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# Shades of Grey: Corporate Financing with Convertible Bonds

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## Abstract

Innovative financial instruments are used increasingly by firms to meet corporate capital requirements. We focus on one such instrument Convertible Bonds which combine the features of both debt and equity. We review literature on motives for corporate issuance of convertible bonds, post issue performance, extinguishment and financial reporting. We find that though issuance motives and post issue performance are well researched areas; the evidence is not conclusive. Adoption of IFRS and the impact thereof on key financial indicators of issuing firms will help firms design appropriate features in future. Studies covering entire lifecycle of the convertible bond and explaining different reasons for extinguishment of bonds are rather scant. We also find that there is greater scope of research on these topics in the context of emerging markets. We conclude with suggestions for other research topics that may be addressed in future.

**Keywords:** Convertible Bonds, Issue Motivations, Call Policies, Performance, Financial Reporting

## Introduction

The seminal work of Modigliani and Miller<sup>1</sup> showed that the means of financing employed by a firm is irrelevant and does not affect its' value. Yet we have since then seen listed firms employing many different instruments for meeting their capital requirements. Firms may use internally generated funds or issue new equity shares, shares with differential voting rights and preference shares. For debt capital they can rely on the banking channels or issue debentures and bonds. Also; hybrid securities like warrants, convertible preferred shares and convertible bonds are other instruments that can be employed.

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Convertible Bonds (CBs) have been an important financing source for firms in many countries. (As reported by Loncarski et al <sup>2</sup> during 1990-2003 there were 7208 issues of CBs across all countries) In this paper we review literature on convertible bonds. CBs are corporate debt instruments that usually carry an option for the investor to exchange future interest payments thereon and principal repayment for equity shares of the issuer. The investor is paid a fixed coupon until he investor chooses to exchange them for shares. In the event that the investor does not exercise this choice, the redemption proceeds are paid out at maturity. CBs can be quite complex instruments as they may various clauses such as floating interest rates, conversion protection period, put option, step-up conversion prices, reset of conversion prices, call option, call protection period etc. Further CBs may be denominated domestic currency of the issuing firm or in foreign currencies. These complexities have attracted researchers to explore varied aspects of CBs and firms issuing them.

While there are special types/variants of convertible bonds (for instance mandatory convertible bonds, contingent convertible bonds and exchangeable bonds) we mainly focus on bonds which are optionally convertible by the investor. Figure 1 shows various financing options available to firms and highlights the focus of this research paper.

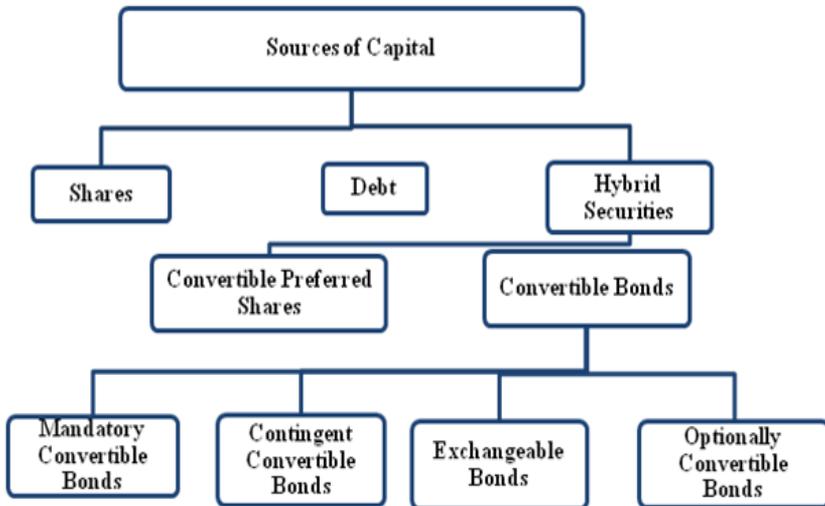


Figure 1: Main Sources of Corporate Financing.

In this review we explore literature that addresses the following research questions:

1. Why do firms issue CBs - What are the firm specific factors, market factors and country specific factors affecting issuance of CBs?
2. What is the post-issue effect on firm risk, stock prices and operating performance of firms issuing CB; both in the short-term and long-term?
3. When and how are CBs extinguished during their lifecycle?
4. How do issuers report (present) CBs in their financial statements during their lifecycle?

The rest of the paper is structured as follows. Section 2 reviews reasons for corporate use of CBs financing instrument. Section 3 explores the effect of CB issuance on the firms' risk and performance. Section 4 discusses the call policies and effect thereof. Section 5 discusses aspects related financial reporting and presentation of CBs by issuing firms. Section 6 concludes with a summary of the discussions on CBs and highlights areas for future research.

### **Motivations for Use of Convertible Debt**

The question as to why firms issue convertible debt (and not equity or straight debt) has attracted considerable academic interest. Literature provides a variety of views explaining firms' choice of convertible debt as a financing vehicle. Agency problem (i.e. shareholder-creditor conflict of interest) and information asymmetry (between managers and investors) are the main theories explaining use of convertible bonds. Role of factors like tax advantages and rationing in equity markets have also been associated with issuance of convertible debt.

