

THE NEW FRONTIERS OF CORPORATE FINANCE

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*Space — the final frontier. These are the voyages
of the starship Enterprise, its continuing mission,
to explore strange new worlds,
to seek out new life and new civilizations,
to boldly go where no one has gone before!*

I. INTRODUCTION

Since its premiere in 1966 everybody knows this theme of the television series *Star Trek* and its subsequent 'next generations.' Just as the starship explores new worlds in space, this Special Issue of the Global Business & Economics Review explores new frontiers in corporate finance, particularly on issues of Financial Architecture; its mission is, to explore strange new theories, to seek out new models and new insights, to boldly go where no researcher has ever gone before. Focusing on new economy firms the Special Issue shows that traditional models, which have been used until now for large corporations, are no longer valid for these new types of firms.

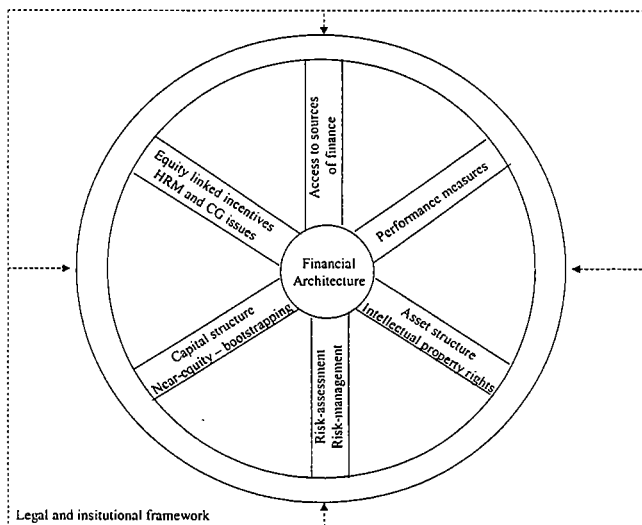
The concept of 'financial architecture' was first introduced by Myers (1999) and extended to 'financial architecture for new economy firms' by Cassimon & Engelen (2001). As such, financial architecture refers to the entire financial design of a business, inclusive of financial and asset structures, incentives, corporate governance, the allocation of risk, ownership and the legal form of organization. Most of corporate finance theory and research has developed with a particular financial architecture in mind, being that of "a public corporation in a country like the USA or UK with well-developed security markets" (Myers, 1999, p.138). Such a financial architecture, however, requires active, risk-tolerant financial markets and is heavily dependent upon adequate periodic financial reporting, protection mechanisms for investors and, in general, a well-developed legal/regulatory framework. This supportive environment is not (yet) omnipresent.

But even in the US or the UK other distinct financial architectures exist such as big law and consulting firms which often prefer to keep their partnership structures because most of the firm value is embedded in human capital. It is thus clear that several models of financial architecture can co-exist; for instance, those of multinational corporations, family-owned businesses or high-tech

companies. Governments could be encouraged to develop a legal framework in which different adequate financial architectures can spin-off a diverse set of firm types, which through evolution and adaptation, could contribute to enhanced economic growth.

Therefore, financial architecture can be a very important and powerful concept to approach research as well as business education within the field of corporate finance in the future. For example, the fact that empirical results with respect to the US do not automatically translate to European and other markets serves as evidence for the need of the new approach. Moreover, in law and finance literature (La Porta et.al., 1997, 1998) have shown a clear causal connection between the legal framework and the development of financial markets. This is extremely important for corporate finance as the legal framework determines the access to external finance (both debt and equity) (La Porta et.al., 1997). One can expect that new economy, or high-tech, firms need a more specific and distinct financial architecture, as it applies for example to capital structure or incentives, relative to more traditional companies that function within the existing financial architecture boundaries.

Figure 1. The financial architecture of new economy firms



It is important to realize that all the different aspects of a firm's financial architecture cannot be viewed separately from one another, but instead as elements of an integrated entity. For example, capital structure decisions cannot be considered independently from incentives and corporate governance decisions; but, incentives also depend on measurements of performance and value creation; furthermore, capital structure decisions such as the use of near-equity also depend on access to finance. As Figure 1 illustrates, financial architecture can be viewed as a wheel and the different aspects of it as its

spokes. Just as is the case with the wheel of a bicycle, when one spoke is missing the wheel performs less efficiently; when many spokes are missing the wheel might even collapse. Something similar happens with respect to financial architecture: the more spokes are missing, the less efficiently new economy firms may operate and the more likely it is that their vitality, development and growth will be hindered.

In the remainder of this paper, we will use the framework portrayed by Figure 1 to present an overview of the different important aspects that make up a financial architecture for new economy firms and simultaneously introduce and position the various contributing papers in this special issue.

