

# **Towards a configurative view of firm innovation in emerging markets**



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## **Abstract**

Innovation studies in emerging markets have highlighted the importance of firm resources and institutions for firm innovation. A majority of studies, however, tend to approach firm resources and

institutions in a manner which predominantly illustrate their direct causal effects on firm innovation. Furthermore, institutions in IB research have been approached in a unidimensional manner, thus not truly capturing effects of institutions on firm innovation. I address these shortcomings by adopting a configurational comparative method and by utilizing National Business Systems theory to explore combinations among firm resources and institutional environments leading to innovation in these settings. I used data from the World Bank Enterprise Survey, Worldwide Governance Indicators, and the education component from the Human Development index to research firm innovation in a sample consisting of more than 6500 firms from seven emerging markets. Results from the crisp-set qualitative comparative analysis confirm that firm innovation in emerging markets can only be understood by considering combinations between firm resources and National business systems. Moreover, I found that innovation can only occur if emerging market firms possess experienced managers and formally trained human capital while concurrently operating in a National Business System characterized by the dominance of an equity-based financial system and the absence of strong state institutions, an advanced skill development system, and normative trust relations. The findings offer guidance to managers seeking competitive advantages through firm innovation and to policymakers seeking to encourage economic development through firm innovation.

**Keywords:**

csQCA, emerging markets, internal firm resources, National Business Systems, firm innovation

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## Chapter 1 introduction

### 1.1 Background information

Firms are operating in an increasingly complex and dynamic environment due to globalization (Teece & Leih, 2016; Baregheh, Rowley & Sambrook, 2009). Globalization has increased the ‘interdependence in the global and economic innovation systems’ which contributes to shaping a more complex environment (Teece & Leih, 2016, p.5). Furthermore, globalization has contributed to

an increasingly dynamic environment for firms, because 'competitive responses can arise from known and unknown competitors in known and unknown places' (Teece & Leih, 2016, p.6). Overall research suggests that the increasingly dynamic and complex environment has contributed to harsher conditions for firms to compete in, thus decreasing the probability of firm survival in the long run (Cefis & Marsili, 2019; Zhang, Zheng & Ning, 2018; Teece & Leih, 2016). However, there are various strategies that firms can adopt to increase the chances of survival, one of them being firm innovation (Cefis & Marsili, 2005; Cefis & Marsili, 2019; Zhang et al., 2018; Teece & Leih, 2016; Franko, 1989). Firms perceive innovation as an imperative within the business strategy, to such an extent that they can no longer envision their continuity without innovating to a certain extent (Cefis & Marsili, 2005; Cefis & Marsili, 2019). Broadly speaking, firm innovation could result in a stronger position within the market and safeguard the continuity of firms in two ways. Firstly, innovation could occur within the production processes making firms more efficient and cost effective relative to a significant share of competitors. Consequently, firms can decrease the price of their product or service which increases the demand for their product or service by customers, thus increasing profitability which safeguards the continuity of the firm (Griliches, 1979; Franko, 1989). Secondly, a firm can develop a new product or service which captures new value that had not been captured before by the market, thus allowing firms to gain a competitive advantage through first mover advantages (Griliches, 1979; Buddelmeyer, Jensen & Webster, 2010; Franko, 1989). In this instance firms often offer something different than their competitors, thus resulting in continuity through diversity.

Overall, it seems that innovation contributes to the competitiveness of firms, thus safeguarding continuity. Cefis & Marsili (2005) illustrate this argument with an empirical analysis which establishes that the rate of survival for innovating firms seems to be 11% higher than non-innovative firms. It would thus be in the interest of firms to understand what factors shape the success of firm innovation. However, interestingly enough firm innovation as a whole is still an ill understood topic, especially within emerging markets (Cefis & Marsili, 2005; Kumar, Mudambi & Gray, 2013; Gorodnichenko, Svejnar & Terrell., 2010). The aforementioned becomes even more interesting if one considers that McKinsey forecasts emerging markets to make up half of the global consumption by 2025 valued at \$30 trillion USD (McKinsey & Company, 2012). Furthermore, the OECD illustrated that currently most of the world's economic growth is occurring within emerging markets, which is illustrated by the global share of international trade from emerging markets increasing from 32% in 2000 to 46% in 2019 (OECD, n.d.). Emerging markets are characterized by low to middle income, rapid economic growth, liberalization of the economy, resource scarcity and a substantial number of institutional voids present within the market (Khanna & Palepu, 2010; Hoskisson, Eden, Lau & Wright, 2000). An understanding of firm innovation in the past had mainly

been shaped by analyzing firms from western developed markets (Ayyagari, Demirgüç-Kunt & Maksimovic, 2011). However, in the past decade academics have started to focus on uncovering firm innovation within emerging markets (Kumar et al., 2013; Gorodnichenko et al., 2010; Ayyagari et al., 2011). By uncovering the innovation process in emerging market firms and what factors influence this, academics are coming closer to solving the puzzle, which is firm innovation. Concepts which academics have found to be of considerable impact to the innovation of firms within emerging markets is the institutional environment (Williams & Vorley, 2015; Castellacci, 2015; Chadee & Roxas, 2013) and the resources of the firm (Ayyagari et al., 2011; Capozza & Divella, 2019; Badir, Frank & Bogers, 2020; Hoskisson et al., 2000). Before this thesis can delve deeper into the impact of institutions and firm resources within emerging markets and how they affect firm innovation it is important to understand what is meant by firm innovation in this thesis.

Firm innovation has been defined in various manners in different fields of research. This thesis will incorporate the definition of Baregheh et al. (2009) of firm innovation, because it captures the various key attributes of firm innovation along different fields of research in an integrative manner. By defining innovation in an integrative manner, the true essence of firm innovation is captured which will contribute to uncovering the puzzle of firm innovation in emerging markets. Overall: *'Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.'* (Baregheh et al., 2009, p.1334). Having defined firm innovation, this thesis is now able to address the topic of both resources and institutions and how these affect innovations within emerging market firms.

## 1.2 Problem statement

Institutions can be described as 'the rules of the game' and it consists of two dimensions, namely formal and informal institutions (North, 1990). Institutions drive and shape the social and economic behavior of organizations through institutional pressures such as regulative pressures, normative pressures, and mimetic pressures. One of the problems in various contemporary research is that institutions viewed in a unidimensional manner (Jackson & Deeg, 2008). The problems resulting from this is that researchers view institutions as if they were operating in a silo, which is far from the truth. It could be argued that by researching the effects of institutions on firm innovation in this manner could not reveal the true effect institutions have on firm innovation (Jackson & Deeg, 2008). An example would be Chadee & Roxas (2013), where they researched several institutional elements in a unidimensional manner such as rule of law, corruption, and regulatory quality. This thesis aims to solve this problem by viewing institutions in an interdependent/thick manner with the help of the National Business Systems (NBS) approach which will be further elaborated upon in [section 1.3](#) and

[section 2.3](#) (Whitley, 1999). The presence of institutions are what allows for the efficiency of transactions within the business realm (Khanna & Palepu, 2010). Within emerging markets this institutional environment is often lacking in one way or another which results in 'higher costs for procuring materials, capital, information, skills, and new ideas, which in turn reduce the likelihood of efficient outcomes' (Doh, Rodrigues, Saka-Helmhout & Makhija, 2017, p. 294). Overall, the presence of institutional voids are thought to increase the transaction costs within a market which hampers the possibilities for entrepreneurial activities within a firm (Doh et al., 2017; Saka-Helmhout, Chappin & Vermeulen, 2020). Furthermore, innovation is already a costly endeavor, increasing transactions costs will only increase the already present risks of innovation, thus pushing innovation outside of the boundaries for most firms in emerging markets (Fernandes & Paunov, 2015). Thus, emerging markets and the lack or absence of institutions is often seen as a constraining factor for firm innovation (Jackson & Deeg, 2008). This current understanding of institutions and their effect on firm innovation have been developed with data from the western/developed contexts (Hotho, 2014; Robson, Haugh & Obeng, 2009). The problem of this is that this contemporary knowledge stemming from western contexts cannot be applied to differing emerging market contexts to understand how an emerging market firm is able to innovate in a successful manner within lacking institutional environments. For example, in China, despite its severe lack of formal institutions, firms in the past were able to create process innovations at a staggering pace and contemporary Chinese firms are competing with firms from developed countries for the creation of radical innovations (Puffer, McCarthy & Boisot, 2010; Ikenberry, 2008). Thus, current academia is confronted with a knowledge gap, where current knowledge cannot fully explain firm innovation in an emerging market context. However, in the previous two decades attempts have been made to explain the phenomenon of firm innovation in emerging market contexts. For example, Castellacci (2015), illustrates that within the emerging market of Latin America firms are still able to innovate in institutional voids, because they are often a part of business groups who possess strong internal resource bases that can substitute for the lack of a stable institutional environment. The previous establishes that besides institutions it is also necessary to consider the role of firm resources and how they are utilized within the institutional environment of an emerging market to shape firm innovation. Studied resources which are said to impact firm innovation are a skilled workforce (Thornhill, 2006; Ayyagari et al., 2011), experience (Cefis & Marsili, 2005; Ayyagari et al., 2011) and learning capabilities/absorptive capacity (Calantone, Cavusgil & Zhao, 2002; Cohen & Levinthal, 1990) among others. It is recognized that firm resources and institutions both influence one another (Venkatraman, 1989). Barasa, Knoblen, Vermeulen, Kimuyu, & Kinyanjui (2017), illustrate the previous by stating that the extent to which a firm can use its internal resources to shape outcomes such as innovation, depends largely on the institutional environment of the firm. By considering configurations between the institutional



environment and firm resources it is possible to gain more insights into the phenomenon of firm innovation in emerging markets, thus filling the knowledge gap.

So, to summarize the problem statement, there is a knowledge gap in the sense that current academia cannot fully comprehend how emerging market firms are able to innovate. This is likely due to the fact that several factors such as the institutional environment and the firms' internal resources have all been considered in a unidimensional manner (Jackson & Deeg, 2019; Jackson & Deeg, 2008; Whitney, 1999). By considering configurations between the interdependent institutional dimensions of the NBS ([section 1.3 and 2.3](#)) and firm resources it becomes possible to gain some more intricate insights into the mystery of firm innovation in emerging markets. This thesis will achieve the aforementioned by answering the following research question: **'How do internal firm resources configure with national business systems to shape firm innovation in emerging markets?'**

### 1.3 Theoretical and practical relevance

The unique contribution of this thesis will be the integration of the national business system (henceforth NBS) approach to evaluating the institutional environment of emerging markets worldwide. National business systems are 'the dominant patterns of economic organization and control' (Hotho, 2014, p.673). Contemporary IB literature has mainly perceived the institutional variable to be of a unidimensional nature. This perception has resulted in an oversight of the theoretical idea that institutions are interdependent, thus shaping a rather thin view on the variable of institutions within contemporary IB literature (Jackson & Deeg, 2008; Jackson & Deeg, 2019). By adopting this rather thin view on institutions it could be argued that the impact of institutions on firm innovation is still a rather ill understood topic within IB, especially with regards to emerging markets where research on this topic is still in the stages of infancy (Jackson & Deeg, 2008; Pezeshkan, Smith, Fainshmidt & Sedeh, 2016). The NBS approach overall allows for a thicker evaluation of institutions. This thicker evaluation of institutions is formed by the recognition of NBS that institutions do not exist in silos, but institutions are interdependent from one another. Thus, a lack of formal institutions will have impacts on certain informal institutions and vice versa (Jackson & Deeg, 2008; Jackson & Deeg, 2019). For example, if formal institutions favor the economic organization of a country to be formed around high direct ownership and coordination, then this will make it difficult for informal institutions such as partnerships and alliances to occur within this business system (Hotho, 2014). It could be argued that it will be difficult to evaluate the institutions within emerging markets due to the prevalence of institutional voids, however Pezeskhan et al. (2016) illustrated that it is entirely possible to use the NBS to evaluate institutions within both developing and emerging markets. The aforementioned point of interdependencies will be elaborated further in section 2.3, giving more insights on the theory of NBS. Overall, the inclusion of

NBS will help to uncover the missing puzzle pieces of firm level innovation and explain why emerging market firms are able to innovate, despite literature within IB illustrating that this would be increasingly difficult in institutional voids (Khanna & Palepu, 2010). Furthermore, this thesis will extend the NBS model by also including firm resources such as managerial experience and skills of human capital. Papers such as Hoskisson et al. (2000) illustrate that the extent to which firm innovation can occur in emerging markets depends on the extent to which firm level resources can be utilized in a specific institutional environment. By integrating firm resources in the theoretical framework, this thesis aims to shape an even thicker evaluation on how firm innovation occurs within emerging market. The integration of both the NBS and firm level resources to evaluate firm innovation in emerging markets is something, which to my knowledge is unprecedented, thus providing a lot of potential to fill gaps in literature and thus form a substantiated opinion on the topic of firm innovation in emerging markets which is not yet fully understood (Kumar et al., 2013; Gorodnichenko et al., 2010). The aforementioned points are the theoretical relevance of this thesis. Furthermore, by extending the research to also include firm resources and how they configure with institutional aspects from the NBS, this thesis will establish that an institutional environment or firm resources by themselves cannot explain firm innovation within an emerging market firm.

The results of this thesis will be of practical relevance for both managers of MNE's willing to enter emerging markets and policymakers within emerging markets. Firstly, by illustrating the specific configurations between institutions and firm level resources, managers will gain insights on what resources must be nurtured and under which institutional environments (NBS) these resources will be able to increase the potential for successful firm innovations. For example, the results from [chapter 4](#) of this thesis, will illustrate that the presence of an experienced manager, a well-trained working force and a national business system characterized by an equity-based financial system will foster firm innovation in emerging market firms. Furthermore, this thesis will also in a similar manner be of practical relevance to policymakers within emerging markets. Research has illustrated that firm innovations are a key driver for economic growth in emerging markets (Gorodnichenko et al., 2010). On top of that, it is accepted that institutions can influence firm innovations (North, 1990). However, Robson et al. (2009), illustrate that knowledge on the influence of institutions on firm innovation is mainly shaped by data from developed Western countries. Thus, a challenge emerges for policymakers in emerging markets in the sense that there is scarcely available information on how institutions affect firm innovation in emerging markets which in turn obstructs policymakers in the endeavor of advancing the competitive position of the respective emerging market countries through economic growth (Gorodnichenko et al., 2010; Robson et al., 2009). By answering the research question, it becomes possible to see what firm resources configure with certain institutional

dimensions from the NBS in order to increase the potential for firm innovations. This knowledge alone does not allow policymakers to directly drive economic growth through developing institutional dimensions of the NBS, because firm resources are also to be considered in the configurations. However, it does give policymakers a hint as to what they can do about the institutional elements of the NBS, which is an aspect that can be controlled to a large extent by policymakers thus facilitating firm innovation and thus economic growth in emerging markets.

#### 1.4 Research structure

The remainder of this thesis will be structured in the following manner. Firstly, this thesis will further elaborate the central concepts within this thesis which are firm innovation, internal firm resources, and national business systems. Secondly, the methodology of this thesis will be elaborated upon, which is QCA. Thirdly, the results of the QCA will be illustrated and visualized. Fourthly, results will be discussed by utilizing views from current debates within state-of-art literature. Lastly, this thesis will be concluded by answering the research question. The answer to the research question will establish what contributions this thesis has made, what the limitations were of this thesis and how it can be improved in future research.

## Chapter 2 Literature Review

This thesis is built around three core concepts within the context of emerging markets, namely firm innovation, internal firm resources, and national business systems. The outcome variable of this thesis is firm innovation, which will be explored and elaborated upon firstly within the following section. Consequently, theory surrounding the internal resources of the firm will be elaborated and how this relates to firm innovation within the emerging context. Then the concept of national business systems will be elaborated and its potential in explaining the puzzle of firm innovation in

emerging markets. Lastly, the relations between firm resources and institutional dimensions within the National Business systems will be discussed.

## 2.1 Firm innovation in emerging markets

As mentioned in the introduction firm innovation is defined as '*The **multi-stage process (1)** whereby **organizations (2)** transform ideas into new/improved products, services or processes (3), in order to advance, compete and differentiate (4) themselves successfully in their marketplace.*' (Baregheh et al., 2009, p.1334). This definition of firm innovation is multilayered, due to the multiple attributes it contains. Firstly, the **multi-stage process (1)** implies that innovation is not an act consisting of one step, it is a process with multiple steps ranging from idea generation all the way to execution and implementation of the idea. Secondly, innovation is often an act occurring within **organizations (2)**, although it is not exclusive to organizations. Thirdly, innovations are about the **transformation (3)** of ideas into new **or** improved products, services, or processes. This part of the definition illustrates two things, namely the nature of the innovation and where innovations can occur. The nature of the innovation according to this definition can be either a radical innovation that is completely new to the market and the firm **or** it can be an improvement of an already existing idea implemented in another setting, thus incremental of nature. Furthermore, innovations are tied to either products, services, or processes within this definition. Fourthly, the definition also involves the aims of innovation, namely '**advance, compete and differentiate**' **(4)**. From this it can be inferred that the aims of innovation can be distinguished along two broad dimensions. The first dimension containing **advance**, where the focus lies on the potential advancements in society and environment due to the firm innovations. The second dimension containing **compete and differentiate**, pertain more to the competitive side of firm innovation in the sense that organizations strive for innovation in order to distinguish themselves from the competition in the pursuit of both competitive advantages and longevity (Baregheh et al., 2009). Academics have long since agreed on this notion that innovation can aid in the longevity of firms, with Schumpeter theorizing on it almost 100 years ago in his seminal work 'the theory of economic development' (Schumpeter, 1934). This notion also seems to hold true for emerging market firms, in the sense that firm innovation results in a stronger competitive position within the emerging market, which then translates into a higher probability of firm survival (Zapata-Cantu, 2020; Zhang et al., 2018). Emerging markets are mainly driven by the presence of SMEs which is illustrated by the statistic that 7 out of 10 formal jobs within emerging markets are created by SMEs (The World Bank, n.d.). Furthermore, SMEs are also responsible for a substantial share of economic growth in emerging markets through innovations (Ayyagari et al., 2011; Cravo, Gourlay & Becker, 2012). Due to the prevalence of SMEs within emerging markets and their

contribution to innovations and economic growth it becomes imperative to take this into consideration when investigating innovations in emerging market firms.

Studies have established that innovations within emerging market firms are often characterized by a frugal or incremental nature rather than a radical nature (Iyer, LaPlaca & Sharma, 2006; Goedhuys & Veugelers, 2012; Zeschky, Widenmayer & Gassmann, 2011). The prevalence of incremental innovations within emerging market firms can be explained when focusing on the risks and uncertainties of innovations combined with the large presence of SMEs in emerging markets. Firms use their capabilities to estimate what kind of innovation will contribute to gaining an edge over the competition at some point in the future (Teece & Leih, 2016; Pandit, Joshi, Sahay & Gupta 2018). However, the process of estimating what product or service will be successful in the future is an unquantifiable task which results in the risk of incurring sunk costs (Fernandes & Paunov, 2015). The degree of risk and uncertainties a firm will encounter within the endeavor of pursuing firm innovation depends on the type of innovation. Radical innovations are those innovations that are new to both the firm and the market (Pandit et al., 2018; Robson et al., 2009). The degree of risk a firm encounters when pursuing radical innovations is greater than the potential risks posed by incremental innovations. Radical innovations require a greater deal of resources such as time and money because the pursuit is in creating something that has not existed before in any other market (Sorescu, Chandy & Prabhu, 2003). Whereas with incremental innovations the innovation is only new to the firm and not necessarily to the market. The innovation has already existed in another context, thus greatly reducing the number of resources that have to be spent on trying to create a new product, service, or process (Robson et al., 2009). Emerging markets are characterized by SMEs driving a significant part of the innovation while SMEs are plagued by scarcity of resources (Rosenbusch, Brinckmann & Bausch, 2011). The combination of limited resources and the resource intensive nature of radical innovations results in the limited choice emerging market firms have regarding firm innovation, thus resulting in a lot of incremental firm innovations (Iyer et al., 2006). Furthermore, the preceding line of reasoning also explains the prevalence of frugal innovations. Frugal innovations are based around the creation of products and services that could produce the same outcome as other competing products and services, but use less resources (Hossain, 2018; Zeschky et al., 2011). Incremental and frugal innovations, thus seem to make up the majority of innovations in emerging market firms, but this does not mean radical innovations do not exist within emerging market firms. However, the share of emerging market firms that do engage in radical innovations are nickels and dimes compared to emerging market firms engaging in incremental and frugal innovations. Pandit et al. (2018), illustrate that radical innovations only happen under a strict set of conditions within emerging market firms, such as the possession of dynamic capabilities and an

abundance of resources which are far and between in emerging market firms. Firm innovation is, however, not something that can be considered in itself or within a silo, it is a dependent variable and the result of numerous factors interacting with one another. This section has already shed some light on how scarcity of firm resources could result in a limited choice towards firm innovation type in emerging market firms. The following section will dig deeper into the internal resources of emerging market firms.

## 2.2 Firm resources (resource-based perspective)

Firm resources are implied to be an important contributor to innovations in emerging market firms (Ayyagari et al., 2011). Furthermore, it is stated that firm resources can have a direct impact on the capabilities of a firm to successfully innovate in an emerging market context (Capozza & Divella, 2019; Badir et al., 2020). This view stems from the resource-based view (RBV) of the firm, which illustrates that in order for firms to distinguish themselves from the competition they need to have valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991; Penrose & Penrose, 2009; Hoskisson et al., 2000). When firms possess resources that adhere to the VRIN framework, it will result in an environment that is characterized by the heterogeneity of firms that will survive due to sustainable competitive advantages (Barney, 1991; Hoskisson et al., 2000; Penrose & Penrose, 2009). As mentioned before, creating a sustainable competitive advantage is highly linked to having strong innovative capabilities as a firm, which is why firms try to create resource bases that can foster firm innovation, even in the emerging market context (Badir et al., 2020; Hoskisson et al., 2000). Those resources that provide the emerging market firm with sustainable competitive advantages are mostly of intangible nature (Hoskisson et al., 2000). Thus, meaning that resources such as managerial experience and the skill level of human capital are fairly important to create sustainable competitive advantages and thus firm innovation in emerging markets (Ayyagari et al., 2011; Badir et al., 2020; Castellacci, 2015).

### 2.2.1 Managerial experience

There exist numerous ways of reasoning as to why managerial experience promotes a higher degree of firm innovation in the emerging market context. A prevalent line of reasoning is vested in the argument that experienced managers have acquired intangible knowledge through years of working in the industry, which enables them to understand and comprehend the smallest of details within the external environment that might signal the opportunity for pursuing innovative endeavors which fit the firm (Back, Parboteeah & Nam, 2014; Capozza & Divella, 2019; Custódio, Ferreira & Matos, 2019). Another line of reasoning argues that experienced managers contribute positively to firm innovation in emerging markets because managers know how to effectively coordinate and guide their subordinates in such a manner that it will result in more innovative work outputs. Experienced

managers are more capable of facilitating employees in the accessing and understanding of internal knowledge sources which in turn facilitates the conversion of internal knowledge into innovative outcomes (Badir et al., 2020). However, despite the claims that managerial experience relates positively to firm innovation in emerging markets there are also studies which illustrate that high managerial experience could also have negative implications on firm innovation. Ayyagari et al. (2011) illustrate that high experience could indicate an older generation of CEO's and managers who might be more conservative in their overall decision-making process. This conservatism is thought to inhibit the propensity for firm innovation, because firm innovation requires radical and flexible decision making (Ayyagari et al., 2011; Capozza & Divella, 2019). However, a fairly recent study from Balsmeier & Czarnitzki (2013) illustrated that managerial experience indeed was a significant contributor to firm innovation in the emerging market context.

### 2.2.2 human capital

Human capital is often at the center of driving firm innovation, which is why the skill levels and education of human capital matter for firm innovation (Badir et al., 2020; Ayyagari et al., 2011). The argument for the significance of education levels of human capital is vested in the concept of absorptive capacity which is the: 'ability to recognize the value of new information, assimilate it, and apply it to commercial ends' (Cohen & Levinthal, 1990, p. 128). It appears that absorptive capacity and educational levels of the human capital are strongly associated, such that high levels of absorptive capacity are largely dependent on the level of education attained by employees. Highly educated individuals are better able to process, understand, and create information than lowly educated individuals (Goedhuys, Janz & Mohnen, 2014; Amann & Cantwell, 2012). To illustrate why the education level of employees is a significant contributor to firm innovation in emerging markets it is necessary to reiterate an argument from [section 2.1](#) which was that incremental innovations are more prevalent within emerging market firms, due to resource scarcity of SMEs (Iyer et al., 2006; Rosenbusch et al., 2011). Consequently, emerging market firms mostly adopt existing innovations from the external environment. Existing innovations are created by other firms with knowledge that is new and foreign to the emerging market firms. Thus, absorptive capacity becomes increasingly important because emerging market firms adopt innovations from other contexts which require the ability to understand new information and assimilate it with the current resource base to successfully introduce the existing innovation to the emerging market context (Amann & Cantwell, 2012). As absorptive capacity is largely the result of highly educated individuals, it becomes apparent why the education levels of human capital matter for emerging market firms' ability to innovate. However, within both the emerging and developing market contexts it seems that the availability of a high-quality workforce, those with adequate knowledge and skills acquired through schooling, are

only scarcely available (Capozza & Divella, 2019). This problem is tackled by emerging market firms by educating employees through formal training (Capozza & Divella, 2019). Research suggests that formal training just as effective as general education in shaping the absorptive capacity of human capital (González, Miles-Touya & Pazó, 2016; Cohen & Levinthal, 1990). The aim of the formal trainings is to update or complement the current knowledge base of the employees which is necessary for firm innovation (van Uden et al., 2017). Capozza & Divella (2019), illustrated an increase in both process and product innovations in emerging market firms when human capital was formally trained. Thus, when appreciating the skill level of human capital in emerging market firms it becomes a requisite to consider if the firm provided formal training to its' employees.

### 2.2.3 Concluding remarks firm resources

In conclusion, it seems that intangible firm resources such as managerial experience and the skill of human capital contributes to firm innovation in the emerging market context (Ayyagari et al., 2011; Capozza & Divella, 2019; Hoskisson et al., 2000; Castellacci, 2015). Firm resources, however, do not exist in a silo. The institutional environment plays a substantial role on if the utilization of firm resources will end up as a success or failure in the institutional contexts of emerging markets (Peng, 2003; Marquis & Raynard, 2015; Barasa et al., 2017). Consequently, it is of importance to dig deeper into the concept of institutions within emerging markets. This thesis will view institutions within emerging markets as national business systems, as this provides a thick view on institutions as mentioned in [chapter 1](#).

## 2.3 National business systems (institutional perspective)

Authors such as Schumpeter (1934) and Nelson & Winter (1982) already understood early on that context matters for firm innovation. Recently endeavors of this topic have been focusing on the emerging and developing market contexts and how the national context in the form of institutions could shape the potential for firm innovation (Pezeskhan et al., 2016; Saka-Helmhout et al., 2020; Castellacci, 2015). One method of operationalizing and analyzing how the institutional environment impacts the potential for business endeavors, such as firm innovation, is created within the work on National Business Systems (NBS) by Richard Whitley in 1999. Firstly, the theory of Whitley (1999) in 'divergent capitalisms' will be discussed below to uncover how aspects of the institutional environment can either aid or obstruct firm innovation. Secondly, a short example will be given which illustrates how the NBS could influence firm innovation.