Shareholders in highly levered firms can have incentives to increase firm risk by accepting more projects having volatile returns. Where majority of the returns are likely to accrue to bondholders, managers acting on behalf of shareholders may reject most profitable projects and accept less profitable or negative return projects. This action leads to transfer of wealth from bondholders to shareholders. Bondholders anticipating this action may tend to increase the cost of debt. An all equity financing would eliminate this agency problem

(shareholder-bondholder conflict) and costs associated with it. However, the costs of foregone interest tax-shields may outweigh the benefits of reducing the risk-shifting problem. Myers<sup>3</sup> suggests that one way of overcoming this is to issue short term debt that matures before the most of the returns are realized.

Jensen and Meckling<sup>4</sup> and Green<sup>5</sup> propose that CBs can be used by firms to resolve/mitigate the risk-shifting problem. The incentive to convert increases with firm value but conversion dilutes the equity held by current shareholders. Therefore, in the presence of CBs shareholders' incentive to accept risky projects with high potential returns is reduced. Thus the argument that convertible debt mitigates risk-shifting incentives is based on the equity dilution effect of conversion. Other studies by Chesney and Gibson-Asner<sup>6</sup>, Julio et al<sup>7</sup> extend Green's work. Empirical evidence shows that CBs are more likely to be used by small growth oriented firms; they are used to finance R&D expenses or acquire intangible assets. Thus, these studies show that CBs are a substitute for straight debt and are most likely to be used by firms facing significant risk in their investment opportunity set. Lewis et al<sup>8</sup> observe that some issuers are smaller than straight debt issuers and that they have higher market- to-book ratios, lower cash flows and use more debt prior to the issue. These conditions make the firms more likely to engage in risk-shifting behaviour and therefore substitute CB for straight debt.

Stein<sup>9</sup> argues that firms with high growth opportunities but significant information asymmetries may find equity issue unattractive as equity values are sensitive to disclosure of private information. For such firms raising debt would help overcome the costs associated with adverse selection. However, increasing leverage could lead to increase in financial distress costs which could outweigh the adverse selection costs. Issuing short-term debt followed by an equity issue on maturity may not be appropriate for firms facing a steady level of information asymmetries. CBs mitigate the adverse selection costs (negative signalling) associated with raising equity for firms with significant information asymmetries and high financial distress costs. Similar motives were noted in surveys done by Pilcher<sup>10</sup>, Brigham<sup>11</sup>, Hoffmeister<sup>12</sup> and Graham & Harvey<sup>13</sup>. In these surveys, respondents

(mainly finance managers of firms) referred to “delayed equity” as the prime motive for issuing convertible bonds. Davidson et al<sup>14</sup> examine empirical data and find low average time taken for bonds to be “at-the-money” – an indication supporting Stein’s arguments about convertible debt being backdoor equity. However, similar surveys by Bancel & Mittoo<sup>15</sup> report mixed results with reasons like debt sweetener and deferring equity dilution being cited by respondents besides the delayed equity motive. Dong et al<sup>16</sup> use in-depth interviews to elicit insights into managers’ decisions to issue convertibles. They also find weak evidence for Stein’s arguments but find strong support for risk-uncertainty rationale.

Mayers<sup>17</sup> focuses on appropriateness of convertible debt to resolve a future financing problem. Firms need funds for planned expansions, expected growth opportunities and emerging investment opportunities. These funds may not be required immediately; but may be required repeatedly over a period of time. If the firm raises the entire amount upfront funding is secure; but managers may be tempted to spend the money on unworthy projects. This also imposes costs of monitoring managerial behaviour (shareholder-manager agency costs). Instead, raising funds in stages (sequential financing) gives investors an opportunity to monitor project results but increases costs of accessing the capital markets. At the same time, since later investments may not be available on time; the project may fail due lack of funds. Also, to gain investor confidence, managers may artificially boost early performance. Mayers proposes that the conversion feature of convertible debt helps in reducing the problems associated with sequential financing as well as controlling the overinvestment problem. He finds evidence showing significant increase in capital expenditures in the year of call and conversion of the bond. Chang et al<sup>18</sup> provide further evidence supporting Mayers’ proposition. They find evidence that issuers’ net new financing is nearly nil over the life of the convertible bond. This indicates that convertibles are used to minimize agency costs of overinvestment by firms having a sequence of potential investment options.

Cornelli and Yosha<sup>19</sup> illustrate the use of convertible bonds in sequential financing of projects backed by venture capital. Usually infusion of capital by the venture capitalist is related to the progressive stages of

the project. The venture capitalist also retains the right to abandon the venture at any stage if future expected net present value of the project is negative. In such cases the entrepreneur has an incentive to report positively biased short term performance (window dressing); thereby reducing the probability of liquidation. Convertible debt prevents such entrepreneurial behaviour as reporting better performance increases the chances of the venture capitalist choosing to convert the bonds. This may lead to the venture capitalist becoming the majority equity holder of the project and appropriating wealth. Therefore, financing a suitable amount through convertible debt and determination of an appropriate conversion ratio is likely to ensure that the project continues to be financed. At the same time this also deters the entrepreneur from engaging in window dressing.

Interest payments on convertible bonds provide beneficial tax-shields to issuing firms. Yet the probability of financial distress is much lesser than in case of straight bonds. Therefore, Jalan and Barone-Adesi<sup>20</sup> argue that the differential tax treatment of interest payments and dividend payments motivate corporate use of CBs as a financing instrument. This tax-shield benefit is also one of the reasons why most firms tend to delay calls of bonds. There is however lack of empirical evidence supporting this.

