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# Guest editorial: Institutions and R&D investment: prospects and challenges

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## Editorial report

This special issue deals with issues and challenges of research and development (R&D) investment with a particular focus on institutional quality. The importance of R&D expenditure has been documented widely in the empirical literature. [Walde and Woitek \(2004\)](#) pointed out that R&D expenditure by profitable firms is the source of both long-run and short-run profitability and sustainability of firms. More recently, [Perez-Sebastian \(2015\)](#) concluded that a lack of appropriate R&D policy could be the cause of low economic growth, low wages, large unemployment rates and even large trade deficits. Considering the importance of R&D investments in both attaining economic growth and corporate sustainability, [Cohen \(2010\)](#) concluded that exploring the determinants of R&D investments should be treated as a crucial part of innovation research. Following Cohen's observation, a number of researchers have been coming forward to explore the link between institutions and R&D investments.

R&D is riskier than other tangible investments due to the high degree of information asymmetry involved in it ([Keupp and Gassmann, 2009](#)). Stronger institutional settings can offer much needed safety and confidence to the investors to react positively to such investments. Therefore, institutions – both formal and informal ([North, 1991](#); [Williamson, 2000](#)) play a crucial role in influencing R&D investment. For example, [Alam \*et al.\* \(2019\)](#) examine the role of government effectiveness, rule of law, regulatory quality, corruption and political instability on R&D investment and find these formal sets of institutions to be significant in explaining firm level R&D investment behavior. Similarly, [Alam \*et al.\* \(2020\)](#) find that the country level corporate governance significantly affects R&D investments. Legal strength could be crucial to building investor confidence and boosting innovative activities. Building on law and finance literature, [Brown \*et al.\* \(2013\)](#) have found a strong positive link between investor protection and corporate R&D expenditure. It has been argued by [Brown \*et al.\* \(2013\)](#) that strict investor protection leads to a better chance of accessing the external equity market at a cheaper cost and therefore firms can afford to make more investments in R&D activities. Moreover, [Xiao \(2013\)](#) stated that legal protection for shareholders reduces the agency conflict and solves the under and over investment problem of R&D activities. Contract enforcement has also been examined as an important determinant of R&D investment. [Seitz and Watzinger \(2017\)](#) find conclusive evidence that stronger contract enforcement encourages R&D investments. Patent laws ([Budish \*et al.\*, 2016](#)), intellectual property rights ([Lerner, 2009](#)), creditor friendly bankruptcy codes ([Acharya and Subramanian, 2009](#)), stronger employment protection laws ([Acharya \*et al.\*, 2014](#)) and antitrust policies ([Segal and Whinston, 2007](#)) are also important components of a legal system that affect R&D investments. However, too much of legal protection and enforcement of very strict laws may hinder innovative activities. For example, in an interview, Milton Friedman mentioned that implementation of very strict governance laws, such as Sarbanes–Oxley (SOX) Act, hinders the innovation. Sarbanes–Oxley Act represents strict governance provisions and protects investors. However, a number of researchers including [Barger \*et al.\* \(2010\)](#) and [Kang \*et al.\* \(2010\)](#) have pointed out that enforcement of this act has indeed reduces the investment. The basic argument of these studies is that strict governance regulations



would increase the compliance cost and therefore firms feel discouraged to raise external capital which in turn reduces the corporate investments such as R&D investments. Moreover, [Bargeron et al. \(2010\)](#) mentioned that some of the provisions in SOX strongly discourage managers to make risky investments. As R&D investment is regarded as risky investments, it is likely that stringent investor protection laws and/or governance provisions will reduce R&D investments. Therefore, the nature of the relation between components of legal system and R&D investments may not always be straightforward and warrants further research in this area.

Research on institutions and R&D investment has been making further progress in recent times and started looking at informal institutions and their effect on innovative activities. For example, [Lewellyn and Bao \(2015\)](#) explore the effect of national culture on firm level R&D investments. They argue that national culture reflects behavioral norms and attitudes of decision makers and therefore should affect the R&D investment decisions. Similarly, [Yan et al. \(forthcoming\)](#) evaluated the culture and R&D investment nexus using Confucian culture – a dominant Chinese cultural trait. Similar to culture, language may also affect cognition and decision making ([Chi et al., 2020](#)) and eventually affect R&D investments. Research combining culture and R&D is a relatively underdeveloped and there is a need to further research to understand this in a more clear and detailed way.

Exogenous economic shocks such as the recent financial crisis have great impacts on R&D investments. While [Bloom \(2007\)](#) argues that R&D investment slows down during financial crisis due to the caution effect, [Peia and Romelli \(forthcoming\)](#) point out the increased level of financial friction as the cause of fall in R&D investment during financial crises. However, [Eslamloueyan and Jafari \(2019\)](#) argue that better institutional quality can help to circumvent financial friction and help to improve innovative activities during crises. It would be interesting to see more evidence on this to see if institutional quality really has any material effect in safeguarding the required level of R&D investment during exogenous shocks such as financial crises or global pandemics (COVID-19 or similar events).

In recent years, R&D investments in emerging markets is increasing considerably because of strategic reasons and also for the higher returns from R&D investment compared to those of advanced countries ([Lederman and Maloney, 2003](#); [Alam et al., 2020](#)). However, existing knowledge on institutions and R&D investment (which is more skewed to developed nations) is not enough to explain the growth of R&D in emerging markets. [Peng et al. \(2008\)](#) state that institutional quality in emerging markets is significantly different from developed markets. Therefore, it is imperative to examine the effect of institutions on R&D investment from the context of emerging markets.

