factor, Investor Protection Index (which is worth remembering is acting as a proxy for hypothesis 16-20) is found to be highly correlated with the voting premium. Indeed, as hypothesized, a higher level of protection of the investor, and in particular of the minorities, reduces the level of Private Benefits of Control exploitable by the controlling shareholders.

Figure 3. Results with Yearly Average Voting Premium as dependent variable

	1	2	3	4	5	6	7	8	9	10
log(MV)	-0.0405**	-0.0247			-0.0119	-0.0455**	-0.0104			
	(-2.1196)	(-1.5463)			(-0.9656)	(-2.4504)	(-1.0833)			
bassv	-0.2251*	-0.2232**		-0.1476***		-0.2045**				-0.1735***
	(-2.7068)	(-3.2300)		(-2.1722)		(-2.5231)				(-2.6594)
turnsv	0.0252	0.0193**		0.0124						
	(-1.8819)	(-2.4659)		(-1.5527)						
basiv	0.086284	0.2506*		0.160937						
	(-0.5154)	(-1.8216)		-1417700						
turniv	-0.0004***	-0.0001**		-0.0005*		-0.0004***				-0.0003**
	(-2.9498)	(-1.8697)		(-0.6247)		(-3.3389)				(-1.7586)
ffsv	-0.0008	(-0.0010)**			-0.0007*	-0.0007		-0.0010**		
	(-1.4577)	-2,021,149			(-1.9264)	(-1.46)		(-2.1088)		
ffiv	-0.0026**	-0.0025***			-0.0016***	-0.0020***		-0.0018***		
	(-3.1033)	(-3.7182)			(-2.8321)	(-2.5371)		(-2.6788)		
divdummy	-0.1810**	-0.2211***			-0.1654***	-0.1744**	-0.1699**			
	(-1.7917)	(-2.2135)			(-2,0151)	(-1.7345)	(-2.5021)			
ROE	0.0000	-0.0001			-0.0002	0.0000	0.0001			
	(-0.1478)	-0.334813			(-0.9424)	(-0.0610)	(-0.4215)			
lev	0.003	-0.0008			0.0002	0.0007	0.0001			
	(-0.3741)	(-0.029152)			(-0.1564)	(-0.2606)	(0.0686)			
GDPg	-0.0035		-0.0043							-0.0084
	(-0.5667)		(-0.7727)							(-1.8361)
stocks	0.0386**		0.0412***			0.0326***				0.0793
	(-2.5194)		(-2.9048)			(-3.2965)				(-0.0097)
corrup	-0.0493		-0.0061							
	(-0.7306)		(-0.1072)							
regq	0.3889***		0.3276***			0.3055***		0.4854***	0.4133***	0.0904**
	(-3.222)		(-3.0530)			(-4.8661)		(-4.4653)	(-3.9143)	(-1.4841)
vanda	0.1287		0.0593					-0.2519**	-0.2221**	
	(-0.7481)		(-0.3903)					(-2.3785)	(-2.1285)	
pressf	0.0047		0.0048*			0.0013		-0.0060**	-0.0050*	-0.0013
	(-0.9181)		(-1.058)			(0.6443)		(-2.0010)	(-1.7211)	(-1.1702)
invp	-0.0386**		-0.0432***			-0.0394**		-0.0367**	-0.0268**	
	(-2.2141)		(-2.9985)			(-2.2841)		(-2.5761)	(-1.9696)	
c	-0.0903	0.3856***	-0.3333	0.0903***	0.2562***	0.1692	0.1048***	0.4000*	0.1195	0.0276
	(-0.2740)	(-5.3425)	(-1,1826)	(-5.4415)	(-4.3962)	(-1.1851)	(-2.9611)	(-1.705)	(0.5459)	0.4663
n	265	367	322	504	467	265	396	310	322	474
R^2	0.5497	0.4058	0.4509	0.3222	0.3393	0.524	0.31029	0.3581	0.3206	0.3147

t statistics in parenthesis

*,**,*** significant at 90%, 95% and 99% level.

