

# Chapter 12

## Corporate R&D Investments and Risk: Impact of Internal Capital Markets

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### ABSTRACT

*Corporate R&D Investments, that constitute basis for sustainable development, are influenced by external and firm-specific risks. Evidence shows that firms in Turkey have increased R&D spending during subprime crisis despite its procyclicality in most of the emerging countries. This chapter investigates if business group affiliation or corporate diversification that is predominant in Turkey stimulate R&D investments under risk. It focuses on internal capital markets of business groups or conglomerates that may enhance R&D spending by reducing financial constraints, and likelihood of distress of the affiliated firms. The results reveal that group affiliation and diversification positively affect corporate R&D spending when firm-specific risks rise. These results are significant during the global crisis period. Group-affiliated corporations increase their R&D investments as idiosyncratic risks rise. The diversified conglomerates increase R&D investments when earnings volatility and equity erosion rise. Results indicate that large firms are more inclined to reduce R&D investments under risk.*

### INTRODUCTION

Most nations, such as European Union countries, focus on financing R&D aimed at enhancing sustainability. According to the report launched by the European Commission Research (2006), focused research and development are a precondition for innovation and sustainability.

The emphasis of sustainable development at the national level, provides incentives for corporations to increase R&D efforts. Evidence provided by Griffith, Redding and Reenen (2001), who study twelve countries of Organization for Economic Cooperation and Development (OECD), shows that R&D has two important functions described as stimulating innovation, and international technology transfer.

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Some studies have investigated the relationship between credit constraints and firms' R&D behavior (Aghion, Askenazy, Berman, Cetto & Eymard, 2012; Correa & Iqbal, 2011). The most common view is that R&D declines during economic downturns because cash flows contract during recessions, and firms face difficulty in raising external financing to support R&D investments. So, firms tend to cut long-term high-risk innovation while reorienting their efforts toward short-term and low-risk innovations (OECD, 2009). Correa and Iqbal (2011) investigate the effect global crisis in 2009 on sales performance of R&D intensive firms in seven East European Countries, and show that investment declines in R&D intensive firms are larger than their counterparts, except for the corporations in Turkey and Hungary. They find that R&D spending rises in Turkey during the crisis years. As technology rapidly advances, firms have to operate in highly competitive environments, and those outperformed by their competitors in technology-driven industries may face substantial risk of failure. In the last decade, extensive evidence is provided on the effects of R&D investments on corporate risk. (Eisdorfer & Hsu, 2011; Ngobo & Gatignon, 2012; Mihet, 2013). A cross-country study that covers 25 countries has documented the effects of R&D on corporate risk, and stock returns (Ngobo & Gatignon, 2012). Their results show that effects of R&D expenditures on risk varies from country to country. Authors reveal that in some countries, including Turkey, R&D increases stock returns and idiosyncratic risk but decreases systematic risk.

Agency proponents claim that managers are risk averse and shareholders can diversify away idiosyncratic risks. Corporate risk taking is investigated within the framework of ownership structure employing the effects of blockholder ownership percentage, type of blockholders, level of diversification, and group affiliation on corporations' incentives to invest in risky projects. Paligorova (2010) finds that group-affiliation leads to higher risk taking by blockholders. Business groups are prevalent corporate structures in emerging countries, and create internal capital markets which enable corporations to have access to the internal funds of the entire organization. There is extensive body of literature that documents the fact that internal capital markets of diversified firms enable them to find profitable projects that, because of information asymmetries and agency costs, the external capital market would not be able to finance (Williamson, 1975; Gertner, Scharfstein & Stein, 1994; Stein, 1997; Matsusaka & Nanda, 2000; Hovakimian, 2011; Maksimovic & Phillips, 2013). Most studies have focused on the effects of conglomeration on capital allocation among segments of conglomerates, and diversified firms in developed markets (Billett & Mauer, 2003; Ozbas & Scharfstein, 2009; Hovakimian, 2011). In emerging countries where financial institutions and markets are less developed, the internal capital markets of business groups that exist in different forms (Khanna & Yafeh, 2005) may constitute an economically rational response to the financing constraints faced by corporations. Further evidence shows that group-affiliated firms are less likely to become bankrupt (Claessens, Djankov & Klapper, 2003; Kim, 2004).

This paper attempts to reveal the reasons underlying the trends in corporate R&D investments in Turkey, where business groups are prevalent, and corporate ownership is highly concentrated. This study investigates if group affiliation or diversification of operations by the corporations affect their R&D investments, incorporating joint effects of these factors with risk. When capital constraints increase, internal capital markets of business groups may create an alternative source of financing, and increase financial flexibility. Furthermore, diversification resulting from conglomeration may facilitate adoption of high risk R&D investments by reducing the volatility of earnings. Thus, corporate ownership structure may be a factor that explains the increases in R&D investments under risk. The effects of firm-specific risks, such as business risk, financial distress, and reductions in long-term solvency, on R&D spending are investigated jointly with group affiliation, and diversification. The analyses rest on two-stage regressions that cover 2006-2010 period, in addition to the study of the effects of global crisis in isolation.

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