National business systems encompass ways that economic activities are organized within the context of a country (Whitley, 1999). The NBS approach was created to identify central phenomena in markets in ways that are sufficiently standardized to allow for systematic cross-country comparisons



while remaining flexible enough to include critical differences between countries (Whitley, 1999, p.31). The institutions within the NBS are operationalized among 4 core dimensions namely, the state, the financial system, the skill development/control system, and the normative trust/authority relations (Whitley, 1999, p.48). The NBS approach considers the interdependency among these four dimensions, which then in turn shapes conducive or unfavorable conditions for firm innovation. The prominent innovation scholar, Lundvall (1999; 2007), argues that Whitley's paradigm is well positioned to provide valuable insights into how the presence (or absence) of institutional complementarities within national business systems might stimulate firm innovation and, as a consequence, economic development. In order to understand how configurations of these four institutional dimensions can shape firm innovation it is necessary to shape some rudimentary knowledge on how each of the dimensions on its own could contribute to the presence of firm innovation.

Firstly, **the state**, has many features through which it can influence forms of economic organization which in turn influences business endeavors such as firm innovation (Whitley, 1999; Pezeskhan et al., 2016; Yi, Hong, Hsu & Wang, 2017). One example through which the state could directly influence firm innovation is through direct ownership. Some studies propose a positive relationship between state ownership and firm innovation (Yi et al., 2017), while others propose a negative relationship (Ayyagari et al., 2011). However, the prevalent way through which the state influences firm innovation in emerging markets is through the formal regulation of markets which is: 'the extent to which states directly or indirectly regulate market boundaries, entry, and exit, as well as set constraints on the activities of economic actors' (Whitley, 1999, p. 48). Formal regulations by the state are for example vested in the rule of law, which pertains to the degree of property right protection which is enforced by the state in a NBS. If the state engages in a limited degree of property right protection within an emerging market it is argued that firms discouraged to engage in firm innovation, because they fear forms of expropriation by competitors who are likely to replicate the product, service, or process innovations without any financial repercussions. Thus, it is argued that in such an environment it might be beneficial to only replicate innovations instead of pursuing them yourself to gain first mover advantages (Wang, Yi, Kafourous & Yan, 2015). Further aspects of formal regulation entail regulatory quality and government effectiveness in a NBS. Studies such as (Alam, Uddin & Yazdifar, 2019; Blind, Petersen & Riilo, 2017) establish that both government effectiveness and regulatory quality contribute positively to the extent to which an emerging market firm will engage in innovative activities. An effective government encourages both public and private firms to engage in firm innovation through providing fiscal policies (e.g., tax exemption/reduction on improved/new products and services) which promote entrepreneurial and innovative activities (Alam

et al., 2019). As for regulatory quality and firm innovation it seems that good regulatory quality indicates an efficient, consistent, and equal enforcement of regulations by the state which reduces uncertainty and thus reduces the transaction costs of operating in such a market which spurs innovations (Alam et al., 2019; Blind et al., 2017).

Secondly, the **financial system** as an institution within the NBS also affects innovation endeavors by emerging market firms. Firm innovation is by no means an easy endeavor, it is constantly plagued by uncertainty and risks. Access to a stable source of external finances seems to contribute to greater firm innovation within emerging markets according to Ayyagari et al, (2011). Whitley distinguishes between the equity and credit-based financial systems (Whitley, 1999). The main distinction between an equity-based and a credit-based financial system lies in the manner through which capital is allocated and distributed in the NBS (Whitley, 1999; Hsu, Tian & Xu, 2014; Hotho, 2014). *'Some models emphasize equity-based financial systems which mobilize and distribute capital mainly through large and liquid equity markets. In contrast, credit-based financial systems rely on banks and/or the state to allocate capital through administrative processes.'* (Judge, Fainshmidt & Brown, 2014, p.367). There are two aspects to financial systems that impact firm innovations within emerging markets.

Firstly, it seems that the strength of financial system influences the ease or difficulty of obtaining capital (Khanna & Palepu, 2010). Strength in this case would be represented by strict regulation within the financial market which would provide both a safe environment for investors and the possibility for 'new enterprises to raise capital on approximately equal terms as big, established companies' (Khanna & Palepu, 2010, p.23). A stronger overall financial system will contribute to more innovations as innovations are inherently resource intensive, thus the equal access to raise capital would facilitate this (Bradley, McMullen, Artz & Simiyu, 2012).

Secondly, it seems that financial systems operating mainly on an equity basis provide favorable conditions for firm innovation in emerging markets (Wu, Si & Wu, 2016; Hsu et al., 2014; Klonowski, 2012). As mentioned in [section 2.1](#) firm innovation in emerging markets is mostly driven by SMEs which are characterized by a lack of resources (Rosenbusch et al., 2011). Credit-based financial systems are characterized by banks allocating the financial resources. Banks tend to be risk averse, and thus when providing a loan to a firm the banks want to reduce the risks as much as possible (Wu et al., 2016; Müller & Zimmerman, 2009). Banks reduce risks in various manners such as requesting collateral from the firm. Banks want the collateral to be worth at least as much as the provided loan, but collateral in several instances can exceed the value of the initial loan by two to three times (Klonowski, 2012). In this instance the difficulty of firm innovation in emerging markets characterized by credit-based financial systems becomes apparent. SMEs in general, and especially

those within the emerging market context, are plagued by resource scarcity which prevents the access to external funds from banks because the SMEs cannot provide the banks with collateral needed for the loans. Thus, SMEs will have a harder time accessing external funds in credit-based financial systems due to the risk aversity of banks, which can prove to be detrimental for firm innovation in emerging markets (Klonowski, 2012; Wu et al., 2016). Actors in charge of resource allocation in equity-based financial systems mainly consist of investors and fund companies (Whitley, 1999). Literature suggests that the behavior of investors and fund companies are more geared towards risk taking than actors (banks) in a credit-based financial system (Nassr & Wehinger, 2016). Both investors and fund managers in equity-based systems are more likely to perceive SMEs and their pursuit of innovation as an opportunity to invest in rather than a risk which should be avoided. Therefore, emerging market firms operating in equity based financial systems are more likely to gain access to external funds which improves the potential for firm innovations (Nassr & Wehinger, 2016; Klonowski, 2012; Wu et al., 2016). Furthermore, Whitley (1999) illustrated that firms operating in equity-based financial systems possess more mobility of market entry and exit. Thus, meaning that firms are motivated to undertake risky endeavors such as innovation when access to external finance is available, which as explained before is likely the case in equity based financial systems.

Thirdly, **the skill development/control system** dimension of Whitley (1999) concerns the availability of a stable and flexible supply of quality human resources, within the labor market (Pezeskhani et al., 2016; Whitley, 1999). There are two sets of interrelated institutions within this dimension. Firstly, there is a set of institutions which trains and certifies the skills of the human resources entering the labor market (Whitley, 1999). Examples would include universities and schools. It is illustrated that a high presence of educational institutions results in an increase of the availability of high-quality human capital within the labor market (Pezeskhani et al., 2016; Castellacci, 2015). There are studies which illustrate that the education levels of human capital plays a substantial role in the propensity for firm innovation in emerging market firms (Sun, Li & Ghosal, 2020; Capozza & Divella, 2019). However other studies such as Na (2021), indicate that there is a lot of mixed results to studying the effect of national skill development institutions on firm innovation, and that there is thus a lot of debate surrounding the topic.

Secondly, there is a set of institutions that 'control the terms on which the owners of those skills sell them in labor markets and how those markets are organized' (Whitley, 1999, p.50). Institutions that characterize the previous are worker unions, trade unions etc. However, unions are fairly uncommon in emerging market contexts. For example, in China, it is near impossible for workers to create independent worker unions, which is likely due to the state fearing strikes or any collective actions against the state (Khanna, Palepu & Sinha, 2005). Therefore, the analysis will

exclude the control system institutions (e.g., worker unions) because they are difficult to form independently in emerging markets resulting in a lack of data regarding this variable.

Lastly, **the normative trust/authority relations** within a country are also institutions that seem to have the ability to affect the propensity for firm innovation within emerging markets. Trust is a key factor within markets because it affects the structure of exchange relationship between business partners (Whitley, 1999). Particularly important is the perception of trust by firms and the general populous in the formal institutions providing and guaranteeing trust between relative strangers. This perception of trust is often affected by the compliance of formal rules by institutional bodies within the other institutional dimensions of the NBS (State, Financial system, and the skill development system). Normative trust relations within emerging markets are often lacking due to various reasons such as corruption, bribery, weak property right protection etcetera (Hoskisson et al., 2000). For example, when there is a weak property right protection by the state it means that formal rules may be in place, but they are not actively enforced by the state. Thus, leaving firms vulnerable to exploitation by other bigger firms, which deters the trust of firms in the formal institutions. From the previous example it once again becomes evident how the several dimensions of institutions within the NBS are interdependent (Whitley, 1999; Jackson & Deeg, 2008). Consequently, due to the lack of trust within emerging markets the transaction costs are considerably high, such that it is not attractive to engage in transactions with business partners (Williamson, 1975; Hoskisson et al., 2000). High transaction costs inhibit firm innovation, especially in emerging market contexts where a scarcity of resources is present among firms, thus not allowing for the possibility of a hierarchical structure such as internalization (Williamson, 1975; Zanella, Fu, Mohnen & Ventresca, 2016; Hoskisson et al., 2000). Thus, some studies such as Zanella et al (2016) illustrate that trust to an extent is necessary for firm innovation in emerging markets.

The previous paragraphs illustrated theories surrounding individual effects of each of the dimensions from the NBS. The direct effects all seemed to propose the presence of the institutions to explain firm innovation in emerging markets, but in reality these institutions are either absent or severely lacking within emerging market (Khanna & Palepu, 2010; Doh et al., 2017). By considering institutions in a unidimensional manner, it seems that outcomes of research, contrast reality because emerging market firms are able to innovate while these institutions are often absent or lacking. NBS theory suggests that all of the institutions are interdependent such that the state, the financial system, the development/control system, and the normative trust/authority relations all impact one another simultaneously, which in turn impacts firm innovation (Whitley, 1999; Jackson & Deeg, 2008; Hotho, 2014; Lundvall, 1999; 2007). It seems that this approach has contributed to a better understanding of the effects of institutional environments on firm innovation in emerging markets. For example,

results of Pezeskhan et al, (2016) illustrate one configuration where firm innovation occurred while trust was absent, and the rest of the institutional dimensions from the NBS were present. Despite a thicker view on institutions this thesis argues that this is still not enough to fully understand firm innovation in emerging markets as will become apparent in the next section.

## 2.4 Relations between firm resources and national business systems

The idea that there should be a fit between the internal resources of the firm and the external environment in order to achieve the greatest degree of performance, is an idea that has existed for quite a while within strategic management literature (Venkatraman, 1989). The concept of fit has brought forth the idea that institutions affect the ways in which firms are able to utilize the internal resources in an optimal manner. It would mean a distinct set of resources might be needed to be successful in different institutional contexts. Hoskisson et al. (2000), illustrate that within both emerging and developed markets, resources are based in a context and thus the degree to which a firm can utilize its resources to shape business outcomes such as innovation also largely depends on these contexts. It would be a senseless thing to exclusively consider the resources of the firm without the context the firm is operating in and vice versa. Emerging markets for example might have more need for certain resources to innovate successfully within the given institutional environment than developed markets (Meyer & Peng, 2005). For example, Castellacci (2015), illustrates that those firms who possess ample relational capabilities have a higher likelihood to produce firm innovations than those firms who lack relational capabilities within Latin America. This is likely due to the fact that institutional voids are present within the Latin American market context (Brenes, Ciravegna & Pichardo, 2019; Castellacci, 2015). Institutional voids exist within various areas of the Latin America NBS, such as the financial system, the skill development system, the normative trust system, and the regulatory system. The results of Castellacci (2015), illustrate that having access to relational resources such as business groups, fills the void left behind by the institutional voids thus once again enabling the possibilities for firm innovation. For example, there is a lack of a financial system which efficiently allocates financial resources to those firm who need it within several countries in Latin America (Brenes et al., 2019). Having access to relational resources such as being part of a business group alleviates this problem through internal funding which improves access to financial resources that are necessary for firm innovations (Castellacci, 2015). If a firm within Latin America would not possess strong relational resources, it would have to operate within the given institutional financial system which is not effective and efficient in the allocation of financial resources. This would ultimately deter the potential for firm innovations to occur. The previous example illustrates that one cannot fully explain firm innovation within emerging markets if one only considers the fact that institutional voids are present within emerging markets. **Therefore, this thesis proposes that firm**

**innovation can only occur by considering configurations between firm resources and institutional elements within the NBS.** Previous studies which have also highlighted the importance of considering both resources and institutions when researching firm innovation are Barasa et al. (2017), Hoskisson et al. (2000) and Saka-Helmhout et al. (2020). Despite of this an application of the National Business System theory and how they configure with certain firm resources to shape firm innovation in emerging markets has not been materialized within academic literature.

## 2.5 summary

The previous paragraphs illustrated that there are differing theoretical perspectives on how firm innovation occurs within emerging market firms. The resource-based perspective endorses the direct effects of internal resources on firm innovation, while the NBS perspective endorses the direct effects of a bundle of institutions on firm innovation. However, it seems that there is a need to combine these previous two perspectives to gain a deeper understanding on firm innovations in emerging markets, which is why this thesis proposed firm innovation can only occur when considering configurations between firm resources and institutional elements of the NBS. Furthermore, this thesis departs from previous literature by configuring both firm resources and NBS to form a unique framework to study firm innovation in emerging markets. It is of interest to mention that to the extent of my knowledge this exact combination of firm resources and NBS theory has not been utilized before to investigate firm innovation.

## Chapter 3 Methods

It is interesting to see what configurations exist between firm resources and the institutional environment (operationalized with the NBS), and how these configurations either shape conducive or unfavorable configurations for firm innovation within emerging markets. In order to realize this, the thesis made use of Qualitative comparative analysis (QCA).

QCA is a method that is used when researchers expect that sets of variables and their relationships are better able to explain an outcome variable than the individual direct effects (Schneider & Wagemann, 2012). While it is outside the scope of this thesis to fully explain the intricacies of the theory surrounding QCA, below is a quote which encapsulates the fundamental characteristics of QCA. There are three key features to QCA “(a) conjunction, which means that outcomes rarely have a single cause but rather result from the interdependence of multiple conditions; (b) equifinality, which entails more than one pathway to a given outcome; and (c) asymmetry, which implies that attributes “found to be causally related in one configuration may be unrelated or even inversely related in another” (Misangyi et al., 2017, p. 256; Meyer, Tsui & Hinings 1993, p 1178). In [chapter 2.4](#) it was argued that it was senseless to focus exclusively on either the firm resources or institutional environment to research the effects on firm innovation. The conjunctural causation of QCA established in (a) encapsulates what it is this thesis wants to illustrate, which is that no single condition – such as firm resources or institutions – can shape firm innovation, but rather a combination of these conditions which is why QCA fits the purpose of this thesis. Overall, this increased the validity for the choice of QCA as a scholarly method to study the research question of this thesis.

It is suggested to utilize a crisp set QCA when the outcome variable is of binary nature (Rohlfing, 2020; Schneider & Wagemann, 2012). The outcome variable within this thesis is firm innovation, which is of binary nature (as explained in section 3.1.2), thus justifying a crisp set QCA (Henceforth csQCA). Within csQCA, variables require a dichotomous categorization, where scores of 0 indicates non-membership and scores of 1 indicates full membership. So, a condition or outcome is either fully present or it is not. Thus, variables should be calibrated in order to adhere to this set membership (Schneider & Wagemann, 2012). It is suggested that one calibrates variables by using pre-validated scales (Schneider & Wagemann, 2012). However, pre-validated scales are scarce in nature, and I was forced to make inferences about the memberships based on a combination of theoretical insights and the sample distribution of the data (Misangyi et al., 2017). According to literature it is of the utmost importance to be transparent in arguing which cut-off points are utilized to determine memberships, which this thesis strictly adhered to (Schneider & Wagemann, 2012; Misangyi et al., 2017). In order to establish what combinations, exist between NBS and firm resources to result in firm innovation, this thesis examined a sample of emerging markets. A classification by the MSCI was utilized to determine what set of countries constitute emerging markets. From the MSCI it can be established that there are 24 emerging markets worldwide as seen in table 1 below (MSCI, 2022).

**Latin America**

**Europe, Middle East, and Africa**

**Asia**

Brazil	Czech Republic	China
Chile	Egypt	India
Colombia	Greece	Indonesia
Mexico	Hungary	Korea
Peru	Kuwait	Malaysia
	Poland	Philippines
	Qatar	Taiwan
	Saudi Arabia	Thailand
	South Africa	
	Turkey	
	United Arab Emirates	

Table 1: Emerging markets (MSCI, 2022)

The MSCI, created the classification based on multiple requirements within factors such as size, liquidity, and market accessibility of the countries. See table 2 below for all of the requirements (MSCI, 2021).

Criteria	Emerging market
Average company size (full market cap)	USD 2,343 mm
Security size (floatmarket cap)	USD 1, 171 mm
Security liquidity	15% ATVR
Openness to foreign ownership	Significant
Ease of capital inflows/outflows	Significant
Efficiency of operational framework	Good and tested
Availability of investment instrument	High
Stability of the institutional framework	Modest

Table 2: MSCI (2021) requirements for an emerging market

### 3.1 Operationalization and Calibration:

This thesis utilized databases from two organizations, first of them being The World Bank which produced the World Bank Enterprise Survey (henceforth WBES) and the World Governance Indicators (henceforth WGI). Furthermore, the World Bank also supplies some additional data on their site which was used in this thesis to evaluate the financial systems variable, and it can be found at <https://data.worldbank.org/>. The WBES is a dataset that has been created and updated since 2005 and holds survey data of 151 countries on a broad range of business topics. Furthermore, the WGI dataset holds data from over 200 countries and territories over the period 1996-2020. The WGI compiled data from 30 different individual sources and aggregated these scores from those data sources into six dimensions of governance (The World Bank, 2020). The six dimensions include, Voice & accountability, Political stability & absence of violence, Government effectiveness, Regulatory Quality, Rule of Law, and lastly Control of Corruption (The World Bank, 2020). The other dataset that was used utilized was the education component from the Human Development Index, which is



provided by the United Nations (2020). The United Nations are actively trying to capture the human development in over 190 countries and territories since 1990. A summary of the proceeding subsections is provided in table 3 below.

Variable	Measurement level	Data source	Calibration
Firm innovation (Outcome)	Nominal/Binary	WBES	Answered yes on either h1 or h5 = 1; answered no on both h1 and h5 = 0
Managerial experience (causal condition)	Ratio	WBES	Top manager with experience $\geq 10$ years = 1; Top manager with $<10$ years = 0
Human capital (causal condition)	Nominal/Binary	WBES	Firms with a formal training program (answered yes) = 1; Firms without a formal training program (answered no) = 0
The state (composite) (causal condition)	Interval	WGI	Countries which scored $\geq 0.34$ = 1 (strong state institutions); Countries $<0.34$ = 0 (weak state institutions)
Equity-based financial system (causal condition)	Ratio	World Bank site (2022)	( % of market capitalization to GDP/ % of private credit extended by deposit money banks to GDP) $\geq 1$ = 1 (dominance of equity-based financial system); $<1$ =0 (dominance of credit-based financial system)
Credit-based financial system (causal condition)	Ratio	World Bank site (2022)	( % of market capitalization to GDP/ % of private credit extended by deposit money banks to GDP) $\geq 1$ = 1 (dominance of credit-based financial system); $<1$ =0 (dominance of equity-based financial system)
Skill development and control system (causal condition)	Ratio	United Nations: education index (2020)	Countries scored $\geq 0.763$ = 1 (strong skill development and control system); $<0.763$ = 0 (weak development and control system)
Normative trust and authority relations (causal condition)	Interval	WGI	Countries scored $\geq 0.5$ = 1 (sufficient levels of trust); $< 0.5$ = 0 (insufficient levels of trust)

Table 3: summary of operationalization & calibration

### 3.1.1 Sample selection

Selecting a sample can be done in several manners, e.g., one could select a sample based on theoretical considerations or methodological considerations. At first I tried select a sample on theoretical basis. I tried this by composing a sample of Spanish speaking Latin American emerging markets (Chile, Colombia, Mexico, and Peru), because they share the same language. Language seems to be a determining factor in how cultures are shaped and thus, it can be argued that countries sharing languages such as Chile, Colombia, Peru, and Mexico share cultural similarities to a certain extent (Beugelsdijk & Maseland, 2011; Inglehart & Carballo, 1997). The resulting configurations could have resulted in a clear-cut case for Latin American emerging market firms and

how businesses in this context should have operated in order to foster firm innovation. However, realizing an analysis based on the Latin American context was not possible due to limited coherency of the year when data was acquired between datasets. Furthermore, according to literature emerging markets are characterized by fast-paced turbulent change, meaning that up to date data is of the utmost necessity when evaluating emerging market contexts (Marquis & Raynard, 2015; Khanna & Palepu, 2010). Considering the Latin American market, the countries of Chile and Mexico only contained datasets from 2010 in the WBES, which could be considered as outdated. Taking the fast-paced nature of emerging markets into consideration this thesis deemed it necessary to utilize recent datasets from emerging markets. Any data from before the year 2017 is considered as outdated in this thesis. Thus, this thesis will only analyze configurations within seven out of the original 24 identified emerging markets (MSCI, 2022), because these emerging markets had an abundance of data for each variable after 2017. The seven emerging markets considered within this thesis are Colombia, the Czech Republic, Greece, Hungary, Peru, Poland, and Turkey. Furthermore, to ensure validity of the research, the year from which the data stems from has to be the same for each variable within a country to avoid results being the consequence of the passage of time (Hair, Babin, Anderson & Black, 2018). Collecting data in this manner resulted in the exclusion of south Africa from the dataset as it did not have information on the skill development system from 2020, and thus not coherent to the year the data was collected from the WBES. The sample is presented in table 4 below.

Country	WBES	WGI	UN	World Bank site
Colombia	2017	2017	2017	2017
Peru	2017	2017	2017	2017
Greece	2018	2018	2018	2018
Hungary	2019	2019	2019	2019
Poland	2019	2019	2019	2019
Turkey	2019	2019	2019	2019
Czech Republic	2019	2019	2019	2019

Table 4: Sample description and paralleling years of data for each data source

### 3.1.2 Firm innovation (outcome variable)

The innovation module of the WBES was utilized to measure the outcome variable of firm innovation within this thesis. More specifically variables h1 and h5 were used. (H1) *‘During the last three years, has this establishment introduced new or significantly improved products or services?’* and (H5) *‘During the last three years, has this establishment introduced any new or significantly improved process?’*. The incorporation of the aforementioned variables is justified for the definition of firm innovation in this thesis: *“Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.”* (Baregheh et al., 2009, p.1334). Thus, the

variables h1 through h5 include every aspect of firm innovation such as process, service, and product innovations that are either of incremental (improved) or radical (new) nature. The answer categories for h1 and h5 were yes or no, thus making it a binary variable. The original datasets coded answers 1 as a yes, while the answer 2 was a no. These scores were calibrated in such a way that the answers yes (originally 1) would be assigned a score of 1 indicating full membership, while the answers no (originally 2) would be assigned a score of 0 indicating non-membership. Similar methodology to measure firm innovation has been utilized by Barasa et al. (2017), Chadee & Roxas (2013) and within the robustness checks of Saka-Helmhout et al. (2020) which further justifies this measure of firm innovation. To reiterate firm innovation is seen as a broad concept within this thesis. Thus, a variable combining H1 and H5 was computed to capture firm innovation. Once a firm has scored full membership on at least one of the variables, it is perceived to be an innovative firm. The new outcome variable that was computed was called 'FirmInnov' where a full membership score of 1 means the firm has either introduced a new or improved product, service, or process. Non membership scores of 0 illustrate no innovative activities by the firm in the previous three years of operation ([appendix 2.4](#) for syntax). A broad definition of firm innovation is supported by (Zanello et al., 2016), because it facilitates capturing the understudied phenomenon of firm innovation in emerging markets

### 3.1.3 Firm resources (causal conditions)

Research suggests that managerial experience and human capital affect the presence of firm innovation in emerging market firms (Ayyagari et al., 2011; Hoskisson et al., 2000). Firstly, the variable b7 within the WBES is a justified indicator to measure the experience of a manager. (b7) *'How many years of experience working in this sector does the Top Manager have?'*. Ayyagari et al. (2011) and Saka-Helmhout et al. (2020) used 10 years as a cut-off point. Thus, if a manager has more than 10 years of experience he or she is considered to have enough experience to be called a veteran within the field. The opposite held true for managers with less than 10 years of experience, and they were deemed to be inexperienced within the field. So, managers with less than 10 years of experience were assigned a score of 0 (non-membership), whereas a score of 1 (full membership) was assigned to managers with at least 10 years of experience. The variable was computed as 'EXPERIENCEDmanagers' within datasets. For the calibration process of b7 please consult [appendix 2.1](#). Secondly, human capital was measured by the amount of training employees have received (Roper & Love, 2006). The variable within the WBES that illustrates this is I10 and it asks: *'Over fiscal year [insert last complete fiscal year], did this establishment have formal training programs for its permanent, full-time employees?'*. The response categories in this instance were of binary nature with the answer categories being yes or no. The calibration process for this variable was similar to h1

and h5 in [section 3.1.2](#) due to the same answer categories. Thus, a score of 0 here indicates non-membership due to the fact that the establishment did not provide any training for its FT employees. A score of 1 (full membership) was assigned to the establishment that did provide the FT employees with training. Studies such as Saka-Helmhout et al. (2020) & van Uden et al. (2017) also used formal training as a measure for the quality of human capital which justifies the use of the measure. The variable was named 'HumanCap' within datasets (table 24, [appendix 2.4](#))

### 3.1.4 National Business Systems (causal conditions)

The NBS approach considers the institutional environment to consist of four interdependent dimensions: the state, the financial system, the skill development/control system, and the normative trust and authority relations.