Conclusion and future development

"Truth in science can be defined as the working hypothesis best suited to open the way to the next better one"

Konrad Lorenz

Private benefits of control are indeed an ongoing feature throughout the life of a company. Entrepreneurs who would like to IPO may at the same time maintain the control of their companies, and at the point of selling them they will ask for a premium in order to give away this control. Therefore nowadays, as M&A and IPO activity is rising again after the crisis, it has become central in the market of corporate control to have an understanding of the economic value attached to them and how they would develop in future.

This paper, conducting two different types of analysis on c. 70 companies with a dual class share structure, tried to answer both questions for the sector which has largely been recognized as the one showing the highest values of PBoC. With a structural break analysis it has been demonstrated that average voting premium has been positive but lowering over the last fifteen years, reaching an average of 4% in the last years. This process however has not been smooth, but characterized by abnormal disruption caused by both internal and external factors of the sector analysed. For example the diffusion of New Media companies adopting a dual class shares structures as well as the recent financial crisis and the consequential liquidity shrinking could have caused such breaks. Interesting, as an idea for further studies in this direction, could be try to reduce the size of the sample to particular countries in order to find nation-specific factors that may affect the value of PBoC (e.g. a new regulation that discourage the dual class share structure as the one already adopted by the London Stock Exchange). In the second part of the paper different possible determinants that could affect the size of the voting premium have been studied through a panel data factor model. In this respect the findings in some part confirm

on a wider sample what previously suggested by other works (Herter, 2012; Lee, 2011; Rooij et al., 2011), but in other clearly rise some questions that would be worth further investigation. In particular, the analysis confirmed that the liquidity of the securities analysed clearly affect the monetary value (i.e. the price differential between the two classes) of the PBoC: as the high voting shares are less liquid, a liquidity discount is applied to their value and while it is arguable that PBoC defined as “the possibility to gain fame and influence” shall not be affected, the monetary value extractable because of them is clearly reduced (while it is enhanced if the class with lower voting rights is less liquid). And the power of the liquidity in affecting such price differential between the two classes could be even more appreciated thinking that it completely offset any other possible effect of the ownership structure. Indeed, as noticed above, as the percentage of the free float of the inferior voting class increases, the voting premium decreases (contrary to the hypothesis that wider dispersed ownership would increase the power of the controlling shareholders). Unfortunately the other company specific variables tested have not been found significant in influencing the premium (different could be the reason, for example as regards dividends not enough companies in the sample were paying higher dividends to the inferior voting class). With regard to the country specific variables the most important results have been achieved with respect to regulatory quality and investor protection. While for the latter the empirical findings have confirmed the hypothesis that a higher level of investor protection decreases the level of PBoC in the TMT industry, with regard to the former an interesting surprised has been encountered. In fact some could argue that a higher level of regulatory quality would decrease the voting premium because of less room for the controlling shareholders to exercise their indirect power, but the empirical analysis suggests the contrary. In fact, interpreting the results, where there is no regulation there is no official recognition of

the control position for certain shareholders, hence in theory everybody could indirectly impose their control over a certain entity without be required to possess the legal prerequisites to do so. So in the countries where there is regulation, the control position of the shareholders with high voting class shares is recognized, and they are able to take advantage, monetary and non, of all these private benefits associated with their position.

To conclude, despite the aim of this paper to be as comprehensive as possible in order to give an answer to those who are looking for monetize the PBoC (e.g. IPO of Alibaba adopting a dual class share structure or the recent acquisitions DIRECTV's buying John Malone and AT&T buying TCI group, both in the TMT sector), it should probably be considered just a starting point for further analysis. Interesting would be to compare the findings of this paper with studies on other sectors, or to try to combine both analyses, analysing also the factors on a time series dimension. Finally, similar analyses on a forward looking basis (for example, applying the empirical findings of a developed country to an emerging one in order to predict where the voting premium will go) would probably be the most valuable ones, as indeed they could answer the question that any control shareholders always asks, what is the true value of my power?