Studies by Lewis et al<sup>8,21</sup>, Krishnaswami and Yaman<sup>22</sup>, Dutordoir and Van de Gucht<sup>23</sup>, find evidence that firms faced with high agency costs, adverse selection costs and financial distress costs are more likely to issue CBs debt rather than equity or straight debt. Similarly, a growing stream of literature<sup>24-27</sup> documents that corporate governance mechanisms can also reduce agency and adverse selection costs. Therefore it may be argued that firms with lower governance processes and high agency conflicts are more likely to issue CBs in order to protect shareholders' interests (known as substitution hypothesis). Isagawa<sup>28</sup> however argues that entrenched managers may also issue callable CBs to preserve their control over the firm. Straight debt can prevent hostile takeovers but can increase the costs of financial distress. But the call feature of CBs can be used effectively to prevent bankruptcy. Thus managers can protect their interests even when it may not be in the best interests of the shareholders. Managerial entrenchment is likely to

be higher in firms with weaker governance systems and therefore such firms are more likely to issue CBs (entrenchment hypothesis). Dutor-doir et al<sup>29</sup> examine the influence of governance quality (measured using board size, ownership concentration, CEO tenure, outside directors) on the firm's financing choice. They find evidence in support of the substitution hypothesis but not in support of entrenchment hypothesis.

These studies assume that investor demand for convertibles is elastic and does not play a role in influencing the volume, pricing and design of issues. Baker<sup>30</sup> argues that time-varying investor tastes, limitations in capital available for financial intermediation and corporate opportunism are likely to affect demand for securities. Similarly Eckmann et al<sup>31</sup> argue that the value of a convertible is not merely the sum of its debt and equity components. Rather its value reflects the interaction between these components. Therefore, convertibles are likely to satisfy a separate class of investors who are not seeking a combination of straight debt and equity. Choi et al<sup>32</sup> find that issue volumes are positively linked to availability of capital with convertible arbitrageurs. This argument is furthered by Brown et al<sup>33</sup> who argue that convertible arbitrageurs/hedge funds play an important role as investors in convertible markets thereby enabling firms to raise capital when they are unable to access equity markets. Arbitrageurs and hedge funds use their expertise to develop sophisticated investment strategies to distribute equity risk to institutional investors. De Jong et al<sup>34</sup> examine the influence of proxies like risk-aversion, demand for option type characteristics, flows into mutual funds and hedge funds specializing in convertibles to assess investors' demand for CBs. They find that CB issue volumes are positively related to fluctuations in investors' demand. Further they also document negative impact of investor demand on the level of under-pricing.

These aforesaid studies focus on issuer specific factors and/or design features to determine the motivations for issuing CBs. However, additionally in various surveys<sup>11,12,37,40</sup> finance managers have indicated the importance of equity and debt market conditions while issuing CBs. As pointed out by Baker<sup>30</sup>, managers are likely to take advantage of temporarily favourable market conditions to issue securities at attractive prices. Brigham<sup>11</sup> found that managers issue CBs as a substitute for issuing equity when equity prices are depressed. Hoffmeister<sup>12</sup>, Meli-

cher & Hoffmeister<sup>37</sup> noted that CB issuances were linked to lower costs of borrowing and making bond attractive to investors. Hoffmeister et al<sup>38</sup> and Mann et al<sup>39</sup> examine relation between various economic, equity market and bond market indicators and number/proportion of CB issues at aggregate levels. They find that CB issues are higher in periods when interest rates are rising or unstable, when industrial production is low and during bull markets. Billingsley et al<sup>40</sup> examine firm level choice of financing and find that equity market forecasts influence the choice between debt & CB while debt market forecasts do not explain the firms' choice. Dutordoir and van de Gucht<sup>41</sup> find that CB announcement effects are much less negative during hot issue markets. Also issuer specific factors (leverage, tax rate, stock return volatility, firm size) and issue specific factors (issue size, equity component of CB) have lesser effect on market reaction to CB announcements during hot markets. Thus they find that firms can exploit windows of opportunity to issue CBs with lesser adverse price impact.

Apart from issuer characteristics, design features and market conditions country specific factors (legal environment, tax regulations) also exert significant influence of the issuance of CBs. Rights of providers of capital (i.e. equity shareholders and creditors/bond holders) are protected in various ways and to varying degrees across countries. Shleifer and Vishny<sup>42</sup>, La Porta et al<sup>43</sup> examine differences in the provisions of corporate laws (with respect to legal protection offered to providers of capital) and their enforcement in various countries. Their studies find that in countries with poor shareholder protection laws; debt is more widely used. This is because default on debt is easier to define and observe. Consequently firms in countries with strong creditor protection laws rely more on debt capital whereas firms in countries with strong shareholder protection laws rely more on equity capital. Rajan and Zingales<sup>44</sup>, Miller and Puthenpurackal<sup>45</sup>, and Reese and Weisbach<sup>46</sup> are other studies which emphasize the connection between legal systems and corporate finance and provide similar insights. While these aforesaid studies refer to ordinary or straight debt; others have extended these studies to call protection terms in convertible securities. Firms can time calling the bond to meet their next investment requirements. Demirguc-Kunt and Maksimovic<sup>47</sup> argue that legal systems

promote stock market development and therefore convertibles will be more equity-like in countries that provide better shareholder protection. Convertibles issues in these countries are therefore expected to have weaker call protection terms which can be used to force investors to convert from bondholders to shareholders. Korkeamaki<sup>48</sup> uses cross country sample of convertible bonds and provides further evidence of the relation between call protection terms, coupon rate and legal systems prevalent in the issuers' country. In countries with weak bankruptcy laws; convertibles are found to have strong call protection terms. Lee et al<sup>49</sup> find that CBs with higher probability of conversion are issued by firms in countries which have stronger laws for protection of shareholders' rights.