II. FINANCIAL ARCHITECTURE OF NEW ECONOMY FIRMS

Traditional business corporations are characterized by high tangible asset-intensity, highly vertical integration, dispersed ownership and tight control over employees (Zingales, 2000). Typical for most new economy firms are the considerable real options characteristics embedded in their operations, and the high degree of co-investment in human and financial capital. In fact, consist mainly of human capital; they hardly possess any physical assets. Rajan & Zingales (2000) discuss the case of the Saatchi & Saatchi advertising agency. Originally, the Saatchi brothers used to work for a firm, which they decided to part with due to a conflict with the owners. Upon their departure to start a new entity, many key employees followed the brothers, leaving the original firm almost without any important human capital assets. This example illustrates that the owners applied the wrong financial architecture to this type of firm.

An appropriate financial architecture for new economy firms should include mechanisms with in-built option characteristics, such as the use of near-equity financing instruments and the use of stock options. The financial architecture should be tailor-made to accommodate the insight that a firm can be viewed as a portfolio of real options with human capital being its utmost important asset (Cassimon & Engelen, 2001). How does this relate to different aspects of financial architecture as those identified in Figure 1?

i. Capital structure

An important aspect of financial architecture of a new economy firm is the appropriate choice of its capital structure. While traditional corporate finance mainly focuses on the classic capital structure issue, whether to finance a firm with debt or equity and the question of the optimal proportion between them (Harris & Raviv, 1991), research focusing on new economy firms should concentrate on the use of near equity and other hybrid financing tools (Damodaran, 1999). Given the high burn rate and the presence of many growth options, near equity is more appropriate for financing new economy firms because the financial option characteristics embedded in near equity instruments

matches best the real option nature of such companies (Cassimon & Engelen, 2002a). An alternative can be the sequential provision of equity by a venture capitalist whenever a new milestone has been reached.

In the fifth contribution of this special issue '*Identifying the Optimal Capital Structure for a Second Stage Growth Company Using Mezzanine Financing*', **Clark & Anderson** focus on the use of mezzanine financing as an alternative to venture capital for second stage growth firms. The authors argue that mezzanine financing can be extremely flexible from both borrowers' and lenders' perspectives because it can incorporate an almost infinite variety of equity and debt combinations. They develop a model in which mezzanine financing is used to minimize the weighted average cost of capital (wacc) for a second stage growth firm waiting to obtain equity capital from an initial public offering (IPO.) An optimization model is provided that allows entrepreneurs to fit their available mezzanine financing cost structure to a continuous function to determine the appropriate amount of mezzanine financing for planning purposes. Related to this issue, is the second contribution titled '*Risk Measures and the Cost of Equity in the New Economy Biotechnology Industry*' by **Sadorsky & Henriques** in which the authors explore cost of equity calculation methodology for biotechnology firms.

ii. Corporate governance and incentives

A typical feature of new economy firms is the high degree of co-investment in human and financial capital. Many firms of this type depend heavily on the availability of highly specialized personnel. Moreover, such highly specialized employees are only prepared to invest their entire human capital in a (start-up) new economy firm ex-ante, when they can participate in the proceeds of the firm in case of successful commercialization ex-post. One way to realize this is the use of employee stock options (ESOs) that can be cashed in, for instance, when an IPO is made. Therefore, the financial architecture of new economy firms implies the use of incentives that are linked to equity, in such a way that the option characteristics of the ESOs mimic the real option characteristics embedded in the operational activities and investment projects of the firm. Put differently, an optimal financial architecture requires the matching of real options and compensation schemes.

As new economy firms tie their employees' earnings to the market value of the firm, **Berg** examines in '*Hedging Housing Risk and the New Economy: Is There a Connection, and Should Firms Care?*' whether the greater volatility in employees' personal earnings through time leads to larger fluctuations in housing prices in geographical areas with concentrations of new economy workers. His empirical study focuses on the Telecom Corridor in Dallas County in the State of Texas, USA. His article contributes to a better understanding of the financial architecture of new economy firms with respect to incentives and human resources management, given that human capital is the most crucial asset. Besides innovative forms of non-cash employee compensation, tax friendly payroll services and upscale lifestyle amenities, he examines the

possibility of introducing innovative labor contracts which create mutually beneficial employee benefits packages that provide insurance against housing market risk associated with home ownership while reducing overall labor costs.

iii. Asset structure

Claessens & Laeven (2001), show that the legal framework, more precisely with respect to the protection of property rights, has an impact on the asset structure of companies. They report the presence of an asset substitution effect, i.e. the investment in more fixed assets relative to intangible assets, in firms operating in a weak legal environment, as compared to firms operating in a strong legal environment, because of the weaker (intellectual) property rights. This is of crucial importance to firms that depend heavily on investments in intangible assets and an over-allocation of resources towards tangible assets will impede the future growth opportunities of new economy firms. Cassimon & Engelen (2002b), illustrate as well some barriers to the optimal amount of investment in intangible assets such as, the level of protection of intellectual property, the demand for collateral by banks and financial institutions, the quality of financial reporting (Hay et.al, 1996), and the functioning of the judiciary.