Appendix

Table 1 – ADF test

Null Hypothesis: VP has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.895156	0.0000
Test critical values:	1% level	-3.437137	
	5% level	-2.864425	
	10% level	-2.568359	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(VP)
Method: Least Squares
Date: 10/18/14 Time: 15:13
Sample (adjusted): 1/22/1996 12/23/2013
Included observations: 933 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VP(-1)	-0.046533	0.009506	-4.895156	0.0000
D(VP(-1))	0.275761	0.031630	8.718322	0.0000
D(VP(-2))	-0.210910	0.031997	-6.591625	0.0000
C	0.003076	0.000770	3.992726	0.0001

R-squared	0.121353	Mean dependent var	-0.000115
Adjusted R-squared	0.118515	S.D. dependent var	0.013389
S.E. of regression	0.012570	Akaike info criterion	-5.910695
Sum squared resid	0.146792	Schwarz criterion	-5.889952
Log likelihood	2761.339	Hannan-Quinn criter.	-5.902785
F-statistic	42.76901	Durbin-Watson stat	1.993183
Prob(F-statistic)	0.000000		

Table 2 – Elliot-Rothenberg-Stock test

Null Hypothesis: VP has a unit root
Exogenous: Constant
Lag length: 2 (Spectral OLS AR based on SIC, maxlag=20)
Sample: 1/01/1996 12/23/2013
Included observations: 936

		P-Statistic
Elliott-Rothenberg-Stock test statistic		2.694598
Test critical values:	1% level	1.990000
	5% level	3.260000
	10% level	4.480000

*Elliott-Rothenberg-Stock (1996, Table 1)

HAC corrected variance (Spectral OLS autoregression)	0.000180

Table 3 – Philips-Perron test

Null Hypothesis: VP has a unit root
Exogenous: Constant
Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.093086	0.0000
Test critical values:	1% level	-3.437122	
	5% level	-2.864419	
	10% level	-2.568356	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.000175
HAC corrected variance (Bartlett kernel)	0.000198

Phillips-Perron Test Equation
Dependent Variable: D(VP)
Method: Least Squares
Date: 10/18/14 Time: 15:29
Sample (adjusted): 1/08/1996 12/23/2013
Included observations: 935 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VP(-1)	-0.046645	0.009693	-4.812365	0.0000
C	0.003102	0.000793	3.910972	0.0001

R-squared	0.024221	Mean dependent var	-9.73E-05
Adjusted R-squared	0.023175	S.D. dependent var	0.013382
S.E. of regression	0.013226	Akaike info criterion	-5.811153
Sum squared resid	0.163203	Schwarz criterion	-5.800799
Log likelihood	2718.714	Hannan-Quinn criter.	-5.807205
F-statistic	23.15885	Durbin-Watson stat	1.546248
Prob(F-statistic)	0.000002		

Table 4 – Kwiatkowski-Phillips-Schmidt-Shin test

Null Hypothesis: VP is stationary
Exogenous: Constant
Bandwidth: 23 (Newey-West automatic) using Bartlett kernel

		LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic		0.515595
Asymptotic critical values*:	1% level	0.739000
	5% level	0.463000
	10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Residual variance (no correction)	0.001989
HAC corrected variance (Bartlett kernel)	0.033055

KPSS Test Equation
Dependent Variable: VP
Method: Least Squares
Date: 10/18/14 Time: 15:30
Sample: 1/01/1996 12/23/2013
Included observations: 936

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.068568	0.001459	47.00863	0.0000

R-squared	0.000000	Mean dependent var	0.068568
Adjusted R-squared	0.000000	S.D. dependent var	0.044625
S.E. of regression	0.044625	Akaike info criterion	-3.379964
Sum squared resid	1.861975	Schwarz criterion	-3.374791
Log likelihood	1582.823	Hannan-Quinn criter.	-3.377992
Durbin-Watson stat	0.089831		

