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Is corporate governance risk valued? Evidence from directors' and officers' insurance

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ABSTRACT

We find that common equity firms pay lower D&O insurance premiums than income trusts, an alternative and riskier ownership form. This result has wide-ranging implications for investors insofar as the information provided by D&O insurers provides investors with an unbiased signal of the firm's governance risk. The signal is unbiased because it comes from an entity (i.e. the insurer) that has a direct financial incentive to correctly assess an organization's governance risk, in contrast to other *ad hoc* governance measures and indices.

1. Introduction

We study the impact of an organizational form on the D&O insurance contract at the time of the IPO to evaluate the extent to which insurers assess the income trusts' potential cost of litigation due to their riskier governance structure. If they are indeed riskier, then, *ceteris paribus*, income trusts should pay more for the same D&O insurance protection. This controlled experiment allows us to test whether D&O insurers charge common equity and income trust companies different premiums based on their ownership structure only.

In line with the corporate governance risk hypothesis, our results show that income trusts pay higher D&O insurance premiums than firms incorporated under a common equity structure. This higher premium remains significant even after controlling for many of the firms' aspects that have been hypothesized in the literature as having an impact on D&O insurance premiums. This result suggests that insurance companies perceive income trusts as riskier than common equity companies, which implies that D&O insurance contracts reveal some litigation and governance risk information to the market.

A corporate director's duty goes beyond a simple firm value maximizing paradigm to include a fiduciary duty, a duty of loyalty and a duty of care. If they fail in those duties, the definitions of which are in constant flux, corporate directors and officers become personally liable for damages caused by their actions or absence thereof. According to the different annual surveys conducted by

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Tillinghast Towers-Perrin[1] (1999 through 2006), around 20% of firms had at least one lawsuit brought against their directors in the previous ten years, and about 50% of claims made against public companies arise from shareholders.[2] This exposure to liability risk prompts directors and officers to request insurance coverage to protect their personal wealth in the event a lawsuit is brought against them as representatives of the corporation.[3] This insurance, known as directors' and officers' liability insurance (D&O insurance hereinafter), is extremely common in public corporations.[4] Moreover, Link et al. (2009) show that following the Sarbanes–Oxley Act of 2002, directors are busier, meet more often and also assume more responsibilities and risk than before. Consequently, they report that D&O insurance premiums have doubled after the adoption of the Sarbanes–Oxley Act.

Corporate governance and its impact on the risk and return of corporations have been increasingly under the scrutiny of investors. Many governance indices have emerged to fulfill the need for governance risk assessment, but these indices are themselves criticized by academics and practitioners. As underlined in Rose (2007) and Bebchuk and Hamdani (2009), governance indices suffer from many different methodological shortcomings (see Bebchuk et al., 2009, for a recent survey of governance indices). As some governance factors are neither adequately specified nor publicly available (see Baker and Griffith, 2007), one has to wonder how much remains unknown. Bhagat and Bolton (2008) highlight the necessity to account for the endogeneous relationship between governance and performance, which is overlooked by governance indices. Moreover, they also judiciously point out that indices suffer from non-trivial measurement error. Adams et al. (2010) argue that the firm is confronted to myriad of governance related problems and that its governance structure emerges as its best response to those problems. Hence, given the heterogeneity of governance issues faced by the firm, it is unlikely that a unique governance policy is best for all firms. For instance, director independence is not necessarily a desirable feature of a board. As noted in Bebchuk and Weisbach (2010), researchers have a hard time finding a relationship between board independence and performance. Ravina and Sapienza (2009) show that when investing in the firm, independent directors earn abnormal returns of the same order of magnitude as the firm's managers. Independent directors thus benefit from an informational advantage and are close to management, which makes their independent status questionable. Recent work by Wintoki et al. (2011) uses a dynamic panel GMM estimator to tackle the endogeneity problem and examines the board structure and performance relationship. The authors find no causal relationship between the structure of the board of directors and firm performance. These various papers illustrate the faulty methodology employed by governance indices.

We argue in this paper that armed with private information and powerful incentives, insurers should be more apt than governance indices to decipher the adequacy of a firm's governance structure. Indeed, an alternative to using ad hoc corporate governance indices is to use the revealed preferences of corporations that have taken it upon themselves to indirectly obtain a corporate governance assessment when purchasing liability insurance on behalf of their directors and officers. Indeed, because of their direct financial involvement in paying for claims arising against directors and officers, insurers have had to develop appropriate technologies that transform a policyholder's observable characteristics into risk measures which yield an appropriate insurance premium. This is true for any type of coverage, including D&O insurance coverage. As a result, insurance companies that provide liability insurance protection to corporate directors and officers face a strong monetary incentive to correctly measure the potential cost of litigation. To assess this risk, insurers conduct a thorough investigation of the risk faced by firms seeking an insurance policy for their directors and officers.[5] The outcome of this analysis is integrated in the insurance contract.

As litigation against a firm's directors and officers is one of the unfortunate consequences of governance risk, and since insurers have the appropriate incentives to correctly measure the potential cost of litigation against the insured firm's directors and officers, one can thus imagine that the structure of a D&O insurance contract is an unbiased measure of a firm's governance risk, one that does not suffer from measurement error. Indeed, Baker and Griffith (2008) mention that the main risk directors and officers face is associated with shareholder litigation, and the major liability exposure is securities litigation on the basis of misrepresentation. We therefore expect D&O insurance premiums to be closely linked to the firm's governance risk, at least inasmuch as insurers use the correct technology to transform observable characteristics into an insurance premium. The insurance contract therefore provides information on the firm's financial perspectives, the quality of its management team and its "deep governance" features (i.e. its *culture* and *character* as highlighted in Baker and Griffith, 2007).

To test the prediction that insurers are able to measure the potential cost of litigation against a corporation's directors and officers, we would like to gain access to a large database of firm characteristics and control for all that is observable by the insurer, including governance risk. Although D&O insurance characteristics are not publicly available for U.S. firms, a close proxy is to use Canadian data as in Core (1997, 2000), Boyer (2006) and Park Wynn (2008) because Canadian firms typically disclose the D&O insurance protection they purchase to protect their managers.

But this still leaves open the question of whether insurers have the ability to measure governance risk and its impact on the potential cost of litigation. To answer this question, we limit our dataset to Canadian companies that went public[6] through an

[1] The Tillinghast Towers-Perrin surveys report trends in average D&O claims and premiums as well as patterns in insurance purchasing habits for North American firms. Although these surveys are not exempt of selection biases, there is no other consistent information on D&O insurance data. These surveys are now conducted by Towers Watson.

[2] McTier and Wald (2011) show that class action lawsuits prompt firms to significantly reduce agency problems.

[3] Having insurance does not mean that directors are immune to out-of-pocket payments. According to Adams et al. (2010), Enron directors were mandated to pay 13 million dollars (not covered by insurance). The bill for Worldcom directors was $18 million.

[4] According to different Tillinghast Towers-Perrin surveys, approximately 95% of public corporations in the United States and 75% of public corporations in Canada provide such insurance to their managers.

[5] See Knepper and Bailey (1998), Blades (2006) and Baker and Griffith (2007).

[6] Chalmers et al. (2002) also analyzed the demand for D&O insurance by firms that went public through an IPO. They obtained their data for 72 American firms that went public between 1992 and 1996 from a proprietary database.

initial public offering (IPO) before 2006 to see if their corporate and governance structure had an impact on the price of D&O insurance. Indeed, until 2006 Canadian companies that decided to go public had the possibility of choosing between two corporate structures: *Common equity* or *Income trust*. Income trusts in Canada are similar to *Master limited partnerships* that were introduced in the early eighties in the United States, but later abandoned.[7] Real estate investment trusts (REITs) represent a subset of all income trusts that has been common in the United States and in Canada for a long time. With Business trusts and Oil & Gas Royalty trusts, REITs make up the quasi totality of income trusts in Canada (see Beck and Romano, 2004, and Boyer et al., 2009).[8] We examine all income trusts in this paper.

The general understanding in the corporate law literature (see amongst others Gillen, 2005, Halpern, 2004; 2006; Huson and Pazzaglia, 2007 and Zetzsche, 2005,) is that income trusts are riskier than stock companies from a governance standpoint, not only because of their higher risk of cash flow misappropriation, but also because there is a lack of jurisprudence regarding the business trusts' directors' and officers' duties. Zetzsche (2005) writes:

> "Compared to a shareholder, the position of a unitholder is weaker, for two reasons. First, the exercise of the unitholder's power can have only an indirect effect, in that it needs to be enforced by the trustee. […] Second, as compared to corporate statutes, the trust indenture and the management agreement rarely, if ever, provide for effective minority rights. […] The above does not suggest that all trusts have governance problems. However, the discretion which trust law allows over the choice of income trust governance might result in structures that are detrimental to investors. This is particularly problematic given that income trusts are marketed as a product for retail investors who might not understand the implications that trust law provides for them."[9]

Income trusts should therefore appear riskier in the eyes of insurance companies because their Byzantine ownership structure increases the chances of conflicts between managers, who have a retained interest at the trust and at the operating company levels, and unitholders.

In this paper, we test whether the riskier governance structure associated with the income trust organizational form is priced by insurers.

Fig. 1 highlights our main result: income trusts pay more to purchase coverage to protect their directors and officers from liability than common equity companies. Fig. 1 provides strong support for the suggestion that investors could benefit from the valuable information embedded in D&O insurance contracts (see Baker and Griffith, 2007; Chalmers et al., 2002 and Griffith, 2006). Inasmuch as insurers have a direct financial incentive to use an optimal technology to assess a firm's governance risk—provided they are correctly pricing a company's litigation and governance risk—investors should value any information they obtain from D&O insurers about a firm's governance risk since it is unbiased.

The remainder of the paper is organized as follows. Section 2 presents a primer on directors' and officers' insurance and income trusts. We develop our hypothesis and describe the data in Section 3, and analyze our results in Section 4. Section 5 is devoted to robustness checks while Section 6 concludes with a discussion.

2. A primer on directors' and officers' insurance, income trusts and the IPO of income trusts

2.1. Directors' and officers' insurance

2.1.1. The D&O insurance market

Directors' and officers' liability insurance contracts cover corporate directors and officers against claims arising from their activities as representatives of the corporation. Divergence in interests mixed with asymmetric information between managers, including both directors and officers, and shareholders is the main source of conflicts. The insurance company will reimburse the corporation and/or its managers for the costs of settling and defending the lawsuit up to the policy limit, provided the firm's directors and officers have acted *honestly and in good faith*. In theory, should managers and their company have acted in a fraudulent manner, the insurance company could decide not to honor the policy. In practice, however, the cost to rescind a policy based on a manager's bad faith typically prompts insurers to settle claims before trial. The average settlement was over $33 million for 2007 whereas the average settlement for the period 2002–2005 was $22.3 million, up from $13.3 million for the period 1996–2001 (see Baker and Griffith, 2007).

The D&O insurance market, as any insurance market, is subject to premium and policy limit cycles. A hard market is characterized by fewer insurers that provide lower coverage at a higher price and by more stringent contract restrictions. Nevertheless, even though two insurers control almost 60% of the Canadian market (see the Tillinghast Towers Perrin 2006 D&O insurance report), one can still consider the D&O insurance market as quite competitive. The reason is that the marginal pricing of D&O insurance contracts is dependent on the ebb and flow of new competitors in this excess market. As a result, competition in the D&O insurance market is best modeled using a Bertrand price-competition model that does not require many suppliers to be competitive.

[7] For more details, see Ciccotello and Muscarella (1997).
[8] Of the 159 income trusts studied in Boyer et al. (2009), 83 were Business trusts, 25 were REITs and 33 were Oil and Gas Royalty trusts.
[9] Zetzsche (2005), p. 66.

