The Association of Formal and Informal Institutions With Total Entrepreneurial Activity: A Neo-Institutional Theory Approach

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I wish whoever the reader is (academic, family, friends or indeed a future PhD candidate) to enjoy this and hopefully have a better appreciation for understanding the complexity surrounding institutions and entrepreneurship activity, not just for academics but for all decision makers interested in such topics.

Declaration of originality

I hereby certify that this dissertation, which is approximately 70,000 words in length (including references, bibliography and appendices), has been composed by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree. This project was conducted by me at the University of Glasgow from October 2019 to July 2022 towards fulfilment of the requirements of the University of Glasgow for the degree of PhD (R) in Management under the supervision of Professor Trevor Buck and Dr. Yee Kwan Tang.

Date: 12/07/2022

Signature of candidate:

Abbreviations

Abbreviation/Term	Word
ATF	Access to Finance
APS	Adult Population Survey
ANOVA	Analysis of Variance
CIT	Corporate Income Tax
DP	Decimal Point
DF	Degrees of Freedom
D-W	Durbin-Watson Test
EA	Entrepreneurial Activity
EF	Economic Freedom
EFW	Economic Freedom of the World Index
E.U.	European Union
FGLS	Feasible Generalised Least Squares
FIs	Formal Institutions
GDP p/c	GDP Per Capita
GEM	Global Entrepreneurship Monitor
GVC	Government Venture Capital
GDP	Gross Domestic Product
IEF	Index of Economic Freedom: IEF
IND	Individualism-Collectivism
IVR	Indulgence vs. Restraint
IB	International Business
ILO	International Labour Organisation
L.A.	Latin American

LTO	Long-Term Orientation
Log	Logarithm
Low IND	Collectivism
Low IVR	Restraint
Low MAS	Femininity
Low LTO	Short-Term Orientation
NIT	Neo-Institutional Theory
N.Z.	New Zealand
OECD	Organisation for Economic Co-operation and Development
OME	Opportunity-Motivated Entrepreneurship
OLS	Ordinary Least Squares
P.Dens	Population Density
PD	Power Distance
PRs	Property Rights
PPPs	Purchasing Power Parities
S.America	South America
SCI-Expanded	Science Citation Index Expanded
SD	Standard Deviation
SMEs	Small-Medium size Enterprises
SSCI	Social Sciences Citation Index
SS	Sum of Squares
TEA	Total Entrepreneurial Activity
TCE	Transaction Cost Economics

UA	Uncertainty Avoidance
U.S.	United States
VCs	Venture Capitalists
VIF	Variance Inflation Factor
WVS	World Value Survey

Abstract

The thesis aims to identify the antecedents of total entrepreneurial activity (TEA) across OECD nations as this is key to national economic progress. Successive studies have associated TEA with informal institutions such as power distance (PD), individualism-collectivism (IND) and uncertainty avoidance (UA) but policymakers can do nothing about these in the short term. Two contributions are claimed. First, the thesis considers relatively new informal institutional dimensions (long-term orientation (LTO) and indulgence versus restraint (IVR)). However, these informal institutions (dimensions of national culture) cannot be modified by governments within a country but may influence the design of formal institutions (FIs). Thus, the second contribution arises from a consideration of two FIs (property rights (PRs) and access to finance (ATF)) as moderators of the main associations between informal institutions and TEA. These institutions may be modified by governments, so it is important to understand them, theoretically and empirically. PRs are analysed as they allow an organised market system to function, providing certainty for entrepreneurs engaging in TEA. Similarly, ATF may be needed for entrepreneurs to sustain or grow their ventures. A lack of ATF encountered by entrepreneurs is commonly viewed as the largest constraint to the creation and development of ventures. The results for this thesis are mixed, Model 1 looks at direct associations between national culture and TEA, and half of the hypotheses are supported. Model 2 (which studies the moderation by PRs and ATF of the relationships between informal institutions and TEA) has five out of the six hypotheses accepted for the PR-moderated hypotheses. This demonstrates that PRs have generally been found to have a positive moderating association with TEA, but ATF surprisingly generates an overall negative moderating association on informal institutions' associations with TEA. OECD nations may therefore wish to encourage more effective PRs to further exploit the potential of TEA. In relation to ATF, FIs may need to tailor specific financial packages (or assistance) for specific industries which may have different gestation periods and tangible assets. Only one hypothesis appears to be accepted for ATF moderations. This may be explained by the quality of the institutional environment where a higher-quality institutional environment may have less impact as a moderator on TEA. In lower-quality institutional environments, FIs may have much more explanatory power. Overall, the models utilised in the thesis have resulted in a more nuanced study of the institutions that influence TEA.