Table 5 – NG-Perron test

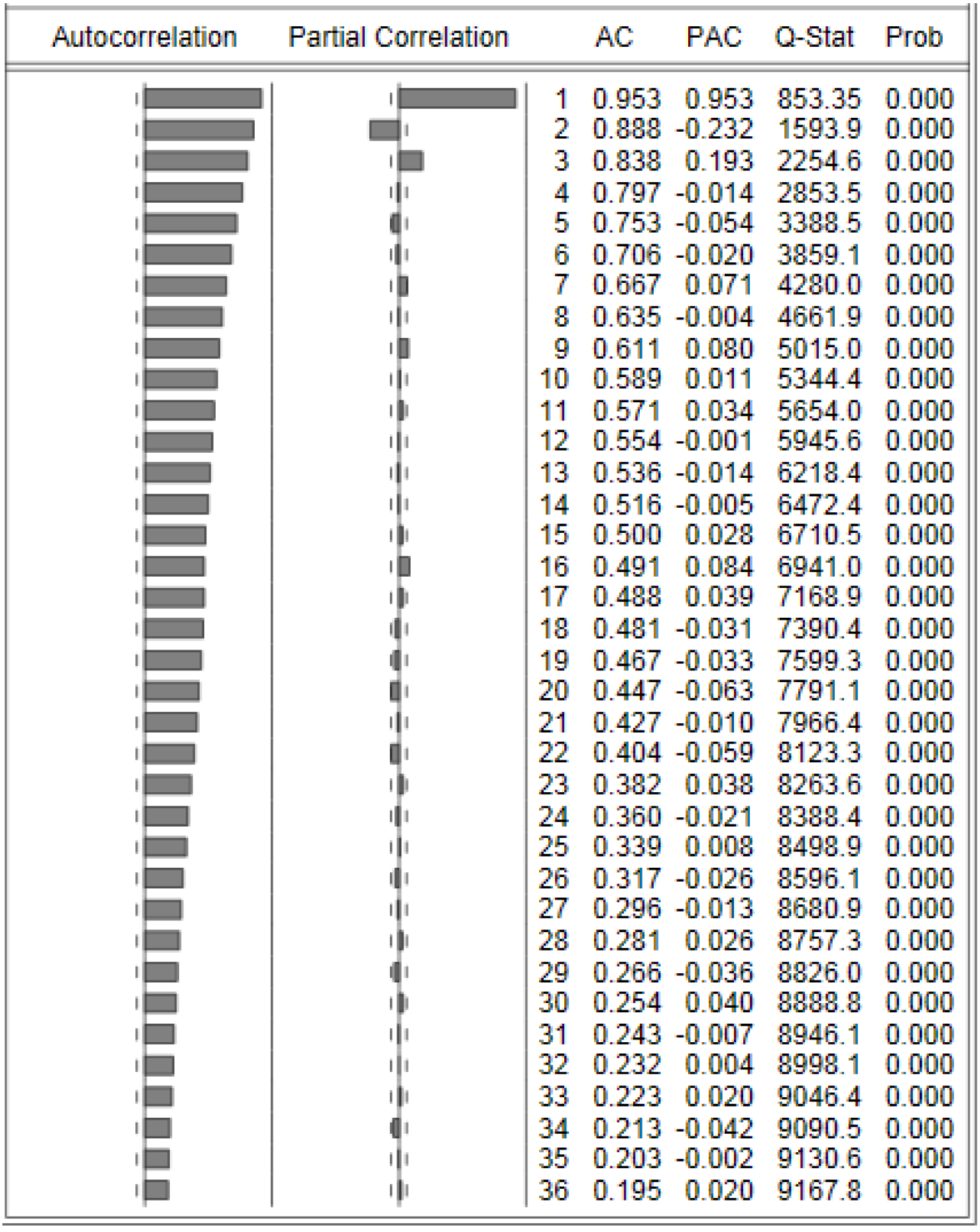
Null Hypothesis: VP has a unit root
Exogenous: Constant
Lag length: 2 (Spectral GLS-detrended AR based on SIC, maxlag=20)
Sample: 1/01/1996 12/23/2013
Included observations: 936