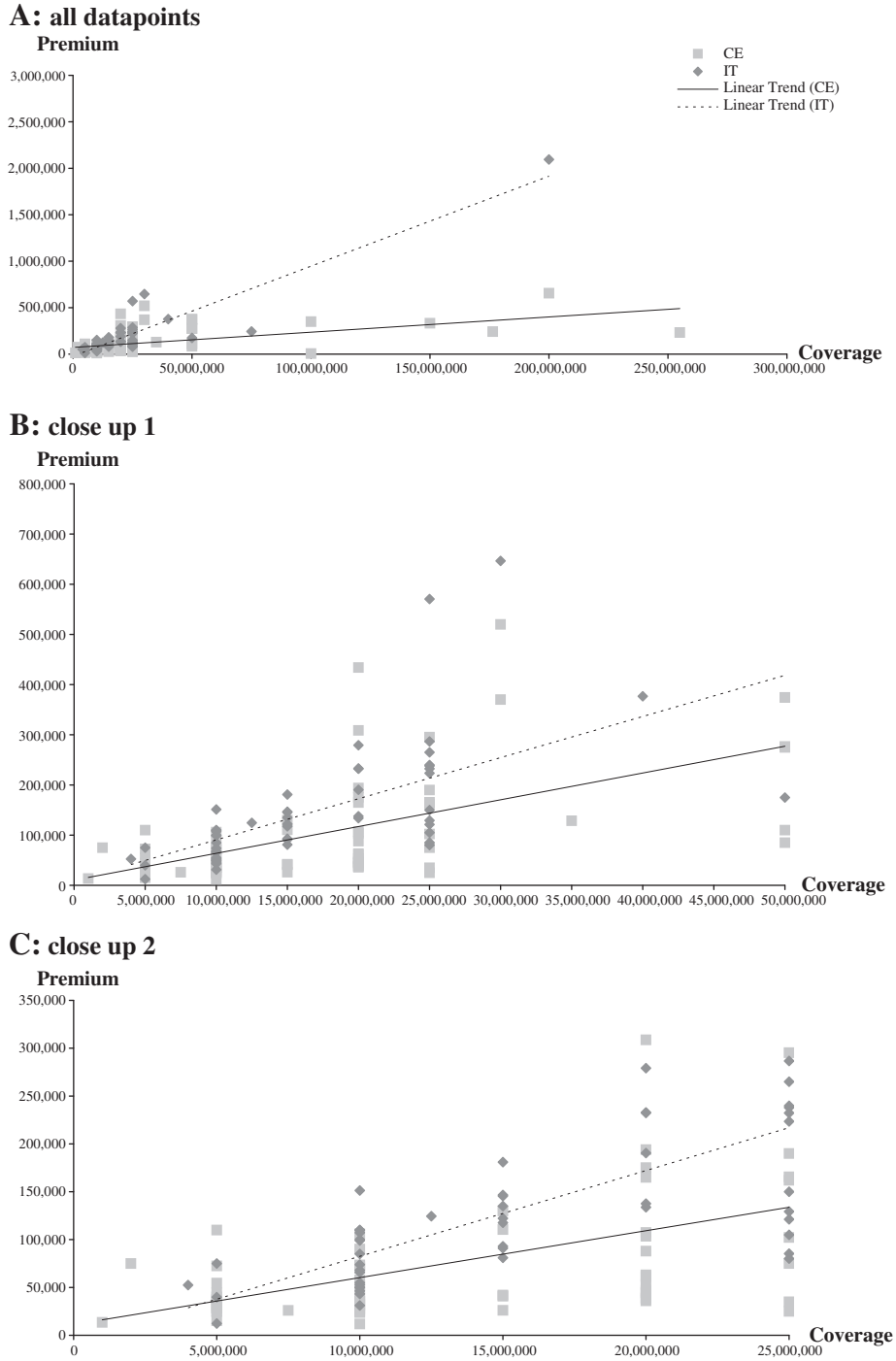


Fig. 1. Comparison of premium paid by income trusts and common equity companies. The figure plots the premium paid by firms for the amount of coverage purchased. Panel A shows all data points as well as trends for the premium paid by IT and CE as coverage increases. Panel B is a first close up of Panel A. The graph has been dimensioned to show trends in premium paid for coverage for IT and CE. Data points for which coverage exceeds 50 million dollars have been omitted to generate the graph. Panel C is a second close up of Panel A. Data points for which coverage exceeds 25 million dollars have been omitted to generate the graph.

2.1.2. The pricing of D&O coverage

Baker and Griffith (2007) provide a valuable in-depth account of the pricing approach used by D&O underwriters. Using detailed interviews of 41 D&O insurance professionals (underwriters, actuaries, brokers, risk managers, lawyers and claim process specialists), they provide an insightful picture of the underwriting process. Individual risk is crucial in the eyes of underwriters, who exert great efforts in trying to out-select their clients. Underwriters use three sources of information: The written application that contains a full array of documentation, the analysis of public financial and accounting data, and interviews with the

prospective insured's senior management team.[10] Any doubt as to the veracity of the statements supplied by the client in the risk assessment phase may cause the insurance policy to be revoked or the claim to be denied. In line with Knepper and Bailey (1998), this underwriting procedure allows us to assume that once the insurance contract is signed, no residual asymmetric information remains between the underwriter and the insured.

Underwriters must accurately assess the potential cost of litigation of each policyholder since they ultimately bear the full cost of their mistakes. As a result, underwriters have developed specific risk assessment tools that use the firm's private internal information that is usually not divulged to other market participants. One possible approach to measuring a firm's potential cost of litigation is to first use the firm's financial information such as the firm's market capitalization, volatility and industry perspective. Governance risk factors are then taken into account.

Baker and Griffith (2007) divide the analysis of governance characteristics into two categories: *Culture* and *Character*. *Culture* refers to the stringency of internal controls at work within the corporation and how top management complies with formal and informal norms in addition to the incentive structure in place. Beyond traditional governance checkpoints, underwriters investigate the way the company is run to get a sense of "how information flows throughout the firm". This allows the insurer to detect the source of potential D&O litigation. The second category is *Character*. It aims to identify excessive risk-taking attitudes by directors and officers and their propensity to hold themselves above the law. In essence, *Character* boils down to uncovering the managers' sense of ethics.

2.1.3. The empirical determinants of D&O insurance premiums

Following the 1992 Dey Report, disclosure of basic information regarding D&O insurance (i.e., policy limit, premium and deductible) in the firms' annual proxy statements has become the norm in Canada. This allowed a handful of academics to analyze the determinants of the purchase of D&O insurance as well as the factors affecting the premiums. The first to test predictions on D&O insurance was Core (1997) using a dataset of 222 firms whose fiscal year ended in 1994. He demonstrates that litigation risk and the cost of financial distress are the main determinants affecting the likelihood of D&O insurance purchases, the policy limit and the deductible. He also rejects the hypothesis that D&O insurance is part of the managers' compensation package. Later, Core (2000) notes that the premium charged is explained by the governance structure quality, as measured by the firm's ownership structure, board independence and management entrenchment, as well as the firm's business risk. As the premium reflects the quality of governance, Core (2000) concludes that a firm's governance structure is related to its excess CEO compensation, which has previously been associated with lower shareholders value (see Core et al., 1999).

Bhagat et al. (1987) had previously found no link between D&O insurance coverage and managerial discipline. Using an event study approach, they find that the decision to purchase D&O insurance does not reduce shareholder wealth, but may in fact have a positive impact. This supports the view that D&O insurers exert a monitoring role that shareholders of widely-held firms should value, thus negating the moral hazard effect of insuring the managers. Indeed, Holderness (1990) notes that liability insurance can be used by a company to attract independent directors who are some of the best monitors of any firm's officers. Fortunately for shareholders, director limited liability provisions and corporate indemnification plans do not seem to cost shareholders anything (see Netter and Poulsen, 1989).

One possible reason for the apparent lack of impact on shareholder wealth of lower director accountability is, as Holderness (1990) suggests, that liability insurance promotes internal monitoring as directors will be keen to monitor each other because if one director should withhold or alter information, coverage could be denied for all, especially since D&O insurers can oppose opportunistic changes in the governance structure, thereby protecting the shareholders' interests. As a result, purchasing D&O insurance comes with the service of an independent investigation of a firm's governance practices. O'Sullivan (1997) successfully tested Holderness' (1990) hypothesis using a sample of 366 British public firms. An alternative explanation to understand why shareholders are willing to pay to protect directors is formulated in recent work by Bradley and Chen (2011). They show that directors whose firms provide them with limited liability and indemnification adopt lower risk strategies, which in turn lower their firm's yield spreads and increase their credit ratings, thus ultimately benefiting shareholders.

Using proprietary data on 72 American IPO firms between 1992 and 1996, Chalmers et al. (2002) examine the relationship between IPO underpricing and D&O insurance coverage and find that firms with more coverage at the time of the IPO are more likely to be sued for mispricing. They also find that insurers are able to price this opportunism *ex ante* by charging higher premiums prior to the IPO to companies whose post-IPO performance will be poor. This result suggests that managers purchase D&O insurance to protect themselves when they know the IPO price was high, which is in line with the managerial opportunism hypothesis that sees D&O insurance as detrimental for shareholders. Moreover, it sheds light on the insurers' ability to forecast potential litigation arising from poor post-IPO performance.

Other authors follow a different line of reasoning and assert that D&O insurance protects shareholders rather than managers. In line with Gutiérrez (2003) who concludes that D&O insurance allows shareholders to optimize litigation as a monitoring tool for managerial ineptitude, Boyer (2003) finds that minority shareholders, who are the group of stakeholders most likely to sue managers, welcome D&O insurance protection because it ultimately protects their wealth against managerial incompetence.

Our study focuses on the income trust structure to test our hypothesis that insurers translate their assessment of governance risk into the premium. We therefore present the specificities of this organizational structure.

[10] Insurers are mostly interested in questions related to prior claims involving the corporation or any of its directors and officers, planned corporate reorganization, potential mergers & acquisitions, securities offerings, as well as sales of divisions.

2.2. Income trusts

Income trusts are investment vehicles structured to maximize the periodic cash distribution to unitholders. Trusts sell units to investors and invest the proceeds to purchase debt and equity of the underlying business. As a result, a unit is a package of debt and equity of the operating entity. Unitholders receive virtually all earnings from the operating business. Typically, good candidates are firms operating in a mature industry, generating high and stable cash flows from assets necessitating low capital expenditure. Even though income trusts are characterized by high payout ratios, they are under no obligation to distribute cash, much like a traditional public company is not required to issue dividends.

Traditionally, the best candidates to become income trust were firms that operated pools of real estate properties, known as Real Estate Income Trust (or REITs) in the literature, and owners of patents and oil and gas producing land, known as Royalty trusts. The mid-2000s saw the emergence of Business trusts, which included firms that were not necessarily mature, did not necessarily have predictable and stable cash flows, and did not necessarily need low capital expenditure. The emergence of business trusts changed the corporate landscape of the Canadian equity world (see Halpern, 2004, for more details).

2.2.1. The structure of income trusts

Until 2007 trust earnings were not taxable at company level, thus avoiding Canada's double taxation burden. This tax advantage spurred the income trust IPO market in the 2000s and is the reason why these investment vehicles were called "flow-through entities." The tax advantage lured many Canadian companies into becoming income trusts even though they were not good candidates[11] a priori since they were not in a mature industry, did not have high and stable cash flows and necessitated high capital expenditure.

With a market capitalization below $22 billion in 2000, the market capitalization of income trusts reached $186 billion in 2006. According to King (2003), the growth in the number of income trusts as an asset class was due to the appreciation of unit values as well as IPOs and sales of existing trusts. In 2002 for instance, income trust IPOs represented 86% of the total value of IPOs. As more and more companies were considering the conversion into an income trust, thus reducing the effective taxation of corporations, the Canadian government amended the legislation on October 31st 2006 to eliminate, by 2011, the tax advantage of income trusts over common equity corporations.

2.2.2. Income trusts and governance

Even before the Canadian federal government decided to remove the income trusts' tax benefits, many analysts (see Gillen, 2006, and Halpern, 2004) criticized the unfounded over-valuation of income trusts. Expressing his opinion regarding the governance of income trusts, the vice-president of public equities at the Ontario Teachers' Pension Plan said: "There are basically no rules: it's like the Wild West."[12] Whereas finance theory tells us that free cash flow should be distributed to investors to frustrate spendthrift managers, Zetzsche (2005) doubts that managers will ultimately be entirely constrained. Indeed, they are under no obligation to distribute anything. Moreover, even though Halpern (2004) contends that income trusts reduce the likelihood of financial distress since debt and equity are bundled together into the unit, most income trusts still use third-party debt financing. And since King (2003) observes that third-party debt is usually senior to unit-debt, income trusts are not immune to incurring financial distress costs should financial difficulties arise.

Gillen (2005, 2006) analyzes the income trusts' structure. He finds that although the declaration of trust closely mirrors corporation statutes, some important facets of the *Canada Business Corporations Act* are not replicated in trust law, to the investors' disadvantage. The most significant examples are the absence of shareholder proposals, appraisal remedy and oppression remedy. This prompted Boyer et al. (2009) to conclude that income trust law was not originally created to suit a growing business structure and therefore does not emphasize investor protection to the extent that common equity corporate law does.

As mentioned in Boyer et al. (2009), although unitholders do not have access to derivative actions, they can still be claimants against trustees who breach their fiduciary duties. Indeed, trustees owe their duties to unitholders who are beneficiaries and not to the trust because the latter is not a separate legal entity under Canada's common law. Moreover, unitholders may even be able to bring a derivative action against the operating entity insofar as they can persuade courts that the value of their units is inherently tied to the actions of the operating business. Therefore, since unitholders have, *de facto*, the possibility to take legal action against trustees, underwriters establishing an insurance contract for an income trust should exert at least as much caution in examining the governance structure of their prospective client as they do for a traditional public corporation.

The value of investment of both types of investors is intrinsically related to the performance of the company. To understand why the control of unitholders is indirect at best, one needs to have in mind the way a trust is run. As King (2003) notes "the first key difference is the introduction of one or more legal entities between equity investors and the operating company." As a result, unitholders are one step further away from the reins of the operating company than common equityholders. The most

[11] The best examples are perhaps that of Telus and BCE, the two largest Canadian telecommunication firms, who announced (September 11th and October 11th 2006) their intention to become income trusts. Based on a one-share-for-one-unit exchange, BCE believed it would be able to transform its $1.32 annual divided per share into a $2.55 annual payout per unit (Canadian Business, *Copycat: BCE follows Telus' lead*, October 23rd 2006, http://www.canadianbusiness.com/markets/income_trusts/article.jsp?content=20061023_81731_81731, last visited on July 9th 2009). Based again on a one-for-one trade, Telus shareholders were promised an annual distribution of $4.00 per unit (Canadian Business, *Anatomy of a trust conversion: Telus*, September 22nd 2006, http://www.canadianbusiness.com/markets/stocks/article.jsp?content=20060922_80590_80590, last visited on July 9th 2009) instead of their annual $1.50 dividend per share.