#### **The state measurement:**

To obtain information about the state and its involvement in firm innovation I considered using three WGI variables as suggested by Pezeskhan et al. (2016). The indicators to be compiled into one variable called 'state' (see [section 4.1.3](#)) are the rule of law, regulatory quality, and government effectiveness. [Section 2.3](#) illustrates how each of the indicators from the state institutions impact firm innovation. Scores on the WGI variables range from -2.5 to +2.5, where the lower scores indicate a weak rule of law, poor regulatory quality, and ineffective government, while the higher scores indicate a strong rule of law, good regulatory quality, and an effective government. A composite was created called STATE, which uses equal weighting as seen in [section 4.1.3](#). The composite also ranges from -2.5 to +2.5 (table b, [appendix 2.1.1](#)). No pre-validated scales were available for a crisp set distinction of the composite state. Therefore, to determine a suitable cut-off point I evaluated the distribution of the scores on the composite STATE. Scores ranged between -0.08 and 1.08 with a fairly equal distribution of scores between the range as seen in table a ([appendix 2.1.1](#)). When the previous is the case it is suggested to evaluate the sample mean rather than the median (Hair et al., 2018; Schneider & Wagemann, 2012). The sample mean was 0.34 (table b, [appendix 2.1.1](#)). This resulted in non-membership scores of 0 for Colombia, Peru, Greece, and Turkey, because  $STATE \leq 0.34$  which indicated low quality of state institutions. Full membership scores of 1 were assigned to Hungary, Poland, and Czech Republic, because  $STATE > 0.34$  indicating high quality of the state institutions ([appendix 2.1.1](#), table b). In hindsight the same calibration for full membership and non-membership would have occurred when opting for the median (= 0.28) as a cut-off point (Table b, [appendix 2.1.1](#)). For further information on the statistical analyses behind the creation of the composite 'STATE' please refer to [section 4.1.3](#) and [appendix 2.2](#).

#### **Finance system measurement:**

The two dimensions that Whitley (1999) considers for the finance system institutions are the equity market and the credit market. To evaluate the finance system institution, this thesis utilized data on market capitalization similar to other studies (Judge et al., 2014; Hotho, 2014) which used the NBS framework. To evaluate market capitalization, the dataset from the World Bank site (2022) was utilized. Both Judge et al. (2014) and Hotho (2014), illustrate that you can evaluate the equity market on the basis of the total amount of stock market capitalization of listed domestic companies as a percentage of the total GDP. Secondly to measure credit markets, it is useful to evaluate the domestic credit provided by the banking sector to private sectors as a percentage of the total GDP (Judge et al., 2014, p.370; Hotho, 2014). To calibrate the membership for the finance system, this thesis will adhere to the method described by Hotho (2014, p.680): *'To capture the relative importance of capital versus credit, I therefore divide the ratio of market capitalization to GDP by the ratio of private credit extended by deposit money banks to GDP. Scores above 1 reflect financial systems that are more based on the capital market, while scores below 1 reflect financial systems that are more based on credit'*. Refer to table 18 [in appendix 2.4](#) for the ratio scores that determined dominance of either equity or credit-based financial systems. Peru was assigned full membership score of 1 in the equity-based financial system and the remaining six countries (Colombia, Czech, Hungary, Poland, Turkey, and Greece) had a full membership score of 1 for the credit-based financial system. Furthermore, Peru had non-membership scores of 0 in the credit-based system and the remaining six countries had non-membership scores of 0 in the equity-based system.

#### **the skill development and control system:**

The education component of the human development index, provided by the United Nations (2020), was used to measure the skill development system of emerging markets. This is similar to previous research from Pezeskhan et al. (2016), who also employed Whitley's framework of national business systems. Furthermore, Lutz & Samir (2011), also supported using the education component of the human development index to measure the skill levels of human capital within a country, but they did recognize some limitations such as difficulties in standardizing classifications of education globally. However, the United Nations, which provide the dataset for the education component try to tackle this problem by creating the ISCED (international standard classification of education). The education component scores range from 0-1, where the higher the score the more developed the skill development system. The two variables that make up the education component are: the average years of schooling (AYS) for those who have completed their education AND the expected years of schooling (EYS) for those continuing their education. The calibration of this variable was based upon some anchor points already provided by the United Nations (2020) within the education index dataset. The following statements were based on statistics from 2019. So according to the United

Nations the scores respectively for least developed, medium developed, high developed and very high developed education systems are: 0.423; 0.531; 0.670; 0.858. One critical side note is that 0.670 is a very lenient classification, because more than 50% of the 160 countries achieve this. Having evaluated the scores of our sample they are all considerably above the third anchor point ([table 19, appendix 2.4](#)). Therefore, a cut-off point was calculated that lies between the high developed and very high developed education index. Thus, resulting in a cut-off point of  $(0.670 + 0.858)/2 = 0.763$ . Meaning that a score  $\leq 0.763$  was evaluated as a developing skill development system and thus be assigned a non-membership score of 0. Furthermore,  $\geq 0.763$  was evaluated as an advanced education system and thus be assigned full membership score of 1. This resulted in Colombia, Peru, and Turkey being assigned non-membership scores of 0 and Greece, Hungary, Czech Republic, and Poland being assigned full membership scores of 1. The variable for skill development and control system was named 'Education' within datasets.

### **Normative trust and authority relations:**

There is a need here to measure the levels of trust in formal institutions and the degree of their reliability according to Whitley (1999). From [section 2.3](#) it became clear that a lack of trust in these institutions could have a negative impact on firm innovation in emerging markets. Bowen & De Clercq (2008), discovered that variables measuring corruption could be used to capture Whitley's notion of trust. Thus, this thesis will capture the institution of trust with the WGI variable 'control of corruption' (Abbreviated as CoC). CoC is described as '*capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests.*' (Kaufmann, Kraay & Mastruzzi, 2011, p. 223). The scale of CoC ranges from scores of -2.5 to 2.5. **The lower the score on the CoC scale**, the less effective governance is to prevent corruption, resulting in higher amounts of corruption prevalent in the NBS which also **indicates low levels of trust**. Furthermore, the **higher the score on the CoC scale**, the more effective governance is to prevent corruption, resulting in lower levels of corruption being prevalent in the NBS **which also indicates high levels of trust**. The use of corruption variables to measure the degree of trust within an institutional system is supported in various papers which employed the national business systems theory, such as Bowen & De Clercq (2008) and Judge et al. (2014). Previous research which captured trust from a NBS perspective tended to use higher cut-off points for trust. For example (Hotho, 2014) used a cut-off point of 5.5 on a 7-point scale for full membership of trust. This would translate in a score of around 1.5 for the scale used by the WGI. However, the context for the research of Hotho (2014) was developed countries, which should be kept in mind as this thesis evaluated emerging markets where perceived trust in institutions are inherently lower (Zanello et al., 2016). When evaluating the means for the variable Control of

Corruption for the sample the following could be said. The mean of the sample was 0.009 ([table 21, appendix 2.4](#)). Taking both theoretical (Hotho, 2014) and empirical insights into consideration, the student deemed a cut-off point of 0,5 necessary to capture trust. Those countries scoring  $\leq 0.5$  were assigned non-membership scores of 0 indicating low perceived trust of the institutions. Those scoring  $> 0.5$  were assigned full membership scores of 1 indicating high perceived trust of the institutions. This resulted in non-membership for Colombia, Peru, Hungary, Greece, and Turkey (table 22, [Appendix 2.4](#)). Full membership scores of 1 were achieved for Poland and the Czech Republic (Table 22, [appendix 2.4](#)). The dimension of normative trust and authority relations was named 'Trust' within datasets.

### 3.2 comparing firm level data with country level institutional data

This thesis works with both firm level variables (firm innovation, managerial experience, and human capital) and country level institutional variables. It is advised to assign the scores of the country level institutional variables to each individual observation within each country (Schneider & Wagemann, 2012; Ragin, 2017). For example, Colombia was assigned a non-membership score of 0 to the NBS dimension 'skill development and control system'. This resulted in each firm (993 in total) being assigned a score of 0 for this variable, because every firm within Colombia operates within the same institutional environment. The previous process was applied to all countries for all institutional variables. The files for this process are too large to include within the appendix of this thesis, but they can be shown at request. Descriptive statistics are illustrated in table 17B ([Appendix 2.3](#)).

### 3.3 ethics

This thesis has adhered to all of the principles laid out by the Netherlands Code of Conduct for Research Integrity (Universities of the Netherlands, 2018). Firstly, the research process was conducted in an **honest** manner, meaning that no adjustments were made to data to present them in a favorable manner. Secondly, this thesis provided **scrupulousness** by using scholarly methods such as crisp set QCA and academic articles to substantiate results. Thirdly, this thesis is **transparent** by providing adequate information about the use of data and how it resulted in the interpretation of the results. **Transparency** was also reached through providing an extensive appendix. Readers are encouraged to utilize the hyperlinks connected to the references regarding the appendices as they guide you through the research process in a coherent manner. Furthermore, the results of this thesis were not distributed to any external parties, outside of the persons in charge of the grading, Ayse Saka-Helmhout and Bas van Heerwaarden. Fourthly, this research has been performed in an **independent** manner, meaning that the thesis has been written in an impartial manner. Lastly this research has been conducted in a **responsible** manner, meaning that both academic and societal

contributions are made as seen in chapter 1 and sections [6.1.1](#) and [6.1.2](#) of the thesis (Universities of the Netherlands, 2018).

This thesis used data from organization such as the World Bank and the United Nations, thus meaning no data was gathered by the researcher himself. Benefits include that dataset could not have been manipulated by the researcher himself to reach desired outcomes. To access data from the previously mentioned organizations, the researcher complied to the rules laid out by these organizations in order to access databanks (The World Bank, 2022; United Nations, 2020).

## Chapter 4 results from analysis

Before executing csQCA a few preparatory steps had to be made as illustrated below.

### 4.1.1 missing value analysis

An overall missing value analysis was not deemed necessary as the percentage on each variable stays considerably below the threshold of 10%, with the largest missing value being present within managerial experience at 2.5% (Hair et al., 2018; Field, 2017; Table 17B, [appendix 2.3](#)).



#### 4.1.2 Distribution statistics of variables

Field (2017), suggests that, when working with large sample sizes, it is recommended to assess the kurtosis and skewness of the variables paired with visual aids such as histograms to determine normality of a variable. Normality tests such as the Kolmogorov-Smirnov test and the Shapiro-Wilk test will not be useful when considering large sample sizes such as this thesis has with  $6763 \leq N \leq 6935$  (Field, 2017; table 74, [appendix 2.6](#)). Research from simulation studies by Kline (2011) suggest a skewness and kurtosis within the range of -3 and +3 for large sample sizes. Serious problems for statistical analysis in large sample sizes will only occur if the absolute values of kurtosis and skewness fall outside of a range between -10 and +10 (Kline, 2011). Furthermore Schneider & Wagemann (2012) mentioned that for QCA, skewed set memberships could result in illogical statements. Taking all of the previous into account I determine the following. Firstly, there are no significant problems regarding skewness as each membership distribution falls in the accepted range of -3 to 3 (table 74, [appendix 2.6](#)). Secondly, there seems to be one outlier regarding kurtosis, which is the experience of managers at 5.644 (table 74, [appendix 2.6](#)). The kurtosis value for experienced managers is still below the threshold of 10 and thus has a low likelihood of posing serious problems (Kline, 2011). Furthermore, Schneider & Wagemann (2012), did not mention anything about kurtosis being important to consider for normality in QCA methods. Taking everything into account as well as the histograms (Table 74, [appendix 2.6](#); figure 1- figure 8, [appendix 2.6](#)), I conclude that the sample for each variable is sufficiently normally distributed and thus that there is a low likelihood of making illogical inferences about the results of the research from this thesis (Kline, 2011; Schneider & Wagemann, 2012).

#### 4.1.3 factor analysis of WGI variables

Pezeskan et al. (2016) suggested it would be useful to make a composite variable for measuring the state institutions within the NBS. Making a composite required the use of a factor analysis. Please refer to [appendix 2.2](#) for the extensive process regarding the factor analysis, including both textual and visual support/elaborations. Including the full factor analysis within the main text of the thesis would deviate too much from the main QCA analysis, which is why it has been placed in the appendix.

According to Kaufmann et al. (2011), the WGI are highly correlated which is appropriate for a factor analysis (Hair et al., 2018). Three WGI variables (Government effectiveness, regulatory quality, and rule of law) illustrated the effect of the state within the NBS as illustrated by Pezeskan et al. (2016). Having conducted the factor analysis it seems that these 3 variables all load significantly on one factor, which explains 94.9% of the total variance (Table 14, [appendix 2.2](#)). Furthermore, all factor loadings exceed the threshold of 0.7 as they all are above 0.9, thus providing substantial practical

significance (Hair et al., 2018; Table 15, [appendix 2.2](#)). Lastly the factor is reliable as  $\alpha=0.973$  which exceeds the threshold of  $\alpha \geq 0.7$  and no improvements could be made by the removal of a variable (Hair et al., 2018; Table 16-17, [appendix 2.2](#)). Thus, the three WGI indicators were computed into one variable which measures the effectiveness of the institution called 'state.' To create a variable which captures the three variables simultaneously a summated scale was created with equal weighting (Syntax [appendix 2.2](#)). Equal weighting was utilized, as there were no substantial differences in factor loadings (Hair et al., 2018; Table 15, [appendix 2.2](#)). Concluding, the composite variable called 'state' measures the effects from the state institutions within the NBS and ranges from -2.5 to +2.5.

## 4.2 csQCA

Having conducted the preparatory steps, it is possible to execute a csQCA. To start off, the SPSS files were converted into \*.dat (tab delimited) formats. This had to be done in order for the program fsQCA 3.0 to be able to open the files (Ragin, 2017). Furthermore, csQCA methods are not sensitive to sample sizes and the method can be applied whether there are tens, hundreds, or thousands of cases within a dataset (Schneider & Wagemann, 2012, p. 77). The total sample size of this thesis consists of 6935 cases which should thus not pose a problem for csQCA (Table 17B). Furthermore Schneider & Wagemann (2012), suggest three to eight conditional variables which this thesis adheres to with seven conditions. To start off the csQCA, researchers need to check for the existence of necessary conditions within the dataset. Necessary conditions are conditions that always have to be present in order for the outcome variable to be present as well. Necessary conditions individually often are not able to explain the outcome variable, but they will always be present in the mix of conditions to produce an outcome (Duşa, 2018). The statistical threshold which indicates the presence of necessary conditions is the consistency score  $> 0.9$  (Schneider & Wagemann, 2012; Ragin & Fiss, 2008). Consistency statistics illustrate the relative empirical strength of the configurations. Secondly, csQCA requires an analysis of sufficient conditions. 'A condition can be considered sufficient if, whenever it is present across cases, the outcome is also present in these cases.' (Schneider & Wagemann, 2012, p.57). However, unlike a necessary condition, an outcome can also occur in the absence of a sufficient condition. A table which facilitates the understanding of sufficient conditions and necessary conditions will be illustrated below in table C.

Nature of condition (X1 vs X2)	Outcome (Y1 or $\sim Y1$ )
X1	Y1
$\sim X1$	$\sim Y1$
X2	Y1
$\sim X2$	Y1

Table C: X1=necessary condition; X2=sufficient condition; Y1=outcome variable; ~ = absence

Threshold statistics include consistency scores  $> 0.75$  for a condition to be considered as sufficient (Schneider & Wagemann, 2012). To establish consistency scores for conditions and configurations of conditions a truth table is constructed. An important aspect of the truth table to consider is the frequency threshold. A frequency threshold illustrates the minimum number of cases that need to be present within a configuration to consider them as relevant for interpreting results from the research. For example, when the frequency threshold is set at 15, it means that at least 15 cases need to be present within a configuration for them to be considered relevant for analysis (Ragin, 2017). Theory surrounding frequency thresholds suggests a cut-off value of around one or two when the sample size is smaller than 150 (Greckhamer, Misangyi & Fiss, 2013). However, this thesis utilizes a considerably large dataset of 6935 emerging market firms, where 2684 firms show some kind of innovative tendencies (table 30, [appendix 2.5.A](#)). Contemporary research has not been able to determine an appropriate frequency threshold for large sample size QCA (Ragin, 2017; Greckhamer et al., 2013). However, it is suggested that the frequency threshold should be substantially larger than small sample QCA's, especially if research is of exploratory nature such as this thesis (Greckhamer et al., 2013). The danger of setting a low frequency threshold for large sample size QCA's is the inclusion of 'rare' configurations which are the result of random forces or measurement errors (Greckhamer et al., 2013). In such instances it is suggested to utilize empirical data to determine a threshold. For example, Ragin & Fiss (2008) utilize an inclusion of 80% of the cases as a threshold. Furthermore, it is preferred to have a high number of cases present within the configuration as it increases the validity of the results. Despite of this, Greckhamer et al. (2013) also recognize that it still might be useful to consider rare configurations. Greckhamer et al. (2013) suggest experimenting with both large and small frequency cutoffs in large sample QCA. This thesis will adhere to this advice by firstly focusing on the more stringent frequency threshold in the main analysis resulting in a focus on the more coarse-grained dominant configurations. Secondly within a subsection of the robustness checks this thesis will present the analysis with a less stringent frequency threshold in order to analyze the relatively rare configurations. Other relevant statistics for csQCA include coverage values which capture the empirical relevance of configurations. So, in simpler terms the coverage illustrates how much of an outcome is covered by a set of conditions (Schneider & Wagemann, 2012). Within coverage statistics there are distinctions between the solution coverage, raw coverage, and unique coverage. The solution coverage illustrates how much of the outcome is covered by all the configurations. The raw coverage illustrates the amount of the outcome that is explained by an alternative path. The unique coverage describes how much of the outcome can be attributed exclusively by one single configuration (Schneider & Wagemann, 2012).

After analyzing the necessary conditions and sufficient conditions for the positive outcomes, the researcher should do the same step wise analysis for the negative outcome to check for causal (a)symmetry and finally present the overall results. One additional aspect to mention is that of prime implicants. This thesis will mainly use the ‘standard analyses’ within the program, fsQCA 3.0 and use theoretical knowledge to select prime implicants when necessary (Ragin, 2017). Standard analyses provide the researcher with logical minimizations. Lastly robustness checks have to be conducted, which illustrate how valid the results are. Conducting the csQCA resulted in the following configurations as shown in table Z and table E.

#### 4.2.1 analysis csQCA presence firm innovation

Firstly, a test for necessary conditions was conducted. Managerial experience (consistency = 0.9052), just passes the threshold of 0.9, meaning that at least nine out of ten times managerial experience is observed if firm innovation occurs within an emerging market firm (Table 31, [appendix 2.5.A](#)). Thus, meaning that managerial seems to be a key factor in explaining firm innovations among emerging market firms. Secondly, a test for sufficient conditions was conducted, which identifies whether there exist configurations of conditions that result in the presence of firm innovation. To do this a truth table has to be constructed (Schneider & Wagemann, 2012). The truth table also illustrates the number of cases that represent a certain configuration and its relation to either the presence or absence of firm innovation. As discussed in [section 4.2](#) within the main analysis of csQCA I will utilize a more stringent measure for frequency thresholds. This results in a cut-off value of 148 in the main analysis which accounts for roughly 6% of innovative firms and it still captured 92% of the cases (Table 32, [appendix 2.5.A](#)). After determining the cut-off point for the frequency of cases, it resulted in one sufficient configuration where consistency = 0.8 and solution coverage = 0.19 (table 33 and 34, [appendix 2.5.A](#)). The solution coverage at 19% means that the configuration accounts for 19% of the of the cases which illustrate the presence of firm innovation. This coverage is neither high or low and it should be considered that there could be other combinations of conditions which might be able to explain firm innovation better. However, this coverage could still be of great theoretical and substantive importance (Schneider & Wagemann, 2012). The resulting configuration is presented below in table Z.

Presence firm innovation	
Configuration	1
Firm resources:	
<b>Managerial experience</b>	●
<b>Human capital</b>	●●
Institutional variables (NBS):	
State influence: <b>State</b>	⊗

Financial system: <b>Equity</b>	●
Financial system: <b>Credit</b>	⊗
Skill development and control system: <b>Education</b>	⊗
Normative trust and authority relations: <b>Trust</b>	⊗
Consistency	0.80
Raw coverage	0.19
Unique coverage	0.19
Solution consistency	0.80
Solution coverage	0.19

Table Z: ● indicates the presence of a condition, ⊗ indicates the absence of a condition, the larger circles indicate a core condition, the smaller circles indicate peripheral conditions, empty cells indicate a ‘don’t care’ response (Fiss, 2011).

At the end of [section 2.4](#) I proposed that: ‘*firm innovation can only occur by considering configurations between firm resources and institutional elements within the NBS*’. From configuration 1 ([table Z](#)) it seems that an emerging market firm is able to foster innovative outputs once it possesses an experienced manager and highly trained human capital AND is operating in a national business system (institutional environment) characterized by an equity-based financial system. Once these conditions are present probability of firm innovation occurring increases even if other institutional aspects are absent or lacking such as property right protection by the state, high level of education within the skill development system, and sufficient levels of trust in the institutions. Configuration 1 (table Z) thus establishes that firm innovation can only occur if certain firm resources are utilized in a specific NBS, thus confirming the proposition made in [chapter 2.4](#). Furthermore, it should be noted that there is no equifinality present, due to the presence of only one single pathway which results in firm innovation (Misangyi et al., 2017). Overall configuration 1 further underscores the importance of the idea of a fit between the institutional environment and firm resources. Furthermore, there is no single firm resource or institutional aspect on its own which can foster the presence of firm innovation among emerging market firms, thus opposing research which focuses on the direct effects of either resources (Barney, 1991; Roper & Love, 2006) or National Business Systems (Pezeskhan et al., 2016) on firm innovation. Consequently, the configuration illustrates that human capital, and the financial system are core conditions, and thus important to consider within the discussion of this thesis. Lastly one interesting result from the configuration in table Z is that there was high quality human capital and a lowly developed skill development system within the NBS. Note that human capital was measured by the presence of formal training to full time employees. This might indicate that on the job training might be more essential for firm innovation in emerging markets rather than a well-developed skill development system. These results are likely to only persist in the short term, rather than the long term. Reasoning as to why this is the case is due

to the fast-paced nature of institutional changes occurring in emerging markets (Kumar et al., 2013; Marquis & Raynard, 2015). Overall, some theoretical aspects presented in chapter 2 were confirmed such as the importance of managerial experience (Badir et al., 2020; Back et al., 2014; Custódio et al., 2019), human capital (Capozza & Divella, 2019) and an equity-based financial system (Nassr & Wehinger, 2016; Klonowski, 2012; Wu et al., 2016) for firm innovations. Other aspects were not expected; however, everything will be extensively discussed in chapter 5.

#### 4.2.2 csQCA for absence of firm innovation

After analyzing the configuration which resulted in the occurrence of the outcome it is necessary and good practice to perform an additional analysis for the non-occurrence of the outcome (Schneider & Wagemann, 2012). There are two reasons as to why the non-occurrence of firm innovation should be investigated. Firstly, the researcher should investigate whether the configuration which explained the occurrence of the outcome also explains the non-occurrence of the outcome. It would not make sense for the same configuration to explain both the occurrence and non-occurrence of an outcome and if this is the case the researcher has to deal with this contradiction appropriately (Schneider & Wagemann, 2012). Secondly, it is good practice to investigate the non-occurrence of the outcome to check for causal symmetry or causal asymmetry in the configurations (Schneider & Wagemann, 2012; Pappas & Woodside 2021). Causal symmetry in a crisp set would indicate that the configuration which explained the occurrence of an outcome could be completely reversed to explain the non-occurrence of an outcome. Causal asymmetry, however, indicates that the configuration which explains the occurrence of firm innovation does not necessarily help to explain the absence of firm innovation. Within this thesis causal asymmetry is expected due to the causal complexity surrounding firm innovation and the difficulty of reaching a causal symmetrical solution with QCA (Misangyi et al., 2017; Scheider & Wagemann, 2012). To check for configurations which result in the absence of firm innovation, this thesis proposes that: *The absence of firm innovation can only be explained by considering configuration(s) between firm resources and institutional elements within the NBS.*

So, the first step once again is to analyze whether there are any necessary conditions present. After evaluating table 35 ([appendix 2.5.A](#)), it seems that three of the conditions, namely Credit, ~Equity and Managerial experience, passed the threshold (consistency > 0.90). Thus, meaning that the condition of a credit-based financial system and an experienced manager should always be present if one wants to explain the absence of firm innovation. The next step was to form a truth table which revealed the sufficient conditions for the absence of firm innovation to occur. Table 36 ([appendix 2.5.A](#)) revealed 4 configurations which surpassed the threshold (raw consistency > 0.75). These configurations might explain the absence of firm innovation in emerging markets. However, one of

the configurations (the fourth row, [table 36](#)) contradicts the necessity statement. In this configuration an experienced manager is absent which should not be possible according to the necessary conditions analysis in table 35 ([Appendix 2.5.A](#)). Thus, there is an incoherent counterfactual present which asks for an Enhanced Standard analysis (ESA) (Schneider & Wagemann, 2012). In ESA researchers remove rows which contain data that contradict the necessity statements, thus removing the fourth row in table 36 is the solution. Due to the enhanced standard analysis and logical minimization two configurations remain as can be seen from solution table 37 ([appendix 2.5.A](#)) and from table E below.

configurations which explain the absence of firm innovation		
Outcome	~Firm innovation	~Firm innovation
Configuration	1	2
Firm resources:		
<b>Managerial experience</b>	●	●
<b>Human capital</b>	⊗	⊗
Institutional variables (NBS):		
State influence: <b>State</b>	●	⊗
Financial system: <b>Equity</b>	⊗	⊗
Financial system: <b>Credit</b>	●	●
Skill development and control system: <b>Education</b>	●	⊗
Normative trust and authority relations: <b>Trust</b>		⊗
Consistency	0.77	0.78
Raw coverage	0.28	0.25
Unique coverage	0.28	0.25
Solution consistency	0.75	
Solution coverage	0.53	

Table E: ● indicates the presence of a condition, ⊗ indicates the absence of a condition, the larger circles indicate a core condition, the smaller circles indicate peripheral conditions, empty cells indicate a ‘don’t care’ response (Fiss, 2011).

So, two configurations within this study resulted in the absence of firm innovation within emerging market firms. These configurations overall were able to cover 53% of the non-innovative outcomes and thus is able to explain a decent amount of the absence of firm innovations in emerging market firms (table 38, [appendix 2.5.A](#)). The configurations which resulted in the absence of firm innovation will always be denoted with a tide symbol ~ in text. Thus, when configuration 1 is mentioned, the configuration from table Z which resulted in the presence of firm innovation is illustrated. However, if ~configuration 1 is mentioned the configuration from table E which resulted in the absence of firm innovation is described.

~Configuration 1 in table E illustrates that absence of firm innovation occurs when there is an absence of high-quality human capital and a NBS characterized by the absence of an equity based financial system. Other conditions which should supposedly contribute to fostering firm innovation are present within ~configuration 1 (Table E) such as an experienced manager (Capozza & Divella, 2019), strong state institutions (Wang et al., 2015; Alam et al., 2019; Blind et al., 2017), and a well-developed skill development system (Sun et al., 2020). Trust is an indifferent variable within ~configuration 1 (Table E), which is against expectations of research such as (Zanello et al., 2016).