		MZa	MZt	MSB	MPT
Ng-Perron test statistics		-9.77463	-2.15863	0.22084	2.71543
Asymptotic critical values*:	1%	-13.8000	-2.58000	0.17400	1.78000
	5%	-8.10000	-1.98000	0.23300	3.17000
	10%	-5.70000	-1.62000	0.27500	4.45000

*Ng-Perron (2001, Table 1)

HAC corrected variance (Spectral GLS-detrended AR)	0.000171

Table 6 – VP Correlogram



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.953	0.953	853.35	0.000
		2	0.888	-0.232	1593.9	0.000
		3	0.838	0.193	2254.6	0.000
		4	0.797	-0.014	2853.5	0.000
		5	0.753	-0.054	3388.5	0.000
		6	0.706	-0.020	3859.1	0.000
		7	0.667	0.071	4280.0	0.000
		8	0.635	-0.004	4661.9	0.000
		9	0.611	0.080	5015.0	0.000
		10	0.589	0.011	5344.4	0.000
		11	0.571	0.034	5654.0	0.000
		12	0.554	-0.001	5945.6	0.000
		13	0.536	-0.014	6218.4	0.000
		14	0.516	-0.005	6472.4	0.000
		15	0.500	0.028	6710.5	0.000
		16	0.491	0.084	6941.0	0.000
		17	0.488	0.039	7168.9	0.000
		18	0.481	-0.031	7390.4	0.000
		19	0.467	-0.033	7599.3	0.000
		20	0.447	-0.063	7791.1	0.000
		21	0.427	-0.010	7966.4	0.000
		22	0.404	-0.059	8123.3	0.000
		23	0.382	0.038	8263.6	0.000
		24	0.360	-0.021	8388.4	0.000
		25	0.339	0.008	8498.9	0.000
		26	0.317	-0.026	8596.1	0.000
		27	0.296	-0.013	8680.9	0.000
		28	0.281	0.026	8757.3	0.000
		29	0.266	-0.036	8826.0	0.000
		30	0.254	0.040	8888.8	0.000
		31	0.243	-0.007	8946.1	0.000
		32	0.232	0.004	8998.1	0.000
		33	0.223	0.020	9046.4	0.000
		34	0.213	-0.042	9090.5	0.000
		35	0.203	-0.002	9130.6	0.000
		36	0.195	0.020	9167.8	0.000

Table 7 – VP least squares estimates

Dependent Variable: VP
Method: Least Squares
Date: 10/18/14 Time: 17:01
Sample: 1/01/1996 12/23/2013
Included observations: 936
HAC standard errors & covariance (Prewhitening with lags = 1, Quadratic -Spectral kernel, Andrews bandwidth = 4.6461)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.068568	0.010048	6.823772	0.0000

R-squared	0.000000	Mean dependent var	0.068568
Adjusted R-squared	0.000000	S.D. dependent var	0.044625
S.E. of regression	0.044625	Akaike info criterion	-3.379964
Sum squared resid	1.861975	Schwarz criterion	-3.374791
Log likelihood	1582.823	Hannan-Quinn criter.	-3.377992
Durbin-Watson stat	0.089831		

Table 8 – VP Global Bai-Perron L Breaks vs. None

Multiple breakpoint tests
Bai-Perron tests of 1 to M globally determined breaks
Date: 10/18/14 Time: 17:37
Sample: 1/01/1996 12/23/2013
Included observations: 936
Breakpoint variables: C
Break test options: Trimming 0.10, Max. breaks 5, Sig. level 0.05
Test statistics employ HAC covariances (Prewhitening with lags = 1,
Quadratic-Spectral kernel, Andrews bandwidth)
Allow heterogeneous error distributions across breaks

Sequential F-statistic determined breaks:	5
Significant F-statistic largest breaks:	5
UDmax determined breaks:	2
WDmax determined breaks:	2