[12] The Globe and Mail, *Income trust boards: The new "Wild West"*, October 25th 2006. Available at: http://www.theglobeandmail.com/archives/article850682.ece (last visited June 18th 2011).

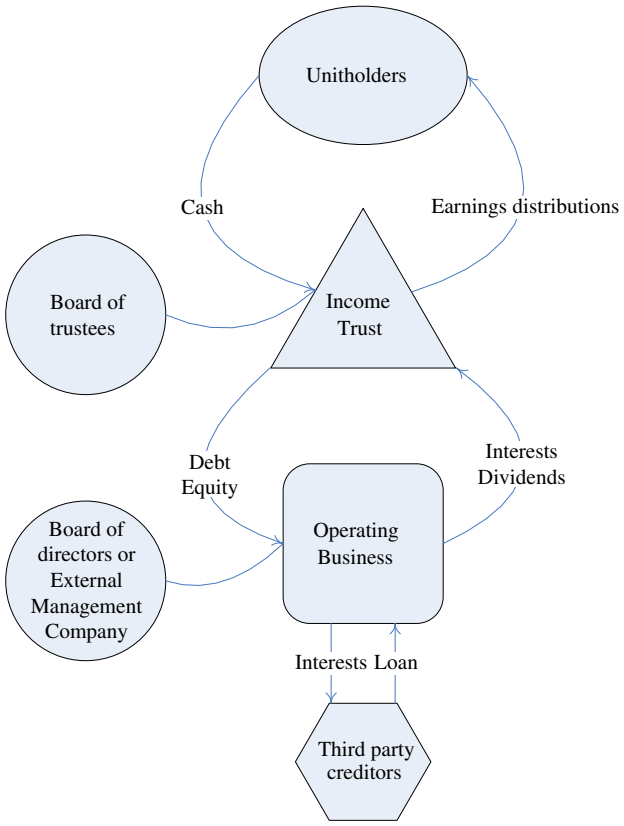


Fig. 2. Basic income trust structure.

basic structure of an income trust is depicted in Fig. 2, and Appendix B presents the corporate structure of two such income trusts, *CanWest MediaWorks Income Fund* and *Spinrite Income Fund*, as presented in their final IPO prospectus. Clearly the contrived organizational form increases a unitholder's difficulty to see the origin of the cash flows he receives.

The complexity of the structure can grow rapidly as more legal entities come into play. It is uncertain whether investors fully appreciate this complexity and weigh the pros and cons to integrate it in the valuation process. This problem is particularly acute since investors in income trusts are more likely to be individuals than in common equity companies (see Mintz and Aggarwal, 2004).

In addition, conflicts of interest may arise when trustees are directors and managers of the operating company, a situation that happens to be quite common. It is not clear whether they will always have the unitholders' best interest in mind when making decisions. Additional conflicts emerge when trustees delegate their responsibilities to external management teams (Gillen, 2006). These outside managers may lack the necessary incentives, skills and time to perform for the betterment of unitholders. *The Globe and Mail* reports that

> "22% of the country's largest trusts continue to be managed under external contracts, which means they do not have in-house management teams who report directly to the board. A further 7% have a combination of internal management and an external management contract."[13]

Income trusts also have discretion over their governance structure. There is no specified standard structure, which complicates the evaluation process for investors and the risk assessment for underwriters. Compared to common equity shareholders investors in an income trust have access to little information regarding the operating entity and have little control over it. As Zetzsche (2005) writes "in many cases, the interests of the trustee and the management are intertwined, to the detriment of investors".[14]

An additional issue related to income trusts is the personal liability of investors in case of business failure. Boyer et al. (2009) mention that even though the provinces of Alberta, Manitoba and Ontario have taken legal measures to protect unitholders as beneficiaries from personal liability, they do not exclude liabilities of unitholders as principals of the trustees. Even without considering the extreme case of bankruptcy, financial difficulties due to unforeseen capital expenditures or difficulties to raise money from outside sources could force management to lower distribution to unitholders. A dramatic plunge in valuation is to be

[13] *The Globe and Mail, Ibid.*
[14] Zetzsche (2005), p. 65.

expected should such a scenario occur since high valuation is mainly dependent on the implied promise of high distribution. This would likely give rise to a claim.

Thus, income trusts are much more complex entities and operate in a more opaque framework than traditional public companies. Unitholders do not enjoy as much protection as investors, although they are able to litigate. Moreover, the governance structure of income trusts is not standardized and various sources of conflicts of interest exist that do not apply for public corporations.

2.3. The IPO of income trusts

The decision to become an income trust rather than a common equity firm depends on many factors. Huson and Pazzaglia (2007) show that the choice of going public as an income trust depends heavily on the income trusts' market valuation relative to common equity firms. They find that after controlling for the asset base, higher market valuations for income trusts significantly increase the probability that a company will choose the trust structure when going public. And even though market timers enjoy lower underwriting fees and underpricing, they ultimately suffer from poor stock price performance in the long run. Hence, companies appear to go public as income trusts on the ground of market timing rather than sound strategic judgment. The poor long-term performance of market timers could trigger claims, which should be taken into account by insurers when they decide upon a premium to charge income trusts for D&O insurance coverage.

3. Hypothesis development, data and variables description

3.1. Hypothesis and data

With these fundamental differences between income trusts and common equity companies in mind, we now develop our hypothesis: Do insurers believe that income trusts face a higher litigation risk, and is that higher litigation risk driven by the trusts' governance structure? Underpinning this question is our assertion that insurers use a plethora of information that is not available to the public and that this information is reflected in the pricing of the D&O insurance contract, which consequently represents useful information for market participants.

Since income trusts have a more complex governance structure and since Baker and Griffith (2007) find that what matters most to underwriters is the firms' governance structure and culture, income trusts should pay more for coverage. A necessary condition for this statement to be valid is that insurers are able to efficiently price governance risk. The risk assessment conducted by insurers (see Blades, 2006) with the possible denial of coverage should an information have been omitted or distorted, prompts us to believe that there is no residual information asymmetry. Hence, our null hypothesis is that the D&O insurance premium is not affected by whether the insured is a stock company or an income trust. The alternative hypothesis is that insurers require a higher premium from income trusts, as they perceive their governance structure to be more susceptible to claims.

To test our hypothesis, we gathered financial and governance information from an initial sample of 272 firms that went public through an initial public offering between 1995 and 2005. This initial sample was initially collected by Huson and Pazzaglia (2007). We obtained financial data from Compustat. Governance data was hand-collected from the firms' annual report directly available on SEDAR. Due to missing data (mainly because their first proxy circular or annual reports were not available on SEDAR), our usable sample consists of 200 observations, including 103 common equity companies and 97 income trusts. The variables collected are as of the end of the first complete fiscal year post-IPO. All monetary figures are in Canadian dollars and a conversion rate as of the end of the firm's fiscal year was applied when needed.

3.2. Description of variables

The determinants of premium previously found in the literature encompass variables related to the firm's financial situation as well as the composition of its board of directors. We describe the variables used in this paper below.

3.2.1. Dependent variables

Purchase is an indicator variable with value one if the firm reported in its management proxy that it carried D&O insurance and zero otherwise.[15] A firm whose management proxy statement makes no mention of D&O insurance was deemed to provide no such coverage to its directors and officers.

We test for the price of coverage using the log of the premium-to-coverage ratio (*ln_prem_cov*). This ratio gives us the unit price of D&O insurance, which is also known as the "rate-on-line" in the language of insurance underwriters. Presumably, a firm that pays a higher rate-on-line is perceived by the insurer as being more at risk to be sued since it is paying more per unit of coverage.

3.2.2. Main independent variables: ITCE

The main variable of interest in our study is the *ITCE* variable, which is an indicator variable equal to one if the company is an income trust and zero otherwise. The null hypothesis is that this variable is insignificant in explaining the price of coverage. If,

[15] As in Park Wynn (2008), we assume that the lack of a firm's D&O insurance disclosure in its proxy circular means that the firm does not carry D&O insurance. Although this assumption can be problematic, the two-stage approach we use partially controls for this selection bias.

however, income trusts are a riskier organizational form, then we should expect the *ITCE* variable to have a positive and significant impact on *ln_prem_cov*.

3.2.3. Control variables

We divided our control variables in three categories: Financial, Governance and Other. We present each variable in turn.

3.2.3.1. Financial variables. Ln_MVE is the logarithm of the stock market value of our sample firms. We collected this variable using Compustat. We completed the missing data with the market price times the number of shares outstanding at the end of the firm's first fiscal year after its IPO. The potential damage should litigation occur is higher for large companies since their ownership is more likely to be diffuse. We could therefore expect firms with a higher market value to pay a higher premium per dollar of coverage. On the other hand, larger firms are more likely to have in house legal staff to defend against litigation brought against a firm's directors and officers. This means that larger corporations could have a lesser need for D&O insurance. The resulting impact is therefore unknown.

Growth measures a firm's growth opportunities. Following Core (1997), we compute *Growth* as $\frac{market\ value\ of\ equity+book\ value\ of\ liabilities}{book\ value\ of\ assets}$. A firm with a high growth ratio faces more governance risk because it is easier for its managers to potentially misallocate resources in a more complex corporate environment. Growth firms should therefore be charged a higher price for insurance.

We measure the performance of our sample firms by computing their return on assets (*ROA*). Two confronting views can be put forth to anticipate the sign of the coefficient in our regression. On one hand, better performing firms should be less likely to face litigation arising from shareholders because of financial losses. On the other hand, a high *ROA* could be due to aggressive earnings management in the short run to prop-up the price (see Boubakri et al., 2008, for more details in this context), which implies that future performance will be lower and possibly trigger claims. If this is indeed the case, we would expect a positive relationship between *ROA* and the price of coverage.

The last financial variable we will use is the firm's book leverage (*Debt_ratio*), which we calculate as $\frac{Total\ Debt}{Total\ Assets}$. The more levered the firm is, the higher its probability of distress and risk of D&O litigation. Underwriter should therefore demand a higher premium. In contrast, the debtholder monitoring hypothesis implies a negative relationship between leverage and the potential cost of litigation as external debtholders have an incentive to monitor the firm's management, which lessens the need for the monitoring services provided by the insurance company. Consequently, the expected sign of *Debt_ratio* is ambiguous.

3.2.3.2. Governance variables. We collected four variables related to governance. Because D&O insurance is designed to attract and retain qualified independent directors, board independence should be an important factor in determining the price of D&O insurance. Consequently we shall use board independence as the sole governance measure in our regressions with the log of the rate-on-line as the dependent variable. The other governance variables will be used in the selection equation. There will thus be four governance measures used in explaining whether a firm protects its directors and officers through an insurance contract.

Board_Indep is the percentage of unrelated directors on the board of directors as mentioned in the firms' proxy statements. We expect firms with more independent boards to pay a lower premium as a large part of the literature views independent boards as a good governance feature.[16]

Duality is an indicator variable taking on the value one if the chairman of the board is also the company's chief executive officer and zero otherwise. This particular feature of a board is usually viewed as an entrenchment red flag, even though a growing number of academics question the necessity to separate the two as they do not find a significant relationship between this variable and firm performance. For example, Brickley et al. (1997) find that the cost of separating the roles of CEO and chairman outweighs the benefits. The entrenchment hypothesis would dictate that *Duality* be positively correlated with *Purchase*. *Board_size* refers to the number of directors on the board. As more individuals sit on the board of directors, the likelihood that they will demand D&O insurance increases. *Blockholder* is an indicator variable equal to one if a shareholder owns 10% or more of the voting shares, as mentioned in the firms' proxy statements. Again, two lines of reasoning can be confronted. Boyer (2003) hypothesized that blockholders view D&O insurance as a wealth protecting mechanism; we thus expect a positive sign for the relationship between *Blockholder* and *Purchase*. On the other hand, D&O insurance can be considered as a substitute monitoring mechanism as in O'Sullivan (1997), thereby indicating a negative expected sign.

3.2.3.3. Other variables. Risky_Industry is an indicator variable equal to one if the firm belongs to one of the risky industries identified in Bajaj et al. (2000). The authors test for settlement statistics across industries and identify the ten riskiest industries (using the first two-digit SIC codes) in terms of the number of cases settled as well as the average settlement amount. We argue that an insurer will deem a prospective insured firm to pose a greater risk of a lawsuit if it belongs to one of these ten risky industries and will charge a higher premium accordingly.

First_yr_XS_return is the one year buy-and-hold return of the firm right after its IPO minus the buy-and-hold return on the S&P/TSX over the same period. If insurers are able to charge a higher premium to firms that will perform poorly because of their revealed poor governance and opaque operations, then the relationship between *First_yr_XS_return* and *ln_prem_cov* will be negative. *First_day_return* is the first day return of our sample IPO firms. This variable allows us to control for the underpricing

[16] As noted above, researchers find it difficult to demonstrate a significant relationship between board structure and firm performance (see Bebchuk and Weisbach, 2010 and Wintoki et al., 2011). However, exchange listing rules and SOX requirements focus on board independence as a desirable (and necessary) feature of boards.

of the IPO in our regressions as suggested by Ritter (1987). Also Chalmers et al. (2002) find a significant negative relationship between D&O insurance and IPO underpricing, suggesting that IPO underpricing acts as a substitute for shareholder lawsuits. Our last stock exchange related variable is the firm's market return volatility. Following previous IPO literature, we use the aftermarket daily return volatility as a measure of risk. We calculated *Volatility* as the standard deviation of annualized daily returns. Although volatility should be lower for income trusts because they are typically more mature companies with more stable cash flows, a higher volatility should be associated with a firm whose operations and governance are riskier, thus increasing the D&O insurance contract's rate-on-line. We collected the IPO issue price using the firms' prospectus available on SEDAR and verified the values on the FPInfomart database. Subsequent price information comes from Bloomberg.