In his contribution *'Market Dominance Options and Asset Structure: The Case of Microsoft and Cisco'* Grabowski examines the asset structure of new economy firms. Building upon game-theoretic approaches to real options, he examines the strategic investments of two major IT companies in order to create some, so-called, market dominance options. Comparing the investments of Microsoft (software) and Cisco (networking) he offers an explanation for the cash-rich asset structure of such companies. Using the real option framework he shows why such a financial architecture might be necessary for these types of new economy firms.

Since a new economy firm can be seen as a portfolio of real options, Zingales (2000) stresses the importance of the interaction between assets in place and growth options. Contrary to financial options, the ownership of real options is less protected and its payoff is highly dependent upon the way the option is exercised. First, employees have the choice of pursuing the growth option within the firm or on their own through a spin-off. Second, potential competitors can also seize part of the growth opportunities. Only seldom the firm will be in a monopolistic position to capture all the value embedded in the growth options. A nice example is the sequel of a successful movie (Zingales, 2000). The decision to make a sequel is in fact a growth option that can be exercised by the film studio that produced the original movie. However, the film studio will not be able to capture the entire value since most of the option value is supplied by a crucial actor who will claim part of the option value. One does not necessarily need such an exotic example to prove the case. In their contribution *'Measuring Knowledge Spillovers in the New Economy Firms in Belgium Using Patent Citations'* Lukach & Plasmans have tracked down knowledge spillovers in the new economy firms of Belgium by following one of the most effective trails of

innovation: patent ownership and citation. In their contribution, it is clearly shown that spillovers allow for a better penetration and diffusion of innovation among companies leading to increased competitiveness.

iv. Risk management and risk assessment

Looking at the firm as a portfolio of real options, options that may or may not be exercised in the future, might (wrongly) create the impression that management has to wait passively once the option has been created. Whether a certain real option will be exercised or not would then depend on good fortune: luckily, the determinants or value-drivers underlying the management decision would evolve in a positive way. However, the opposite is true. By actively managing its portfolio of options, including the use of risk management, the firm can increase real options portfolio value during its lifetime. Moreover, financial risk management can create value for new economy firms by reducing the costs of financial distress, which might arise from the negative impact of factors, beyond firm control, on the net cash flow of a company negatively influencing the burnrate of funds available. In his contribution, *Grabowski* shows how new economy firms can use financial derivatives to manage the risk of their portfolios of real options. In order to better assess the risks of investing in new economy firms, *Sadorsky & Henriques*, furthermore, examine different risk measures, including systematic risk, total risk, downside risk and value at risk that is necessary to correctly calculate the cost of capital (wacc) of new economy firms (see supra).

v. Access to finance

Engineering the appropriate financial architecture also requires access to finance because the availability of financial instruments such as near-equity and the supply of venture capital depend on the existence of well-developed financial markets. Myers (1999) points out that a venture capital market will only develop when there exists a stock market where growth companies can successfully apply for a listing. The existence of stock markets such as NASDAQ therefore provides venture capitalists with an exit-opportunity through an IPO (Black & Gilson, 1998). Notice again the importance of this exit-opportunity for the compensation of highly qualified personnel (see supra).

vi. Performance measures

The distinct features of new economy firms (as opposed to traditional firms) also call for a different framework to evaluate performance and to measure value creation. First of all, as demonstrated by *Grabowski* and *Trigeorgis* (2000), the valuation of an asset portfolio that consists of real options requires, naturally, valuation based on option models. Moreover, as most of the value is embedded in the human capital of the employees and other intangible assets, valuation calls for performance and value creation measurement based on models that assess these intangibles, sometimes called the 'intellectual' capital of the firm - see *Stewart* (1997.) In their contribution, entitled '*Value Creation Efficiency in the New Economy*', *Pulic & Kolakovic* present their version of an intellectual capital measurement model and apply it to banking firms in Croatia as well as the entire Croatian economy.