CHAPTER 1: Introduction

This chapter examines the significance of entrepreneurship. It briefly illustrates a historical overview of the significance of entrepreneurship and the recent attention paid to it post World War 2 and why policy makers pay attention to it. Interest in this topic has mostly been focused on the significant amount of employment generated by entrepreneurs (as high as 50% of employment generated in the United States (U.S.)) in the local economy (Cuervo, Riberio and Roig, 2007).

1.1) Significance of entrepreneurship

This section will give a brief overview of the historical debates and data surrounding the significance of entrepreneurship.

The origins of entrepreneurship in the 20th century arguably emerged in the work of Max Weber, a German historian, sociologist, and political economist (Brouwer, 2002). He is seen as one of the most important theorists on the development of modern Western society and largely influential on social research (Brouwer, 2002). Weber's research into how entrepreneurship had historically facilitated economic development which then led to the early foundations of entrepreneurship. Brown and Thornton (2013) explain that scholars recognise that entrepreneurship is understood as the facilitator of economic growth (Bosma, Wennekers and Amorós, 2011), information and knowledge transfer within an economy (Holcombe, 2007). Entrepreneurs are central to facilitating economic activity within a country, this points to the significance of examining entrepreneurship theoretically.

When examining the antecedents of entrepreneurship, the literature is seen to be inconsistent and sparse when understanding specific mechanisms and the associations between institutions and TEA. This is mentioned in Section 2.12 (P.86), where the thesis investigates potential associations when looking at TEA. However, problems with secondary data often involve imprecision in relation to the disclosure of interviews and their timing, and details on the exact industries investigated. To identify causation rather than association, future studies could usefully involve interviews or industry-specific studies (mentioned in Section 7.4) utilising econometric techniques (e.g., a Granger

causality test, where variables are examined in a time-series format and the predictability of one variable to forecast another is noted (Shukur and Mantalos, 2000)). The aim here is to better understand the antecedents, and influences on entrepreneurship generally whereas the secondary data and its context used in this thesis can only suggest associations and possible mechanisms explaining them, not conclusively identifying causation and effects.

Contemporary research around entrepreneurship can be seen to have occurred after the Second World War (around 1949) (Cuervo *et al*., 2007). This period saw the research encompass two main phenomena:

i) *Small-Medium size Enterprises (SMEs):* SMEs are defined here as firms with less than 250 employees and/or less than (or equal to) 50 million Euros turnover. It also means a balance sheet total of less than (or equal to) 43 million Euros (E.C.,2020).

ii) The entrepreneur and new firm formation: The peak point of interest in this field came about in 1979 with the Birch Report which was titled ''*The Job Generation Process*'' (Gupta, 2020). This report highlighted that the period of 1969-1976 exhibited 50% of employment created in the United States (U.S.) coming from new start-ups. These statistics attracted the interest of policy makers in government as well as the academic community (Cuervo *et al*., 2007). The 1980s also saw organisations like the Babson College focusing conferences on entrepreneurship research, and well-respected academic journals such as the ''*Journal of Small Business Venturing''*, ''*Entrepreneurship: Theory and Practice*'' and ''*Small Business Economics''* coming into existence, since then the field

has grown immensely.