~Configuration 2 in table E illustrates the absence of firm innovation if an experienced manager is present and the NBS is characterized by the dominance of a credit-based financial system in combination with the absence of human capital and other institutions such as a strong state institutions (good property right protection, effective rule of law, effective government), a strong skill development system and sufficient amounts of trust by the public in the institutions. ~Configuration 2 denotes that an experienced manager on its own cannot provide the firm with innovations if other resources and institutions are absent. Overall, the configurations which resulted in the absence of firm innovation really drive home the importance of both human capital and the equity-based financial system within the NBS. The importance of human capital (Badir et al., 2020; Capozza & Divella, 2019) and the financial system (Nassr & Wehinger, 2016; Klonowski, 2012; Wu et al., 2016), individually were already recognized as factors that could affect firm innovation. The results of this thesis establish that when there is an absence of high quality human capital and an absence of an equity-based financial system it becomes increasingly difficult for emerging market firms to innovate even when other institutional factors are present which supposedly should facilitate firm innovation such as effective state institutions (combination of good protection of property rights, regulatory quality and government effectiveness) and a strong skill development system. Overall, the second proposition made at the end of the first paragraph of [section 4.2.2](#) was also confirmed in the sense that various configurations of the institutional environment and firm resources resulted in non-innovative outcomes for emerging market firms. Furthermore, Asymmetric causation was found in the negative outcome when compared to the positive outcome which was expected. The aforementioned means that outcomes which have resulted in the presence of firm innovation in emerging markets (Configuration 1 table Z) cannot help to explain the absence of firm innovation in emerging markets, which illustrates the causal complexity of firm innovation in emerging markets. Embracing causal complexity as proposed by Misangyi et al (2017), thus seems to be necessary for firm innovation in emerging markets.



### 4.3 robustness checks

To check whether results are robust it is suggested to recalibrate conditions in various manners and compare them to the results from initial configurations (Schneider & Wagemann, 2012). Variables such as firm innovation, human capital, and the financial system were not available for recalibrations due to a binary nature. Values in these variables can only be either this or that and no in between is possible making recalibrations illogical. Consequently, four variables were open for recalibration such as managerial experience, state quality, skill development system and the normative trust. Furthermore, a less stringent frequency threshold will be used as a robustness check as suggested by Greckhamer et al (2013).

So firstly, managerial experience was recalibrated to establish whether a more stringent classification of experience would provide different configurations. 90.5% of the managers within the original calibration were experienced (6121/6763). When opting for a more stringent cut-off point of 15 years in the recalibration, only 78.7% of the managers were perceived to be experienced (table 39 [appendix 2.5.1](#)). Opting for a more stringent cut-off point of 15 years for managerial experience is justified, because other studies such as Saka-Helmhout et al. (2020) also utilized this cut-off point in robustness checks. The recalibration of managerial experience resulted in the same configurations for explaining the presence of firm innovation, but managerial experience was no longer a necessary condition within this configuration (consistency = 0.79) as seen in tables 40-44 ([appendix 2.5.1](#)). Furthermore, three new configurations for explaining the absence of firm innovation appeared (table 45-47, [appendix 2.5.1](#)). Thus, from the recalibration of managerial experience it seems that the configurations for explaining the presence of firm innovation are robust, while the configurations for the absence of firm innovation have to be doubted. However, this thesis integrated a theoretical cut-off point of 10 years suggested by Ayyagari et al (2011), which is why the initial results will be deemed of more relevance.

As for recalibrating trust I opted to lower the threshold by 0.5 points in order to come closer to the sample mean for a cut-off point. This resulted in a cut-off point of 0 for trust which meant that full membership was now attained by Hungary as well (next to Poland and Czech Republic). The previous indicates I now view it as an institutional environment with sufficient levels of trust within it. It seems that the recalibration resulted in the same configurations for the presence of firm innovation (table 49-52, [appendix 2.5.2](#)). As for configurations explaining the absence of firm innovation there were two, one of them being completely similar to the main analysis and the other being new (table 53-55, [appendix 2.5.2](#)). The recalibration of trust supports the robustness completely for the configuration which predicted a presence of firm innovation. Furthermore, the recalibration partly supports configurations which explain the absence of firm innovation.

For the recalibration of the skill development system of the NBS, I opted to use the fourth anchor point provided by the United Nations (2020), which illustrated the very high developed education systems at a cut-off point of 0.858 on the education index. This resulted in two out of the seven markets attaining full membership on the institutional dimension of education, namely, Poland and the Czech Republic (table 56-58, [appendix 2.5.3](#)). Non-membership scores of 0 were acquired by Peru, Colombia, Greece, Hungary, and Turkey. Thus, 27% of the sample was now viewed to have strong education systems, while the others were perceived to have weak education systems (table 56-58, [appendix 2.5.3](#)). The recalibration resulted in the same configurations for the presence of firm innovation (Table 59-61, [appendix 2.5.3](#)). As for the configurations for the absence of firm innovation, I noticed that there were two configurations. When comparing table 37 ([appendix 2.5.A](#)) and table 64B ([appendix 2.5.3](#)) it can be established that these two configurations were also present within the original analysis within intermediate solution 2 and intermediate solution 3. Thus, overall, the configuration for both the presence and absence of firm innovation are fully robust.

Lastly, I recalibrated the STATE dimension of the NBS to evaluate the robustness of the findings. Originally a cut-off point of 0.34 was decided upon, however for the recalibration I opted to use a stricter cut-off point of 1 to determine whether the NBS was characterized by strong or weak state institutions. The new cut-off point resulted in the Czech Republic being characterized by strong state institutions while all the other remaining countries were characterized by weak state institutions. The configuration which illustrated the presence of firm innovation remained identical (table 68-70, [appendix 2.5.4](#)). As for the absence of firm innovation 2 configurations emerged (table 72 & 73, [appendix 2.5.4](#)), one of which was identical to the third intermediate solution in table 37 ([appendix 2.5.A](#)) from the original csQCA. The other configuration was new. Consequently, the configuration which illustrates the presence of firm innovation is robust, whereas the configurations for the absence of firm innovation are partially robust.

#### 4.3.1 robustness checks: less stringent frequency threshold (outcome = presence firm innovation)

As Greckhamer et al. (2013) mentioned it is interesting to consider experimenting with frequency thresholds for large sample csQCA. A cut-off threshold of 27 will be used for recalibrations in order to see what relatively rare configurations might exist to foster firm innovation. A frequency threshold of 27 cases captured 99% of all cases, meaning that almost every configuration has been considered (table 75, [appendix 2.7](#)). Firstly, a necessary conditions analysis was conducted which led to the same results as the main analysis, so please refer to table 31 ([appendix 2.5](#)). Thus, managerial experience (consistency = 0.9052) is still a necessary condition. Secondly a truth table was constructed (Frequency cut-off = 27; consistency  $\geq 0.75$ ), which resulted in the appearance of one more configuration that resulted in the presence of firm innovation besides, the already established

configuration. Thus, two configurations of conditions sufficiently resulted in the presence of firm innovation (Table 76; [appendix 2.7](#)). The subsequent step was to conduct a standard analysis to illustrate the coverage statistics and integrate the processes of logical minimization to reduce the results from the truth table into configurations (Table 77-79, [appendix 2.7](#)). The resulting configuration is illustrated in the table D ([appendix 2.7](#)). There is however a problem with the additional configuration which appeared. The new configuration establishes that the absence or presence of managerial experience does not matter. This contradicts the statement of necessity which provided the information that managerial experience should always be present in order to explain the presence of firm innovation in emerging markets. Schneider & Wagemann (2012, p.198), define this pitfall as an incoherent counterfactual which occurs when: ‘researchers make a claim of necessity but then also allow a logical remainder to be part of a sufficiency solution that contradicts that claim of necessity’. To resolve incoherent counterfactuals, it is advised to utilize Enhance Standard Analysis (ESA), which is a straightforward resolution (Schneider & Wagemann, 2012). ESA requires one to delete any rows which contain configurations that contradict the necessary condition analysis manually. Consequently, row 1 in table 76 ([appendix 2.7](#)) was removed because it contradicted the necessity statement for managerial experience. When analyzing the standard analysis after the removal of the contradictory configuration, it resulted in the exact same configuration for the presence of firm innovation as the main analysis except for the lower consistency cut-off threshold of 27, thus illustrating complete robustness (Table 80B, [appendix 2.7](#); Table 33, [Appendix 2.5](#)). The robustness check of a less stringent frequency threshold potentially allowed for the inclusion of configurations that were the result of measurement errors, thus causing for the contradiction of the necessity statement. This robustness check hints at the utility of a higher frequency threshold for large sample size QCA’s.

#### 4.3.1 robustness checks: less stringent frequency threshold (outcome = absence firm innovation)

As for testing for the absence of firm innovation under the less stringent threshold frequency threshold the following results were obtained. Firstly the necessary conditions analysis resulted in the same results as the main analysis so please refer to table 35 and [section 4.2.2 \(Appendix 2.5\)](#). Next a truth table was constructed, which resulted in 5 sufficient configurations of conditions that explained the absence of firm innovation (Table 82, [appendix 2.7.1](#)). However, once again there were some configurations that contradicted the statements of necessity. These rows were deleted by an Enhanced Standard Analysis as advised by Schneider & Wagemann (2012). Table 82B establishes the truth table after deletion of rows which contradicted the necessity statement. After deletion it is possible to execute the original standard analysis and can be found in table 83 & 84 ([appendix 2.7.1](#)). Comparing the configurations to the ones in the main analysis I notice that they are the same. Thus,

once again proving the robustness of the results. Furthermore, this once again indicates the utility of a higher frequency threshold for large sample QCA, because the lower frequency threshold only resulted in the inclusion of illogical configurations which contradicted the necessity statements.

#### 4.5 concluding remarks chapter 4

The results provide some interesting discussion materials such as the importance of managerial experience, human capital, and the financial system to provide conducive conditions for firm innovation in emerging markets. Furthermore, after extensive and strict robustness checks it can be established that the results for the presence of firm innovation are fully robust, while the results for the absence of firm innovation are partially robust.

### Chapter 5 discussion

The aim of this thesis was to establish how firm innovation could occur within emerging markets. To achieve this aim, this thesis utilized theory from the resource based perspective and National Business Systems perspective, to find out what configurations between resources and institutional environments shaped innovation in emerging market firms. Several conditions on the basis of these perspectives such as managerial experience, skill level of human capital, state institutions, financial system, skill development system, and normative trust relations were utilized. This chapter will discuss the findings from chapter 4 in the light of the state-of-art debates within literature presented

in chapter 2, and if necessary additional academic sources will be collected to elevate the discussion to the next level.

Theory presented in chapter 2 illustrated that the presence of resources such as managerial experience (Badir et al., 2020; Back et al., 2014; Custódio et al., 2019), Human capital (Capozza & Divella, 2019) directly affects the presence of firm innovative outcomes in emerging markets. Furthermore, research suggested that the presence of strong state institutions (Wang et al., 2015), dominance of equity based financial systems (Nassr & Wehinger, 2016; Klonowski, 2012; Wu et al., 2016), strong skill development systems (Sun et al., 2020), and sufficient levels of trust in the formal institutions (Zanello et al., 2016; Hoskisson et al., 2000) individually contributed to firm innovation in emerging market firms. Results from configuration 1 (Table Z) illustrates that emerging market firms foster innovation when a combination of high-level resources (such as experienced managers, formally trained human capital) are present and the firm is operating in a NBS characterized by an equity-based financial system, weak state institutions, underdeveloped skill development system, and low trust in formal institutions. Configuration 1 highlights that firm innovation is not something that can occur by the force of either firm resources or institutions alone, they interact in a specific manner to result in firm innovation. Configuration 1 thus, challenges the idea of direct effects from either institutions (Pezeskhani et al., 2016) or firm resources (Roper & Love, 2006; Barney, 1991) on firm innovation while conforming with the view that firm resources and institutions should be combined to understand innovation as proposed by studies such as Barasa et al. (2017), Saka-Helmhout et al. (2020), and Hoskisson et al. (2000). Furthermore, configuration 1 establishes that when a researcher considers a configurative view between firm resources and NBS, some institutions can be absent in emerging markets to foster firm innovation (such as strong state institutions, a developed skill development system, and sufficient levels of trust) which was inconceivable when one considered institutions individually.

To understand configuration 1 (table Z) and why certain conditions are present while others are absent, it could be useful to incorporate some additional academic insights. Several studies (Atanassov, 2016; Atanassov et al., 2007; Bergemann & Hege, 2005), illustrate that managers of firms who rely on external financing in an institutional environment characterized by equity-based financial systems are able to produce more innovative outputs, because they are allowed more discretion than counterparts who operate in credit-based financial institutional environments. Reason as to why managers are given more discretion in equity-based systems is vested in information asymmetry. Within credit-based financial systems as explained in chapter 2 banks are the institutions which allocate the financial resources within the NBS (Whitley, 1999). Banks by nature are risk averse and thus, often want to reduce risks as much as possible when providing firms

with loans (possible (Wu et al., 2016; Müller & Zimmerman, 2009)). An additional method of risk reduction, besides collateral, is acquisition of information about every aspect of the business. Thus, when firms operate in a financial system dominated by relationship-based lending (which is the case in credit-based systems) they are often required to provide sufficient information before gaining access to external finance from banks (Bergemann & Hege, 2005). Thus, information asymmetry in credit-based systems is reduced when banks gain access to private information of firms (such as finances and innovation plans). There are some downsides to the reduction of information asymmetry for emerging market firms regarding firm innovation (Wolf, 2011; Yim, 2020). For example, the decision to keep providing the emerging market firm with external finance depends on the ability of banks to appreciate the ideas for innovations that emerging market firms have. The ability of banks to appreciate risky endeavors such as firm innovation is often tainted by bias and a lack of expertise which can overall result in premature shutdowns of innovations when banks decide to pull finances from the firms (Atanassov, 2016; Bergemann & Hege, 2005). Thus, managers in credit-based systems are overly restricted in how they approach firm innovations because they are constantly monitored by the banks and are at risk of banks pulling finances if they think that something is too risky. In equity-based financial NBS investors are more geared towards risks taking and often have more of an intricate understanding about the firms they are investing due to experience (Atanassov, 2016; Bergemann & Hege, 2005). This intricate understanding of the industry often makes investors from equity-based financial system, better able to appreciate the potential of innovations, which at first sight might seem risky. Overall, within equity-based NBS firms are less at risk of investors pulling out because firm innovations seem risky. Overall, investors from equity-based systems seem to feel more comfortable with giving discretion to managers, because they appreciate the potential of innovations and are more geared towards risk taking than banks who adopt more of a hands-on approach, thus restricting managers in their decision-making processes in innovation projects. The previous has been confirmed to also be the case in the emerging market contexts (Wolf, 2011; Yim, 2020). Furthermore, discretion is something that can only be used effectively if managers are experienced which could explain why within the configuration there is a presence of experienced managers (Caza, 2011). Chapter 2 illustrated that experienced managers potential impact on firm innovation, and while it might not have been explicitly mentioned, managers are often the ones who get the ball rolling for firm innovation (Papadakis & Barwise, 2002). Managers take in detailed environmental cues or internal cues from human capital to decide whether certain ideas (innovations) might be worth pursuing. If a manager is operating in an equity based financial system the manager has more discretion and is thus able to engage in creative and outside of the box thinking which is necessary for initiating firm innovation (Bello, Radulovich, Javalgi, Scherer & Taylor, 2016). Even if other factors are absent such as trust, a developed skill development system and

supporting state institutions, it will not inhibit the discretion of managers to pursue firm innovation. Another aspect to consider within this configuration is the presence of human capital as a core condition, which might indicate that experienced managers left at discretion in an equity-based system have the possibility to utilize human capital effectively to encourage and gather ideas for innovations.

Configurations which resulted in the absence of firm innovation can also add some additional insights to the phenomenon of firm innovation in emerging markets. The configurations emphasize the significance of skilled human capital and an equity-based financial system. Both aspects were absent in the configurations which explained the absence of firm innovation (table E), while in configuration 1 (Table Z) these conditions were present. Furthermore, managerial experience is present within all configurations (Table Z; Table E). Thus, it could be argued that managerial experience is a complementary factor that can only contribute to firm innovation if skilled human resources are at disposal while concurrently operating in NBS characterized by the dominance of an equity-based financial system. If skilled human capital is not present and managers have less discretion over the decision-making process regarding firm innovation due to operating in a credit based system, then it is likely they cannot innovate even if other institutional forces are present (~configuration 1, table E) which supposedly should encourage innovative behavior by firms such as strong property right protection (Wang et al., 2015) and a high quality of the skill development system (Sun et al., 2020; Capozza & Divella, 2019). The previous emphasizes that human capital is a main driver for firm innovation and that managers are likely dependent on human capital for inputs on innovation, as well as the execution of firm innovation which is in line with expectations from several papers (Capozza & Divella, 2019; Ayyagari et al., 2011), but this thesis adds to it that it can be the main driver in combination with other conditions such as the presence of an equity-based financial system while other institutions are lacking such as trust, education and property right protection. The configurations which illustrated the absence for firm innovation also established causal asymmetry for firm innovation in emerging markets, thus confirming the need to embrace causal complexity for firm innovation (Misangyi et al., 2017).

Further interesting aspects to consider are the absence of institutions within the NBS that when researched individually contributed to firm innovation, but in the combination with other firm resources and institutions were absent. The absence of strong state institutions and sufficient levels of normative trust within the NBS, can be understood to an extent by considering the presence of an equity-based financial system, an experienced manager and transaction cost economics. Studies which researched the individual effects of the state and trust as institutions on firm innovation in emerging markets mainly did so from the perspective of transaction cost economics (Alam et al.,

2019; Blind et al., 2017; Wang et al., 2015; Zanello et al., 2016;). If aspects of these institutions were lacking, it was argued to increase the transaction costs within the market. Thus, pushing innovative activities outside the scope for many firms in emerging markets as they are characterized by SME's which do not possess a lot of resources (The World Bank, n.d.; Rosenbusch et al., 2011). However, equity-based financial systems are present which should ease the access to capital for emerging market firms (Nassr & Wehinger, 2016; Klonowski, 2012; Wu et al., 2016). Easier access to capital in equity-based financial systems for emerging market firms does not reduce transaction costs within the market, however it does reduce the impact the high transaction costs can have on the emerging market firm.

Furthermore, managerial experience can reduce the transaction costs which are caused by the lack of trust and strong state institutions within a NBS. Trust, in this thesis was measured by the variable control of corruption, where low control of corruption indicated a lack of trust and thus high corruption levels (Bowen & De Clerq, 2008; Judge et al., 2014). Experienced managers have likely encountered corruption multiple times in these environments characterized by low trust and weak state institutions, which in turn allows the manager to realize that there is a high likelihood that bribes are needed to secure the success of business endeavors such as innovation, rather than relying on the fairness and neutrality of the officials operating within the institutions (Anokhin & Schulze, 2009). Experienced managers are thus likely to understand corruption within the system which enables them to effectively utilize strategies to deal with the issues related to corruption (Krammer, 2019). The previous, might thus indicate a greasing effect of experienced managers for firm innovation in NBS characterized by corruption and weak state institutions. This finding contrasts other research which did not find a link between experienced managers and more effective circumvention of the negative effects of corruption (Aidt, 2009). Overall, as emerging market firms gain access over financial resources and experienced managers they are likely to consider firm innovation as a viable strategy to gain an edge over competitors, despite high transaction costs caused by the absence of trust and strong state institutions.

One final intriguing feature of configuration 1 (table Z), is vested in the dynamic nature between human capital (measured through formal training) and the skill development system (measured through the education index). Na (2021) illustrated that the effects of general education on firm innovation in emerging markets (Skill development systems) were marginal when compared to formal training of human capital. Similar results were obtained by van Uden et al. (2017), in the developing market context. Configuration 1 (table Z) illustrates that when configuring multiple conditions, highly skilled human capital has to be present while an advanced skill development systems was absent. Configuration 1 (table Z) thus establishes that firm level trainings might have a



substitutive effect for the institutional voids within the skill development systems of the NBS. Thus, confirming the importance of industry specific knowledge gained through formal training rather than general education levels when producing firm innovative outcomes in emerging markets (Na, 2021; van Uden et al., 2017). The substitutive effect of formal training could be understood by considering the fast-paced changes occurring within emerging markets (Marquis & Raynard, 2015). The knowledge gained from education which could have contributed to firm innovation is now at risk of becoming obsolete quickly in the emerging market context. Therefore, it becomes imperative to continuously update the knowledge repository of human capital through formal training to contribute to firm innovation in emerging markets. Furthermore, the substitutive effect of formal training could be explained by the fact that formal training is effective in fostering incremental and process innovations, while high education levels seem to provide more benefits to fostering radical product innovations (Goedhuys & Veugelers, 2012). Incremental and process innovation are concurrently the more prevalent type of innovations in emerging markets as also illustrated in chapter 2 (Capozza & Divella, 2019), which might indicate the effectiveness of formal training of employees compared to general education levels when fostering firm innovation.

## Chapter 6 conclusion

The research question of this thesis was: **‘How do internal firm resources configure with national business systems to shape firm innovation in emerging markets?’**

The results illustrate that there is only one pathway to firm innovation in emerging market firms. This pathway could be one of the missing puzzle pieces which has prevented a full understanding on the topic of firm innovation in emerging markets. The pathway illustrates that the presence of high-level firm resources are required, such as an experienced manager and skilled human capital whose knowledge repository is continuously updated. These firm resources can only be utilized effectively to foster firm innovation if the emerging market firm is operating in a national business system that is characterized by the presence of a dominant equity-based financial system, while other institutions

can be lacking or absent such as trust in formal institutions, skill development systems (education) and other state institutions such as rule of law. The discussion of the findings of this thesis present a possible explanation as to why this combination of factors can explain the presence of firm innovation. Equity-based NBS provide managers with enough discretion, which is necessary for managers to both make use of their own creative insights which is shaped by experience and to utilize other innovation generating sources such as formally trained human capital. If no discretion is available firms will be restricted in the utilization of creativity of both managers and human capital which is detrimental for firm innovation, which is a process requiring flexibility and an open stance to creative, but inherently risky ideas. Furthermore, it seems that formally trained human capital and a NBS characterized by an equity-based financial system are core conditions. Which means that without the presence of these core conditions it is impossible to foster firm innovation even if other supposedly conditions are present which supposedly help foster firm innovation (e.g., experienced managers, strong state institutions and advanced skill development systems).

## 6.1 Implications

This subsection will shortly discuss why the results of this thesis are theoretically and practically relevant.

### 6.1.1 theoretical implications

Firm innovation in emerging markets is an ill understood topic within IB literature because previous knowledge on firm innovation has mainly been shaped by research from western developed contexts (Ayyagari et al., 2011). The unique theoretical framework of this thesis was able to provide an intricate combination of conditions that to some extent explains the mystery of firm innovation in emerging markets. Several attempts have been made to understand firm innovation in emerging markets in the last few decades. Where one strand of literature focusses and endorses the direct effects of internal resources to explain firm innovation such as human capital (Badir et al., 2020; Capozza & Divella, 2019; Amann & Cantwell, 2012) and managerial experience (Back et al., 2014; Balsmeier & Czarnitzki, 2013; Badir et al., 2020). Other literature endorses the direct effects of institutional environments (NBS) to shape firm innovation in emerging markets (Pezeskhan et al., 2016). Dimensions of the NBS were individually researched and illustrated to positively impact firm innovation in emerging markets such as strong state institutions (Wang et al., 2015), equity-based financial systems (Nassr & Wehinger, 2016; Klonowski, 2012), high quality skill development systems (Sun et al., 2020), and sufficient trust (Zanello et al., 2016). However results from configuration 1 (table Z), illustrate that to foster firm innovation a firm needs to have an experienced manager, formally trained human capital and operate in a NBS characterized by an equity-based financial system. If these conditions are present then other institutions which supposedly are conducive for

fostering firm innovation can be absent such as an advanced skill development system and strong rule of law by the state, which contrasts research on direct effects of institutions in emerging markets. Overall, the results from this thesis have contributed to academia by establishing that there is one sole path which results in firm innovation in emerging markets. Furthermore, to understand this path it is necessary to utilize a unique theoretical framework which adheres to a holistic view on firm innovation in emerging markets, rather than tunnel vision on direct effects from either resources or institutions.

### 6.1.2 managerial implications

The results of this thesis are of use to both managers and policy makers in emerging markets. The configurations (table Z; table E) indicated the importance of both an experienced manager and skilled human capital. It seems that human capital is especially of importance if an emerging market firm wants to innovate. The positive effects of an experienced manager were only prevalent when operating in a NBS characterized by the presence of an equity-based financial system and a presence of skilled human capital. Considering this the advice this thesis presents to managers is to thoroughly focus on setting up human resource practices that are focused on frequent formal training of human capital. Rather than engaging in selective hiring processes centered around hiring highly educated human capital it seems that formal training is more beneficial to firm innovation in emerging markets which is likely due to the incremental nature of the innovations. Furthermore, the results of this thesis suggest emerging market firms to employ selective hiring practices that focus on hiring managers who possess sufficient levels of experience within the industry (>10 years). The majority of the cases within the configurations were present in Peru, which is why it is especially recommended that Peruvian firms acquire experienced managers and formally train human capital.

One aspect that managers do not have control over is the institutional environment they are operating in. The results of this thesis suggest that developing these firm resources will only be of relevance to fostering firm innovation if one is operating in a NBS characterized by the dominance of an equity-based financial system and the absence of strong state institutions, trust, and a high-quality skill development system. If managers are not operating in this specific NBS chances are low that high level firm resources will contribute significantly to firm innovation. However, there are parties in emerging markets who do possess the capabilities to influence the institutions within the NBS, namely policymakers. Policymakers are advised to focus extensively on developing the equity-based financial systems within the NBS and develop it in such a manner that it becomes the dominant financial system over credit-based financial systems. Commonly institutions are perceived to be rather static and not easily changed (Beugelsdijk & Maseland, 2011). However, policymakers in emerging markets are not likely to encounter this problem in shaping equity-based financial

institutions, because formal institutions are rather malleable in emerging markets (Marquis & Raynard, 2015; Kumar et al., 2013). One further beneficial aspect for trying to change institutions within a NBS is that the interests of emerging market firms and policy makers are aligned to some extent (Parsons, 2002). The aim of policy makers is to facilitate the growth of individuals, communities, and organizations within a country, which also should pertain to emerging market firms. So, at first sight a specific configuration of firm resources and national business systems might be difficult to attain, however because formal institutions in emerging markets are rather malleable and interests are likely to be aligned chances might be greater than one might believe.

## 6.2 Limitations

Firstly, a limitation can be found in the selected sample of this thesis. Five out of the seven emerging markets consisted of European emerging markets while the other two originated from Latin America. Thus, African, and Asian emerging markets were not considered in this research due to a lack of recent datasets. Due to the exclusion of African and Asian emerging markets within our research, the results of this thesis might be more relevant to emerging markets from Europe and Latin America, rather than emerging markets as a whole. Furthermore, if Asian and African emerging markets had been included in the research it might have resulted in additional/different configurations which explain firm innovation.

Secondly, the consistency value of the configuration explaining a presence of firm innovation was rather low at 0.8. The absolute minimum for consistency values ranges between 0.75-0.80 (Pappas & Woodside, 2021). Thus, configuration 1 (table Z) barely passed the suggested minimum for the solution consistency, which might indicate that the configuration might be a poor explanation of firm innovation in emerging markets (Greckhamer, Furnari, Fiss & Aguilera 2018). Researchers in these instances might have to reconsider the model and thus add or omit conditions accordingly to better explain the phenomenon of firm innovation in emerging markets.