Thus; as theorised and evidenced empirically, CBs have been used as financing instrument to resolve many agency issues & information asymmetry problems, to lower financing costs and for signalling firm value. Investors' preferences for securities, market conditions and country specific legislative controls explain differences in issuance volumes over time. It is well known that some firms (e.g. MCI) which issued CBs have faced debt overhang problems when the bonds did not convert and adverse conditions prevented firms from calling the bonds. Yet, there is little empirical evidence of the disadvantages or problems faced by firms that issued CBs. Groth<sup>50</sup> demonstrates that even in periods of rising equity prices, conversions may not happen even over long periods. This implies that where conversion is desired by management, firms could face financial problems on account of non-conversion of bonds. Non-conversion could leave firms with undesirable capital structures and cash flow problems. Further research is required about characteristics of firms that faced debt-overhang and related problems post issuance of CBs, reasons therefor and strategies used by firms to overcome the problems. Issuing firms must be aware of benefits as well as limitations of the financing instruments chosen.

### **Firm Risk, Stock Wealth and Operating Performance**

Systematic equity risk is the discount rate used by investors to discount future cash flows of a firm. In some cases investors might anticipate an increase in the firm's post-issue systematic risk for which they

may not be adequately compensated with corresponding increase in returns. Such firms would not be able to access equity markets directly and may issue CBs enabling investors to assess the associated risk. Lewis et al<sup>51</sup> find that systematic risk of CB issuers declines post-issue but not so for similar non-issuing firms. Therefore decline in risk is largely due to firm specific factors rather than industry related factors. They document post-issue increase in financial leverage but a decline in asset risk for CB issuing firms. Also the reduction in business risk is large enough to offset the increase the financial risk. Rai<sup>52</sup> also finds that decline in systematic risk of CB issuers is significantly related to potential dilution of equity but not to the intended use of funds. Kleidt and Schiereck<sup>53</sup> however document contrasting evidence of a significant increase in financial leverage following CB issue and small declines in asset risk leading to a net effect of increase in systematic risk. Thus evidence on risk dynamics surrounding CB issues is limited and with mixed results.

Managers having greater information use this to benefit existing shareholders at the expense of new shareholders. Hence an equity issue is regarded as less favourable than a debt issue (adverse selection problem). As convertible debt represents a middle path, the announcement effect of a convertible issue should be less negative than an equity issue but more negative than a straight debt issue. Dann & Mikkelson<sup>54</sup>, Davidson et al<sup>14</sup>, Abhyankar and Dunning<sup>55</sup>, Ammann et al<sup>56</sup>, Li & Wang<sup>57</sup> find significant negative abnormal stock returns on announcement of new CB issues. As expected the returns are less negative than observed for a pure equity issue. Various factors like size of the issue, intended use of funds, previous market returns and security design/features have been cited to explain the equity price impact of CB issues. Though the extent of negative abnormal returns observes varies across these studies, the findings are generally consistent with the backdoor equity hypothesis. However this negative announcement effect is observed mainly in U.S. markets. In contrast studies in the Japanese<sup>58</sup> & Taiwanese<sup>18</sup> contexts showed significant positive abnormal stock returns on announcement. Further in the case of Taiwanese firms it was also noted that the positive returns were observed only in the case of first time issuers and not for seasoned issuers of CBs. These

positive returns were attributed to the financial deregulation in these countries during that time and a signalling of the firms' ability to move away from the traditional banking channels for funding requirements. Similarly Lewis et al<sup>21</sup> and Dutordoir & Van de Gucht<sup>41</sup> also find more favourable announcement returns in case of CB issues during hot markets due to lower economy-wide information asymmetries.

The above mentioned studies fail to examine changes in the investor base and impact thereof on announcement returns. Duca et al<sup>60</sup> find large declines in CB announcement returns for issues during 2000-2008. They attribute this to the corresponding increase in the presence of convertible arbitrage funds during this period. Traditionally investors would buy CBs without shorting the underlying equity. However these arbitrageurs (hedge funds & institutional investors) generally shorted the underlying equity. The increase in the supply of shares resulting from arbitrage-related short selling would lead to downward stock price pressure around the convertible bond issue date. Thus presence of different types of investors and hedging strategies adopted by them can affect the size of announcement returns.

Announcement returns may not fully capture shareholder wealth effect as share prices may under-react to certain firm specific news. Therefore many studies document firm performance over the years following CB issuance. Hansen and Crutchley<sup>61</sup> examine changes in earnings of CB issuers over a 4 year post-issue period. They report significant abnormal decline in earnings, find a positive relation between issue size and earnings decline. Lee and Loughran<sup>62</sup>, Spiess and Affleck-Graves<sup>63</sup> and Lewis et al<sup>51</sup> also report poor long run stock price performance for CB issuers over a 5 year post issue period (in comparison with similar non-issuing firms). This may be due to the increase in returns demanded by shareholders for the increase in risk of assets.

Similarly, McLaughlin et al<sup>64</sup> and Lewis et al<sup>51</sup> also find evidence of declines in cash flows and operating performance over long run post issuance period. This is attributed to the inability of managers to invest in positive net present value projects or longer time required for the projects to generate positive cash flows. However, earnings management (income increasing accounting adjustments) around the time of

convertible debt issuance could also explain post issuance post stock price and operating performance. Legoria et al<sup>65</sup> find that firms use discretionary accruals to create a pattern of improved financial performance leading up to the year of the debt issue. Similar evidence is also reported by Chou et al<sup>66</sup> and Chang et al<sup>67</sup> in case of CB issuers.