Breaks	F-statistic	Scaled F-statistic	Weighted F-statistic	Critical Value
1 *	32.77753	32.77753	32.77753	9.10
2 *	63.49167	63.49167	72.95129	7.92
3 *	41.74233	41.74233	55.53438	6.84
4 *	32.38753	32.38753	48.87670	6.03
5 *	29.24330	29.24330	49.55569	5.37

UDMax statistic*	63.49167	UDMax critical value**	9.52
WDMax statistic*	72.95129	WDMax critical value**	10.39

* Significant at the 0.05 level.
** Bai-Perron (Econometric Journal, 2003) critical values.

Estimated break dates:
1: 10/13/1997
2: 10/13/1997, 7/20/2009
3: 10/13/1997, 11/26/2007, 9/07/2009
4: 10/13/1997, 5/07/2001, 11/05/2007, 8/17/2009
5: 10/13/1997, 7/26/1999, 5/14/2001, 11/05/2007, 8/17/2009

Table 9 – Sequential Bai-Perron

Multiple breakpoint tests
Bai-Perron tests of L+1 vs. L globally determined breaks
Date: 10/19/14 Time: 18:48
Sample: 1/01/1996 12/23/2013
Included observations: 936
Breakpoint variables: C
Break test options: Trimming 0.10, Max. breaks 5, Sig. level 0.05
Test statistics employ HAC covariances (Prewhitening with lags = 1, Quadratic-Spectral kernel, Andrews bandwidth)
Allow heterogeneous error distributions across breaks

Sequential F-statistic determined breaks:	1
Significant F-statistic largest breaks:	1

Break Test	F-statistic	Scaled F-statistic	Critical Value**
0 vs. 1 *	32.77753	32.77753	9.10
1 vs. 2	5.254435	5.254435	10.55
2 vs. 3	0.792132	0.792132	11.36
3 vs. 4	0.839025	0.839025	12.35
4 vs. 5	7.679522	7.679522	12.97

* Significant at the 0.05 level
** Bai-Perron (Econometric Journal, 2003) critical values.

Estimated break dates:
1: 10/13/1997
2: 10/13/1997, 7/20/2009
3: 10/13/1997, 11/26/2007, 9/07/2009
4: 10/13/1997, 5/07/2001, 11/05/2007, 8/17/2009
5: 10/13/1997, 7/26/1999, 5/14/2001, 11/05/2007, 8/17/2009

Table 10 – Global Information Criteria

Multiple breakpoint tests
Compare information criteria for 0 to M globally determined breaks
Date: 10/19/14 Time: 18:18
Sample: 1/01/1996 12/23/2013
Included observations: 936
Breakpoint variables: C
Break test options: Trimming 0.10, Max. breaks 5
Test statistics employ HAC covariances (Prewhitening with lags = 1,
Quadratic-Spectral kernel, Andrews bandwidth)
Allow heterogeneous error distributions across breaks

Schwarz criterion selected breaks:	5
LWZ criterion selected breaks:	5

Breaks	# of Coefs.	Sum of Sq. Resids.	Log-L	Schwarz* Criterion	LWZ* Criterion
0	1	1.861975	1582.823	-6.212668	-6.200786
1	3	1.468007	1694.082	-6.435781	-6.400131
2	5	1.330377	1740.153	-6.519606	-6.460182
3	7	1.140251	1812.325	-6.659201	-6.576000
4	9	1.115188	1822.727	-6.666808	-6.559824
5	11	1.046218	1852.604	-6.716030	-6.585259

* Minimum information criterion values displayed with shading

Estimated break dates:
1: 10/13/1997
2: 10/13/1997, 7/20/2009
3: 10/13/1997, 11/26/2007, 9/07/2009
4: 10/13/1997, 5/07/2001, 11/05/2007, 8/17/2009
5: 10/13/1997, 7/26/1999, 5/14/2001, 11/05/2007, 8/17/2009

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