Thirdly, there exists a limitation in how this thesis operationalized firm innovation. This thesis included variable h1 and h5 from the WBES to operationalize firm innovation and measure whether firm innovation was present or not when answered yes to one of the questions (section 3.1.2). A problem exists in the fact that the question includes both radical and incremental innovations within the same question, which leaves no room for discussing whether the configurations hold true for incremental or radical innovations. Knowing the emerging market context, the results of this thesis most likely are biased towards incremental innovations, as incremental innovations are more prevalent than radical innovations in emerging markets (Iyer et al., 2006). However, the previous cannot be said with certainty due to the measure of firm innovation within this thesis not making a distinction between radical or incremental innovations, which leaves a lot to be desired.

Another limitation within the measure of firm innovation is that it is a subjective and self-reported measure of firm innovation. Even though similar measures for firm innovation have been utilized in other studies (Saka-Helmhout et al., 2020; Barasa et al., 2017; Chadee & Roxas, 2013) biases could be introduced due to the instance that firm innovation might be perceived differently depending on the context. More objective measures of firm innovation such as patent filing data could be utilized to prevent the limitations of subjective measures for firm innovation. Previously the use of patent filings as an objective measure for firm innovation in emerging markets would not have been useful, due to the fact that patent filings are relatively costly and emerging market often lack the resources to engage in these activities (Dang & Motohashi, 2015; Nair, Guldiken, Fainshmidt & Pezeshkan, 2015; Rosenbusch et al., 2011). However, nowadays use of this objective measure seems to be more realistic due to the increase rise of patent filing activities by firms in emerging markets (Abbott, Correa & Drahos, 2013). The increase of patent filing has become more prevalent due to government subsidies and institutional development which support innovative endeavors (Dang & Motohashi, 2015; Abbott et al., 2013).

### 6.3 Recommendations for future research

Avenues for future research mainly stem from the low consistency value within the explanatory model for firm innovation in this thesis. Low solution consistency indicates that a researcher might have to consider adding or omitting conditions to achieve greater empirical strength which facilitates a greater understanding of firm innovation in emerging markets (Greckhamer et al., 2018).

So, the theoretical framework of this thesis is by no means an all-encapsulating view on firm innovation in emerging markets. It would be useful to consider adding other causal conditions within the framework to increase the empirical strength. An interesting resource to consider adding to the theoretical framework would be group affiliation (Castellacci, 2015). The results of this thesis indicated that equity-based financial systems likely contributed to the presence of firm innovation among emerging markets. However, would this result still persist if a firm has internal access to financial resources, because they are part of a business group? Chang, Chung & Mahmood (2006), illustrated that in emerging markets where institutions were weak, firms affiliated with business groups were still able to innovate due to internal access to financial resources. One might thus question the importance of an equity-based NBS if an emerging market firm possesses access to internal financial resources through business groups.

Another causal condition that would be interesting to investigate is managerial discretion. Chapter 5 discussed that managers in equity-based NBS were more likely to produce firm innovation than those who operated in credit-based NBS, due to more discretion in equity-based systems. To establish whether managerial discretion could really be one of the core conditions in explaining firm

innovation in emerging markets, when configured with institutional elements from the NBS and other firm resources, it would be useful to incorporate managerial discretion as a condition into the theoretical framework of this thesis. Overall research suggests utilizing an aggregate construct of managerial discretion, as it is a complex concept to measure (Finkelstein & Hambrick, 1990). Furthermore, the role of managerial discretion combined with contextual and environmental factors is an understudied topic (Sahaym, Trevino & Steensma, 2012). By combining managerial discretion into this framework, one would be able to see how it configures with contextual factors such as the institutional environment. Concurrently one would fill gaps in top management literature and innovation literature.

Other causal conditions to consider including into the theoretical framework are for example ownership structures (Chen, Shapiro & Zhang, 2014). There are varying views as to how different types of ownership influence innovation by firms in emerging markets. Yi et al. (2017) endorse a positive relationship, while Ayyagari et al. (2011) endorse a negative relationship. This mix of results has likely been due to a unidimensional perspective on the matter, which is why integrating ownership structure as a condition into a configurational framework could provide a more intricate perspective on ownership structure and its influence of firm innovation in emerging markets.

Furthermore, the NBS is one way of incorporating a thick view of institutions within a research framework, however it does not encapsulate all types of institutions that are prevalent within emerging markets. Other notable institution said to affect firm innovations are culture (Beugelsdijk & Maseland, 2011) & regional institutions (Barasa et al., 2017). It would be interesting to see whether dynamics within configurations change substantially when accounting for other types of institutions.

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## Appendices

### Appendix 1 planning

Week number	To do	Deadline
14	Work on datasets and cleaning them + integrating feedback on proposal	
15	Do the research	
16	Interpret results and start making a sketch of the findings	
17	Start making a coherent piece of sketch of chapter 4	
18	Finalize chapter 4	
19	Integrate feedback on chapter 4 + start the discussion and conclusion	May 9 <sup>th</sup> chapter 4
20	Finish conclusion	

21	Finish discussion	
22	Integrate feedback on chapter 5 and 6	May 30 <sup>th</sup> chapter 5 + 6
23	Finalize thesis	
24	Hand in thesis	June 13 <sup>th</sup> MSC thesis
25	Prepare PowerPoint and presentation text for defense	Defense
26	Vacation!!!	Defense

--

Appendix 2 all the necessary info for the research process.:

Guide for appendix:

Use hyperlinks throughout main text to get a coherent picture.

Appendix 2.1 calibration process managerial experience

### **Managerial experience:**

Before a QCA could be performed two transformations had to be made to the original datasets. Firstly, managerial experience has to be recoded where 0-9 years indicates a lack of experience and everything above 10 years indicates a high level of experience for managers. Thus, if a manager had anything between zero through nine years of experience he or she would be assigned a score of 0, indicating a lack of experience. If a manager, however possessed anything equal to 10 or more years of experience he or she would be assigned a score of 1, indicating a lot of experience. To do this the student made use of the function 'recode into different variables' within SPSS 25 and renamed the new variable into 'EXPERIENCEDmanagers'. To deal with the difficulties of some managers responding, 'I do not know' to the question '*How many years of experience working in this sector does the Top Manager have?*', This thesis coded these managers into the inexperienced manager category as well. Missing scores were accordingly dealt with by recoding them as 'SYSMISS'. Fortunately, within each country there were not a lot of instances where managers did not know how much years of experience they had. See table 5 below to see the amount of people who responded I do not know relative to the total sample size. Most of them stay below one percent of the total sample, however Poland seems to be an outlier with 10.2% of the managers not knowing how much experience they have in years. However, as this thesis does not compare countries, but rather compiles the data which results in 2.5% missing scores across the entire sample which is sufficiently below the 10% requirement stated by Hair et al (2018), thus chances are acceptably low to ignore missing values in this instance.

Country	Total of -9 scores (I don't know)	Cumulative percentage of -9 scores relative to total (%)
Colombia	1	1/993=0.1%
Peru	9	9/1003=0.9%
Greece	2	2/600=0.3%
Hungary	3	3/805= 0.4%
Poland	140	140/1369=10.2%
Turkey	16	16/1663=1.0%
Czech Republic	1	1/502=0.2%
<b>Total</b>	172	172/6935=2.5%

Table 5: Managers who scored -9 on variable b7

The exact way of doing this within SPSS 25 was to make use of the following function. **Transform → recode into different variables → Range lowest thru value 9 assigned score 0 → Range, value thru highest assigned score 10.**

Having stated all of the values for the individual countries themselves, the entire sample will look like this table below regarding firm experience:

		ExperiencedManagers (compiled)			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	,00	642	9,3	9,5	9,5
	1,00	6121	88,3	90,5	100,0
	Total	6763	97,5	100,0	
Missing	System	172	2,5		
Total		6935	100,0		

#### Appendix 2.1.1 STATE CALIBRATION:

Please note that the STATE variable and the process of creating the composite can be found in the next section in [appendix 2.2](#). First of all, having split the file according to groups based on years I was able to see what the averages were for the 200 countries were throughout the years on the composite STATE. The averages for all of the years between 2017-2019 were 0.000. It seems that throughout almost all of the years the world average of STATE seems to have little deviation from the score 0, with lowest combined score reaching -0.0158 in 1996. Thus, only one hundredth of a point difference which is miniscule. Thus, the cut-off that was determine is 0 because it is the average.

Syntax:

```
FREQUENCIES VARIABLES=STATE
```

```

/FORMAT=NOTABLE
/STATISTICS=MEAN
/ORDER=ANALYSIS.

```

Colombia	-,03
Peru	-,07
Greece	,28
Hungary	,54
Poland	,66
Czech Republic	1,08
Turkey	-,08

**Table a: composite STATE scores for seven emerging markets**

Statistics		
STATE		
N	Valid	7
	Missing	0
Mean		,3404
Median		,2813
Std. Deviation		,44459
Range		1,17
Minimum		-,08
Maximum		1,08

**Table b. Mean of sample for composite state**

Statistics		
STATE		
N	Valid	184
	Missing	30
Mean		-,0158

**Table 6: 1996 world average of state composite**

Statistics		
STATE		
N	Valid	209
	Missing	5
Mean		,0000

**Table 7: 2017 world average of state composite**

Statistics		
STATE		
N	Valid	209
	Missing	5
Mean		,0000

Table 8: 2018 world average  
of state composite

Statistics		
STATE		
N	Valid	209
	Missing	5
Mean		,0000

Table 9: 2019 world average  
of state composite

Appendix 2.2 Factor analysis for State (was done before the calibration above) (both textual and visual process)

#### **Textual argumentation/process behind the factor analysis:**

The second step is to create a composite variable out of three WGI indicators, namely rule of law, regulatory quality and government effectiveness. To create a composite variable, it is necessary to execute a factor analysis. Kaufmann et al. (2011), already indicated that each of the six variables within the WGI dataset are highly correlated with one another which illustrates a lot of multicollinearities among the WGI variables. In order to reduce the multicollinearity, it would thus be helpful to utilize data reduction methods such as factor analysis (Hair et al., 2018). Furthermore, due to the fact that others have already described within research that the 6 variables within the WGI are highly correlated it will facilitate finding an underlying structure among the variables, thus further supporting the use of a factor analysis (Hair et al., 2018).

Conducting a factor analysis should be done in a step-by-step decision process according to Hair et al. (2018, pp. 127-164), and this thesis will adhere to this process in order to provide transparency.

1. Identify the objectives of factor analysis
2. Designing a factor analysis
3. Assumptions in factor analysis
4. Deriving factor and assessing overall fit
5. Interpreting the factor
6. Validation of the factor analysis

### **1. Identifying objectives:**

So first of all, there are a few things that need to be checked here. First of all, the objective is to reduce the data of three WGI variables into one composite called state (regulatory quality, government effectiveness, and rule of law) which would be useful as suggested by Pezeskhan et al. (2016). However, it seems that these suggestions have been made on a conceptual basis.

Furthermore, the only attempt to my knowledge to reduce the WGI to factors has been made by Langbein & Knack (2010), but the research seems to remain inconclusive on the number of factors involved. In line with the previous it can be stated that little is known regarding whether the three WGI variables in this research can be reduced to one composite, which calls for an **exploratory factor analysis**. Thus, the main objective of the factor analysis seems to be the exploration and summarization regarding whether the three variables form one factor. The previous, calls for the application of a factor analysis to a **correlation matrix**, also coined as a **R factor analysis** (Hair et al., 2018). Furthermore, data reduction will also be achieved through computing a summated scale score for the new factor which will be used in the subsequent QCA.

### **2. Designing a factor analysis:**

There are a few statistical requirements in order to perform a factor analysis such as the measurement levels, sample size and correlations among variables. First of all, the requirement of the measurement levels is that the variables have to be at least metrically scaled (Hair et al., 2018). The scores on the WGI variables range from either -2.5 to 2.5 OR they range in percentile points from 0%-100% (Kaufmann et al., 2011). It seems that -2.5 to 2.5 scale is made up from several aggregated scores from various sources of data (The World Bank, 2020). So, at a glance the measurement levels of the WGI are based around a Likert scale and a scale based around percentile points. Currently within academia there is a lot of debate surrounding the Likert scale and its use within statistical parametric methods such as factor analysis, structural equation modeling, etcetera (Norman, 2010). It is far outside the scope of this thesis to fully explain the debate surrounding the use of a Likert scale within statistical methods such as a factor analysis, for the full debate please refer to Norman (2010). However, from previous research it seems to be fully possible to use Likert scale scores as

interval data within factor analysis, due to the fact that parametric statistical methods are versatile, powerful and comprehensive. Norman (2010, p.631) states the following as a conclusion on the use of Likert scales as interval data: “Parametric statistics can be used with Likert data, with small sample sizes, with unequal variances, and with non-normal distributions, with no fear of “coming to the wrong conclusion”. These findings are consistent with empirical literature dating back nearly 80 years. The controversy can cease (but likely won’t).”

Now regarding sample size there are a few requirements that have to be adhered to according to (Hair et al., 2018):

1. sample size must be larger than the amount of variables
2. The absolute minimum of the sample size should contain 50 observations, but a minimum of 100 observations are preferable.
3. Have a ratio of at least 5:1, preferably 10:1 regarding observations per variable.

From table 10 (Appendix 2.2) it becomes clear that the WGI indicators adhere to the sample size requirements. Firstly, the sample size of 4500+ is sufficiently more than the three variables involved. Secondly the quantity of observations exceeds the preferred minimum of 100 with about 4400 to spare. Lastly, the ratio in this instance is roughly 1500:1>10:1. Furthermore it is also interesting to note that Government Effectiveness, Regulatory Quality and Rule of Law all are normally distributed with the kurtosis and skewness falling between the recommended threshold of -1 to +1 as seen in table 10 (Hair et al., 2018).

### **3.Assumptions in exploratory factor analysis**

The main thing to do now is to construct a correlation matrix and test whether there are enough communalities among the variables to perform a factor analysis (Hair et al., 2018). There are several statistics that can establish whether there is enough support in your dataset to perform a factor analysis. I expect however that finding communalities should prove to be simple as Kaufmann et al. (2011), provided us with the knowledge that there is a lot of multicollinearities among WGI variables, this is further supported by table 11 (appendix 2.2) which shows high levels of correlations between the three WGI. The preferred levels of communalities are 0.5, which all of the values are well above at 0.9+ (Hair et al., 2018; Table 11 in appendix 2.2) Two statistics that are of importance are the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity (Hair et al., 2018). The KMO measure needs to score above 0.500, whereas the Bartlett's test of sphericity has to be significant at  $p < 0.05$  (Hair et al., 2018; Field, 2017). From the results of SPSS in table 12, it seems



that the sample of the three indicators adhere to the requirements, because  $KMO = 0.773 > 0.500$  And Bartlett's test of sphericity  $p < 0.001 < p < 0.05$  (thus significant as it should be). As for the extraction method, it seems that a principal component analysis is most suited, because we already have some previous knowledge that the WGI are highly correlated to one another (Hair et al., 2018; Kaufmann et al., 2011). Furthermore, data reduction along data summarization is one of the objectives which further supports the use of Principal component analysis.

#### **4. Deriving factor and assessing overall fit**

For deriving factors there are once again several ways to determine this. This thesis will utilize three components, namely the eigenvalue scores, scree plot, cumulative variance. The requirements for each of these respectively are that the eigenvalue  $> 1.00$  to accept a factor, the inflection point of the scree plot and that the factors derived explain for at least 60% of the variance involved (Hair et al., 2018). Firstly, from table 14 (appendix 2.2) it can be established that only one factor needs to be derived on the basis of eigenvalue scores, there were a potential of three components which respectively had eigenvalue scores of 2.847, 0.097, and 0.056. Secondly from the scree plot (appendix 2.2), it can be seen that the inflexion point is between one and two factors, thus indicating one factor to be extracted. Lastly the first factor already explains 94.9% of the total variance, well above the necessary 60%.

#### **5. Interpreting the factor**

Due to the fact that only one factor can be extracted from the 3 WGI variables, there is no need for considering rotations such as oblique rotations or orthogonal rotations (Hair et al., 2018). Furthermore, SPSS cannot compute rotations if only one component is extracted. Finally considering factor loadings from the component matrix in table 15 (appendix 2.2) it becomes clear that each variable loads significantly on the factor. The preferred level is 0.5, and *'loadings exceeding 0.70 are considered indicative of well-defined structure and are the goal of any factor analysis'* (Hair et al., 2018, p.151). It seems from table 15 that government effectiveness= 0.956 regulatory quality= 0.936 and rule of law =0.978, thus all well above 0.5 resulting in great practical significance (Hair et al., 2018)

#### **6. Validate the factor**

After this one of the last steps was to construct a reliability analysis to make sure that there was a consistency of the WGI loading on the construct. One of the ways to do this is to utilize the widely used Cronbach's alpha statistic (Hair et al., 2018). The requirements for the Cronbach's alpha is the

following  $\alpha \geq 0.7$  (Hair et al., 2018; Field, 2017). From table 16 it is shown that in this case  $\alpha = 0.973$ . Furthermore, the Cronbach's alpha does not improve when a variable is removed from the newly formed factor as seen in table 17.

All that is left now is to create a summated scale for the new factor which has been named '**State**', as it intends to measure the effects from the government from an institutional perspective within this thesis. To create the new summated scale an average score of the three variables government effectiveness, regulatory quality and rule of law was taken to form the new variable called State. The rationale behind the use of a summated scale instead of a surrogate variable or factor score is the following. Firstly, the differences between the factor loadings of each variable are so low that it would not make sense to assign one variable as having a lot more influence than the other (Hair et al., 2018). Due to the differences being so small the factor score would likely not differ much from the summated scale. See syntax 1 in appendix 2.2 for the newly created variable STATE.

**SPSS output/statistical research process, of the text discussed above from appendix 2.2 (Table 10-17):**

Statistics				
		Government Effectiveness	Regulatory Quality	Rule of Law
N	Valid	4516	4516	4588
	Missing	192	192	120
Std. Deviation		,99767	,99767	,99771
Skewness		,281	,037	,200
Std. Error of Skewness		,036	,036	,036
Kurtosis		-,688	-,654	-,831
Std. Error of Kurtosis		,073	,073	,072
Minimum		-2,48	-2,65	-2,61
Maximum		2,44	2,26	2,13

Table 10: sample size statistics

Correlation Matrix				
		Government Effectiveness, Estimate	Regulatory Quality, Estimate	Rule of Law, Estimate
Correlation	Government Effectiveness, Estimate	1,000	,935	,932
	Regulatory Quality, Estimate	,935	1,000	,903
	Rule of Law, Estimate	,932	,903	1,000
Sig. (1-tailed)	Government Effectiveness, Estimate		,000	,000
	Regulatory Quality, Estimate	,000		,000
	Rule of Law, Estimate	,000	,000	

Table 11: correlation matrix

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,773
Bartlett's Test of Sphericity	Approx. Chi-Square	18804,961
	df	3
	Sig.	,000

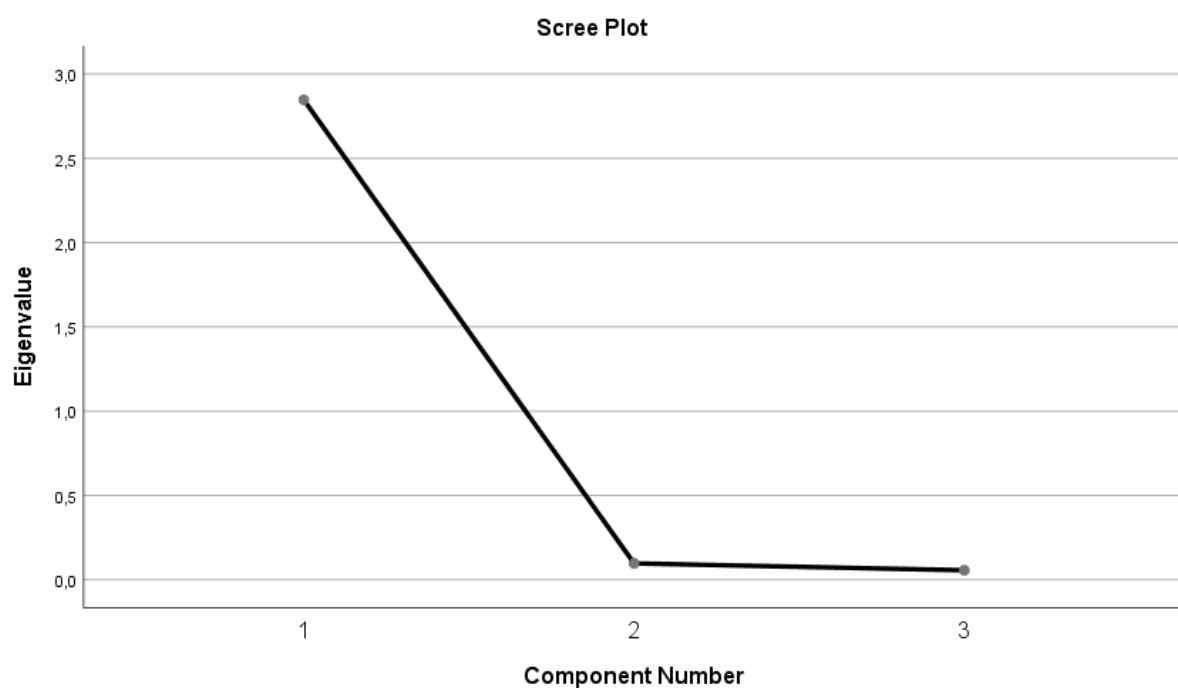
Table 12: test for sufficient communalities

Communalities	
	Initial
Government Effectiveness, Estimate	1,000
Regulatory Quality, Estimate	1,000
Rule of Law, Estimate	1,000
Extraction Method: Principal Component Analysis.	

Table 13: communalities (all score 1 due to the fact that there is only one factor, which exempts extraction according to Hair et al., 2018)

Total Variance Explained			
Component	Initial Eigenvalues		
	Total	% Of Variance	Cumulative %
1	2,847	94,900	94,900
2	,097	3,226	98,126
3	,056	1,874	100,000
Extraction Method: Principal Component Analysis.			

Table 14: eigenvalues



Plot 1. Scree plot factor analysis

Component Matrix <sup>a</sup>	
	Component
	1
Government Effectiveness, Estimate	,956
Regulatory Quality, Estimate	,936
Rule of Law, Estimate	,978
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Table 15: component matrix

Reliability Statistics	
Cronbach's Alpha	N of Items
,973	3

Table 16: Cronbach's alpha

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Government Effectiveness, Estimate	-,0095	3,798	,957	,949
Regulatory Quality, Estimate	-,0095	3,854	,935	,965
Rule of Law, Estimate	,0002	3,853	,933	,967

Table 17: effects of removing WGI variables on Cronbach's alpha

Syntax STATE composite see below: for the new composite variable state, which consists of government effectiveness, regulatory quality and rule of law

```
COMPUTE STATE=(gee + rqe + rle)/3.
EXECUTE.
```

### Appendix 2.3 Compiling data files

In order to start of the process, one of the first things that had to be done was to transform the datasets I had compiled into the correct format. I mainly worked with SPSS formats, which had to be converted into tab delimited formats (Ragin, 2017). Furthermore, the excel sheet which I used to gather data on the skill and development dimension and the financial system dimension was converted into a comma separated values (\*.csv) format. This all had to be done in order for the files

to open within the fsQCA 3.0. The syntaxes can be seen below, which started the process of compiling data from each country into one big dataset:

**See below the syntax of compiling all of the individual datasets together:**

```
DATASET ACTIVATE DataSet9.
RECODE h1Tur h5Tur l10Tur (1=1) (2=0) (-9=SYSMIS) INTO InnoProdSer
InnoProcess HumanCap.
VARIABLE LABELS InnoProdSer 'InnoProdSer ' /InnoProcess 'InnoProcess'
/HumanCap 'HumanCap'.
EXECUTE.
DATASET ACTIVATE DataSet9.
```

```
SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset '+'
'Turkey 2019.sav'
/COMPRESSED.
```

```
SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country
reports or '+'
'datasets\Datasets saved in correct format for csQCA\turkey
compiled.dat'
/TYPE=TAB
/ENCODING='UTF8'
/MAP
/REPLACE
/FIELDNAMES
/CELLS=VALUES.
```

Data written to C:\Users\...\Country reports or datasets\Datasets saved in correct format for csQCA\turkey compiled.dat.

13 variables and 1663 cases written.

Variable: h1Tur	Type: Number	Width: 2	Dec: 0
Variable: h5Tur	Type: Number	Width: 2	Dec: 0
Variable: b7Tur	Type: Number	Width: 3	Dec: 0
Variable: l10Tur	Type: Number	Width: 2	Dec: 0
Variable: EXPERIENCEDmanagers	Type: Number	Width: 8	Dec: 2
Variable: InnoProdSer	Type: Number	Width: 8	Dec: 2
Variable: InnoProcess	Type: Number	Width: 8	Dec: 2
Variable: HumanCap	Type: Number	Width: 8	Dec: 2
Variable: STATE	Type: Number	Width: 8	Dec: 2
Variable: Equity	Type: Number	Width: 8	Dec: 2
Variable: Credit	Type: Number	Width: 8	Dec: 2
Variable: Education	Type: Number	Width: 8	Dec: 2
Variable: Trust	Type: Number	Width: 8	Dec: 2

```
DATASET ACTIVATE DataSet14.
DATASET CLOSE DataSet9.
GET
FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset Greece 2018.sav'.
DATASET NAME DataSet15 WINDOW=FRONT.
GET
FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset Peru 2017.sav'.
DATASET NAME DataSet16 WINDOW=FRONT.
GET
```

```

FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset Colombia2017.sav'.
DATASET NAME DataSet17 WINDOW=FRONT.
GET
FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset Czech Republic 2019.sav'.
DATASET NAME DataSet18 WINDOW=FRONT.
DATASET ACTIVATE DataSet15.
RECODE h1Gr h5Gr l10Gr (1=1) (2=0) (-9=SYSMIS) INTO InnoProdSer InnoProcess
HumanCap.
VARIABLE LABELS InnoProdSer 'InnoProdSer' /InnoProcess 'InnoProcess'
/HumanCap 'HumanCap'.
EXECUTE.
DATASET ACTIVATE DataSet15.

SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset '+
'Greece 2018.sav'
/COMPRESSED.

SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country
reports or '+
'datasets\Datasets saved in correct format for csQCA\Greece 2018
compiled dataset.dat'
/TYPE=TAB
/ENCODING='UTF8'
/MAP
/REPLACE
/FIELDNAMES
/CELLS=VALUES.

Data written to C:\Users\...\Datasets saved in correct format for
csQCA\Greece 2018 compiled dataset.dat.
13 variables and 600 cases written.
Variable: h1Gr           Type: Number   Width:   1   Dec:  0
Variable: h5Gr           Type: Number   Width:   2   Dec:  0
Variable: b7Gr           Type: Number   Width:   3   Dec:  0
Variable: l10Gr          Type: Number   Width:   2   Dec:  0
Variable: EXPERIENCEDmanagers Type: Number   Width:   8   Dec:  2
Variable: InnoProdSer     Type: Number   Width:   8   Dec:  2
Variable: InnoProcess     Type: Number   Width:   8   Dec:  2
Variable: HumanCap        Type: Number   Width:   8   Dec:  2
Variable: STATE           Type: Number   Width:   8   Dec:  2
Variable: Equity          Type: Number   Width:   8   Dec:  2
Variable: Credit          Type: Number   Width:   8   Dec:  2
Variable: Education       Type: Number   Width:   8   Dec:  2
Variable: Trust           Type: Number   Width:   8   Dec:  2

DATASET ACTIVATE DataSet14.
DATASET CLOSE DataSet15.
DATASET ACTIVATE DataSet16.
RECODE h1Per h5Per l10Per (1=1) (2=0) (-9=SYSMIS) INTO InnoProdSer
InnoProcess HumanCap.
VARIABLE LABELS InnoProdSer 'InnoProdSer' /InnoProcess 'InnoProcess'
/HumanCap 'HumanCap'.
EXECUTE.
DATASET ACTIVATE DataSet16.

SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset '+

```

```

    'Peru 2017.sav'
    /COMPRESSED.

SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country
reports or '+'
    'datasets\Datasets saved in correct format for csQCA\Peru 2017 Compiled
dataset.dat'
    /TYPE=TAB
    /ENCODING='UTF8'
    /MAP
    /REPLACE
    /FIELDNAMES
    /CELLS=VALUES.