Age measures the number of years since the start of the company's operations at the time of the IPO announcement. We expect this variable to have a negative coefficient in our regressions of the rate-on-line since insurers should view more experience as a positive signal when they assess the risk of an IPO firm because more historical data is available. For business trusts, we considered the date of inception of the operating company. For real estate investment trusts, we used the start of operations of the properties' current owner.[17]

Float is the ratio of the number of shares issued at the IPO on the total number of shares outstanding after the IPO. As a larger fraction of shares is issued at the time of the IPO, we expect an increase in both the probability of litigation and the expected loss should a claim arise. *Pct_US_Sales* is the percentage of the firm's sales that were incurred in the United States. The variable was collected by looking at annual reports for the year following the IPO. The United States being a more fertile environment for potential litigation, we expect this variable to be positively correlated with the decision to purchase D&O insurance, as well as with the price of coverage.

Because the income trust structure was designed initially for real estate entities as well as oil and gas firms, we use a *REIT_O&G* dummy variable equal to 1 if the IPO is a financial/real estate firm or an oil and gas firm and 0 otherwise. We expect this variable to have a negative impact on the rate-on-line as firms for which the income trust structure was designed should not be penalized by the insurance market for choosing this particular corporate structure. *A contrario*, business trusts and royalty trusts (i.e., the omitted trust) should be penalized by the insurance market that would require higher premiums.

Finally, we use indicator variables for the different years in our sample to account for the differences in market characteristics and other macroeconomic factors driving premiums. More specifically, we create an indicator variable *Dummy_hard* for hard insurance market years. We define hard market years based on the information on premium trends in the Tillinghast Towers-Perrin 2006 D&O Liability Survey as well as on various comments and articles by D&O liability professionals. Years 2002 through 2005 are considered hard market years, and should therefore lead to higher rate-on-line independently of the firm's ownership structure. We also use the gross D&O premium index measure (*Premium_index*) as a control variable for the hard insurance market years. We also use an interactive variable (*Hard x ITCE*) to see if the hard market affected income trust more than common equity firms.

3.3. Sample statistics

Table 1 presents the industrial distribution of our usable sample of IPO firms. We see that our usable sample is relatively homogeneously distributed across industries. About one third of our sample firms are categorized as belonging to a risky industry, including 45% of common equity companies and 28% of income trusts.

Fig. 3 shows the number of common equity and income trust IPO firms across time. The income trust wave is readily apparent as of the 31 firms that went public in 2002, 28 were income trusts. Fig. 4 indicates that the increase in the percentage of income trust IPOs coincides with the high relative valuation of income trust as well as with the hard market in the D&O insurance market.

4. Analysis of results

4.1. Preliminary results and tests

4.1.1. Descriptive statistics

Panel A of Table 2 presents descriptive statistics for our independent and dependent variables for the usable sample of IPO firms. We observe that 69% of IPO firms reveal having purchased D&O insurance around their IPO date. Firms paid on average $148,554 in premiums for an average coverage of $24 million. We also see a very wide distribution for the rate-on-line (Prem_cov) variable, which is calculated as the premium paid per $1000 of coverage. Whereas the maximum coverage is 200 times the minimum coverage and the maximum premium is 325 times the minimum premium, the maximum rate-on-line is almost 600 times larger than the minimum rate-on-line. This provides justification for using as our dependent variable the log-transformation of the rate-on-line variable.

In Panel B of Table 2, we separate income trusts from common equity firms. We first test for each variable whether the variances are equal and then test for the difference in means accordingly. We compute Fisher's exact test for indicator variables to test for their means difference.

[17] In some cases, there were multiple owners or several companies that were grouped as part of the IPO transaction. Subjective judgment was therefore inevitable in those particular cases but we were wary to focus on the date when the company generating the cash flows started its business.

Table 1
Industry breakdown. This table presents the industry breakdown of our sample firms. Panel A reports the number of CE and IT for each of the division structures represented in our sample, based on their SIC codes and identified by the United States Department of Labor, available at http://www.osha.gov/pls/imis/sic_manual.html (last visited June 19th 2009). Panel B reports the number of CE and IT for each of the ten risky industries identified in Bajaj et al. (2000).

Panel A: Industry breakdown for CE and IT

Industry	CE	IT	Total
Mining	15	7	22
Construction	1	0	1
Manufacturing	41	28	69
Transportation, communications, electric, gas, and sanitary services	7	22	29
Wholesale trade	1	3	4
Retail trade	3	13	16
Finance, insurance, and real estate	16	12	28
Services	19	12	31
	103	97	200

Panel B: Risky industries breakdown for CE and IT, based on their two-digit SIC codes as identified in Bajaj et al. (2000)

Industry	CE	IT	Total
Manufacturing			
Chemicals and allied products	10	2	12
Industrial and commercial machinery and computer equipment	1	2	3
Electronic and other electrical equipment and components	14	1	15
Measuring, analyzing, and controlling instruments	2	0	2
Transportation			
Electric, gas, and sanitary services	1	12	13
Wholesale trade			
Wholesale trade—durable goods	1	3	4
Finance, insurance, and real estate			
Depository institutions	0	1	1
Holding and other investment offices	1	2	3
Services			
Business services	16	4	20
Health services	0	0	0
	46	27	73
Percentage of sample	23.00%	13.50%	36.50%
Percentage of firm type	44.66%	27.84%	

Income trusts appear to be more mature companies as they are older and have a lower market-to-book (*Growth*) ratio. This is consistent with the income trust literature which highlights that the trust structure best fits low growth corporations. Income trusts also show higher performance as measured by their return on assets, and use more debt per dollar of asset (Debt_ratio). Although common equity firms appear to have a large market capitalization, the difference is not statistically significant.

Examining governance variables, we find that income trusts do not have as many blockholders as common equity firms, and that their boards are significantly smaller and more independent. This last feature is rather surprising. As noted earlier, the boards of income trusts are often controlled by the operating company. However, the proxy statements of income trusts were usually not as clear as those of common equity firms in displaying the independence of their trust members. It is thus possible that a bias was introduced in constructing the *Board_indep* variable.

The same is true for the *Duality* variable. An income trust does not run any business but merely holds units and acts as a flow-through entity. Therefore, there is no CEO *per se* in an income trust, and the duality variable can thus suffer from a construction

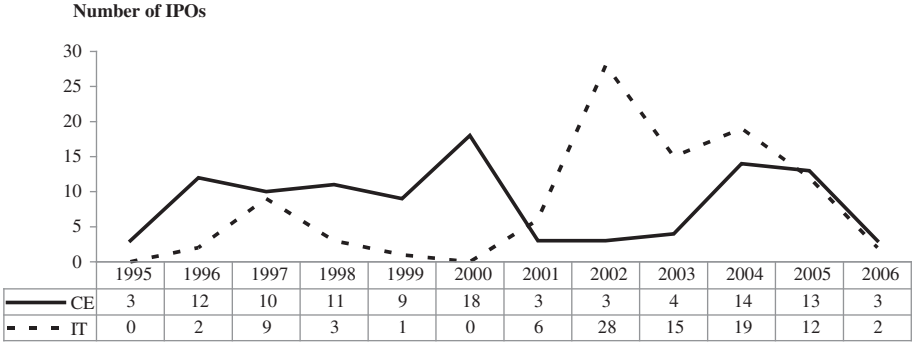
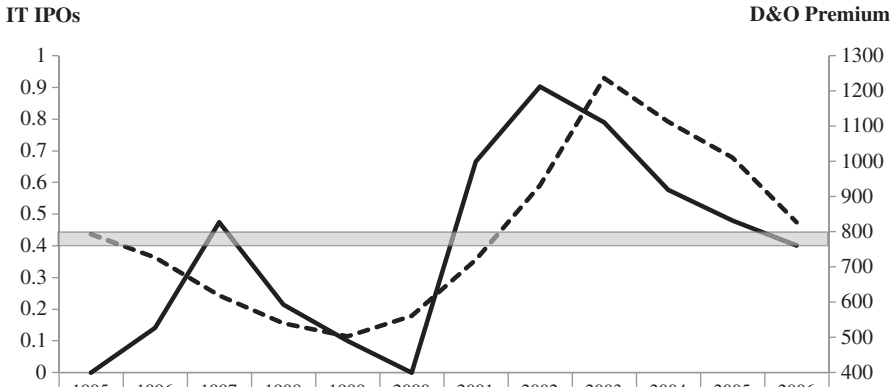


Fig. 3. Number of IPOs by year and firm type. This figure reports the number of IPOs by firm type for our sample period 1995–2006. The high relative market valuation period of income trusts coincides with the peek in the number of income trust IPOs.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
% IT IPOs	0	0.14	0.4737	0.2143	0.1	0	0.6667	0.9032	0.7895	0.5758	0.48	0.4
D&O Premium Index	793	726	619	539	503	560	720	931	1237	1113	1010	827

Fig. 4. Percentage of income trust IPOs and D&O Premium Index. The solid line reports the percentage of IPO firms that chose the income trust structure over the common equity structure for a given year. The dotted line shows the evolution of the average D&O Premium Index as reported in the Tillinghast Towers-Perrin 2006 D&O Liability Survey. The top of the horizontal rectangle indicates the mean of the D&O Premium Index over our sample period (798), the bottom is the average percentage of IT IPOs over our sample period (40%).

bias. Theoretically, it should be equal to one for an income trust if the CEO of the operating company acts as the chairman of the board of trustees. This is the logical counterpart of the duality variable for traditional corporations. It is not clear however, that income trusts are required to report such a duality in their proxy statements. This might have led us to infer that the duality variable for some income trusts was zero when reality is different.

There are marked differences in the D&O insurance patterns of the two organizational structures. Common equity firms are more likely to carry D&O insurance than income trusts as shown by the *Purchase* variable. Income trusts pay a higher premium, however. The difference is statistically significant at the 5% level, and is economically significant as well. The median premium for an income trust ($126,873) is over twice as large as that for a common equity firm ($62,152). Moreover, while the average common equity firm pays $6.15 for every $1000 of D&O insurance coverage, an income trust will pay about $8.42. This difference is statistically significant at the 5% level.

It is worth mentioning that the two types of firm do not differ in the amount of coverage they purchase. Again, although we have no *a priori* reason to believe that income trusts should purchase more or less insurance coverage than common equity firms, we do have an *a priori* reason to expect income trusts to pay a higher price per unit of coverage for D&O insurance. Fig. 1 introduced earlier in the paper shows that income trusts do pay a higher premium for the same amount of coverage.[18]

Concerning the IPO variables, although income trusts represent a larger fraction of IPO companies, there is no statistically significant difference in the underpricing of income trusts and common equity companies. The one-year stock performance statistics show that common equity firms perform better in the year following the IPO, although the difference is not statistically significant. The annualized daily stock price volatility over the same period is much higher for common equity firms, which corroborates the fact that income trusts generate more stable cash flows.

Overall, the descriptive statistics we present in Table 2 are consistent with the general understanding of income trusts: They are mature profitable businesses operating in a less turbulent environment and they generate more stable cash flows. Despite the fact that income trusts have higher return on assets, a market-to-book ratio closer to one, are less likely to have a CEO that is also chairman, have a higher float, less activities in the United States and are older, we observe that insurers require a higher premium to insure the directors and officers of income trusts.

4.1.2. Theoretical econometric model and endogeneity tests

The theoretical econometric model has the following structure.

1 Firms decide whether they want to incorporate themselves as an income trust or as a common equity firm;
2 Firms decide whether to purchase D&O insurance or not;
3 Firms decide how much to purchase and the market gives them a price per unit of coverage (rate-on-line).

Of course, we observe a firm's rate-on-line only if it decided to purchase D&O insurance, which means that we do not observe what would have been the rate-on-line of firms that did not purchase insurance. To control for this selection problem, we shall use a classic Heckman two-step procedure (results in Tables 4A and 4B).

[18] Interestingly, when we look at the firms that converted from common stock companies to income trusts (these firms are not included in the current study), we find that their D&O insurance premium per dollar of coverage almost doubled on average (from $5 per $1000 of coverage to $10 per $1000 of coverage). Although the number of firms for which we have this information is small, the difference in the mean rate-on-line of CE and IT firms is significant at the 1% level. We thank the journal's anonymous editor/reviewer for this insightful suggestion.

It is possible that the decision to become an income trust or a common equity firm is not exogenous to the decision to purchase D&O insurance or not. For instance, it might be that prior to the IPO, firm managers anticipate that their D&O insurance premium will be larger (or smaller) if they choose to become an income trust rather than a common equity firm. This means that there is a potential endogeneity problem between step 1 and step 2 of the econometric model. We argue, however, that this eventuality is unlikely since the insurance premium is such a small component of a firm's operations that it should not impact the decision to incorporate itself as an income trust or as a common equity firm. We are therefore confident that there is no major endogeneity problem between step 1 and step 2. To be sure we follow Maddala (1983) and implement a two-stage-Probit equation to show that IT/CE does not depend on the decision to buy insurance or not. In the same vein, we present in the Robustness section of the paper (Table 5) the second stage results of the Heckman two-step procedure in which the first stage is a two-stage-Probit equation to control for the endogeneity between IT/CE and Buy/Don't as well as the selection bias associated with the fact that the rate-on-line is only observed for companies that bought insurance. Results highlight the fact that the potential endogeneity problem between the decision to be an income trust and the decision to purchase D&O insurance is not important.