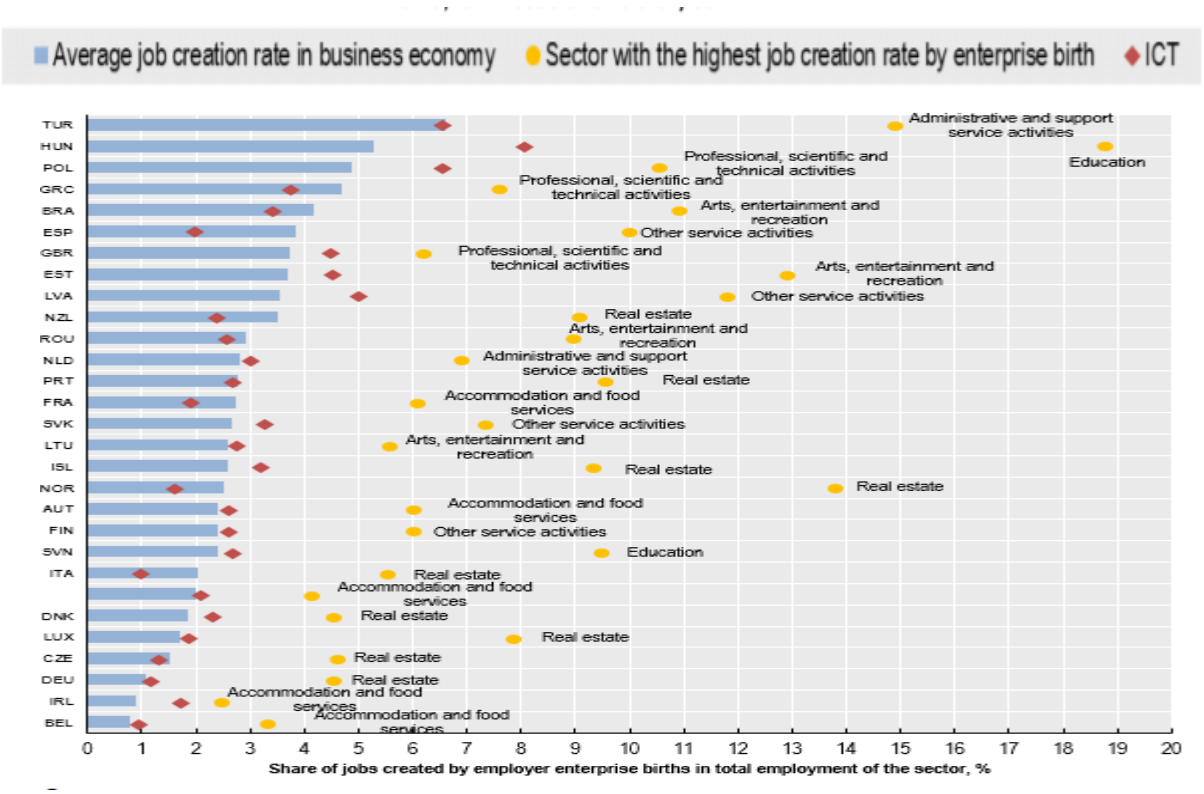


Figure 1: Share of employment created by the birth of enterprises in 2016 for individual countries. *Source: OECD (2018).*

The OECD (Organisation for Economic Co-operation and Development) is an inter-governmental economic organisation that has 38 member countries, founded in 1961 to stimulate economic progress and world trade (OECD, 2018). On average, OECD countries' start-up firms account for about 20% of employment but create almost half of all new jobs (OECD, 2018). The impact of entrepreneurship rates is seen in Figure 1(*above*). Figure 1 illustrates the share of employment by industry in the OECD countries. This demonstrates the reason why local governments and policymakers may need to pay attention to entrepreneurship activity in their countries. The service sector remains to be the largest source of employment created by entrepreneurship in countries. Across OECD countries, the highest job creation rates have been noted in leisure-based activities (e.g., entertainment; professional, scientific, and technical activities; and real estate). These industries are responsible for, in some cases, as much as 16% of the total employment in their countries (OECD, 2018).