```

Data written to C:\Users\...\Country reports or datasets\Datasets saved in correct format for csQCA\Peru 2017 Compiled dataset.dat.  
13 variables and 1003 cases written.

Variable: h1Per	Type: Number	Width: 2	Dec: 0
Variable: h5Per	Type: Number	Width: 2	Dec: 0
Variable: b7Per	Type: Number	Width: 3	Dec: 0
Variable: l10Per	Type: Number	Width: 2	Dec: 0
Variable: EXPERIENCEDmanagers	Type: Number	Width: 8	Dec: 2
Variable: InnoProdSer	Type: Number	Width: 8	Dec: 2
Variable: InnoProcess	Type: Number	Width: 8	Dec: 2
Variable: HumanCap	Type: Number	Width: 8	Dec: 2
Variable: STATE	Type: Number	Width: 8	Dec: 2
Variable: Equity	Type: Number	Width: 8	Dec: 2
Variable: Credit	Type: Number	Width: 8	Dec: 2
Variable: Education	Type: Number	Width: 8	Dec: 2
Variable: Trust	Type: Number	Width: 8	Dec: 2

```

DATASET ACTIVATE DataSet14.
DATASET CLOSE DataSet16.
DATASET ACTIVATE DataSet17.
RECODE h1Col h5Col l10Col (1=1) (2=0) (-9=SYSMIS) INTO InnoProdSer
InnoProcess HumanCap.
VARIABLE LABELS InnoProdSer 'InnoProdSer' /InnoProcess 'InnoProcess'
/HumanCap 'HumanCap'.
EXECUTE.
DATASET ACTIVATE DataSet17.

```

```

SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Compiled dataset '+'
    'Colombia2017.sav'
    /COMPRESSED.

```

```

SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country
reports or '+'
    'datasets\Datasets saved in correct format for csQCA\Colombia 2017
compiled dataset.dat'
    /TYPE=TAB
    /ENCODING='UTF8'
    /MAP
    /REPLACE
    /FIELDNAMES
    /CELLS=VALUES.

```

Data written to C:\Users\...\Datasets saved in correct format for csQCA\Colombia 2017 compiled dataset.dat.  
13 variables and 993 cases written.



Variable: h1Col	Type: Number	Width: 2	Dec: 0
Variable: h5Col	Type: Number	Width: 2	Dec: 0
Variable: b7Col	Type: Number	Width: 3	Dec: 0
Variable: l10Col	Type: Number	Width: 2	Dec: 0
Variable: EXPERIENCEDmanagers	Type: Number	Width: 8	Dec: 2
Variable: InnoProdSer	Type: Number	Width: 8	Dec: 2
Variable: InnoProcess	Type: Number	Width: 8	Dec: 2
Variable: HumanCap	Type: Number	Width: 8	Dec: 2
Variable: STATE	Type: Number	Width: 8	Dec: 2
Variable: Equity	Type: Number	Width: 8	Dec: 2
Variable: Credit	Type: Number	Width: 8	Dec: 2
Variable: Education	Type: Number	Width: 8	Dec: 2
Variable: Trust	Type: Number	Width: 8	Dec: 2

DATASET ACTIVATE DataSet14.

DATASET CLOSE DataSet17.

DATASET ACTIVATE DataSet18.

GET

FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or datasets\Compiled dataset Colombia2017.sav'.

DATASET NAME DataSet19 WINDOW=FRONT.

DATASET ACTIVATE DataSet14.

DATASET CLOSE DataSet19.

DATASET ACTIVATE DataSet18.

RECODE h1Cz h5Cz l10Cz (1=1) (2=0) (-9=SYSMIS) INTO InnoProdSer InnoProcess HumanCap.

VARIABLE LABELS InnoProdSer 'InnoProdSer' /InnoProcess 'InnoProcess' /HumanCap 'HumanCap'.

EXECUTE.

DATASET ACTIVATE DataSet18.

SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or datasets\Compiled dataset '+'

'Czech Republic 2019.sav'

/COMPRESSED.

SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or '+'

'datasets\Datasets saved in correct format for csQCA\Czech Republic 2019 compiled dataset.dat'

/TYPE=TAB

/ENCODING='UTF8'

/MAP

/REPLACE

/FIELDNAMES

/CELLS=VALUES.

Data written to C:\Users\...\Datasets saved in correct format for csQCA\Czech Republic 2019 compiled dataset.dat.

13 variables and 502 cases written.

Variable: h1Cz	Type: Number	Width: 2	Dec: 0
Variable: h5Cz	Type: Number	Width: 2	Dec: 0
Variable: b7Cz	Type: Number	Width: 3	Dec: 0
Variable: l10Cz	Type: Number	Width: 1	Dec: 0
Variable: EXPERIENCEDmanagers	Type: Number	Width: 8	Dec: 2
Variable: InnoProdSer	Type: Number	Width: 8	Dec: 2
Variable: InnoProcess	Type: Number	Width: 8	Dec: 2
Variable: HumanCap	Type: Number	Width: 8	Dec: 2
Variable: STATE	Type: Number	Width: 8	Dec: 2
Variable: Equity	Type: Number	Width: 8	Dec: 2

Variable: Credit	Type: Number	Width: 8	Dec: 2
Variable: Education	Type: Number	Width: 8	Dec: 2
Variable: Trust	Type: Number	Width: 8	Dec: 2

DATASET ACTIVATE DataSet14.

DATASET CLOSE DataSet18.

GET

FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or datasets\Compiled dataset Czech Republic 2019.sav'.

DATASET NAME DataSet20 WINDOW=FRONT.

DATASET ACTIVATE DataSet14.

DATASET ACTIVATE DataSet14.

SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or datasets\Compiled dataset '+'

'Hungary 2019.sav'

/COMPRESSED.

DATASET ACTIVATE DataSet14.

DATASET CLOSE DataSet20.

FREQUENCIES VARIABLES=STATE

/STATISTICS=RANGE MINIMUM MAXIMUM MODE

/ORDER=ANALYSIS.

DATASET ACTIVATE DataSet14.

SAVE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or datasets\Compiled dataset '+'

'Hungary 2019.sav'

/COMPRESSED.

SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or '+'

'datasets\Datasets saved in correct format for csQCA\Hungary 2019 compiled.dat'

/TYPE=TAB

/ENCODING='UTF8'

/MAP

/REPLACE

/FIELDNAMES

/CELLS=VALUES.

Data written to C:\Users\...\Country reports or datasets\Datasets saved in correct format for csQCA\Hungary 2019 compiled.dat.

13 variables and 805 cases written.

Variable: h1Hung	Type: Number	Width: 2	Dec: 0
Variable: h5Hung	Type: Number	Width: 2	Dec: 0
Variable: b7Hung	Type: Number	Width: 3	Dec: 0
Variable: l10Hung	Type: Number	Width: 1	Dec: 0
Variable: EXPERIENCEDmanagers	Type: Number	Width: 8	Dec: 2
Variable: InnoProdSer	Type: Number	Width: 8	Dec: 2
Variable: InnoProcess	Type: Number	Width: 8	Dec: 2
Variable: HumanCap	Type: Number	Width: 8	Dec: 2
Variable: STATE	Type: Number	Width: 8	Dec: 2
Variable: Equity	Type: Number	Width: 8	Dec: 2
Variable: Credit	Type: Number	Width: 8	Dec: 2
Variable: Education	Type: Number	Width: 8	Dec: 2
Variable: Trust	Type: Number	Width: 8	Dec: 2

```
FREQUENCIES VARIABLES=Education
/STATISTICS=RANGE MINIMUM MAXIMUM MODE
/ORDER=ANALYSIS.
```

```
SAVE TRANSLATE OUTFILE='C:\Users\olivi\OneDrive\Master thesis\Country
reports or '+'
'datasets\Datasets saved in correct format for csQCA\Poland
Compiled.dat'
/TYPE=TAB
/ENCODING='UTF8'
/MAP
/REPLACE
/FIELDNAMES
/CELLS=VALUES.
```

Data written to C:\Users\...\Country reports or datasets\Datasets saved in correct format for csQCA\Poland Compiled.dat.  
13 variables and 1369 cases written.

Variable: h1Pol	Type: Number	Width: 2	Dec: 0
Variable: h5Pol	Type: Number	Width: 2	Dec: 0
Variable: b7Pol	Type: Number	Width: 3	Dec: 0
Variable: l10Pol	Type: Number	Width: 2	Dec: 0
Variable: EXPERIENCEDmanagers	Type: Number	Width: 8	Dec: 2
Variable: InnoProdSer	Type: Number	Width: 8	Dec: 2
Variable: InnoProcess	Type: Number	Width: 8	Dec: 2
Variable: HumanCap	Type: Number	Width: 8	Dec: 2
Variable: STATE	Type: Number	Width: 8	Dec: 2
Variable: Equity	Type: Number	Width: 8	Dec: 2
Variable: Credit	Type: Number	Width: 8	Dec: 2
Variable: Education	Type: Number	Width: 8	Dec: 2
Variable: Trust	Type: Number	Width: 8	Dec: 2

```
DATASET ACTIVATE DataSet14.
DATASET CLOSE DataSet21.
```

After compiling all of the data coherently to their fitting country I compiled it into one big datafile which can be shown at request.

**Compiling all of the data resulted in the following dataset with the following descriptive statistics:**

		Statistics							
		Experienced Managers2	HumanCap	STATE	Equity	Credit	Education	Trust	FirmInnov
N	Valid	6763	6875	6935	6935	6935	6935	6935	6864
	Missing	172	60	0	0	0	0	0	71
Ratio missing to valid		2.5%	0.9%	0%	0%	0%	0%	0%	1,0%

Table 17B: descriptive statistics full file

## Appendix 2.4 Rest of calibrations + syntaxes

### Human capital syntax:

```
FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or  
datasets\Complete file with every country (14-05-2022).sav'.  
DATASET NAME DataSet1 WINDOW=FRONT.  
RECODE l10 (-9=SYSMIS) (1=1) (2=0) INTO HumanCap.  
VARIABLE LABELS HumanCap2 'HumanCap2'.  
EXECUTE.
```

### Firm innovation syntax

```
COMPUTE FirmInnov=InnoProdSer + InnoProcess > 0.  
EXECUTE.
```

Some textual explanation of the above: So, I made a formula in which the score for the newly computed variable had to be bigger than 0. The calibrated variables InnoProdSer (h1) and InnoProcess (h5) all had scores of 0 or 1. This made it quite easy as now once h1 or h5 scores 1 it will immediately be assigned the score of full membership, and if it does not score at least 1 on either h1 or 5 it will be assigned a zero. After evaluation of my SPSS file, this process fully worked. So now this syntax was applied to each of the country datasets.

### Financial system:

So, the following table indicates the scores of the variable

Country	EquityMarket	CreditMarket	Ratio (equity market/credit market)
Colombia	38,95%	49,79%	0.78
Peru	47,02%	42,41%	1.11
Greece	18,10%	91,52%	0.20
Hungary	20,11%	33,36%	0.60
Poland	25,39%	50,68%	0.50
Czech	10,42%	50,28%	0.21
Turkey	24,30%	61,83%	0.39

Table 18: equity and credit market strength (world bank, 2020)

### Skill and development systems:

Country	EduclIndex
Colombia 2017	0,678 (2017)
Peru 2017	0,721 (2017)
Greece 2018	0,833 (2018)
Hungary 2019	0,821 (2019)
Poland 2019	0,869 (2019)
Czech 2019	0,890 (2019)
Turkey 2019	0,731 (2019)

Table 19: education index (United Nations, 2020)

### Normative trust and authority relations:

#### Control of corruption

2017	N	Valid	209
		Missing	5
	Mean		,0000
	Median		-,1826
	Std. Deviation		1,00000
	Range		4,06
	Minimum		-1,82
	Maximum		2,24
2018	N	Valid	209
		Missing	5
	Mean		,0000
	Median		-,1802
	Std. Deviation		1,00000
	Range		4,00
	Minimum		-1,79
	Maximum		2,21
2019	N	Valid	209
		Missing	5
	Mean		,0000
	Median		-,1783
	Std. Deviation		1,00000
	Range		3,94
	Minimum		-1,77
	Maximum		2,17
2020	N	Valid	209

	Missing	5
Mean		,0000
Median		-,1164
Std. Deviation		1,00000
Range		4,18
Minimum		-1,91
Maximum		2,27

Table 20: descriptive tables control of corruption variable for the entire sample

Statistics		
Control of Corruption		
N	Valid	7
	Missing	0
Mean		,0090
Median		-,0252
Std. Deviation		,45050
Range		1,14
Minimum		-,50
Maximum		,64

Table 21: sample (7 emerging markets) mean for control of corruption

Country	Control of Corruption score
Colombia	-,37
Peru	-,50
Greece	-,03
Hungary	,06
Poland	,64
Czech Republic	,57
Turkey	-,31

Table 22: corruption control scores (World Bank, 2020)

Now after having argued all of the calibrations, I will here put all of the syntaxes for the calibrations for transparency. Note that all calibration syntaxes are shown except for managerial experience because this was already done earlier.

**All countries have the same syntax so here the example of Colombia (the same syntax was applied for every other country)**

WBES calibrations syntax:

```
RECODE h1 (2=0) (1=1) (-9=SYSMISS) INTO InnoProdSer.
VARIABLE LABELS InnoProdSer 'InnoProdSer'.
EXECUTE.
RECODE h5 (2=0) (1=1) (-9=SYSMISS) INTO InnoProcess.
VARIABLE LABELS InnoProcess 'InnoProcess'.
EXECUTE.
RECODE l10 (2=0) (1=1) (-9=SYSMISS) INTO HumanCap.
VARIABLE LABELS HumanCap 'HumanCap'.
```

**Descriptive statistics after recalibrations:**

		ExperiencedManagers			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	,00	642	9,3	9,5	9,5
	1,00	6121	88,3	90,5	100,0
	Total	6763	97,5	100,0	
Missing	System	172	2,5		
Total		6935	100,0		

Table 23 descriptive statistics

		HumanCap			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	,00	3953	57,0	57,5	57,5
	1,00	2922	42,1	42,5	100,0
	Total	6875	99,1	100,0	
Missing	System	60	,9		
Total		6935	100,0		

Table 24 descriptive statistics

**STATE**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	weak	4259	61,4	61,4	61,4
	strong	2676	38,6	38,6	100,0
	Total	6935	100,0	100,0	

Table 25 descriptive statistics

		Equity			Cumulative Percent
		Frequency	Percent	Valid Percent	Percent
Valid	credit	5932	85,5	85,5	85,5
	equity	1003	14,5	14,5	100,0
	Total	6935	100,0	100,0	

Table 26 descriptive statistics

		Credit			Cumulative Percent
		Frequency	Percent	Valid Percent	Percent
Valid	equity	1003	14,5	14,5	14,5
	credit	5932	85,5	85,5	100,0
	Total	6935	100,0	100,0	

Table 27 descriptive statistics

		Education			Cumulative Percent
		Frequency	Percent	Valid Percent	Percent
Valid	weak	3659	52,8	52,8	52,8
	strong	3276	47,2	47,2	100,0
	Total	6935	100,0	100,0	

Table 28 descriptive statistics

		Trust			Cumulative Percent
		Frequency	Percent	Valid Percent	Percent
Valid	NoTrust	5064	73,0	73,0	73,0
	Trust	1871	27,0	27,0	100,0
	Total	6935	100,0	100,0	

Table 29 descriptive statistics

**FirmInnov**



		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NonInnovation	4180	60,3	60,9	60,9
	innovation	2684	38,7	39,1	100,0
	Total	6864	99,0	100,0	
Missing	System	71	1,0		
Total		6935	100,0		

Table 30: Frequency of firm innovation among the sample

#### Appendix 2.5.A fsQCA 3.0 output data for the csQCA

Conditions	Consistency	Coverage
<b>EXPERIENCEDmanagers</b>	0.905215	0.394689
<b>~EXPERIENCEDmanagers</b>	0.094785	0.401613
<b>HumanCap</b>	0.594975	0.549385
<b>~HumanCap</b>	0.405025	0.280000
<b>STATE</b>	0.285497	0.302297
<b>~STATE</b>	0.714503	0.450769
<b>Equity</b>	0.283593	0.760981
<b>~ Equity</b>	0.716407	0.332157
<b>Credit</b>	0.716407	0.332157
<b>~ Credit</b>	0.283593	0.760981
<b>Education</b>	0.362391	0.309493
<b>~ Education</b>	0.637609	0.469319
<b>Trust</b>	0.205177	0.320261
<b>~ Trust</b>	0.794823	0.420798

Table 31: Output for necessary conditions test for presence of firm innovation

ExperiencedManagers2	HumanCap	STATE	Equity	Credit	Education	Trust	number	FirmInnov	cases	raw consist.	PRI consist.	SYM consist
1	1	0	1	0	0	0	611	1	cases	0.798691	0.798691	0.798691
1	0	0	1	0	0	0	296	0	cases	0.672297	0.672297	0.672297
1	1	0	0	1	0	0	1062	0	cases	0.508475	0.508475	0.508475
1	1	1	0	1	1	1	510	0	cases	0.47451	0.47451	0.47451
1	1	0	0	1	1	0	183	0	cases	0.360656	0.360656	0.360656
1	1	1	0	1	1	0	250	0	cases	0.36	0.36	0.36
1	0	0	0	1	1	0	365	0	cases	0.345205	0.345205	0.345205
0	0	1	0	1	1	1	149	0	cases	0.248322	0.248322	0.248322
1	0	1	0	1	1	1	957	0	cases	0.246604	0.246604	0.246604
1	0	0	0	1	0	0	1309	0	cases	0.223835	0.223835	0.223835
1	0	1	0	1	1	0	482	0	cases	0.20332	0.20332	0.20332

Table 32. Truth table (presence of firm innovation)

Type of solution	Pathway
Complex	ExperiencedManagers * HumanCap*~STATE*Equity*~Credit*~Education*~Trust
Parsimonious 1	HumanCap*~Credit
Parsimonious 2	HumanCap*Equity
Intermediate	ExperiencedManagers * HumanCap*~STATE*Equity*~Credit*~Education*~Trust

Solution Table 33: Coherent pathways to solutions, necessary for (Presence firm innovation)

	Complex	Parsimonious 1	Parsimonious 2	Intermediate
Frequency cut-off	149	149	149	149
Consistency cut-off	0.798691	0.798691	0.798691	0.798691
Raw coverage	0.185763	0.20137	0.20137	0.185763
Unique coverage	0.185763	0	0	0.185763
Consistency	0.798691	0.800303	0.800303	0.798691
Solution coverage	0.185763	0.20137	0.20137	0.185763
Solution consistency	0.798691	0.800303	0.800303	0.798691

Table 34: compiled results Quine-McCluskey algorithm

Comment table 33 & 34: It makes sense that a lot of the numbers are practically equal, which is due to the fact that only one legit pathway exists to reach innovation within the sample.

Conditions	Consistency	Coverage
EXPERIENCEDmanagers	0.907665	0.605311
~ EXPERIENCEDmanagers	0.092334	0.598387
HumanCap	0.319064	0.450615

<b>~ HumanCap</b>	0.680936	0.720000
<b>STATE</b>	0.43081	0.697703
<b>~ STATE</b>	0.569189	0.549232
<b>Equity</b>	0.058238	0.239019
<b>~ Equity</b>	0.941762	0.667843
<b>Credit</b>	0.941762	0.667843
<b>~ Credit</b>	0.058238	0.239019
<b>Education</b>	0.528621	0.690507
<b>~ Education</b>	0.471379	0.530681
<b>Trust</b>	0.284719	0.679739
<b>~ Trust</b>	0.715281	0.579202

Table 35: Output necessary conditions analysis for the absence of firm innovation

ExperiencedManagers2	HumanCap	STATE	Equity	Credit	Education	Trust	number	~FirmInnov	raw consist.	PRI consist.	SYM consist
1	0	1	0	1	1	0	482	1	0.796681	0.796681	0.796681
1	0	0	0	1	0	0	1309	1	0.776165	0.776165	0.776165
1	0	1	0	1	1	1	957	1	0.753396	0.753396	0.753396
0	0	1	0	1	1	1	149	1	0.751678	0.751678	0.751678
1	0	0	0	1	1	0	365	0	0.654795	0.654795	0.654795
1	1	1	0	1	1	0	250	0	0.64	0.64	0.64
1	1	0	0	1	1	0	183	0	0.639344	0.639344	0.639344
1	1	1	0	1	1	1	510	0	0.52549	0.52549	0.52549
1	1	0	0	1	0	0	1062	0	0.491525	0.491525	0.491525
1	0	0	1	0	0	0	296	0	0.327703	0.327703	0.327703
1	1	0	1	0	0	0	611	0	0.201309	0.201309	0.201309

Table 36 Truth table for absence of firm innovation

ExperiencedManager	HumanCap	STATE	Equity	Credit	Education	Trust	number	~FirmInnov	cases	raw consist.	PRI consist.	SYM consist
1	0	1	0	1	1	0	482	1	cases	0.796681	0.796681	0.796681
1	0	0	0	1	0	0	1309	1	cases	0.776165	0.776165	0.776165
1	0	1	0	1	1	1	957	1	cases	0.753396	0.753396	0.753396
1	0	0	0	1	1	0	365	0	cases	0.654795	0.654795	0.654795
1	1	1	0	1	1	0	250	0	cases	0.64	0.64	0.64
1	1	0	0	1	1	0	183	0	cases	0.639344	0.639344	0.639344
1	1	1	0	1	1	1	510	0	cases	0.52549	0.52549	0.52549
1	1	0	0	1	0	0	1062	0	cases	0.491525	0.491525	0.491525
1	0	0	1	0	0	0	296	0	cases	0.327703	0.327703	0.327703
1	1	0	1	0	0	0	611	0	cases	0.201309	0.201309	0.201309

Table 36B: Truth table after removal of row 4 in table 36 (to deal with incoherent counterfactual)

Type of solution	Pathway
Complex 1	ExperiencedManagers * ~HumanCapital * State * ~Equity * Credit * Education
Complex 2	ExperiencedManagers * ~HumanCapital * ~State * ~Equity * Credit * ~Education * ~Trust
Parsimonious 1	~HumanCapital * State
Parsimonious 2	~HumanCapital * ~Equity * ~Education
Parsimonious 3	~HumanCapital * Credit * ~Education
Intermediate 1	ExperiencedManagers * ~HumanCapital * State * ~Equity * Credit * Education
Intermediate 2	ExperiencedManagers * ~HumanCapital * ~State * ~Equity * Credit * ~Education * ~Trust

Solution Table 37: Coherent pathways to solutions resulting in absence of firm innovation

	Complex 1	Complex 2	Parsimonious 1	Parsimonious 2	Parsimonious 3	Intermediate 1	Intermediate 2
Frequency cut-off	189		189			189	
Consistency cut-off	0.75		0.75			0.75	
Raw coverage	0.28	0.25	0.31	0.28	0.28	0.28	0.25
Unique coverage	0.28	0.25	0.31	0	0	0.28	0.25
Consistency	0.77	0.78	0.76	0.77	0.77	0.77	0.78
Solution coverage	0.58		0.58			0.53	
Solution consistency	0.77		0.77			0.77	

Table 38: Compiled results Quine-McCluskey Algorithm for absence of firm innovation

## Appendix 2.5.B Robustness checks:

### 2.5.1 Managerial experience:

Newly calibrated point is 15 years see the syntax right here of the new calibration:

```
RECODE b7 (-9=SYSMIS) (Lowest thru 14=0) (15 thru Highest=1) INTO
RecalibratedManExp.
VARIABLE LABELS RecalibratedManExp 'RecalibratedManExp'.
EXECUTE.
```

		RecalibratedManExp			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	,00	1439	20,7	21,3	21,3
	1,00	5324	76,8	78,7	100,0
	Total	6763	97,5	100,0	
Missing	System	172	2,5		
Total		6935	100,0		

Table 39 Recalibration descriptive of managerial experience

Conditions	Consistency	Coverage
<b>RecalibratedManExp</b>	0.802056	0.401793
~ RecalibratedManExp	0.197944	0.371163
<b>HumanCap</b>	0.594975	0.549385
~ HumanCap	0.405025	0.280000
<b>STATE</b>	0.285497	0.302297
~ STATE	0.714503	0.450769
<b>Equity</b>	0.283593	0.760981
~ Equity	0.716407	0.332157
<b>Credit</b>	0.716407	0.332157
~ Credit	0.283593	0.760981
<b>Education</b>	0.362391	0.309493
~ Education	0.637609	0.469319
<b>Trust</b>	0.205177	0.320261
~ Trust	0.794823	0.420798

Table 40: necessary conditions recalibrated managerial experience (**Presence** firm innovation)

RecalibratedManExp	HumanCap	STATE	Equity	Credit	Education	Trust	number	FirmInnov	cases	raw consist.	PRI consist.	SYM consist
1	1	0	1	0	0	0	532	1	cases	0.802632	0.802632	0.802632
1	0	0	1	0	0	0	262	0	cases	0.683206	0.683206	0.683206
0	1	0	0	1	0	0	188	0	cases	0.670213	0.670213	0.670213
1	1	0	0	1	0	0	961	0	cases	0.495317	0.495317	0.495317
1	1	1	0	1	1	1	445	0	cases	0.485393	0.485393	0.485393
0	1	1	0	1	1	1	163	0	cases	0.417178	0.417178	0.417178
1	1	0	0	1	1	0	157	0	cases	0.388535	0.388535	0.388535
1	0	0	0	1	1	0	332	0	cases	0.358434	0.358434	0.358434
1	1	1	0	1	1	0	227	0	cases	0.356828	0.356828	0.356828
1	0	1	0	1	1	1	799	0	cases	0.252816	0.252816	0.252816
1	0	0	0	1	0	0	1106	0	cases	0.232369	0.232369	0.232369
1	0	1	0	1	1	0	423	0	cases	0.210402	0.210402	0.210402
0	0	0	0	1	0	0	349	0	cases	0.209169	0.209169	0.209169
0	0	1	0	1	1	1	412	0	cases	0.196602	0.196602	0.196602