4.2. Applied econometric model

We first analyze the determinants of the decision to purchase D&O insurance using a probit regression. In our model, this decision depends on business risk factors as well as governance indicators and control variables. A correlation matrix of the variables used is provided in the Appendix.

Before testing whether the pricing of D&O insurance coverage depends on the decision to go public as an income trust or as a common equity corporation, we first have to control for the decision to purchase D&O liability insurance or not. Following Heckman (1979), we proceed in two steps to reduce the selection bias. The first step consists of a probit regression to analyze the determinants of the probability that a firm reports having purchased D&O insurance around its IPO date. The dependent variable in this regression is *Purchase*. The second step in the Heckman two-step procedure involves an OLS regression to determine what variables explain the log of the rate-on-line.

4.3. Likelihood of carrying D&O insurance

The first statistical relation we are interested in is the one between *Purchase*, a dummy variable equal to one if the firm purchased D&O insurance around its IPO and zero otherwise, and *ITCE*, a dummy variable equal to one if the firm is an income trust. We also include financial variables, governance measures and control variables to test for the determinants of the decision to purchase D&O insurance. Table 3 presents the regressions results for different model specifications.

In all model specifications of Table 3, it appears that the corporate structure has no impact on the decision to purchase D&O insurance or not. Looking in particular at Model specification 2, we see that the *ITCE* variable could not possibly have less explanatory power. Removing ITCE from the probit regression model and replacing it by the *Duality* dummy variable, we observe that the coefficients of the variables in Model specification 3 are not different from those of Model 2.[19] This suggests that the decision to be an income trust has little impact on the insurance decision.

Concentrating the remainder of our discussion on Model specification 4 (Model specification 5 is the same probit model as Model 4, but reporting the value of the coefficients rather than their marginal impact), which we will use afterwards as our selection regression model in our two-step approach, we see that growth firms are more likely to purchase insurance; a result that is in line with our hypothesis. A marginal change in *Growth* is associated with an increase in the likelihood to purchase insurance, when all variables are set at their means. A firm's market value of equity is inversely related to its likelihood to carry D&O insurance. This result, even though surprising at first, can be explained by the array of alternatives to D&O insurance that large companies have to protect and indemnify their directors and officers, such as having an in-house team of jurists. The *Debt_ratio* does not play a significant role in the model, but the profitability measure does. The return on assets has a positive impact on the decision to purchase insurance. The last significant variable in our probit regressions is the size of the board. A marginal increase in the number of board members is associated with an increase in the likelihood to purchase insurance. The presence of blockholders, board independence and whether the CEO is also the chairman do not seem to affect the insurance purchase decision of the companies in our sample, nor does the riskiness of the industry.

In Model specification 6, we see that there is marginal evidence that the higher the percentage of sales conducted in the United States, the higher the probability of carrying D&O insurance, which illustrates the United States' more litigious environment (see Clarkson and Simunic, 1994). The aftermarket volatility and the number of years from inception to IPO do not seem to impact the likelihood to purchase insurance.

Model specification 7 tests for the endogeneity of the *ITCE* and *Purchase* decisions using a Probit-Probit equivalent of a two–stage least square econometric model using Newey's (1987) two-step estimator approach for the coefficients.[20] The decision to

[19] Interestingly, the number of observations available drops by 15 between Model specifications 2 and 3. The reason is that it was not possible to find who the Chairman of the board and/or the CEO were for these entities so that we were not able to code the Duality variable. Of the 20 firms in the original 200 firms that did not report this information 15 were income trusts, which highlights once more that income trusts are such opaque firms that it is often impossible to know who is responsible for what.

[20] In Model specification 7 of Table 3, ITCE is instrumented by Age, Dummy_hard and risky industry. Adding other instruments does not alter the results much. We also ran a biprobit model and tested for the independence between the ITCE and the Purchase equations. Our test confirms what we see in Table 3: We cannot reject that the ITCE equation and the Purchase equation are independent (p-value of 50%).

Table 2
Descriptive statistics. Panel A reports descriptive statistics for all firms. Panel B provides a breakdown by firm type as well as a test of the means difference for our two firm types for each variable. A test for equality of variances between the two groups has been computed to perform the test of the difference in means with equal or unequal variance. *ROA* is the return on assets. *Debt_ratio* is computed as total debt over total asset. *Ln_MVE* is the natural logarithm of the market value of equity. *Growth* is the market value of equity plus the book value of liability, divided by the book value of assets. *Board_indep* is the percentage of independent directors on the board. *Board_size* is the number of directors on the board. *Blockholder* is an indicator variable for the presence of an investor owning 10% or more of the outstanding shares or units. *Duality* takes on the value one if the CEO of the company is also the chairman of the board. *Purchase* is an indicator variable with value one if the firm purchased D&O insurance at the beginning of its first fiscal year as a public company. *Premium* and *Coverage/1000$* are respectively the premium paid and the limit in thousands of dollars purchased for D&O insurance as reported in the firm's first proxy statement as a public company. *Prem_cov* is the ratio of premium over coverage, which is also referred to as the rate-on-line, multiplied by 1000. *Ln_premium*, *ln_cov/1000$* and *ln_prem_cov* are the natural logarithm of these variables. *Float* is computed as the ratio of the number of shares issued over the total number of shares outstanding. *Pct_US_Sales* is the percentage of sales carried out in the US. *Risky_Industry* is an indicator variable equal to one if the company operates in one of the industries classified as risky in Bajaj et al. (2000). *First_year_XS_Return* is the company's one year buy-and-hold return after its IPO completion, minus the return of the S&P/TSX index for the same period. *First_Day_Return* is our control variable for underpricing and is computed as the first day return on the close of the first trading day. *Volatility* is the annualized daily volatility over the one year period following the IPO. *Age* is the number of years separating inception from the announcement of the IPO. (*) signals an indicator variable. Fisher's exact test is used to find the p-value of the means difference test for indicator variables. Panel B reports p-values in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A

	All companies				
	Mean	Median	Min	Max	St Dev
Financial variables					
ROA	−.0329	.0353	−3.7860	.9372	.3608
Debt_ratio	.1597	.1161	0	.8742	.1723
ln_MVE	5.4799	5.3620	1.4125	9.7573	1.2241
Growth	2.3428	1.2859	.7280	48.8288	4.1110
Governance variables					
Board_indep	.6936	.6667	.1667	1	.1623
Board_size	7.1436	7	3	18	2.2521
Blockholder(*)	.765	1	0	1	.4251
Duality(*)	.3056	0	0	1	.4619
D&O insurance variables					
Purchase(*)	.69	1	0	1	.4637
Premium	148,554	86,500	6433	2,094,842	220,713
Coverage/1000$	24,212	20,000	1000	200,000	31,677
Prem_cov	7.0134	6.0667	.0643	37.5000	5.0516
ln_premium	11.4079	11.3678	8.7692	14.555	.9803
ln_cov/1000$	9.6873	9.9035	6.9078	12.2061	.8504
ln_prem_cov	1.7004	1.8028	−2.7437	3.6243	.7976
Other variables					
Float	.5614	.5021	.0476	1.0231	.3344
Pct_US_Sales	.2504	.0140	0	1	.3155
Risky_Industry(*)	.3650	0	0	1	.4827
First_year_XS_Return	.0377	−.0303	−.9265	2.3849	.5296
First_day_return	.0414	.0125	−.1523	.5625	.0970
Volatility	.4167	.3129	.1279	2.6002	.3193
Age	27.0388	5.3717	0.0027	135.1400	30.0372

Panel B

	Common equity companies					Income trusts					*T*-test for means difference 95% p-value
	Mean	Median	Min	Max	St Dev	Mean	Median	Min	Max	St Dev	
Financial variables											
ROA	−.0965	.0098	−3.7860	.9372	.4891	.0353	.0415	−.3077	.1361	.0732	(0.0080)***
Debt_ratio	.1146	.0503	0	.5907	.1395	.2125	.1897	0	.8742	.1920	(0.0002)***
ln_MVE	5.6022	5.5538	1.4125	9.7573	1.3930	5.3308	5.3015	3.4704	9.5618	.9672	(0.1239)
Growth	2.8221	1.9686	.7442	18.1810	2.7411	1.7511	1.1293	.7280	48.8288	5.2996	(0.1019)
Governance variables											
Board_indep	.6643	.6667	.1667	.9	.1678	.7252	0.7	.4286	1	.1507	(0.0095)***
Board_size	8	8	5	18	2.2535	6.1848	6	3	12	1.8333	(0.0000)***
Blockholder(*)	.8252	1	0	1	.3816	.7010	1	0	1	.4602	(0.0460)**
Duality(*)	.4286	0	0	1	.4974	.1585	0	0	1	.3675	(0.0000)***
D&O insurance variables											
Purchase(*)	.7864	1	0	1	.4118	.5876	1	0	1	.4948	(0.0030)***
Premium	116,080	62,152	6433	656,000	126,481	200,218	126,873	12,300	2,094,842	312,888	(0.0954)*
Coverage/1000$	25,492	20,000	1000	200,000	34,626	22,395	20,000	4000	200,000	27,136	(0.5736)
Prem_cov	6.1494	5.1738	.0643	37.5000	5.4723	8.4200	8.1461	2.4600	22.8215	3.9476	(0.0120)**
ln_premium	11.1756	11.0372	8.7692	13.3939	.9898	11.7774	11.7508	9.4174	14.555	.8518	(0.0471)**
ln_cov/1000$	9.6584	9.9035	6.9078	12.2061	.9512	9.7282	9.9035	8.2940	12.2061	.6882	(0.6180)
ln_prem_cov	1.5011	1.6436	−2.7437	3.6243	.8883	2.0248	2.0975	.9002	3.1277	.4754	(0.0001)***
Other variables											
Float	.2864	.2373	.0476	1.0231	.1767	.8335	.9770	.3386	1	.2057	(0.0000)***
Pct_US_Sales	.2744	.1240	0	1	.3141	.2247	0	0	1	.3169	(0.2957)
Risky_Industry(*)	.4466	0.0000	0.0000	1.0000	.4996	.2784	0.0000	0	1.0000	.4505	(0.0180)**
First_year_XS_Return	.0831	−.0134	−.9265	2.3849	.6724	−.0097	−.0315	−.7962	1.6127	.3161	(0.2226)
First_day_return	.0526	.0214	−.1523	.5625	.1235	.0308	.0090	−.0470	.3330	.0613	(0.1406)
Volatility	.5936	.4699	.1629	2.6002	.3501	.2360	.2080	.1279	1.0228	.1294	(0.000)***
Age	19.4211	8.6982	0.0027	135.1400	27.3698	35.4756	26.4422	0.0055	130	30.7391	(0.001)***

Table 3
Marginal impact on the decision to purchase D&O insurance. We evaluate the marginal impact of some variables on the likelihood to carry D&O insurance. The dependent variable is *Purchase*, an indicator variable equal to one if the firm purchased D&O insurance. We report the marginal effects of variables in our probit models for ease of interpretation of the estimated coefficients. *ITCE* is an indicator variable equal to one if the company is an income trust. *Growth* is the market value of equity plus the book value of liability, divided by the book value of assets. *Ln_MVE* is the natural logarithm of the market value of equity. *Debt_ratio* is computed as total debt over total asset. *ROA* is the return on assets. *Duality* takes on the value one if the CEO of the company is also the chairman of the board. *Board_size* is the number of directors on the board. *Blockholder* is an indicator variable for the presence of an investor owning 10% or more of the outstanding shares or units. *Board_indep* is the percentage of independent directors on the board. *Risky_Industry* is an indicator variable equal to one if the company operates in one of the industries classified as risky in Bajaj et al. (2000). *Pct_US_Sales* is the percentage of sales carried out in the US. *Volatility* is the annualized daily volatility over the one year period following the IPO. *Age* is the number of years separating inception from the announcement of the IPO. Except for models (5) and (7) the reported values are the marginal impacts. In model (5) and (7) we report the coefficients. In all cases, p-values in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ITCE(*)	−.1142	−.0001				−.0865	−.0312
	(0.150)	*(0.999)*				*(0.457)*	*(0.962)*
Growth	.0533	.0817	.1013	.0943	.3218	.0745	.3153
	(0.154)	*(0.054)**	*(0.017)***	*(0.032)***	*(0.032)***	*(0.199)*	*(0.068)**
ln_MVE	−.0315	−.0831	−.0704	−.0812	−.2772	−.0753	−.2686
	(0.316)	*(0.026)***	*(0.058)**	*(0.037)***	*(0.037)***	*(0.072)**	*(0.051)**
Debt_ratio	−.0471	−.1400	−.1526	−.1458	−.4975	−.1941	−.3674
	(0.819)	*(0.494)*	*(0.446)*	*(0.488)*	*(0.488)*	*(0.408)*	*(0.649)*
ROA	.1796	.3046	.3396	.5303	1.8098	.5753	1.7946
	(0.216)	*(0.052)**	*(0.032)***	*(0.021)***	*(0.021)***	*(0.044)***	*(0.023)***
Duality(*)			−.0955	−.1363	−.4384	−.1821	−.4628
			(0.217)	*(0.126)*	*(0.126)*	*(0.070)**	*(0.165)*
Board_size		.0559	.0538	.0560	.1912	.0503	.1666
		*(0.009)****	*(0.006)****	*(0.011)***	*(0.011)***	*(0.053)**	*(0.105)*
Blockholder(*)				−.0716	−.2595	−.0660	−.3217
				(0.374)	*(0.374)*	*(0.447)*	*(0.298)*
Board_indep				−.1832	−.6254	−.2310	−.7486
				(0.477)	*(0.477)*	*(0.404)*	*(0.418)*
Risky_Industry(*)				.0815	.2863	.0670	.3513
				(0.266)	*(0.266)*	*(0.412)*	*(0.194)*
Pct_US_Sales						.2286	
						*(0.069)**	
Volatility						−.0432	
						(0.825)	
Age						.0010	
						(0.502)	
Number of obs	171	170	155	150	150	135	149
LR chi^2	8.94	15.86	16.92	20.17	20.17	24.19	13.57
Prob > chi^2	0.1114	.0145	0.0096	0.0169	0.0169	0.0294	0.1934
Log likelihood	−96.0819	−91.3230	−80.0491	−76.9003	−76.9003	−66.1945	
Pseudo R^2	0.0445	0.0799	0.0956	0.1160	0.1160	0.1545	

(*) dF/dx is for discrete change of dummy variable from 0 to 1.

incorporate as an income trust rather than a common equity firm has almost no impact on the probability to purchase D&O insurance. All other variables have an impact that is similar to that reported in Model specification 5 (coefficient value) and Model specification 4 (marginal impact).