Thus evidence on post issue changes in systematic equity risk, stock performance and operating performance and is not conclusive. Also whether and how changes in risks influence the changes in performance has not been fully explored. There is scope further research on these issues.

### **Bond Extinguishment**

As seen in the earlier section CBs can mitigate adverse selection problems. At the same time CBs can increase default risk. The call option allows the issuing firm to force conversion and thereby prevent financial distress. Also, managers acting in the best interest of existing stockholders can limit the transfer of wealth to bondholders by calling the bonds at the earliest opportunity. Where CBs were issued as “back-door equity” and early conversion is desired by management, firms may not be willing to await voluntary conversion – especially when it cannot be guaranteed and may happen gradually over long periods. Therefore, use of the call provision and shareholders’ reaction to the call has attracted much academic interest.

Brennan and Schwartz<sup>68</sup>, Ingersoll<sup>69</sup> argue that the optimal policy is to call the bond as soon as the conversion value exceeds the redemption value since forcing conversion eliminates the bondholders’ premium or option value. However, empirical evidence shows that firms typically delay the call till the conversion value far exceeds the call price - Ingersoll<sup>70</sup>. They attribute this to the stock price volatility during the call period. Harris and Raviv<sup>71</sup> propose that convertible calls are interpreted as negative signals about future performance of the firm, hence the delayed calls. Constantinides and Grundy<sup>72</sup> explain delayed calls by assuming that voluntary conversions are less costly and hence preferred to conversion forcing calls. They further maintain that the interest-dividend differential is the primary factor explaining voluntary conversion. If the dividends are expected to increase, management

should delay calls and allow voluntary conversion. Early calls would imply that the management believes that dividends will not increase in future and hence send negative signals. Asquith and Mullins<sup>73</sup> suggest that if the cost of dividends on the converted bonds is likely to be more than the after tax coupon payments, the firm may prefer to delay the call in order to maximize current shareholders' wealth. Ederington et al<sup>75</sup> examine empirical data to examine call policies and find evidence supporting this proposition. Alexander and Stover<sup>76</sup> find that firms tended to call the convertible bonds after a period of abnormal price increases relative to the market. They find that the number of conversion forcing calls is positively correlated with the relative level of the stock market. King and Mauer<sup>78</sup> also find empirical evidence that firms call only when there is no danger of a failed call, when there is a cash flow advantage to the firm and when equity financing is needed to fund future growth options.

Weston and Copeland<sup>74</sup> argue that the market forms an expectation of the firm's call policies based on its past behaviour. New CB issues by firms that had called the bonds at the earliest opportunity are likely to be priced lower. Investors are likely to punish firms that denied them an opportunity to profit from the conversion option. Veld and Zabolotnyuk<sup>77</sup> find evidence in support of the market memory hypothesis.

Emery et al<sup>79</sup> observe that firms calling convertible debt grow significantly faster (as measured by retained earnings) than non-calling firms in the same industry. Calling firms also experience significant decline in book value leverage ratios but no significant change in market value leverage ratios after the call in comparison to non-calling firms. As the calling firms obtain significant amount of new book equity from the conversion, they are found to issue less new equity. This shows that issuing firms use the call option as part of their capital structure management policies.

Mikkelson<sup>80</sup>, Ofer and Natarajan<sup>81</sup> and Datta et al<sup>82</sup> report decline in stock prices at the time of announcement of conversion forcing call of convertibles supporting the signalling model of Harris and Raviv<sup>71</sup>. However, Mazzeo and Moore<sup>83</sup> find that the negative market reaction

is transitory – prices being to rise shortly after announcement. They suggest that the negative price reaction is due to selling pressure and not due to negative signalling effect by the issuer (liquidity hypothesis). Brick et al<sup>84</sup> confirm negative abnormal returns around conversion forcing call announcements. However they do not find any statistical relation between the abnormal returns and proxies for the stock's illiquidity – thereby rejecting the liquidity hypothesis.

These aforesaid studies document negative stock reaction of in-the-money calls. Cowan et al<sup>85</sup> examine stock reaction of out-of-the-money calls and find significant positive announcement effect. This signals that the firm has sufficient cash/liquid resources to redeem the bonds before maturity or that it is refinancing with a new issue at lower cost of capital. Bechmann et al<sup>86</sup> also find significant positive announcement effect for out-of-the-money calls. They further examine the call announcement and earlier announcements regarding availability/source of cash for meeting the redemption requirements. They observe that in many instances the call announcement was preceded by issuance of securities and the call was mentioned as a possible use of cash raised. As such the market had already anticipated the call and the announcement effect might be moderated. They find that the announcement effect was more positive where the firm used existing cash or existing lines of credit rather than issuing new securities.

Conversions affect future cash flows and financial flexibility. Hence, managers of firms having convertible debt are interested in knowing the likelihood of conversion. Frank and Weygandt<sup>87</sup> use the ratio of conversion value to call price to predict conversions with little error in the short term (i.e one year ahead). Frank and Kroncke<sup>88</sup> develop a model to predict conversions over longer time horizons. Their findings (through use of multiple discriminant analysis) indicate that in the long run factors like number of quarters to maturity, growth rate of stock price and ratio of the market price to the higher of the call price or conversion value have greater explanatory power. Based on option pricing model of Black & Scholes<sup>89</sup> and Merton<sup>90</sup> more recent studies investigating the role of security design/features use “delta” to estimate the probability of conversion of CBs. Delta measures the equity component of a CB at issue using parameters like time to maturity,

risk free rate, standard deviation of stock returns and dividend yield of the firm. Delta values close to '1' indicate higher probability of conversion and values close to '0' indicate very low probability of conversion.