**table 41: recalibration managerial experience presence firm innovation**

```

--- COMPLEX SOLUTION ---
frequency cutoff: 157
consistency cutoff: 0.802632

```

	raw coverage	unique coverage	consistency
RecalibratedManExp*HumanCap*~STATE*Equity*~Credit*~Education*~Trust	0.160105	0.160105	0.802632
solution coverage: 0.160105			
solution consistency: 0.802632			

**Table 42: complex solution recalibrated managerial experience (presence firm innovation)**

```

--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 157
consistency cutoff: 0.802632

```

	raw coverage	unique coverage	consistency
HumanCap*~Credit	0.2006	0	0.799701
HumanCap*Equity	0.2006	0	0.799701
solution coverage: 0.2006			
solution consistency: 0.799701			

**Table 43: parsimonious solution recalibrated managerial experience (presence firm innovation)**

```

--- INTERMEDIATE SOLUTION ---
frequency cutoff: 157
consistency cutoff: 0.802632
Assumptions:

```

	raw coverage	unique coverage	consistency
RecalibratedManExp*HumanCap*~STATE*Equity*~Credit*~Education*~Trust	0.160105	0.160105	0.802632
solution coverage: 0.160105			
solution consistency: 0.802632			

**Table 44 intermediate solution recalibrated managerial experience (Presence firm innovation)**

## Analysis of Necessary Conditions

Outcome variable: ~FirmInnov

Conditions tested:

	Consistency	Coverage
RecalibratedManExp	0.780737	0.598207
~RecalibratedManExp	0.219263	0.628837
HumanCap	0.319064	0.450615
~HumanCap	0.680936	0.720000
STATE	0.430811	0.697703
~STATE	0.569189	0.549232
Equity	0.058238	0.239019
~Equity	0.941762	0.667843
Credit	0.941762	0.667843
~Credit	0.058238	0.239019
Education	0.528621	0.690507
~Education	0.471379	0.530681
Trust	0.284719	0.679739
~Trust	0.715281	0.579202

Table 45: necessary conditions recalibrated managerial experience (**absence** firm innovation)

RecalibratedManExp	HumanCap	STATE	Equity	Credit	Education	Trust	number	~FirmInnov	cases	raw
0	0	1	0	1	1	1	412	1	cases	
0	0	0	0	1	0	0	349	1	cases	
1	0	1	0	1	1	0	423	1	cases	
1	0	0	0	1	0	0	1106	1	cases	
1	0	1	0	1	1	1	799	0	cases	
1	1	1	0	1	1	0	227	0	cases	
1	0	0	0	1	1	0	332	0	cases	
1	1	0	0	1	1	0	157	0	cases	
0	1	1	0	1	1	1	163	0	cases	
1	1	1	0	1	1	1	445	0	cases	
1	1	0	0	1	0	0	961	0	cases	
0	1	0	0	1	0	0	188	0	cases	
1	0	0	1	0	0	0	262	0	cases	
1	1	0	1	0	0	0	532	0	cases	

table 46: recalibrated managerial experience absence firm innovation

```

--- COMPLEX SOLUTION ---
frequency cutoff: 157
consistency cutoff: 0.767631

```

	raw coverage	unique coverage	consistency
~HumanCap*~STATE*~Equity*Credit*~Education*~Trust	0.271608	0.271608	0.773196
RecalibratedManExp*~HumanCap*STATE*~Equity*Credit*Education*~Trust	0.0806374	0.0806374	0.789598
~RecalibratedManExp*~HumanCap*STATE*~Equity*Credit*Education*Trust	0.0799131	0.0799131	0.803398

solution coverage: 0.432158  
 solution consistency: 0.781659

**Table 47 Complex solution recalibrated managerial experience (Absence firm innovation)**

## 2.5.2 recalibrations trust

RecalibratedTrust					Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	NoTrust	4259	61,4	61,4	61,4
	Trust	2676	38,6	38,6	100,0
	Total	6935	100,0	100,0	

**Table 48 Recalibration trust descriptive**

### Analysis of Necessary Conditions

Outcome variable: FirmInnov

Conditions tested:

	Consistency	Coverage
ExperiencedManagers2	0.905215	0.394689
~ExperiencedManagers2	0.094785	0.401613
HumanCap	0.594975	0.549385
~HumanCap	0.405025	0.280000
STATE	0.285497	0.302297
~STATE	0.714503	0.450769
Equity	0.283593	0.760981
~Equity	0.716407	0.332157
Credit	0.716407	0.332157
~Credit	0.283593	0.760981
Education	0.362391	0.309493
~Education	0.637609	0.469319
RecalibrateTrust	0.285497	0.302297
~RecalibrateTrust	0.714503	0.450769

**Table 49 necessary conditions analysis presence firm innovation recalibrations trust**



ExperiencedManage	HumanCap	STATE	Equity	Credit	Education	RecalibrateTrust	number	FirmInnov	cases	raw consi
1	1	0	1	0	0	0	611	1	cases	0.79
1	0	0	0	1	0	0	1309	0	cases	0.22
1	0	1	0	1	1	1	1439	0	cases	0.23
0	0	1	0	1	1	1	188	0	cases	0.26
1	0	0	0	1	1	0	365	0	cases	0.34
1	1	0	0	1	1	0	183	0	cases	0.36
1	1	1	0	1	1	1	760	0	cases	0.43
1	1	0	0	1	0	0	1062	0	cases	0.50
1	0	0	1	0	0	0	296	0	cases	0.67

**Table 50 recalibration trust (presence firm innovation)**

Type of solution	Pathway
Complex	ExperiencedManagers * HumanCap*~STATE*Equity*~Credit*~Education*~RecalibratedTrust
Parsimonious 1	HumanCap*~Credit
Parsimonious 2	HumanCap*Equity
Intermediate	ExperiencedManagers * HumanCap*~STATE*Equity*~Credit*~Education*~RecalibratedTrust

Solution Table 51: Coherent pathways to solutions, necessary for (Presence firm innovation) →

#### RECALIBRATED TRUST

	Complex	Parsimonious 1	Parsimonious 2	Intermediate
Frequency cut-off	149	149	149	149
Consistency cut-off	0.798691	0.798691	0.798691	0.798691
Raw coverage	0.185763	0.20137	0.20137	0.185763
Unique coverage	0.185763	0	0	0.185763
Consistency	0.798691	0.800303	0.800303	0.798691
Solution coverage	0.185763	0.20137	0.20137	0.185763
Solution consistency	0.798691	0.800303	0.800303	0.798691

Table 52: compiled results Quine-McCluskey algorithm

## Analysis of Necessary Conditions

Outcome variable: ~FirmInnov

Conditions tested:

	Consistency	Coverage
ExperiencedManagers2	0.907665	0.605311
~ExperiencedManagers2	0.092334	0.598387
HumanCap	0.319064	0.450615
~HumanCap	0.680936	0.720000
STATE	0.430811	0.697703
~STATE	0.569189	0.549232
Equity	0.058238	0.239019
~Equity	0.941762	0.667843
Credit	0.941762	0.667843
~Credit	0.058238	0.239019
Education	0.528621	0.690507
~Education	0.471379	0.530681
RecalibrateTrust	0.430811	0.697703
~RecalibrateTrust	0.569189	0.549232

Table 53 Necessary conditions recalibrated trust (absence firm innovation)

ExperiencedManage	HumanCap	STATE	Equity	Credit	Education	RecalibrateTrust	number	~FirmInnov	cases	raw consist.
1	0	0	0	1	0	0	1309	1	cases	0.776165
1	0	1	0	1	1	1	1439	1	cases	0.767894
0	0	1	0	1	1	1	188	0	cases	0.739362
1	0	0	0	1	1	0	365	0	cases	0.654795
1	1	0	0	1	1	0	183	0	cases	0.639344
1	1	1	0	1	1	1	760	0	cases	0.563158
1	1	0	0	1	0	0	1062	0	cases	0.491525
1	0	0	1	0	0	0	296	0	cases	0.327703
1	1	0	1	0	0	0	611	0	cases	0.201309

Table 54 Truth table recalibrations trust (absence firm innovation)

--- INTERMEDIATE SOLUTION ---  
frequency cutoff: 183  
consistency cutoff: 0.767894  
Assumptions:

	raw coverage	unique coverage	consistency
ExperiencedManagers2*~HumanCap*~STATE*~Equity*Credit*~Education*~RecalibrateTrust	0.252862	0.252862	0.776165
ExperiencedManagers2*~HumanCap*STATE*~Equity*Credit*Education*RecalibrateTrust	0.275012	0.275012	0.767894
solution coverage: 0.527875			
solution consistency: 0.771834			

Table 55 Intermediate solution recalibrated trust (~firm innovation)

### 2.5.3 recalibration education (skill development system)

		Education			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	weak education system	3659	52,8	52,8	52,8
	strong education system	3276	47,2	47,2	100,0
	Total	6935	100,0	100,0	

Table 56 descriptive statistics original calibration education

		RecEdu			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	weak education system	5064	73,0	73,0	73,0
	strong education system	1871	27,0	27,0	100,0
	Total	6935	100,0	100,0	

Table 57: descriptive statistics, recalibration education

		Statistics	
		RecEdu	Education
N	Valid	6935	6935
	Missing	0	0
Mean		,2698	,4724
Std. Deviation		,44388	,49927
Minimum		,00	,00
Maximum		1,00	1,00

Table 58: additional descriptive statistics on recalibration and original calibration for education

## Analysis of Necessary Conditions

Outcome variable: FirmInnov

Conditions tested:

	Consistency	Coverage
ExperiencedManagers2	0.905215	0.394689
~ExperiencedManagers2	0.094785	0.401613
HumanCap	0.594975	0.549385
~HumanCap	0.405025	0.280000
STATE	0.285497	0.302297
~STATE	0.714503	0.450769
Equity	0.283593	0.760981
~Equity	0.716407	0.332157
Credit	0.716407	0.332157
~Credit	0.283593	0.760981
RecalibrateEducation	0.205177	0.320261
~RecalibrateEducation	0.794823	0.420798
Trust	0.205177	0.320261
~Trust	0.794823	0.420798

**Table 59: necessary conditions test recalibration education (presence firm innovation)**

xperiencedManagers	HumanCap	STATE	Equity	Credit	RecalibrateEducation	Trust	number	FirmInnov	cases	raw consist.
1	1	0	1	0	0	0	611	1	cases	0.798691
1	0	0	1	0	0	0	296	0	cases	0.672297
1	1	0	0	1	0	0	1245	0	cases	0.486741
1	1	1	0	1	1	1	510	0	cases	0.474503
1	1	1	0	1	0	0	250	0	cases	0.320261
0	0	0	0	1	0	0	181	0	cases	0.254146
1	0	0	0	1	0	0	1674	0	cases	0.250261
0	0	1	0	1	1	1	149	0	cases	0.248321
1	0	1	0	1	1	1	957	0	cases	0.246691
1	0	1	0	1	0	0	482	0	cases	0.203261

**Table 60: truth table recalibration education (presence firm innovation)**

--- INTERMEDIATE SOLUTION ---  
frequency cutoff: 149  
consistency cutoff: 0.798691  
Assumptions:

	raw coverage	unique coverage	consistency
ExperiencedManagers2*HumanCap*~STATE*Equity*~Credit*~RecalibrateEducation*~Trust	0.185763	0.185763	0.798691
solution coverage: 0.185763			
solution consistency: 0.798691			

**Table 61 intermediate solution truth table recalibration education (presence firm innovation)**

## Analysis of Necessary Conditions

Outcome variable: ~FirmInnov

Conditions tested:

	Consistency	Coverage
ExperiencedManagers2	0.907665	0.605311
~ExperiencedManagers2	0.092334	0.598387
HumanCap	0.319064	0.450615
~HumanCap	0.680936	0.720000
STATE	0.430811	0.697703
~STATE	0.569189	0.549232
Equity	0.058238	0.239019
~Equity	0.941762	0.667843
Credit	0.941762	0.667843
~Credit	0.058238	0.239019
RecalibrateEducation	0.284719	0.679739
~RecalibrateEducation	0.715281	0.579202
Trust	0.284719	0.679739
~Trust	0.715281	0.579202

Table 62: necessary conditions analysis recalibration education (absence firm innovation)

xperiencedManagers	HumanCap	STATE	Equity	Credit	RecalibrateEducation	Trust	number	~FirmInnov	cases	raw consist.	PRI c
1	0	1	0	1	0	0	482	1	cases	0.796681	
1	0	1	0	1	1	1	957	1	cases	0.753396	
0	0	1	0	1	1	1	149	1	cases	0.751678	
1	0	0	0	1	0	0	1674	0	cases	0.749701	
0	0	0	0	1	0	0	181	0	cases	0.745856	
1	1	1	0	1	0	0	250	0	cases	0.64	
1	1	1	0	1	1	1	510	0	cases	0.52549	
1	1	0	0	1	0	0	1245	0	cases	0.513253	
1	0	0	1	0	0	0	296	0	cases	0.327703	
1	1	0	1	0	0	0	611	0	cases	0.201309	

Table 63A truth table recalibration education (absence firm innovation)

xperiencedManage	HumanCap	STATE	Equity	Credit	scalibrateEducatio	Trust	number	~FirmInnov	cases	raw consist.	PRI consist.	SYM consist
1	0	1	0	1	0	0	482	1	cases	0.796681	0.796681	0.796681
1	0	1	0	1	1	1	957	1	cases	0.753396	0.753396	0.753396
1	0	0	0	1	0	0	1674	0	cases	0.749701	0.749701	0.749701
0	0	0	0	1	0	0	181	0	cases	0.745856	0.745856	0.745856
1	1	1	0	1	0	0	250	0	cases	0.64	0.64	0.64
1	1	1	0	1	1	1	510	0	cases	0.52549	0.52549	0.52549
1	1	0	0	1	0	0	1245	0	cases	0.513253	0.513253	0.513253
1	0	0	1	0	0	0	296	0	cases	0.327703	0.327703	0.327703
1	1	0	1	0	0	0	611	0	cases	0.201309	0.201309	0.201309

Table 63B truth table recalibration education (absence firm innovation) after removal of row 3 of table 63A because it contradicted the necessity statement (Schneider & Wagemann, 2012)

```

--- INTERMEDIATE SOLUTION ---
frequency cutoff: 149
consistency cutoff: 0.751678
Assumptions:

raw coverage unique consistency
-----
~HumanCap*STATE*~Equity*Credit*RecalibrateEducation*Trust 0.207317 0.207317 0.753165
ExperiencedManagers2*~HumanCap*STATE*~Equity*Credit*~RecalibrateEducation*~Trust 0.0955699 0.09557 0.796681
solution coverage: 0.302887
solution consistency: 0.766373

```

Table 64: Intermediate solution recalibration education (absence firm innovation)

```

--- INTERMEDIATE SOLUTION ---
frequency cutoff: 181
consistency cutoff: 0.753396
Assumptions:

raw coverage unique
-----
consistency -----
-----
ExperiencedManagers2*~HumanCap*STATE*~Equity*Credit*~RecalibrateEducation*~Trust 0.0955699 0.0955699
0.796681
ExperiencedManagers2*~HumanCap*STATE*~Equity*Credit*RecalibrateEducation*Trust 0.179443 0.179442
0.753396
solution coverage: 0.275012

```

Table 64B correct intermediate solution after enhanced standard analysis

## 2.5.4 recalibration state

Statistics			
		STATE	RecState
N	Valid	6935	6935
	Missing	0	0
Mean		,3859	,0724
Std. Deviation		,48683	,25915
Minimum		,00	,00
Maximum		1,00	1,00

Table 65 descriptive statistics **original** calibration and recalibration of the variable STATE

		STATE			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	weak	4259	61,4	61,4	61,4
	strong	2676	38,6	38,6	100,0
	Total	6935	100,0	100,0	

Table 66: Membership statistics original calibration of STATE

		RecState			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	weak state support	6433	92,8	92,8	92,8
	strong state support	502	7,2	7,2	100,0
	Total	6935	100,0	100,0	

Table 67: membership statistics recalibration of STATE

#### Analysis of Necessary Conditions

Outcome variable: FirmInnov

Conditions tested:

	Consistency	Coverage
ExperiencedManagers2	0.905215	0.394689
~ExperiencedManagers2	0.094785	0.401613
HumanCap	0.594975	0.549385
~HumanCap	0.405025	0.280000
RecalibrateSTATE	0.099353	0.523046
~RecalibrateSTATE	0.900647	0.384966
Equity	0.283593	0.760981
~Equity	0.716407	0.332157
Credit	0.716407	0.332157
~Credit	0.283593	0.760981
Education	0.362391	0.309493
~Education	0.637609	0.469319
Trust	0.205177	0.320261
~Trust	0.794823	0.420798

Table 68: necessary conditions analysis Recalibration State

xperiencedManagers	HumanCap	RecalibrateSTATE	Equity	Credit	Education	Trust	number	FirmInnov	cases	raw consist.	PRI consist.
1	1	0	1	0	0	0	611	1	cases	0.798691	0.798691
1	0	0	1	0	0	0	296	0	cases	0.672297	0.672297
1	1	1	0	1	1	1	228	0	cases	0.583333	0.583333
1	1	0	0	1	0	0	1062	0	cases	0.508475	0.508475
1	0	1	0	1	1	1	237	0	cases	0.459916	0.459916
1	1	0	0	1	1	1	282	0	cases	0.386525	0.386525
1	1	0	0	1	1	0	433	0	cases	0.360277	0.360277
1	0	0	0	1	1	0	847	0	cases	0.264463	0.264463
1	0	0	0	1	0	0	1309	0	cases	0.223835	0.223835
1	0	0	0	1	1	1	720	0	cases	0.176389	0.176389

Table 69: truth table recalibration STATE (presence firm innovation)

--- INTERMEDIATE SOLUTION ---  
frequency cutoff: 228  
consistency cutoff: 0.798691  
Assumptions:

	raw coverage	unique coverage	consistency
ExperiencedManagers2*HumanCap*~RecalibrateSTATE*Equity*~Credit*~Education*~Trust	0.185763	0.185763	0.798691
solution coverage: 0.185763			
solution consistency: 0.798691			

Table 70: intermediate solution recalibration STATE (presence firm innovation)

## Analysis of Necessary Conditions

Outcome variable: ~FirmInnov

Conditions tested:

	Consistency	Coverage
ExperiencedManagers2	0.907665	0.605311
~ExperiencedManagers2	0.092334	0.598387
HumanCap	0.319064	0.450615
~HumanCap	0.680936	0.720000
RecalibrateSTATE	0.059233	0.476954
~RecalibrateSTATE	0.940767	0.615034
Equity	0.058238	0.239019
~Equity	0.941762	0.667843
Credit	0.941762	0.667843
~Credit	0.058238	0.239019
Education	0.528621	0.690507
~Education	0.471379	0.530681
Trust	0.284719	0.679739
~Trust	0.715281	0.579202

Table 71: Necessary conditions analysis recalibration STATE (absence firm innovation)

xperiencedManagers	HumanCap	RecalibrateSTATE	Equity	Credit	Education	Trust	number	~FirmInnov	cases	raw consist.	PR
1	0	0	0	1	1	1	720	1	cases	0.823611	
1	0	0	0	1	0	0	1309	1	cases	0.776165	
1	0	0	0	1	1	0	847	0	cases	0.735537	
1	1	0	0	1	1	0	433	0	cases	0.639723	
1	1	0	0	1	1	1	282	0	cases	0.613475	
1	0	1	0	1	1	1	237	0	cases	0.540084	
1	1	0	0	1	0	0	1062	0	cases	0.491525	
1	1	1	0	1	1	1	228	0	cases	0.416667	
1	0	0	1	0	0	0	296	0	cases	0.327703	
1	1	0	1	0	0	0	611	0	cases	0.201309	

table 72: truth table recalibration STATE (absence firm innovation)

--- INTERMEDIATE SOLUTION ---

frequency cutoff: 228

consistency cutoff: 0.776165

Assumptions:

	raw coverage	unique coverage	consistency
ExperiencedManagers2*~HumanCap*~RecalibrateSTATE*~Equity*Credit*~Education*~Trust	0.252862	0.252862	0.776165
ExperiencedManagers2*~HumanCap*~RecalibrateSTATE*~Equity*Credit*Education*Trust	0.147586	0.147586	0.823611
solution coverage: 0.400448			
solution consistency: 0.793001			

table 73: intermediate solution recalibration STATE (absence firm innovation)

## Appendix 2.6 tests of normality

Syntax:

GET



```

FILE='C:\Users\olivi\OneDrive\Master thesis\Country reports or
datasets\Complete file with every country (14-05-2022).sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
FREQUENCIES VARIABLES=FirmInnov ExperiencedManagers2 HumanCap STATE Equity
Credit Education Trust
/STATISTICS=STDDEV MINIMUM MAXIMUM MEAN SKEWNESS SESKEW KURTOSIS SEKURT
/HISTOGRAM NORMAL
/ORDER=ANALYSIS.

```

Statistics									
		FirmInno v	Experienced Managers	HumanCa p	STATE	Equity	Credit	Educatio n	Trust
N	Valid	6864	6763	6875	6935	6935	6935	6935	6935
	Missing	71	172	60	0	0	0	0	0
Mean		,3910	,9051	,4250	,3859	,1446	,8554	,4724	,2698
Std. Deviation		,48802	,29314	,49438	,48683	,35175	,35175	,49927	,44388
Skewness		,447	-2,765	,303	,469	2,021	-2,021	,111	1,038
Std. Error of Skewness		,030	,030	,030	,029	,029	,029	,029	,029
Kurtosis		-1,801	5,644	-1,908	-1,781	2,086	2,086	-1,988	-,924
Std. Error of Kurtosis		,059	,060	,059	,059	,059	,059	,059	,059
Minimum		,00	,00	,00	,00	,00	,00	,00	,00
Maximum		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Table 74 (change number): tests of Normality