4.4. The pricing of coverage

Using Model specification 4 of Table 3 as the first step in the two-step procedure,[21] we now investigate the determinants of the premium per thousand dollars of coverage that firms pay once they have decided to purchase D&O insurance. We report in Tables 4A and 4B the results from the second stage outcome model using the log of the rate-on-line as the dependent variable. The independent variables are *ITCE*, proxies for the business risk, governance quality as well as control variables. We exclude from the outcome equations three variables that appear in the selection equation: *Blockholder*, *Board size* and *Duality*.

The main variable of interest for this paper is the *ITCE* indicator variable. We investigate whether insurers require higher premiums from firms that have a riskier governance structure, such as that of income trusts. The empirical results strongly support

[21] Given the results presented in Table 3, we reiterate our confidence that *ITCE* has no impact on the decision to purchase D&O insurance or not. We will therefore only include the *ITCE* variable in the second stage of the Heckman two-step procedure since our goal in this paper is to measure the impact of being an income trust on the cost of each unit of insurance. Using Model specification 4 rather than the other model specifications in Table 3 does not alter our second stage results much since the reduction in the number of observations from Model specification 2 to Model specification 4 (from 170 to 150 observations) is mainly due to the impossibility to tell what value we should assign to the *Duality* variable (15 cases) and to the Board_indep variable (5 cases), two variables that should have some explanatory power on the rate-on-line.

Table 4A
Second stage of the Heckman selection model of the log of the ratio premium/coverage. We evaluate the impact of our variable of interest *ITCE* on the price of coverage and include several variables as controls. The dependent variable is *ln_prem_cov*, the natural logarithm of the ratio of premium over coverage. *ITCE* is an indicator variable equal to one if the company is an income trust. We hypothesize that due to its inherently more complex governance structure, an income trust will be required to pay a higher premium for coverage. *Dummy_hard* is an indicator variable to account for the hard insurance market years. *First_year_XS_Return* is the company's one year buy-and-hold return after its IPO completion, minus of the return of the S&P/TSX index for the same period. *First_Day_Return* is our control variable for underpricing and is computed as the first day return on the close of the first trading day. *Board_indep* is the percentage of independent directors on the board. *Growth* is the market value of equity plus the book value of liability, divided by the book value of assets. *Ln_MVE* is the natural logarithm of the market value of equity. *Debt_ratio* is computed as total debt over total asset. *ROA* is the return on assets. *Age* is the number of years separating inception from the announcement of the IPO. *Volatility* is the annualized daily volatility over the one year period following the IPO. *Float* is computed as the ratio of the number of shares issued over the total number of shares outstanding. *Risky_Industry* is an indicator variable equal to one if the company operated in one of the industries classified as risky in Bajaj et al. (2000). *Pct_US_Sales* is the percentage of sales carried out in the US. The first stage is the probit model specification 4 from Table 3. The selectivity effect of the selection equation (the inverse-Mills ratio) is summarized in λ, and the Prob ($\rho = 0$) represents whether we can reject that the error terms from the two equations (insurance purchase and rate-on-line) are independent. Coefficients are reported with their p-values in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The econometric models use a full maximum likelihood approach.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	1.4888	1.4500	1.0795	.4198	−.1195	.4041	−.2973
	*(0.000)***	*(0.000)***	*(0.034)***	*(0.404)*	*(0.813)*	*(0.415)*	*(0.597)*
ITCE	.4295	.5873	.4575	.6582	.5069	1.0179	.8621
	*(0.001)***	*(0.000)***	*(0.009)***	*(0.000)***	*(0.001)***	*(0.000)***	*(0.004)***
Dummy_hard		.2516	.0993	.1742		.3754	−.1778
		*(0.064)**	*(0.473)*	*(0.201)*		*(0.035)***	*(0.487)*
Index					.0011		.0015
					*(0.000)***		*(0.002)***
Hard × ITCE						−.5296	−.3679
						*(0.068)**	*(0.175)*
First_Year_XS_Return	−.3635	−.1888	−.4489	−.2426	−.1872	−.2088	−.1151
	*(0.003)***	*(0.116)*	*(0.000)***	*(0.047)***	*(0.112)*	*(0.088)**	*(0.352)*
First_Day_Return			−.0579	.1853	.4469	.1084	.5467
			(0.927)	*(0.766)*	*(0.447)*	*(0.860)*	*(0.357)*
Board_indep			.9981	.4421	.1024	.3594	.3211
			*(0.029)***	*(0.257)*	*(0.790)*	*(0.352)*	*(0.423)*
Growth			−.0158	.0172	.0210	.0204	.0123
			(0.601)	*(0.482)*	*(0.372)*	*(0.400)*	*(0.629)*
ln_MVE			.0543	.0272	−.0027	.0216	−.0574
			(0.398)	*(0.637)*	*(0.962)*	*(0.706)*	*(0.355)*
ROA			.1995	.4511	.3979	.4509	.5404
			(0.478)	*(0.072)**	*(0.098)**	*(0.070)**	*(0.179)*
Debt_ratio			−.0825	.0695	.1058	.2044	.2372
			(0.830)	*(0.831)*	*(0.736)*	*(0.536)*	*(0.494)*
Age			−.0043	−.0026	−.0020	−.0029	−.0020
			*(0.034)***	*(0.249)*	*(0.357)*	*(0.188)*	*(0.361)*
Volatility		.7143		.7531	.9363	.7988	1.1599
		*(0.014)***		*(0.012)***	*(0.001)***	*(0.007)***	*(0.000)***
Risky_Industry		.3379		.3293	.3358	.3414	.3019
		*(0.009)***		*(0.016)***	*(0.009)***	*(0.011)***	*(0.033)***
Float							−.0466
							(0.881)
Pct_US_Sales							−.0988
							(0.594)
Selectivity effect (λ)	*.3209*	*.3605*	*−.5859*	*.3066*	*.3472*	*.3195*	*.3460*
Prob(ρ = 0)	*.2281*	*.0557*	*.2677*	*.1762*	*.0498*	*.1444*	*.0437*
Number of censored obs	40	40	40	40	40	40	40
Number of uncensored obs	86	85	83	83	83	83	76
Log Likelihood	−141.53	−129.38	−131.07	−124.64	−118.85	−123.01	−108.96
Wald Chi^2	18.87	43.64	42.80	48.01	66.80	53.06	79.53
Prob > chi^2	0.0001	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000

our hypothesis. In every model specification,[22] the coefficient of the *ITCE* variable remains positive and highly significant in determining the premium. The results presented in Table 4A present the results associated with a full maximum likelihood model and are robust to various specifications of the selection model. The results of the two-step efficient estimate of the parameters (see Heckman, 1979) are presented in Table 4B. As we see, the results are not much different, at least with respect to the

[22] There are companies in our data set for which we have the coverage amount, but not the premium paid so that we were not able to compute the log of their rate-on-line. These 21 companies were removed from the regression results we present in Table 4A and Table 4B, although they were included in the results of Table 3 since we know that they were insured. This explains why there were 150 usable observations in the Model specification 4 of Table 3, but only a maximum of 126 observations that can be used in the second stage regression that explains the log of the rate-on-line in the last few tables. The last 3 companies had information missing about the stock market returns in the first year.

Table 4B

Second stage of the Heckman selection model of the log of the ratio premium/coverage. We evaluate the impact of our variable of interest *ITCE* on the price of coverage and include several variables as controls. The dependent variable is *ln_prem_cov*, the natural logarithm of the ratio of premium over coverage. *ITCE* is an indicator variable equal to one if the company is an income trust. We hypothesize that due to its inherently more complex governance structure, an income trust will be required to pay a higher premium for coverage. *Dummy_hard* is an indicator variable to account for the hard insurance market years. *First_year_XS_Return* is the company's one year buy-and-hold return after its IPO completion, minus of the return of the S&P/TSX index for the same period. *First_Day_Return* is our control variable for underpricing and is computed as the first day return on the close of the first trading day. *Board_indep* is the percentage of independent directors on the board. *Growth* is the market value of equity plus the book value of liability, divided by the book value of assets. *Ln_MVE* is the natural logarithm of the market value of equity. *Debt_ratio* is computed as total debt over total asset. *ROA* is the return on assets. *Age* is the number of years separating inception from the announcement of the IPO. *Volatility* is the annualized daily volatility over the one year period following the IPO. *Float* is computed as the ratio of the number of shares issued over the total number of shares outstanding. *Risky_Industry* is an indicator variable equal to one if the company operated in one of the industries classified as risky in Bajaj et al. (2000). *Pct_US_Sales* is the percentage of sales carried out in the US. The first stage is the probit model specification 4 from Table 3. The selectivity effect of the selection equation (the inverse-Mills ratio) is summarized in λ. Coefficients are reported with their p-values in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The econometric models use Heckman's two-step efficient estimates of the parameters.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	1.5353	.8622	1.1587	.4664	−.0667	.4538	−.2128
	*(0.000)***	*(0.000)***	*(0.010)**	*(0.365)*	*(0.913)*	*(0.373)*	*(0.793)*
ITCE	.4399	.5088	.4663	.5957	.3856	.9481	.7391
	*(0.003)***	*(0.003)***	*(0.005)***	*(0.001)***	*(0.045)**	*(0.000)***	*(0.075)**
Dummy_hard		.2571	.0685	.1827		.3429	−.2068
		*(0.057)**	*(0.633)*	*(0.183)*		*(0.039)**	*(0.559)*
Index					.0011		.0016
					*(0.001)****		*(0.018)**
Hard × ITCE						−.5171	−.3742
						*(0.073)**	*(0.345)*
First_Year_XS_Return	−.3693	−.1942	−.3635	−.2445	−.1814	−.2146	−.1133
	*(0.002)****	*(0.106)*	*(0.004)****	*(0.046)**	*(0.162)*	*(0.077)**	*(0.497)*
First_Day_Return			.1652	.1986	.4655	.1305	.5502
			(0.800)	*(0.751)*	*(0.491)*	*(0.833)*	*(0.512)*
Board_indep			.7061	.3871	−.1068	.2987	.0584
			*(0.092)**	*(0.374)*	*(0.838)*	*(0.490)*	*(0.929)*
Growth			.0096	.0197	.0322	.0226	.0278
			(0.713)	*(0.479)*	*(0.344)*	*(0.413)*	*(0.525)*
ln_MVE			.0182	.0232	−.0214	.0187	−.0927
			(0.765)	*(0.706)*	*(0.764)*	*(0.758)*	*(0.344)*
ROA			.1610	.4450	.4225	.4410	.6694
			(0.505)	*(0.087)**	*(0.171)*	*(0.087)**	*(0.278)*
Debt_ratio			−.1749	.0660	.0918	.1969	.1619
			(0.590)	*(0.844)*	*(0.817)*	*(0.563)*	*(0.762)*
Age			−.0045	−.0023	−.0016	−.0026	−.0014
			*(0.057)**	*(0.311)*	*(0.501)*	*(0.244)*	*(0.637)*
Volatility		.6191		.6874	.8569	.7323	1.0789
		*(0.028)***		*(0.020)***	*(0.006)****	*(0.012)***	*(0.007)****
Risky_Industry		.3492		.3476	.4034	.3577	.3867
		*(0.011)***		*(0.024)***	*(0.022)***	*(0.019)***	*(0.094)**
Float							−.1033
							(0.810)
Pct_US_Sales							−.1021
							(0.686)
Selectivity effect (λ)	.2107	.4211	−.0212	.3891	.6754	.4033	.8054
	(0.433)	*(0.116)*	*(0.945)*	*(0.256)*	*(0.089)**	*(0.233)*	*(0.122)*
Number of censored obs	40	40	40	40	40	40	40
Number of uncensored obs	86	85	83	83	83	83	76
Wald Chi^2	16.93	39.52	35.79	53.09	55.99	54.49	47.55
Prob > chi^2	0.0002	0.0000	0.0019	0.0000	0.0000	0.0000	0.0012

main variable of interest, *ITCE*. The reason we present both sets of result is to highlight the fact that our main results are robust to different econometric specifications.