Johnson<sup>91</sup> uses multiple regression techniques to explain the voluntary conversion behaviour. He notes that the dividend-interest differential simulates voluntary conversion but with a lag over time. Also, increases in stock prices are observed to have rapid and substantial impact on the cumulative amount of voluntary conversion. Theoretically, voluntary conversion should be total as soon as the market prices of equity exceed conversion price. However, Mehta<sup>92</sup> observes that voluntary conversion did not occur as soon as equity prices exceeded conversion price; but was gradual over a period of time. He attributes this gradual conversion of bonds to market imperfections like transaction costs and taxes. Storey and Dipchand<sup>93</sup> use multiple discriminant analysis to examine the impact of various firm specific factors, convertible structure and market factors on conversion records. They conclude that growth rate of equity prices, conversion premium at issue date and dividend-interest differential are the main factors affecting voluntary conversions.

Though there is a large body of research addressing various aspects (need for, design & execution) of the call policy there is little evidence/ understanding on extinguishment of CBs by other means - voluntary conversion by investors before or at maturity, repurchase of CBs by issuing firm, put option exercised by investors, redemption at maturity and related issues. Also further evidence may be needed to conclude whether firms which did not call adopted such a policy as part of their capital structure management or whether they faced lack of growth options or financial distress.

### **Financial Reporting**

Traditionally, convertible debt was presented in the financial statements of the issuer as "debt" on issuance of the bonds. It was being presented as "equity" only on conversion. However, International Financial Reporting Standards (IFRS - IAS 32) require firms to separate the components of a compound instrument. CBs optionally con-

vertible by the investor into number of shares that is fixed at the time of issue are defined as compound instruments. The sum of the carrying amounts assigned to the liability and equity components on initial recognition is set equal to the fair value that would be ascribed to the instrument as a whole. Debt is to be valued as the present value of all future interest payments and principal repayment. For this the fair market rate for the issuer's straight debt is used as a discount rate. The difference between fair value of the CB and the value assigned to debt thus calculated is assigned to equity. In subsequent years, debt is measured at amortized cost using the effective interest method. Convertible bonds can be viewed as a combination of a straight bond and a call option on the equity of the issuer. Therefore, Vigeland<sup>94</sup>, King<sup>95</sup> and Arak and Martin<sup>96</sup> recommend use of modern option theory (Black-Scholes option pricing theory) to decompose the values of convertible debt. The equity value is assumed to be equal to the option value.

Academic literature presents a mix of views on accounting for CB. King et al<sup>97</sup> provide evidence that the component approach is consistent with the way convertibles are perceived by the market and that such a disclosure recognizes the true economic value of the instrument. Barth et al<sup>98</sup> demonstrate that the debt-to-equity ratios are significantly different when the components approach is used in reporting convertible debt. This; they argue; is sufficient evidence that separate disclosure of components provides materially relevant information to users of financial statements.

The components approach has been criticized on practical as well as conceptual grounds. Ma and Lambert<sup>99</sup> argue that the components approach is conceptually flawed. They propose that hybrid instruments should be viewed as a single instrument with dual nature rather than an instrument of two parts. This is because the option to convert cannot be detached from the debt component and traded separately. Also, the components approach does not permit revision of the initial classification in subsequent years. They argue that this does not reflect market realities as the likelihood of conversion may change from time to time. Instead of a components approach, they propose that such instruments should be treated as wholly debt or wholly equity

depending on whether the liability or equity nature is dominant at a particular time. Casson<sup>100</sup> notes that for components approach to be used assumptions and estimates about probability of conversion and redemption are required. These assumptions by users of financial statements may be different from that of the issuer of convertible debt. He suggests that convertible debt should be classified as liability as there is an obligation to transfer economic wealth either in the form of cash or issuance of shares. He further suggests that convertible debt should be presented separately from other liabilities. He recommends that adequate information about method and timing of settlement of the debt should be provided to enable users to make informed judgments. This approach he feels would overcome the practical difficulties associated with the components approach. Schneider et al<sup>101</sup>, Bishop et al<sup>102</sup> also report reduction in reported incomes due to amortization of debt component under split accounting practices. They draw attention to this and indicate that analysts/investors would have to reassess critical values of commonly used performance measures. Otherwise many firms are likely to be classified as “distressed” without any changes in underlying business.

Rue et al<sup>35</sup> adopt a completely different view that that CB should be treated as equity on issue. They argue that convertible bonds can be viewed as partially executed contracts. The issuer receives cash from the investor. In return the issuer commits to periodic cash outflows for a period of time and issuance of a fixed number of shares to the investor on demand. The contract is fully executed either on maturity of the bond or demand for conversion by the investor or the bond being called by the issuer. Thus, the convertible bond is in essence a contract to receive equity in future in exchange for upfront cash payments. They also support this view as most CBs are converted and rarely redeemed. As such, they recommend that convertible bonds should be classified as equity in issue. They point out that this approach resolves other problems like the need for computing diluted EPS. They suggest this method to also make comparisons over a period of time easier than the re-classifications from debt to equity. Further, they also assert that convertible bonds are mainly issued by firms to raise equity capital. The initial classification as equity is deemed appropriate by them consid-

ering the intention of the issuers. This method is however acceptable under IAS 32 only in case of mandatory convertibles.