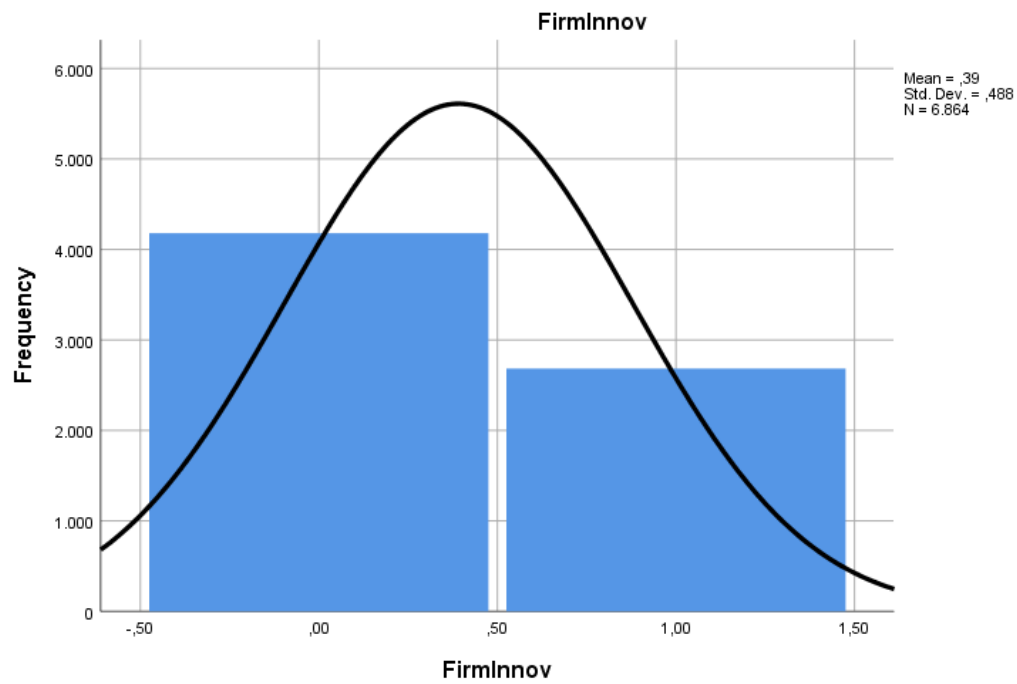


Figure 1: Histogram firm innovation

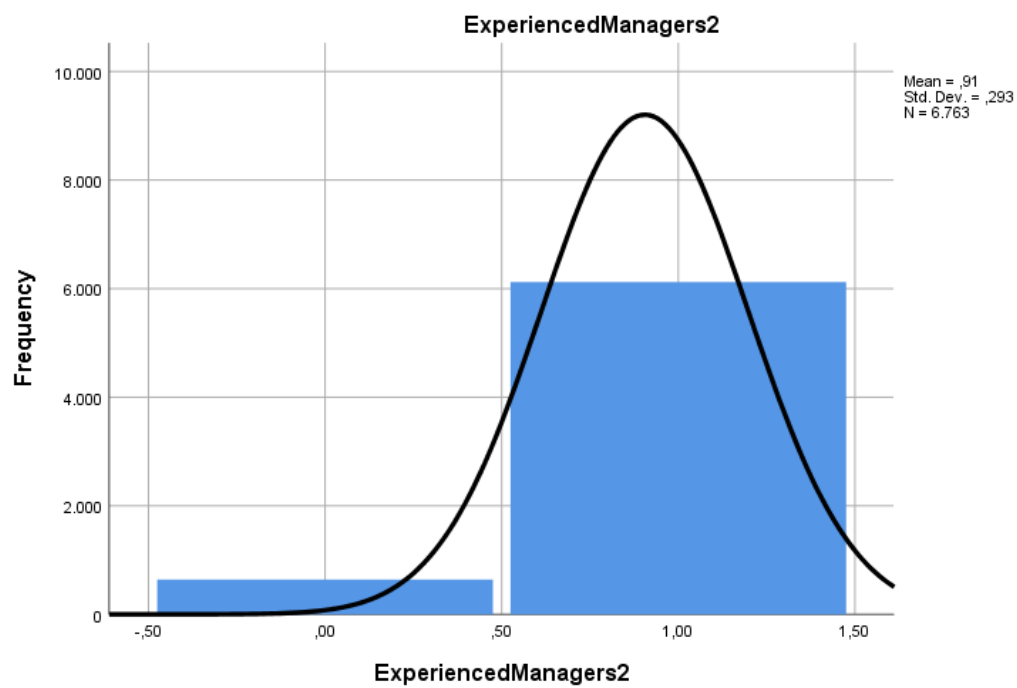


Figure 2: Histogram Experienced managers

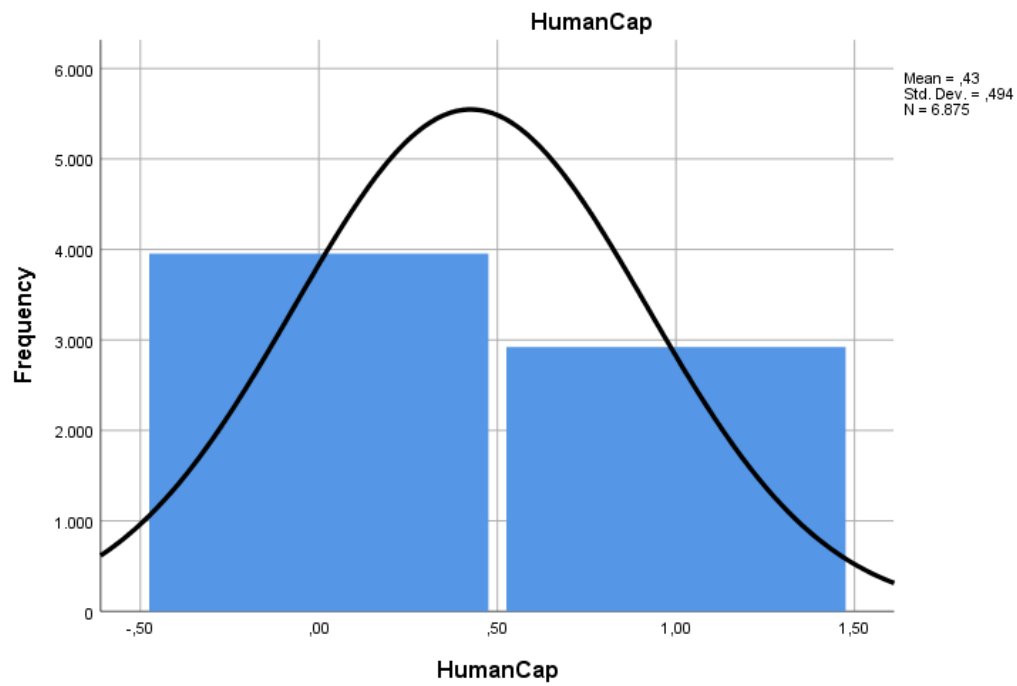


Figure 3: Histogram Human capital

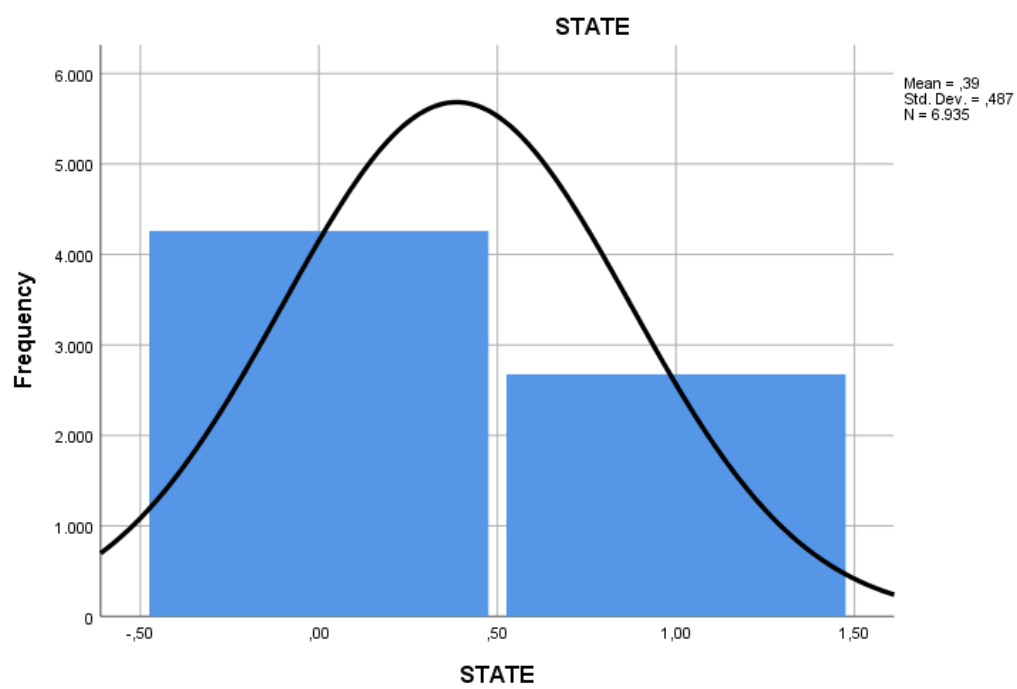


Figure 4: Histogram State

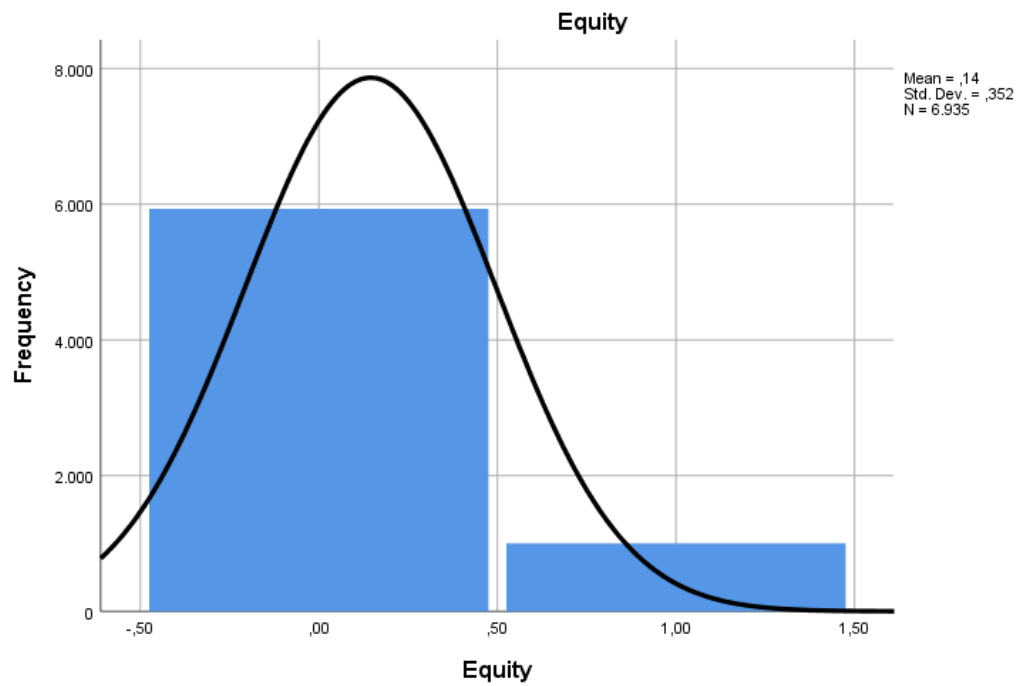


Figure 5: Histogram Equity

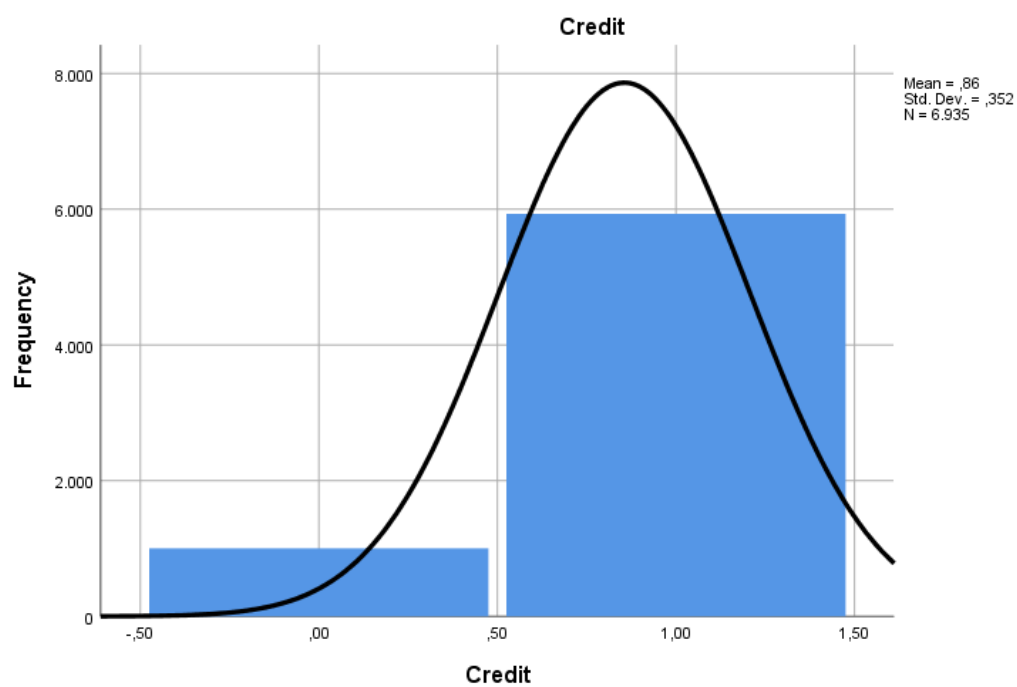


Figure 6: Histogram Credit

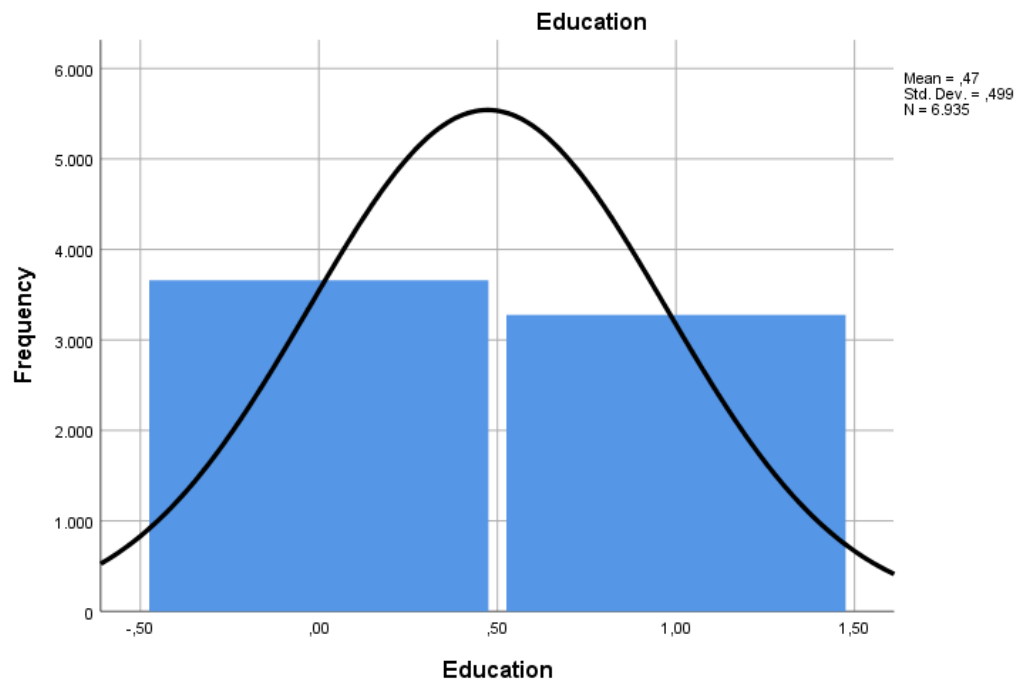


Figure 7: Histogram Education

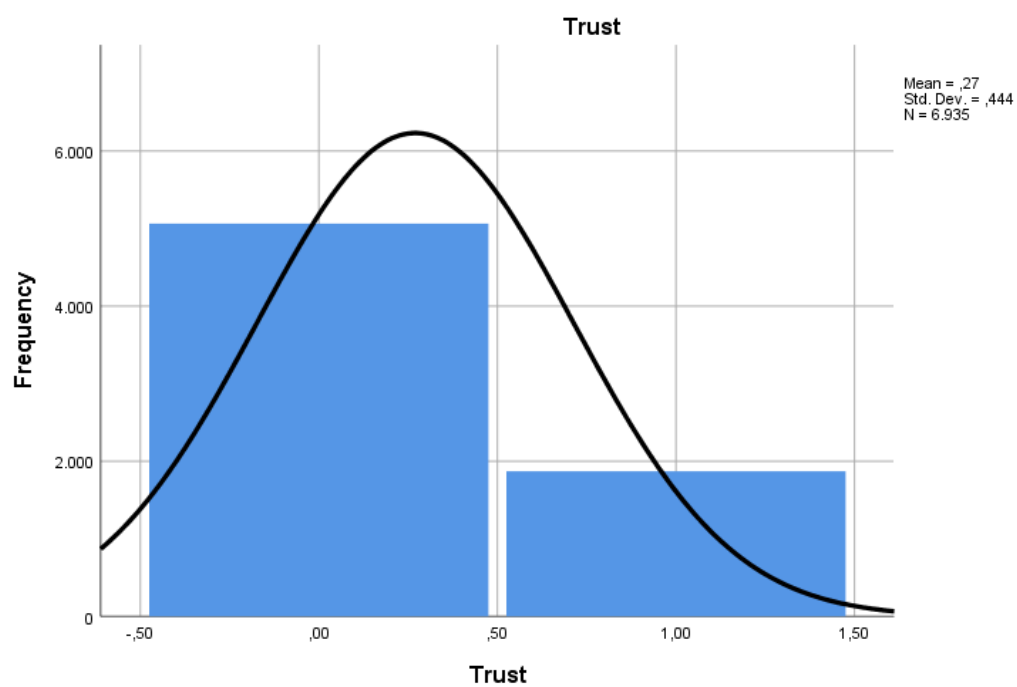


Figure 8: Histogram Trust

## Appendix 2.7 Robustness check with less stringent measure for frequency thresholds (presence firm innovation)

experiencedManager	HumanCap	STATE	Equity	Credit	Education	Trust	number	FirmInnov	raw consist.	PRI consist.	SYM consist
1	0	0	0	1	0	0	1309 (19%)		0.223835	0.223835	0.223835
1	1	0	0	1	0	0	1062 (35%)		0.508475	0.508475	0.508475
1	0	1	0	1	1	1	957 (50%)		0.246604	0.246604	0.246604
1	1	0	1	0	0	0	611 (59%)		0.798691	0.798691	0.798691
1	1	1	0	1	1	1	510 (67%)		0.47451	0.47451	0.47451
1	0	1	0	1	1	0	482 (74%)		0.20332	0.20332	0.20332
1	0	0	0	1	1	0	365 (79%)		0.345205	0.345205	0.345205
1	0	0	1	0	0	0	296 (84%)		0.672297	0.672297	0.672297
1	1	1	1	0	1	0	250 (87%)		0.36	0.36	0.36
1	1	0	0	1	1	0	183 (90%)		0.360656	0.360656	0.360656
0	0	1	0	1	1	1	149 (92%)		0.248322	0.248322	0.248322
0	0	0	0	1	0	0	135 (94%)		0.266667	0.266667	0.266667
0	1	0	0	1	0	0	84 (96%)		0.72619	0.72619	0.72619
0	1	1	0	1	1	1	67 (97%)		0.358209	0.358209	0.358209
0	1	0	1	0	0	0	50 (98%)		0.82	0.82	0.82
0	0	0	0	1	1	0	46 (98%)		0.217391	0.217391	0.217391
0	0	1	0	1	1	0	39 (99%)		0.307692	0.307692	0.307692
0	1	1	0	1	1	0	27 (99%)		0.407407	0.407407	0.407407
0	0	0	1	0	0	0	22 (100%)		0.772727	0.772727	0.772727
0	1	0	0	1	1	0	1 (100%)		0	0	0
0	0	0	0	0	0	0	0 (100%)				
1	0	0	0	0	0	0	0 (100%)				
0	1	0	0	0	0	0	0 (100%)				
1	1	0	0	0	0	0	0 (100%)				

Table 75: truth table with frequencies (less stringent frequency)

experiencedManager	HumanCap	STATE	Equity	Credit	Education	Trust	number	FirmInnov	raw consist.	PRI consist.	SYM consist
0	1	0	1	0	0	0	50	1	0.82	0.82	0.82
1	1	0	1	0	0	0	611	1	0.798691	0.798691	0.798691
0	1	0	0	1	0	0	84	0	0.72619	0.72619	0.72619
1	0	0	1	0	0	0	296	0	0.672297	0.672297	0.672297
1	1	0	0	1	0	0	1062	0	0.508475	0.508475	0.508475
1	1	1	0	1	1	1	510	0	0.47451	0.47451	0.47451
0	1	1	0	1	1	0	27	0	0.407407	0.407407	0.407407
1	1	0	0	1	1	0	183	0	0.360656	0.360656	0.360656
1	1	1	0	1	1	0	250	0	0.36	0.36	0.36
0	1	1	0	1	1	1	67	0	0.358209	0.358209	0.358209
1	0	0	0	1	1	0	365	0	0.345205	0.345205	0.345205
0	0	1	0	1	1	0	39	0	0.307692	0.307692	0.307692
0	0	0	0	1	0	0	135	0	0.266667	0.266667	0.266667
0	0	1	0	1	1	1	149	0	0.248322	0.248322	0.248322
1	0	1	0	1	1	1	957	0	0.246604	0.246604	0.246604
1	0	0	0	1	0	0	1309	0	0.223835	0.223835	0.223835
0	0	0	0	1	1	0	46	0	0.217391	0.217391	0.217391
1	0	1	0	1	1	0	482	0	0.20332	0.20332	0.20332

Table 76: Applied consistency score of 0.75 and cutoff value of 27

```

--- COMPLEX SOLUTION ---
frequency cutoff: 27
consistency cutoff: 0.798691

               raw      unique
               coverage coverage consistency
               -----
HumanCap*~STATE*Equity*~Credit*~Education*~Trust  0.20137  0.20137  0.800303
solution coverage: 0.20137
solution consistency: 0.800303

```

Table 77: Complex solution less stringent frequency threshold

```

--- PARSIMONIOUS SOLUTION ---
frequency cutoff: 27
consistency cutoff: 0.798691

               raw      unique
               coverage coverage consistency
               -----
HumanCap*~Credit  0.20137  0  0.800303
HumanCap*Equity  0.20137  0  0.800303
solution coverage: 0.20137
solution consistency: 0.800303

```

Table 78: Parsimonious solution less stringent frequency threshold

```

--- INTERMEDIATE SOLUTION ---
frequency cutoff: 27
consistency cutoff: 0.798691
Assumptions:

               raw      unique
               coverage coverage consistency
               -----
HumanCap*~STATE*Equity*~Credit*~Education*~Trust  0.20137  0.20137  0.800303
solution coverage: 0.20137
solution consistency: 0.800303

```

Table 79: Intermediate

solution less stringent frequency threshold

Presence firm innovation	
Firm resources:	
<b>Managerial experience</b>	
<b>Human capital</b>	●
Institutional variables (NBS):	
State influence: <b>State</b>	⊗
Financial system: <b>Equity</b>	●
Financial system: <b>Credit</b>	⊗
Skill development and control system: <b>Education</b>	⊗
Normative trust and authority relations: <b>Trust</b>	⊗
Consistency	0.80
Raw coverage	0.20
Unique coverage	0.20
Solution consistency	0.80
Solution coverage	0.20

Table D: ● indicates the presence of a condition, ⊗ indicates the absence of a condition, the larger circles indicate a core condition, the smaller circles indicate peripheral conditions, empty cells indicate a ‘don’t care’ response (Fiss, 2011).

	Complex	Parsimonious 1	Parsimonious 2	Intermediate
Frequency cut-off	27	27	27	27
Consistency cut-off	0.798691	0.798691	0.798691	0.798691
Raw coverage	0.185763	0.20137	0.20137	0.185763
Unique coverage	0.185763	0	0	0.185763
Consistency	0.798691	0.800303	0.800303	0.798691
Solution coverage	0.185763	0.20137	0.20137	0.185763
Solution consistency	0.798691	0.800303	0.800303	0.798691

Table 80: Enhanced Standard Analysis less stringent frequency threshold (final solution)

--- INTERMEDIATE SOLUTION ---			
frequency cutoff: 27			
consistency cutoff: 0.798691			
Assumptions:			
	raw coverage	unique coverage	consistency
ExperiencedManagers2*HumanCap*~STATE*Equity*~Credit*~Education*~Trust	0.185763	0.185763	0.798691
solution coverage: 0.185763			
solution consistency: 0.798691			

Table 80B: coherent pathway to intermediate solution after removal of incoherent counterfactual

## Appendix 2.7.1 Robustness check with less stringent measure for frequency thresholds

(Absence firm innovation)

Conditions	Consistency	Coverage
<b>EXPERIENCEDmanagers</b>	0.907665	0.605311
<b>~ EXPERIENCEDmanagers</b>	0.092334	0.598387
<b>HumanCap</b>	0.319064	0.450615
<b>~ HumanCap</b>	0.680936	0.720000
<b>STATE</b>	0.43081	0.697703
<b>~ STATE</b>	0.569189	0.549232
<b>Equity</b>	0.058238	0.239019
<b>~ Equity</b>	0.941762	0.667843
<b>Credit</b>	0.941762	0.667843
<b>~ Credit</b>	0.058238	0.239019
<b>Education</b>	0.528621	0.690507
<b>~ Education</b>	0.471379	0.530681
<b>Trust</b>	0.284719	0.679739
<b>~ Trust</b>	0.715281	0.579202

Table 81: Necessary conditions analysis less stringent frequency threshold (absence firm innovation)

→ note it is the same as table 35



periencedManage	HumanCap	STATE	Equity	Credit	Education	Trust	number	~FirmInnov	cases	raw consist.	PRI consist.	SYM consist
1	0	1	0	1	1	0	482	1	cases	0.796681	0.796681	0.796681
0	0	0	0	1	1	0	46	1	cases	0.782609	0.782609	0.782609
1	0	0	0	1	0	0	1309	1	cases	0.776165	0.776165	0.776165
1	0	1	0	1	1	1	957	1	cases	0.753396	0.753396	0.753396
0	0	1	0	1	1	1	149	1	cases	0.751678	0.751678	0.751678
0	0	0	0	1	0	0	135	0	cases	0.733333	0.733333	0.733333
0	0	1	0	1	1	0	39	0	cases	0.692308	0.692308	0.692308
1	0	0	0	1	1	0	365	0	cases	0.654795	0.654795	0.654795
0	1	1	0	1	1	1	67	0	cases	0.641791	0.641791	0.641791
1	1	1	0	1	1	0	250	0	cases	0.64	0.64	0.64
1	1	0	0	1	1	0	183	0	cases	0.639344	0.639344	0.639344
0	1	1	0	1	1	0	27	0	cases	0.592593	0.592593	0.592593
1	1	1	0	1	1	1	510	0	cases	0.52549	0.52549	0.52549
1	1	0	0	1	0	0	1062	0	cases	0.491525	0.491525	0.491525
1	0	0	1	0	0	0	296	0	cases	0.327703	0.327703	0.327703
0	1	0	0	1	0	0	84	0	cases	0.27381	0.27381	0.27381
1	1	0	1	0	0	0	611	0	cases	0.201309	0.201309	0.201309
0	1	0	1	0	0	0	50	0	cases	0.18	0.18	0.18

Table 82: Truth table less stringent frequency threshold (absence firm innovation)

periencedManage	HumanCap	STATE	Equity	Credit	Education	Trust	number	~FirmInnov	cases	raw consist.	PRI consist.	SYM consist
1	0	1	0	1	1	0	482	1	cases	0.796681	0.796681	0.796681
1	0	0	0	1	0	0	1309	1	cases	0.776165	0.776165	0.776165
1	0	1	0	1	1	1	957	1	cases	0.753396	0.753396	0.753396
0	0	0	0	1	0	0	135	0	cases	0.733333	0.733333	0.733333
0	0	1	0	1	1	0	39	0	cases	0.692308	0.692308	0.692308
1	0	0	0	1	1	0	365	0	cases	0.654795	0.654795	0.654795
0	1	1	0	1	1	1	67	0	cases	0.641791	0.641791	0.641791
1	1	1	0	1	1	0	250	0	cases	0.64	0.64	0.64
1	1	0	0	1	1	0	183	0	cases	0.639344	0.639344	0.639344
0	1	1	0	1	1	0	27	0	cases	0.592593	0.592593	0.592593
1	1	1	0	1	1	1	510	0	cases	0.52549	0.52549	0.52549
1	1	0	0	1	0	0	1062	0	cases	0.491525	0.491525	0.491525
1	0	0	1	0	0	0	296	0	cases	0.327703	0.327703	0.327703
0	1	0	0	1	0	0	84	0	cases	0.27381	0.27381	0.27381
1	1	0	1	0	0	0	611	0	cases	0.201309	0.201309	0.201309
0	1	0	1	0	0	0	50	0	cases	0.18	0.18	0.18

Table 82B: Truth table after deletion of rows which contradicted the necessity statement (see row 2 and row 5 in table 82).

Table 83: Solutions after standard analysis:

	Complex 1	Complex 2	Parsimonious 1	Parsimonious 2	Parsimonious 3	Intermediate 1	Intermediate 2
Frequency cut-off	27		27			27	
Consistency cut-off	0.75		0.75			0.75	
Raw coverage	0.28	0.25	0.31	0.28	0.28	0.28	0.25

Unique coverage	0.28	0.25	0.31	0	0	0.28	0.25
Consistency	0.77	0.78	0.76	0.77	0.77	0.77	0.78
Solution coverage	0.58		0.58			0.53	
Solution consistency	0.77		0.77			0.77	

Table 84: configurations which explain the absence of firm innovation (less stringent frequency threshold):

Type of solution	Pathway
Intermediate 1	ExperiencedManagers * ~HumanCapital * State * ~Equity * Credit * Education
Intermediate 2	ExperiencedManagers * ~HumanCapital * ~State * ~Equity * Credit * ~Education * ~Trust

Solution Table 85: Coherent pathways to solutions resulting in absence of firm innovation

## Appendix 3 Research Integrity Form and consent form - Master thesis

Name: <b>Olivier Haker</b>	Student number: <b>S1022239</b>
RU e-mail address: <b>Olivier.Haker@ru.nl</b>	Master specialisation: <b>International Business</b>

Thesis title:  <b>Towards a configurative view of firm innovation within emerging markets</b>
Brief description:  Innovation studies in emerging markets have highlighted the importance of firm resources and institutions for firm innovation. A majority of studies, however, tend to approach firm resources and institutions in a manner which predominantly illustrate their direct causal effects on firm innovation. Furthermore, institutions in IB research have been approached in a unidimensional manner, thus not truly capturing effects of institutions on firm innovation. I address these shortcomings by adopting a configurational comparative method and by utilizing National Business Systems theory to explore combinations among firm resources and institutional environments leading to innovation in these settings. I used data from the World Bank Enterprise Survey, Worldwide Governance Indicators, and the education component from the Human Development index to research firm innovation in a sample consisting of more than 6500 firms from seven emerging markets. Results from the crisp-set qualitative comparative analysis confirm that firm innovation in emerging markets can only be understood by considering combinations between firm resources and National business systems. Moreover, I found that innovation can only occur if emerging market firms possess experienced managers and formally trained human capital while concurrently operating in a National Business System characterized by the dominance of an equity-based financial system and the absence of strong state institutions, an advanced skill development system, and normative trust relations. The findings offer guidance to managers seeking competitive advantages through firm innovation and to policymakers seeking to encourage economic development through firm innovation.

**Keywords:**

csQCA, emerging markets, internal firm resources, National Business Systems, firm innovation

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