The results show that the organizational structure plays a meaningful role in the risk assessment conducted by the insurer, no matter which model specification we look at. In Model specification 2 of Table 4A for instance, the control variables are the dummy variable for the hard insurance market, the first year's market adjusted return for the security, the security's volatility of the return and the type of industry in which the firm operates. We would expect the hard market, the volatility and the risky industry variables to have a positive impact on the rate-on-line, and the first year's return to have a negative impact (as in Chalmers et al., 2002). This is what we observe, although the first year's return variable is not statistically significant.

In terms of our main variable of interest, we find that controlling for the selection bias, the coefficient for the *ITCE* variable is .5873, compared to a value of .3764 if we do not control for the selection (that is, using a simple OLS approach whose results we do not show) and .5088 if we use a two-step estimator instead of a maximum likelihood approach. Because our dependent variable is log of the rate-on-line, the change in the rate-on-line if *ITCE* goes from 0 (common equity firm) to 1 (income trust) is

Table 5
Regressions correcting for endogeneity between the ITCE and the purchase decisions. We evaluate the impact of our variable of interest *ITCE* on the price of coverage and include several variables as controls. The dependent variable is *ln_prem_cov*, the natural logarithm of the ratio of premium over coverage. *Dummy_hard* is an indicator variable equal to one if the company is an income trust. We hypothesize that due to its inherently more complex governance structure, an income trust will be required to pay a higher premium for coverage. *Dummy_hard* is an indicator variable to account for the hard insurance market years. *First_year_XS_Return* is the company's one year buy-and-hold return after its IPO completion, minus of the return of the S&P/TSX index for the same period. *First_Day_Return* is our control variable for underpricing and is computed as the first day return on the close of the first trading day. *Board_indep* is the percentage of independent directors on the board. *Growth* is the market value of equity plus the book value of liability, divided by the book value of assets. *Ln_MVE* is the natural logarithm of the market value of equity. *Debt_ratio* is computed as total debt over total asset. *ROA* is the return on assets. *Age* is the number of years separating inception from the announcement of the IPO. *Volatility* is the annualized daily volatility over the one year period following the IPO. *Float* is computed as the ratio of the number of shares issued over the total number of shares outstanding. *Risky_Industry* is an indicator variable equal to one if the company operated in one of the industries classified as risky in Bajaj et al. (2000). *Pct_US_Sales* is the percentage of sales carried out in the US. The first stage is the probit model specification 4 from Table 3. The selectivity effect of the selection equation (the inverse-Mills ratio) is summarized in λ, and the Prob(ρ = 0) represents whether we can reject that the error terms from the two equations (insurance purchase and rate-on-line) are independent. As an endogeneity problem between *ITCE* and *Purchase* could arise, we used a two-stage probit in the main selection regression. Coefficients are reported with their p-values in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The econometric model here uses a full maximum likelihood.							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	1.500	.7769	1.2828	.4921	−.0520	.4749	−.1740
	*(0.000)***	*(0.000)***	*(0.010)***	*(0.340)*	*(0.919)*	*(0.346)*	*(0.763)*
ITCE	.3664	.5385	.3829	.5943	.4445	.9289	.7867
	*(0.008)***	*(0.001)***	*(0.030)**	*(0.000)***	*(0.006)***	*(0.000)***	*(0.010)***
Dummy_hard		.2924	.0912	.2003		.3941	−.1921
		*(0.037)**	*(0.537)*	*(0.155)*		*(0.020)**	*(0.460)*
Index					.0011		.0015
					*(0.000)***		*(0.003)***
Hard × ITCE						−.5511	−.3541
						*(0.056)**	*(0.222)*
First_Year_XS_Return	−.3486	−.1902	−.3452	−.2260	−.1745	−.1921	−.0962
	*(0.005)***	*(0.115)*	*(0.008)***	*(0.067)**	*(0.139)*	*(0.118)*	*(0.458)*
First_Day_Return			.1833	.1796	.4512	.0790	.6159
			(0.783)	*(0.775)*	*(0.447)*	*(0.898)*	*(0.312)*
Board_indep			.5861	.4508	.1475	.3861	.3444
			*(0.192)**	*(0.254)*	*(0.701)*	*(0.319)*	*(0.393)*
Growth			.0183	.0148	.0167	.0173	.0077
			(0.511)	*(0.548)*	*(0.476)*	*(0.474)*	*(0.770)*
ln_MVE			−.0121	.0049	−.0240	−.0018	−.0745
			(0.866)	*(0.935)*	*(0.678)*	*(0.976)*	*(0.254)*
ROA			.1726	.4708	.4030	.4560	.6171
			(0.2613)	*(0.067)**	*(0.096)**	*(0.070)**	*(0.139)*
Debt_ratio			−.1942	.1148	.1521	.2534	.2690
			(0.564)	*(0.731)*	*(0.631)*	*(0.448)*	*(0.447)*
Age			−.0047	−.0028	−.0020	−.0030	−.0021
			*(0.056)**	*(0.226)*	*(0.339)*	*(0.172)*	*(0.327)*
Volatility		.8013		.8169	.9916	.8709	1.1527
		*(0.007)***		*(0.008)***	*(0.001)***	*(0.004)***	*(0.000)***
Risky_Industry		.3489		.3459	.3405	.3535	.3112
		*(0.008)***		*(0.012)**	*(0.008)***	*(0.009)***	*(0.031)**
Float							−.0761
							(0.809)
Pct_US_Sales							−.1035
							(0.577)
Selectivity effect (λ)	*.3820*	*.4023*	*.2674*	*.3757*	*.3745*	*.3673*	*.3929*
Prob(ρ = 0)	*.2452*	*.0290*	*.6910*	*.0715*	*.0284*	*0.0788*	*0.0256*
Number of censored obs	40	40	40	40	40	40	40
Number of uncensored obs	86	85	83	83	83	83	76
Log Likelihood	−136.13	−125.88	−129.48	−121.40	−115.56	−119.63	−106.55
Wald Chi^2	13.69	42.12	24.21	46.67	65.27	52.52	72.38
Prob > chi^2	0.0011	0.0000	0.0071	0.0000	0.0000	0.0000	0.0000

$e^{0.5873} - 1 \approx 80\%$. This means that, everything else equal, income trusts pay 80% more than common equity firms for their D&O insurance coverage.

In all seven model specifications presented in Table 4A and in Table 4B, we see that the impact of the ITCE variable is highly significant both statistically as well as economically.

We also ran the outcome Model specification 2 of Table 4A with the rate-on-line as the dependent variable in lieu of its log transformation (results not shown). The adjusted coefficient for *ITCE* is then 3.98. This means that, *ceteris paribus*, an income trust pays almost $4.00 more for each $1000 of coverage than the common equity firm. Given that the average coverage is $24 million, an income trust should expect to pay $96,000 more in D&O insurance premium on average than a comparable

Table 6
Second stage of the Heckman selection model: robustness tests of the main results. We evaluate the impact of our variable of interest *ITCE* on the price of coverage and include several variables as controls. The dependent variable is *ln_prem_cov*, the natural logarithm of the ratio of premium over coverage. *ITCE* is an indicator variable equal to one if the company is an income trust. We hypothesize that due to its inherently more complex governance structure, an income trust will be required to pay a higher premium for coverage. *Index* is the Tillinghast D&O insurance premium index. *First_year_XS_Return* is the company's one year buy-and-hold return after its IPO completion, minus of the return of the S&P/TSX index for the same period. *First_Day_Return* is our control variable for underpricing and is computed as the first day return on the close of the first trading day. *Board_indep* is the percentage of independent directors on the board. *Growth* is the market value of equity plus the book value of liability, divided by the book value of assets. *Ln_MVE* is the natural logarithm of the market value of equity. *Debt_ratio* is computed as total debt over total asset. *ROA* is the return on assets. Age is the number of years separating inception from the announcement of the IPO. *Volatility* is the annualized daily volatility over the one year period following the IPO. *Risky_Industry* is an indicator variable equal to one if the company operated in one of the industries classified as risky in Bajaj et al. (2000). *REIT_O&G* equals 1 if the firm is an income trust from a traditional sector such as a real estate (including financial) investment trust or an oil and gas trust. *IMR_ITCE* is an inverse-Mills ratio of the decision to be an income trust. Except for Model (7), the first stage equation is model specification 4 from Table 3. The selectivity effect of the selection equation (the inverse-Mills ratio) is summarized in λ. Coefficients are reported with their p-values in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The econometric models use Heckman's two-step efficient estimates of the parameters.							
	Base (1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	−.0667	−.1667	−.1357	.1153	.6216	−.4703	−.4713
	(0.913)	*(0.748)*	*(0.794)*	*(0.881)*	*(0.308)*	*(0.190)*	*(0.190)*
ITCE	.3856	.4004	.4354	.4539	.9575	.6083	.5980
	*(0.045)***	*(0.020)***	*(0.014)***	*(0.062)**	*(0.000)****	*(0.011)***	*(0.017)***
Dummy_hard					.3716	−.3118	−.3098
					*(0.054)**	*(0.164)*	*(0.169)*
Index	.0011	.0011	.0010	0.0012		.0018	.0018
	*(0.001)****	*(0.000)****	*(0.000)****	*(0.005)****		*(0.000)****	*(0.000)****
Hard × ITCE					−.4733	– 3232	−.3230
					(0.137)	*(0.220)*	*(0.220)*
First_Year_XS_Return	−.1814	−.1980	−.1968	−.1557	−.1983	−.1033	−.1037
	(0.162)	*(0.084)**	*(0.085)**	*(0.345)*	*(0.141)*	*(0.331)*	*(0.330)*
First_Day_Return	.4655	.4621	.4503	.4270	.0933		
	(0.491)	*(0.433)*	*(0.443)*	*(0.607)*	*(0.891)*		
Board_indep	−.1068	.1246	.1203	−.3401	.0905		
	(0.838)	*(0.737)*	*(0.745)*	*(0.595)*	*(0.858)*		
Growth	.0322	.0279	.0260	.0212	.0157		
	(0.344)	*(0.341)*	*(0.377)*	*(0.622)*	*(0.656)*		
ln_MVE	−.0214	−.0031	−.0079	−.0325	.0096		
	(0.764)	*(0.959)*	*(0.896)*	*(0.714)*	*(0.894)*		
ROA	.4225	.3813	.3666	.5857	.5683		
	(0.171)	*(0.149)*	*(0.167)*	*(0.147)*	*(0.085)**		
Debt_ratio	.0918	.0939	.0839	−.0875	.0506		
	(0.817)	*(0.785)*	*(0.808)*	*(0.864)*	*(0.906)*		
Age	−.0016	−.0018	−.0016	−.0014	−.0023		
	(0.501)	*(0.386)*	*(0.457)*	*(0.650)*	*(0.350)*		
Volatility	.8569	.8667	.8858	.8532	.7219	.8740	.8733
	*(0.006)****	*(0.002)****	*(0.001)****	*(0.028)***	*(0.022)***	*(0.001)****	*(0.001)****
Risky_Industry	.4034	.2860	.3169	.5229	.4676	.2481	.2475
	*(0.022)***	*(0.014)***	*(0.010)****	*(0.021)***	*(0.014)***	*(0.020)***	*(0.020)***
REIT_O&G			.1257				
			(0.477)				
IMR_ITCE				1.7414	1.2967		
				(0.116)	*(0.163)*		
Selectivity effect (λ)	.6754	*.5503*	*.5570*	*−.8566*	*−.7010*	*.5040*	*.5149*
	*(0.089)**	*(0.094)**	*(0.090)**	*(0.391)*	*(0.405)*	*(0.057)**	*(0.063)**
Number of censored obs	40	40	40	40	40	40	40
Number of uncensored obs	83	83	83	83	83	87	87
Wald Chi^2	55.99	65.88	66.70	40.69	47.17	66.74	63.70
Prob > chi^2	0.0000	0.0000	0.0000	0.0010	0.0002	0.0000	0.0000

common equity firm. Assuming that this extra premium remains constant over time, and assuming a constant interest rate of 4%, the value of an income trust is almost $2.4 million less on average than the value of a common equity firm.

This extra cost of being an income trust may be associated with the governance characteristics of income trusts that are somewhat ambiguous and opaque, particularly when it comes to the unknown level of protection that unitholders enjoy compared to that of shareholders. Baker and Griffith (2007) document that insurers are interested in business risk as well as governance risk while assessing the probability and severity of a potential claim. In particular, insurers seek to uncover “deep governance” effects that lie beyond traditional governance features. Income trusts represent a rare opportunity to test such a hypothesis; our results suggest that from the D&O insurers' perspective, the risk associated with the income trusts' Byzantine organizational and governance structure is significant.

Our study also confirms the results in Chalmers et al. (2002) since we find a strong negative relationship between the first year excess return and the log of the rate-on-line, at least as long as we do not control for future return volatility and the riskiness of

the industry. Firms that perform poorly in the year following their IPO, as measured by their stock price performance, are strongly penalized *ex ante* by insurers. This result highlights the fact that a drop in the stock market price is an important indicator of a future potential claim. In Chalmers et al. (2002), the firms' long term performance post IPO is significantly negatively correlated with the D&O premium paid, thereby suggesting that insurers have the ability to forecast performance and price coverage accordingly. Our results therefore concur with those of Chalmers et al. (2002) in that insurers use the firm's private information to determine the premium to be paid.