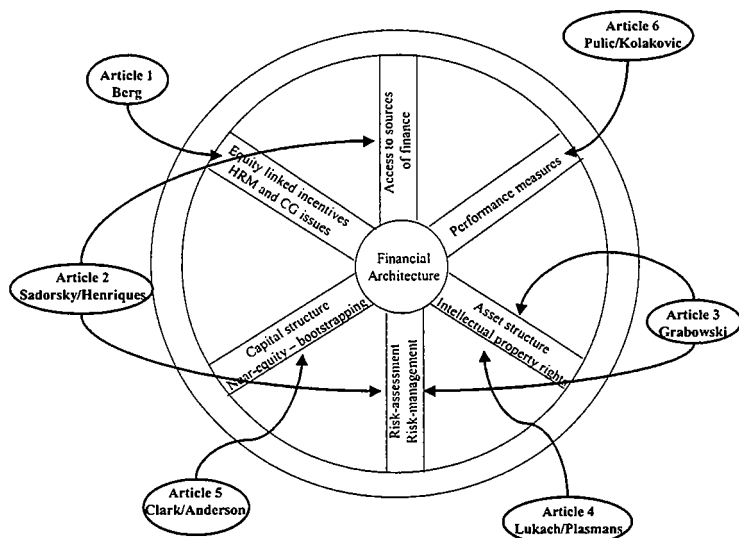
vii. Law and finance

Although it is not addressed directly in this special issue, the existence of an appropriate financial architecture also depends, in general, on the legal setting. The importance of the institutional and legal environments for the behaviour of actors in financial markets as well as the development of these markets and economic growth only recently has attracted the attention of researchers in corporate finance and has given rise to the so-called '*law and finance*' literature pioneered by the seminal papers of *La Porta et. al.* (1997, 1998.) These papers investigate the relationship between a country's financial development in conjunction with the legal framework and they show that differences in legal frameworks and law enforcement affect ownership structure, capital structure, dividend policy and corporate governance. *Engelen* (2003) provides a recent overview of this literature.

viii. Overview of the special issue

Explaining above the different elements that make up a possible characterization of the distinct financial architecture for new economy firms, we primarily focused on the various papers published in this Special issue. Figure 2 summarizes the different contributions of this Special Issue by linking them to the different spokes of the financial architecture wheel of Figure 1 indicating which aspects of the financial architecture of new economy firms are covered throughout the different articles.

Figure 2. Outline of the special issue



As Figure 2 points out, the contributions in this special volume of the *Global Business & Economics Review* have been linked to the different elements that make up a possible characterization of the financial architecture for new economy firms. It is hoped that this collective research undertaking has contributed to a deepening of knowledge and, by virtue of analogy, it has strengthened the spokes of the financial architecture wheel for new economy firms, making it run more effectively and more efficiently.

REFERENCES

- Black, B. and R. Gilson (1998), "Venture capital and the structure of capital markets: bank versus stock markets", *Journal of Financial Economics*, vol.47, nr.3, 243-277.
- Cassimon, D. and P.J. Engelen (2001), "An adequate financial architecture for new economy firms", *Global Business & Economics Review*, 2001, vol.3, nr.2, 200-211.
- Cassimon, D. and P.J. Engelen (2002a), "Bootstrapping, burnrate and the value of a company", in Aernoudt, R., e.a. (eds.), *Belgian Yearbook Corporate Finance*, Intersentia Publishers, 55-69.
- Cassimon, D. and P.J. Engelen (2002b), "Legal and Institutional Barriers to Optimal Financial Architecture for New Economy Firms in Developing

Countries”, WIDER-The United Nations University, Helsinki, Discussion paper, nr.02-90, 34p.

Claessens, S. and L. Laeven (2001), “Law, property rights and growth”, Paper presented at the Third Annual Conference on *Financial Market Development in Emerging and Transition Economies*, Hong Kong, June 28-30, forthcoming in *Journal of Finance*.

Damodaran, A. (1999), “Financing innovations and capital structure choice”, *Journal of Applied Corporate Finance*, 28-39.

Engelen, P.J. (2003), “Law and Finance – State of the Art”, *Ekonomia*, forthcoming.

Harris, M. and A. Raviv (1991), “The theory of capital structure”, *Journal of Finance*, vol.46, 297-355.

Hay, J., A. Shleifer and R. Vishny (1996), “Towards a theory of legal reform”, *European Economic Review*, 559-567.

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

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R.W. Vishny (1998), “Law and finance”, *Journal of Political Economy*, vol.106, 1113-1155.

Myers, S. (1999), “Financial architecture”, *European Financial Management*, 133-141.

Rajan, R. and L. Zingales (2000), “*The Governance of the New Enterprise*”, in X. Vives (ed.), *Corporate Governance*, Cambridge University Press.

Trigeorgis, L. (2000), “Real options and financial decision-making”, *Contemporary Finance Digest*, 5-42.

Zingales, L. (2000), “In Search of New Foundations”, *Journal of Finance*, vol.55, 1623-1653.