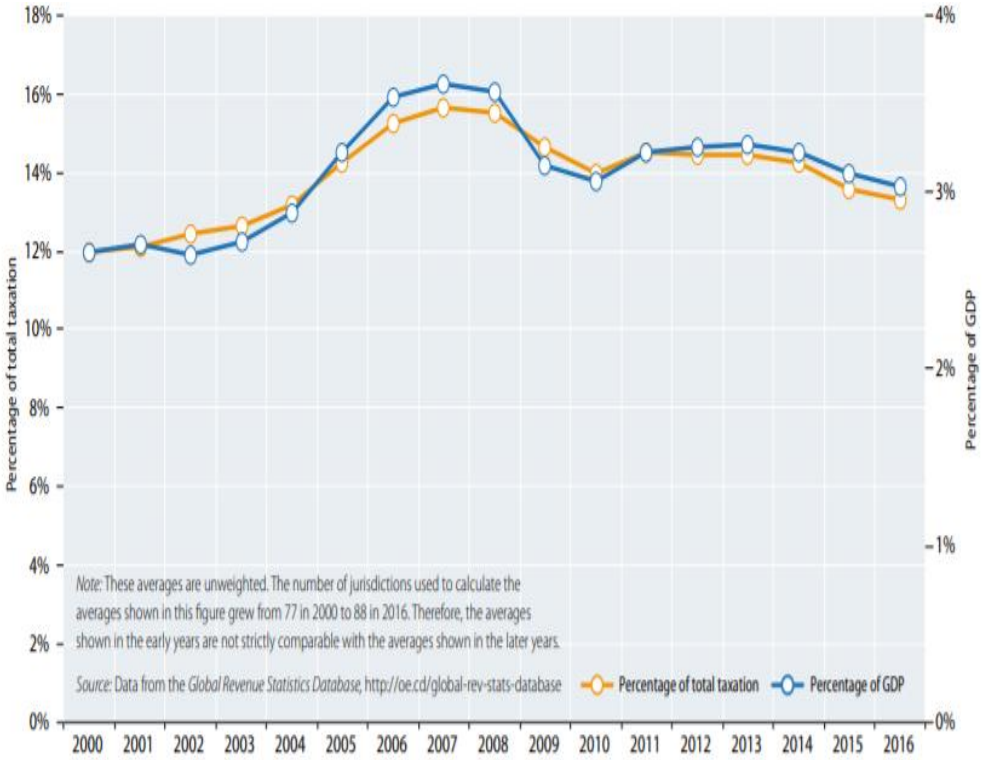


Figure 2: Average corporate tax revenues as a percentage of total tax and as a percentage of GDP (2000-2016) for OECD countries. *Source*: *OECD (2017)*.

Looking at large corporations, the OECD (2017) comments that there was a slight increase in both the average of corporate income tax (CIT) revenues as a share of total tax revenues and as a share of gross domestic product (GDP) between 2000 and 2016 across the 88 jurisdictions for which data are available (see Figure 2). Average CIT revenues as a share of total tax revenues increased from 12.0% in 2000 to 13.3% in 2016, and average CIT revenues as a percentage of GDP increased from 2.7% in 2000 to 3.0% in 2016 (OECD, 2017). On average 13% of all tax revenues generated in OECD countries were raised from corporations alone in 2016. This shows the economic significance of corporations. Figure 2 shows that whilst employment growth is generated largely by SMEs, the economic value generated by established corporations is much greater than that by SMEs (as seen with GDP and taxation generation values above). Policymakers need to consider this factor as well when analysing economic activity in their countries.

The literature would point to several origins for entrepreneurship. Minniti and Bygrave (1999) note that economic agents are diverse and will have different perceptions surrounding uncertainties and costs associated with starting a venture. All entrepreneurs will have a set of characteristics (biological and sociological) alongside social

circumstances that will determine their position to any form of total entrepreneurial activity (TEA) (Minniti and Bygrave, 1999). Beyond the individual level of characteristics, attention is now being paid to the exclusion of entrepreneurial barriers and the support of entrepreneurial development via useful policies like business education and finance facilities (Ahlstrom, Cumming and Vismara, 2018). Indeed, having stable institutions ultimately facilitates starting businesses and venture development (Baumol, Litan and Schramm, 2007; Langlois, 2016). The thesis will focus on the latter and its association with TEA in the next Chapter.