A firm's market-to-book ratio, market value, return on assets, leverage and age do not seem to have robust significant impacts on the price per dollar of coverage of D&O insurance. In some model specifications some of these variables seem to have an impact (significant at the 10% or 5% level), but it disappears when more variables are included in the regression. In particular, *Age* and *Board_independence* lose all significance when stock return volatility and the risky industry dummy are included in Model 4 through 7.

Although usually not significant, it may come as a surprise that *Board independence* is positively correlated with the price of coverage given that a large body of literature views independence as a sign of good governance. The reason may be that more independent directors require contracts that have less stringent trigger coverage conditions (or less exclusions) and lower deductibles. These demands would translate into higher premiums. Although it is impossible for us to observe the triggers, we can observe the deductible which, when included in the regression, eliminates all of the little significance *Board independence* had in determining premium per dollar of coverage (these results are not shown).

The estimates from Tables 4A and 4B also illustrate a close connection between the aftermarket volatility of the firm's stock price and the price of coverage. It is interesting to note that even though stock returns are on average more volatile for common equity firms than for income trusts (see Panel B of Table 2), and that volatility has a very large impact on the price of D&O insurance coverage, income trusts still pay more for coverage.

In Model specifications 5 and 7 of Table 4A, we include as an explanatory variable the Tillinghast D&O premium index rather than the dummy variable for the hard market. The market price index, as expected, has a positive impact on the rate-on-line, but it does not affect much the economic significance of our main independent variable, *ITCE*. The same can be said about the inclusion of an interactive term in Model specification 6 (*Hard* × *ITCE*). We include this interactive variable to see if income trusts paid relatively more for their insurance during the hard market years (so that the effect of the hard market years showed up in the slope rather than as a pure tack-on). Surprisingly, we see that income trusts paid relatively less for their insurance during the hard market years (which corresponded to years of high IT IPOs as seen in Fig. 4). Using our previous calculation to the extra cost that income trust had to pay for their D&O insurance, the change in the rate-on-line if *ITCE* goes from 0 to 1 is $e^{1.0179} - 1 \approx 175\%$ outside of the hard market years.

Finally, Model specification 7 in Table 4A shows that adding market float and U.S. activities reduces the number of observations (some companies reported having U.S. activities without telling how much, thus forcing us to delete these observations) while not affecting much the organizational structure's impact. Only in Model specification 7 in Table 4B is the coefficient of the *ITCE* variable no longer significant at the 5% level or better (but still significant at the 10% level). One possible reason is that by including the *Index* variable, we are controlling for price increases in the rate-on-line variable (the numerator) without controlling for adjustments in the coverage (the denominator) during the hard market years. To account for this possibility, we ran Model specification 7 in Table 4B using the log of the premium as the dependent variable and letting the log of the coverage become an explanatory variable (result not shown). The D&O insurance premium should be positively linked to the D&O insurance coverage, whereas all other explanatory variables should have the same impact as that of Table 4B (including a positive impact for *ITCE*). Although we do not show these results, it is worth mentioning that the *ITCE* coefficient is equal to .5713 and that it is significant at the 2% level. Such a coefficient suggests that income trusts pay on average $e^{0.5713} - 1 \approx 77\%$ more in premium per year than common equity firm, after controlling for the selection bias and the total coverage purchased. This is very close to the initial estimate we discussed (Model specification 2 of Table 4A).

5. Robustness checks

This section reports the results of a series of robustness checks testing for the sensitivity of the empirical results to various model specifications.

5.1. Rate-on-line as the dependent variable and controlling for coverage and the deductible

As mentioned in the previous section, we also ran the regressions with the rate-on-line as the dependent variable in the second stage to interpret results in dollar terms. The results are qualitatively unchanged (result not shown). There was no qualitative change either when we added the log of the total coverage as an independent variable (result not shown). The hypothesis behind the use of coverage (also known as the policy limit) is that extraordinary coverage may increase the cost of D&O insurance as the insurer may infer that the firm is riskier because it is requesting more coverage. The regression result does not support this hypothesis, however, since coverage does not have any significant impact on the rate-on-line. We included the deductible as an independent variable in both the log and level regressions. Its coefficient is never significant.

5.2. Endogeneity

Endogeneity in this type of research is difficult to avoid. One such endogeneity problem likely arises as the residuals of the selection equation may be correlated with the decision to incorporate as an income trust rather than a common equity firm. Some unobservable factors are likely to affect two managerial decisions around the IPO date: *Do we incorporate as an income trust or not?* and *Do we purchase D&O insurance or not*? Clearly, managers who are strongly risk-averse will opt for the common equity structure (since it is arguably less likely to face litigation) and are more likely to carry D&O insurance, and more of it.

To control for this potential endogeneity issue, we could have used an instrumental variable approach with *ITCE* in the second-stage regressions. As instruments for *ITCE*, *Age*, *Dummy_hard* and *Float* could have been used. The *Age* variable is calculated as the number of years since the start of the underlying business' operations. Huson and Pazzaglia (2007) show that *Age* is strongly correlated with the organizational form decision as older firms are best suited for the income trust structure. Moreover, *Age* is not strongly correlated with the decision to purchase D&O insurance. Including *Dummy_hard* also works since years where the market was hard coincided with the high relative valuation wave of income trusts (see Fig. 4). Finally, *Float* is highly correlated with *ITCE* but not with *Purchase* (see the correlation matrix in Appendix A).[23]

Instead of using an IV approach, we opted for an econometric model whereby the selection component of the Heckman two step procedure is a two-stage probit equation (see Model specification 7 of Table 3). Put differently, we first run a probit–probit model (as explained in Maddala, 1983) for the purchase and the corporate structure decisions, and then use this probit–probit model, where the *predicted-ITCE* variable is used in the *Purchase* regression structural equation, as our selection model in the Heckman. Table 5 presents the results of the second stage of the Heckman procedure whereby the log of the rate-on-line is the dependent variable. These results provide strong evidence that income trusts pay more for coverage.

In fact, comparing the regression results presented in Table 5 to those of Tables 4A and 4B, we see that the coefficient of the *ITCE* is reduced in every model specification, but by very little. For instance, comparing Model specification 2 in Table 5 with its counterpart in Table 4A, we see that the ITCE coefficient declines from .5873 to .5385, a 10% reduction. The same is true in almost every model specification. Nevertheless, in all model specifications in Table 5, the overall results are sensibly the same as those we presented in Tables 4A and 4B. This suggests that the potential endogeneity problem between the choice of the organizational structure and the decision to purchase D&O insurance is of little consequence.

We can therefore conclude that the main results of the paper remain valid: Insurance companies penalize income trusts for their contrive ownership structure and lack of unitholder right jurisprudence by overcharging them by an average of 80% compared to common equity firms (depending on the model specifications, of course). This is economically consequential.

5.3. Other robustness checks

Table 6 presents another set of robustness checks depending on variables that are included and/or omitted. In all model specifications in Table 6, we use the base case of Model 5 in Table 4B (two-step procedure) because the two-step procedure is more stable than the full maximum likelihood approach. Model specification 2 in Table 6 uses the same approach as in Model specification 1, but uses as the selection equation Model specification 3 in Table 3 (this selection model is used in all specifications presented in Table 6).

In Model specification 3 of Table 6, we include in our regression whether the firms that incorporated themselves as income trust originated from a sector for which the income trust structure was designed (Oil & Gas, REIT & Financial). We see that firms that originate from a classic income trust industry are not better treated (in the sense of obtaining a smaller rate-on-line) than other firms.

Model specification 4 and Model specification 5 include as an explanatory variable the inverse-Mills ratio obtained from a probit regression in which ITCE is instrumentalized by *Age*, *Dummy_hard* and *Float*. The only difference between these two model specifications is how we account for the variations in the supply side of the D&O insurance market: Using Tillinghast's premium index or using a dummy variable for the hard market years. Again, we see that the selection bias, if it exists, remains inconsequential in terms of the economic importance of our main variable of interest, *ITCE*. Model specification 6 limits the number of explanatory variables used for the log of the rate-on-line. Finally, Model specification 7 includes the ITCE variable in the first stage regression. Neither specification alters the main message of the paper: Income trusts pay more per thousand dollar of coverage than common equity firms.

6. Discussion and conclusion

The primary objective of this paper was to demonstrate that insurers penalize the more opaque governance of income trusts. We have documented a strong relationship between the organizational structure opted for by a firm at its IPO and the premium insurers charge to protect its directors and officers against lawsuits. Our results are statistically and economically significant and robust to various model specifications. Several papers, such as Baker and Griffith (2007), have argued that premiums charged by D&O insurers are based on business and governance risk factors and that deep governance is particularly crucial. Investors

[23] Using Probit model specification 3 from Table 3 with *ITCE* instrumentalized by *Age, Dummy_hard* and *Float*, we can find the inverse Mills' ratio from that regression and include it in OLS regressions with *ln_prem_cov* as the dependent variable. All the results are not shown in this version of the paper, but support the overall conclusion of the paper. We still present in Table 6 (Model specification 3) the results that we obtained running one such model.

unfortunately cannot observe this deep governance; they cannot even observe, in the United States, the evaluation that D&O insurers make of such deep governance issues (see Griffith, 2006).

Governance indices have emerged in order to fulfill the need for governance risk assessment. These indices suffer, however, from various methodological shortcomings. One of these shortcomings (see Bebchuk and Hamdani, 2009) is that governance indices typically follow a "one-size-fits-all" approach thereby failing to take into account an array of idiosyncratic issues. Adams et al. (2010) view the governance structure of a firm as the result of an optimization problem. Therefore, what is a best response for one firm might not be the best response for another given the environment it operates in. Hence, heterogeneous governance structures are to be expected in practice. Governance indices do not allow taking this crucial aspect into account. Moreover, the positive relationships between governance as measured by an index and performance forego the endogeneity problem highlighted in the works of Wintoki et al. (2011) and Bhagat and Bolton (2008). In addition, governance indices rely heavily on public information and are often issued by firms that are not always free of conflicts of interest. Finally, as Baker and Griffith (2007) write, "the deep governance factors that […] matter so much to D&O insurance underwriters are neither adequately specified nor publicly available" (p. 492).

Another problem with *ad hoc* governance indices is that firms under the scrutiny of the rating entity can artificially manipulate these ratings. This should be reminiscent of the credit default swaps debacle. Right or wrong, a growing voice in financial markets strongly urges for accountability from entities emitting ratings that are widely used by major market players, which would alleviate the instability emerging from the development of financial products or companies purposively structured so as to barely fit a particular rating.

An alternative to governance indices that could assist investors assess the governance risk of a corporation—or any organization for that matter—lies in the fact that the vast majority of those corporations are taking it upon themselves to indirectly purchasing a governance assessment when they purchase liability insurance on behalf of their directors and officers. Having D&O liability insurance allows a firm (and in particular its directors and officers) to put the onus of the cost of the liability risk on the shoulders of the insurance company. And because lawsuits against corporate directors for having breached one of their duties toward the firm (fiduciary, care or loyalty) can be very expensive, insurance companies have a monetary incentive to correctly assess the governance risk are assuming. As a result, and in contrast to other governance indices, insurers have a very primal incentive to measure and control governance risk as it impacts the potential cost of litigation as mentioned by Core (2000) and Baker and Griffith (2007, 2008).

Another advantage of using D&O insurance over governance indices to assess corporate governance risk is that the D&O insurance market is competitive; insurers must therefore use ever more complex and precise measurement tools to profit from selling such a protection to corporations and their directors. As a result, D&O insurers do not follow the one-size-fits-all approach typical of governance indices. Instead insurers use their expertise to review specific risk factors that may be unavailable to other parties since they have access to unique private information about the firms' directors and officers. This access allows insurers to refine their pricing of governance risk of each prospective insured.

In line with the corporate governance risk hypothesis, our results show that D&O insurance providers recognize the governance risk of firms that incorporate using a more contrived structure and effectively charge higher insurance premiums to these firms. Our paper therefore contributes to strengthen the use of D&O insurance contracts as a natural measure of governance risk. The natural governance experiment we use, whereby a corporation has the choice of incorporating itself as an income trust or as a common equity firm at the time of its initial public offering, shows that D&O liability insurers penalize income trusts (i.e., charge income trusts a higher premium) for having a riskier corporate governance structure.. In accordance with our main hypothesis, we find that the income trusts' D&O insurance premium is significantly larger than the common equity firms' premium, even after controlling for a multitude of other factors.

Where does that leave us in terms of the market's use of D&O insurance information? The most important message one should take from our results is that simple D&O insurance information provides valuable information to investors. This D&O insurance information should be regarded as an alternative to commercial governance indices. And since this information, which could be distributed at no cost to all investors, comes from entities (i.e. the insurers) that have a direct financial incentive to correctly assess the governance risk of a corporation, it does not suffer from some apparent shortcoming associated with rating agencies.

Our results also raise an interesting question related to the availability of D&O insurance information. Given that a company's basic D&O insurance information is currently not available to the public in the United States, our results provide a rationale for examining whether such information should be made available. The current argument against making that information public is that if trial lawyers know what the policy limit is for a given D&O insurance contract, then such a limit would act as a natural focal point for any and all class action lawsuits that lawyers may bring upon a corporation and its management team. Such an argument, even if it is true, is moot if we look at the premium-to-coverage ratio. This ratio provides investors with information about a firm's litigation risk without acting as a beacon for lawsuits. We could therefore imagine making the rate-on-line information public without revealing the policy limit, thus allowing investors access to a governance index without attracting unnecessary costly and frivolous lawsuits. More work needs to be done on larger datasets and on datasets related to operations in the United States before a more definite conclusion can be reached.

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