In order to make financial statements more relevant to global investors, enable easier flow of capital across economies; most countries have started adoption of a common financial accounting and reporting practices. Issuers adopting of International Financial Reporting Standards (IFRS) for the first time will have to change from “debt until conversion” to the “component approach”. This is likely to affect many key financial performance indicators (without any change in underlying business fundamentals). Issuers will also face challenges in terms of educating investors about new accounting practices. Some of these challenges may be specific to the country of the issuing firm. As such more research is needed across various countries on impact of adoption of IFRS. The aforesaid studies on adoption of IAS 32 mainly comment on the impact of the issuing firms’ financial status at the time of issue. However events such as conversions (whether in response to call by the firm or voluntarily), reset of conversion price, repurchases and redemption (early or at maturity) are likely to occur and affect the carrying values of debt and/or equity, financial indicators. Examining how adoption of IAS 32 in light of these events might affect financial statements of issuing firms is likely to be more useful to design features of future issues.

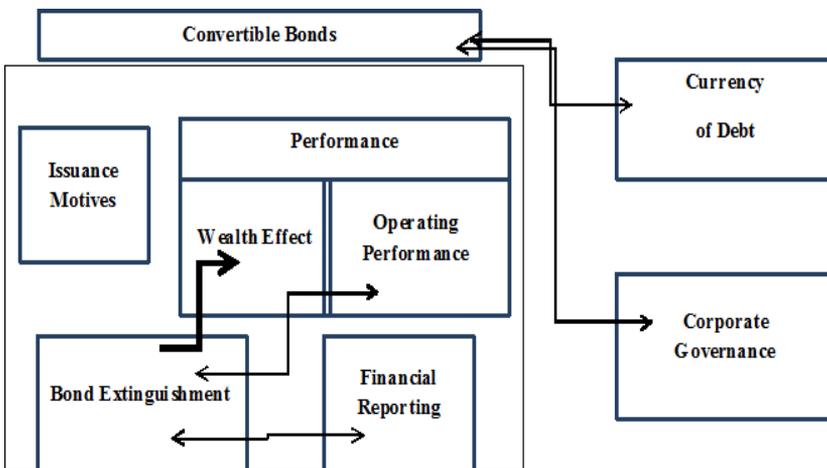


Figure 2: Themes in Research on Convertible Bonds

## Conclusions and Directions for Future Research

As discussed in earlier sections of the paper, various theories have been proposed to explain why firms issue convertibles. Factors such as issuing firm characteristics, security design features, market conditions and legislative controls have been used to explain use of CBs. However most of the empirical evidence with regard to these issuance motives is based on firms in U.S., Western Europe, Australia and in few instances Canada, Japan, Taiwan. (Table 1 provides a list of empirical works cited in this paper and the markets studied therein). Role of country specific financial regulations, legislative controls and governance practices in influencing firm financing choice is well recognised. Yet there appears to be a lack of studies on firms from emerging markets. The regulatory environment, size and stage of development of each of these emerging markets present unique contexts for further research on these issues. Firms as well as investors will appreciate a more appropriate understanding of the dynamics and risks associated with emerging markets. It would be interesting to examine whether firms in emerging markets also issue CBs for the same reasons (adverse selection, information asymmetry, risk-shifting, sequential financing).

Henderson et al<sup>103</sup> observe that international debt accounts for more than 90% of all international security issues. They also find that the share of CBs issued abroad (as a fraction of all CB issuances) has been steadily increasing. Many reasons such as hedging exchange rate exposure of overseas assets and/or revenues, need to minimize borrowing costs, corporate tax arbitrage, size and depth of local debt markets have been cited for firms' motivations to raise debt capital denominated in foreign currencies<sup>36,59,104-107</sup>. Most studies cited in earlier sections of this paper focus on issues in domestic markets (as seen from Table 1). Research on choice of currency and markets specifically in the context of CBs is lacking. Characteristics of CB issuers in domestic markets and international markets may be compared and contrasted for greater insights into firms' motivations for using CBs as well as foreign currency debt. Also, financial regulation in many countries (especially emerging markets) permitted firms to issue CB in foreign currencies/overseas markets only in more recent times. A cross country comparison of firms issuing CBs in overseas markets, market reaction to

announcement, long run performance, listing & trading in international markets are areas that may be explored for research.

Following the global financial crisis in 2008; there has been greater emphasis on adoption better internal governance mechanisms by firms. Impact of corporate governance on choice of security has received some attention, though mostly in periods before the crisis. Studies on announcement effect returns, long run performance and conversion forcing calls have ignored the possible moderating influence of governance mechanisms.

Recent literature has shown that the profile of investors participating in the CB market in the U.S. has changed over a period of time and highlighted the presence of convertible arbitrageurs. It remains to be examined whether such changes have been observed across all markets or and how such changes influenced issue timing and design features.

Only a few studies mention the disadvantages or risks associated with convertible debt. Non-conversion has been identified as a risk and finds scant mention in a few cases. The consequences of non-conversion however have not been explained. In the event of non-conversion, firms would have to refund the bond at maturity thereby burdening the firm with cash outflows and/or undesirable capital structures. Relation between post-issue long run performance and conversion records may also be explored. Evidence on risks/limitations of CBs as means of capital will be useful to issuers as they can adopt suitable management practices or incorporate appropriate features while designing issue features.