Now that the significance of why scholars examine entrepreneurship and institutions has been highlighted, the thesis will examine common characteristics of entrepreneurs. An '*institution*' here refers to the formal rule sets (North, 1990), and taken for-granted assumptions (Meyer and Rowan, 1991), that organisations and individuals are expected to follow. This is the definition that the author uses throughout the thesis when referring to institutions. Informal institutions in this thesis are seen as societal norms, or '*shared mental models*' and represent unwritten codes of conduct, value systems, and ideologies (Frederking, 2004; Denzau and North, 1994). In comparison, Chaux and Haugh (2020) understand that FIs (e.g., regulations) comprise a part of the taken-for-granted (used for sense making) rules that guide behaviour to make sense of a situation (North, 1990).

Chapter 2 examines institutional theory and the categorisation of a stream of institutional theory. Neo-institutional theory (NIT) is first reviewed (Section 2.5). The categorisation of institutions is then understood and noted. First, informal institutions and their influence on entrepreneurship is detailed then formal institutions (FIs) are analysed. Justification for the specific FIs that the thesis examines are then stated in Section 2.9. Next, the thesis demonstrates why informal institutions are the main focus of investigation in this thesis, not just the specific FIs. Then, the identified research gap and research question is posed (Section 2.12 on P.86). Subsequently, the hypotheses (broken into three categories) and the research methodology are explained, with the latter examining the research philosophy, the stance of positivism and the justification for a deductive logic is noted. The study context examining the OECD countries involved and the period of the study is succinctly explained (Section 4.4 on P.112). Moreover, the measures that the thesis will use to test the hypotheses will be examined, the dependent

variable (TEA) first, noting its prominence in the literature. The independent variables of informal institutions using Hofstede's index will then be explored followed by FIs (specifically dimensions of property rights (PRs) and access to finance (ATF)) from the Index of Economic Freedom (IEF) (constructed by the Heritage Foundation) will be explained. The controls deployed in the thesis are explained with reference to previous studies.

The thesis claims several contributions (theoretical and empirical) to the academic body of knowledge (see Section 7.2 on P.199). The theoretical and empirical contributions are seen in TEA's direct and moderated relations with several informal institutions. The first is individualism (IND), and the contribution is seen in the moderating associations of the two specific FIs (PRs and ATF) on the relation between IND and TEA. Effective PRs positively moderate the positive association between IND and TEA, changing the IND coefficient from a negative to a positive one with more effective PRs. However, easier ATF negatively moderates the positive association between IND and TEA. This appears to suggest that the more difficult ATF is for entrepreneurs, the lower the positive association between IND and rates of TEA arises (Boubakri and Saffar, 2016). The theoretical contribution is seen with the two FIs as moderators, this thesis shows that associations are more subtle than just a direct main association of IND and TEA.

The dimension of uncertainty avoidance (UA) involves another claimed contribution. The thesis confirms the usual finding that higher UA is associated with lower TEA but claims to make theoretical and empirical contributions in relation to moderation by FIs. Examining the specific FIs, increases in effective PRs positively moderate the negative association between UA and TEA. This moderation changes the coefficient from a negative to a positive one. Li and Zahra (2012) conclude that entrepreneurs are less responsive to the incentives offered by FIs in higher UA countries, easy ATF may not have as much of a moderating association on TEA in this context. Future financial returns may not be the main objective of entrepreneurs in high UA contexts (Di Pietro and Butticè, 2020). The contribution, aside from the empirical reinforcement, is the fact that the two FIs' moderations depict a nuanced understanding beyond the UA-TEA main association.

Next, a consideration of the long-term orientation (LTO) dimension generated both a theoretical and empirical contribution. There is a lack of studies looking at the direct LTO/TEA association, with even fewer studies examining moderation. This thesis claims that a negative coefficient on LTO's direct association with TEA is a contribution to the literature. When looking at the specific FIs in question, the positive moderating association of PRs might mean that LTO makes entrepreneurs value long-term, growth-oriented objectives (Tiessen, 1997). The ambiguous ATF results may mean that financial institutions may not be able to evaluate the attainment of potential nascent TEA and thus not able to target successful TEA, as decision makers will be oriented towards a more short-term perspective of demanding loans given to the entrepreneur back in a shorter timeframe. The fact that one out of three has been confirmed is still a claimed contribution. The mixed results may be theoretically explained by the diverse gestation periods both for projects within and between industries (Fine, 1998).