The collection of papers in this special issue has addressed diverse and challenging issues that link institutions with firm-level R&D investment to see how institutions shape valuable innovative activities and support financial performance and value-enhancing corporate activities.

The first paper by Albert Danso, Emmanuel Adu-Ameyaw, Linda Hickson and Theophilus Lartey (title: R&D spending intensity of private versus public firms: the role of cash flow, leverage and information quality) provides a comparison of R&D spending intensity in private and public firms and the extent to which these firms' unique characteristics affect their R&D spending rate. The study compares both private and public data from UK firms for the period 2006–2016 generating a total matched 232,029 firm-year observations, and applies a probability model technique to our large panel data sets. The study uncovers that private firms show lower R&D spending intensity compared to their public counterparts. The evidence also shows that privately owned firms in the technological (non-technological) sector display a higher (lower) probability of R&D spending intensity. Compared with public firms, the study further observes that the intensity of private firms'

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R&D spending increases with higher internal cash flow, leverage and industry information quality. The results remain robust to alternative econometric models.

The next paper by Vlachos Vasileios (title: The effect of institutions on R&D investment: the case of four mediterranean euro area states) examines the institutional determinants of R&D investment using cross-sectional data for four European countries, namely – Cyprus, Greece, Italy and Portugal collected from the World Bank’s Enterprise Survey. Using appropriate and robust econometric techniques, the paper has found that political instability, the burden of labor regulations, rule of law, the presence of corruption and the quality of tax administration influence the extent of R&D investments in those countries. Moreover, the paper has found that firm-level cash flow and access to external finance also significantly affect firm-level R&D investments.

The next paper by Marco Túlio Viglioni Marco Tulio, Manuel Ferreira, Aveline Stefaniak, Eduardo Carlos and Juciara Alcântara (title: Corruption, R&D and performance: firm-level evidence from Latin America) investigates how firms’ perceived level of corruption moderates the relationship between R&D investments and firms’ financial performance. The study has used dynamic panel data for local private and public firms from Latin American countries (Brazil, Chile, Mexico and Peru) during 2012–2019. The results show that corruption has a direct and positive effect on firms’ financial performance. Moreover, while firms’ financial performance increases in the presence of corruption, the findings suggest that corruption negatively moderates the relationship between R&D investments and firms’ financial performance. This finding exposes the debate “grease the wheels” once it appears that corruption works much more like sand than grease on more innovative firms. Finally, the study observed a negative effect of long-term R&D investments on firms’ performance, indicating that high levels of corruption harm even more long-term innovative activities.

The next paper by Md. Shuvo Howlader and Md. Musfiqur Rahman (title: The impact of research and development expenditure on firm performance and firm value: evidence from a South Asian emerging economy) analyses the impact of R&D expenditure on firm performance and firm value in an emerging economy, Bangladesh. In this study, firm performance is examined by firm financial performance (ROA and ROE) and market performance (TBQ). This study conducted a multivariate analysis on the sampled data using pooled OLS regression method. In addition, both the level and lagged models have been used to test hypotheses in order to get empirical results. The analyses show a significant and positive association of R&D expenditure with firm performance and firm value. The study also validates that all results are robust and free from outliers and multicollinearity issues.

The next paper by Fakhrul Hasan, Sujana Shafique, Bijoy Chandra Das and Rajib Shome (title: R&D intensity and firms dividend policy: evidence from BRICS countries) examines the moderating effects of investor protection and other country-level governance mechanisms on the relationship between R&D investments and dividend payments in the firms from Brazil, Russia, India, China and South Africa (BRICS countries). The findings indicate that although R&D intensity is negatively related to the cash dividend payments, with the interaction of investor protection and other country-level mechanisms the relationship between R&D intensity and dividend payments becomes positive. The results further show that investor protection has a stronger impact on the relationship between R&D intensity and firm cash dividend payments than other selected country-level governance factors.

The next paper by Shayan Farhangdoust, Abedalqader Rabahah and Homa Molavi (title: Creating value via R&D, marketing costs and financial matters) examines the effect of financial leverage on customer satisfaction and marketing costs including R&D and advertisement costs. The study also investigates whether customer satisfaction as well as financial distress moderates the effect of financial leverage impact on customer satisfaction and marketing costs including R&D and advertisement costs. The results indicate that financial leverage is negatively and significantly associated with customer satisfaction and

this negative relationship is more pronounced in companies with lower sales growth. The paper also finds that financial leverage significantly affects firms' R&D and advertisement costs.

The next paper by Parisa Behbahania and Mohadeseh Golbidi (title: The effect of R&D activities on the market response and company's performance during the shock caused by the COVID-19 pandemic in Iran) investigates whether R&D investments by firms help to minimize the damage caused by exogenous shocks such as the Covid-19 pandemic. The study also examines whether, in the Covid-19 critical situation, the market in its reactions, pays attention to companies' R&D activities or not. The results show that the companies that have more R&D investments performed better than other companies during the Covid-19 pandemic and were able to better manage this crisis. Furthermore, companies with more R&D activities suffered lower abnormal returns during coronavirus shocks than other companies.

The results of this collection of papers included in this special issue are interesting and should help the readers to have a more in-depth understanding of the dynamics between institutions and R&D investments.

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