Studies on IPO/SEO have examined the relation between identity of the auditors, underwriters/merchant bankers to the issue and oversubscription, listing day performance. Similar aspects may be examined in case CB announcement returns as well.

As an alternative to calling the bonds issuing firms may “reset” the conversion price in order to encourage conversions. Though in this case the extent of equity dilution will be greater than originally envisaged; it may be considered as an alternative to calling of out-of-money bonds. Market reactions, “reset” prices may be different from conversion forcing calls. Repurchases and Delisting of equity shares

(motives, announcement returns and financial effect) is a fairly well researched area. Similarly, extinguishment of CBs by means other than forced conversions and aspects related thereto may be researched to throw light on their effectiveness as a financing instrument.

These avenues for research on CBs will be beneficial to issuers as they can design features that meet not only their financing requirements but investors' expectations as well. These topics may also be extended to other hybrid securities such as preferred convertibles.

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## Annexure

### Markets addressed in Empirical Studies

<b>Author(s)</b>	<b>Main Topic(s) Addressed</b>	<b>Countries/Markets</b>
Julio <i>et al</i> <sup>7</sup>	Financing Choice	US domestic market
Lewis <i>et al</i> <sup>8</sup>	Financing Choice	US domestic market
Davidson <i>et al</i> <sup>14</sup> (1995)	Financing Choice	US domestic market
Bancel and Mittoo <sup>15</sup>	Financing Choice	Western Europe
Lewis <i>et al</i> <sup>21</sup>	Financing Choice & Wealth Effect	US domestic market
Krishnaswami and Yaman <sup>22</sup>	Financing Choice	US domestic market
Dutordoir and Van de Gucht <sup>23</sup>	Financing Choice	Western Europe
Dutordoir <i>et al</i> <sup>29</sup>	Financing Choice	Western Europe
Choi <i>et al</i> (2010)	Market Conditions, Role of Investor Classes	US domestic market
De Jong <i>et al</i> <sup>34</sup>	Investor Demand for Securities	US domestic market
Hoffmeister <i>et al</i> <sup>38</sup>	Market Timing of Issues	US domestic market
Mann <i>et al</i> <sup>39</sup>	Market Timing of Issues	US domestic market
Billingsley <i>et al</i> <sup>40</sup>	Financing Choice	US domestic market
Dutordoir and van de Gucht <sup>41</sup>	Market Timing of Issues & Wealth Effect	Western Europe
Lewis <i>et al</i> <sup>51</sup>	Post Issue Long Term Performance	US domestic market
Dann & Mikkelsen <sup>54</sup>	Wealth Effect	US domestic market
Davidson <i>et al</i> <sup>14</sup>	Wealth Effect	US domestic market
Abhyankar and Dunning <sup>55</sup>	Wealth Effect	UK market
Ammann <i>et al</i> <sup>56</sup>	Wealth Effect	Swiss and German markets
Li & Wang <sup>57</sup>	Wealth Effect	Chinese domestic market
Kang & Stulz <sup>58</sup>	Wealth Effect	Japanese domestic market

Chang <i>et al</i> <sup>18</sup>	Wealth Effect	Taiwanese domestic market
Duca <i>et al</i> <sup>60</sup>	Wealth Effect	US domestic market
Hansen and Crutchley <sup>61</sup>	Post Issue Long Term Performance	US domestic market
Lee and Loughran <sup>62</sup>	Post Issue Long Term Performance	US domestic market
Spieß and Affleck-Graves <sup>63</sup>	Post Issue Long Term Performance	US domestic market
McLaughlin <i>et al</i> <sup>64</sup>	Post Issue Long Term Performance	US domestic market
Legoria <i>et al</i> <sup>65</sup>	Post Issue Long Term Performance	US domestic market
Chou <i>et al</i> <sup>66</sup>	Post Issue Long Term Performance	US domestic market
Author(s)	Main Topic(s) Addressed	Countries/Markets
Chang <i>et al</i> <sup>67</sup>	Post Issue Long Term Performance	Taiwanese domestic market
Ederington <i>et al</i> <sup>75</sup>	Call Policy	US domestic market
Alexander and Stover <sup>76</sup>	Stock Reaction & Call	US domestic market
King and Mauer <sup>78</sup>	Call Policy	US domestic market
Veld and Zabolotnyuk <sup>77</sup>	Call Policy	Canada & US
Emery <i>et al</i> <sup>79</sup>	Long Term Performance & Call	US domestic market
Mikkelsen <sup>80</sup>	Stock Reaction & Call	US domestic market
Ofer and Natarajan <sup>81</sup>	Stock Reaction & Call	US domestic market
Datta <i>et al</i> <sup>82</sup>	Long Term Performance & Call	US domestic market
Mazzeo and Moore <sup>83</sup>	Stock Reaction & Call	US domestic market
Brick <i>et al</i> <sup>84</sup>	Stock Reaction & Call	US domestic market
Cowan <i>et al</i> <sup>85</sup>	Stock Reaction & Call	US domestic market
Bechmann <i>et al</i> <sup>86</sup>	Stock Reaction & Call	US domestic market
Johnson <sup>91</sup>	Voluntary Conversion	US domestic market
Mehta <sup>92</sup>	Voluntary Conversion	US domestic market
Storey and Dipchand <sup>93</sup>	Voluntary Conversion	Canada
Schneider <i>et al</i> <sup>101</sup>	Adoption of IAS 32	US domestic market
Bishop <i>et al</i> <sup>102</sup>	Adoption of IAS 32	New Zealand