Finally, the indulgence vs. restraint (IVR) dimension, which is the most recent of the informal institutional dimensions, has contributions arising from both examining this dimension as a main association on TEA (both theoretically and empirically). The findings here indicate that IVR is found to have a positive, significant, main association with TEA. Looking at the literature, Hofstede (2011) argues that individuals living in high IVR countries are on average optimistic and encourage critical decision-making which might stimulate innovation due to novel ideas pursued by entrepreneurs impacting TEA positively (Boubakri, Chkir, Saadi and Zhu, 2021).

Similarly, a lack of studies on moderation are available. The thesis illustrates a significant positive moderation of PRs is seen for IVR's association with TEA. The coefficient changing from negative to positive with an increase in effective PRs. Michael and Pearce II (2009) appear to confirm that effective PRs may facilitate the desires of entrepreneurs to be realised by guaranteeing a level of protection of their ideas, providing confidence in the process of TEA. Yet, there is a significant negative moderation of ATF on the positive association between IVR and TEA. This demonstrates that entrepreneurs with high IVR may be more likely to be impulsive and use their own financial means avoiding alternative options thus saving external financial resources for future TEA (Cobb-Clark

Kassenboehmer and Sinning, 2016).

CHAPTER 2: Literature Review and Research Gap

With the significance of entrepreneurship having been illustrated, one may wonder what entrepreneurship is, and what are its features? Various types of entrepreneurship present in the literature are first noted alongside its connection to the dependent variable used in this thesis (total entrepreneurial activity (TEA)). The chapter next looks at institutional theory and debates around the characteristics of institutions. After examining the streams of traditional institutional theory present in the literature, a connection is then drawn between NIT and Scott and North's work on those formal/informal institution categories which will be the theoretical basis for this thesis. Afterwards, NIT and its connection with a prominent literature stream in institutional theory is established. The next section explains the categorisation of institutional theory into formal and informal institutions and revisits North's (1990) framework of informal institutions. Debates around national culture and informal institutions being interchangeable concepts will be examined, and literature streams of national culture and entrepreneurship are discussed. Next, informal institutions (or, arguably, national culture) and its various dimensions are examined in relation to TEA. A subsequent section looks at FIs and their influence on entrepreneurship in the literature. This thesis next focuses on two selected FIs: PRs and ATF. These are examined in relation to their association with TEA in moderating contexts. The identified research gaps relate to the neglect in prior studies of the LTO and IVR dimensions of informal institutions, alongside FIs i.e., PRs and ATF as moderators of the association between informal institutions and TEA. Finally, a research question is posed.

2.1) Definition of entrepreneurship and its characteristics

Entrepreneurship may be understood as the discovery of opportunities and the subsequent creation of new economic activity, often through the inception of a new venture (Reynolds, Bosma, Autio, Hunt, Bono, Servais, Garcia and Chin, 2005).
This is also cited by Cuervo *et al.* (2007) as a necessary element for economic development for creating opportunities in different ways via:
i) Identifying and exploring potential business opportunities.
ii) Creating new firms and/or making existing firms more competitive and dynamic.
iii) Helping grow the economy through innovation, employment creation and ultimately improving the well-being of a society.

When analysing the different approaches to what is entrepreneurship in general, the role of the entrepreneur is understood as applying innovations, creating '*new combinations*', that may be considered as newly founded firms (Schumpeter, 1942). This is the definition the author adopts. These innovations include examples of technological innovations which can cause disruption to the market (Schumpeter, 1942). Henrekson and Sanandaji (2020) understand that the entrepreneur brings about change by displacing the prior market arrangement disrupting a stagnant market ('*creative disruption*').

However, there are some limitations to this definition, the first being that this definition deviates from other scholarly definitions like Kirzner's who comprehends the entrepreneur as an arbitrageur who does not disturb equilibria but facilitates a new state of equilibrium via arbitrage (Kirzner, 1973). Kirzner (2009) notes that opportunities exist in the present but also in the future (speculatively). The definition above also disregards the role of the corporate entrepreneur.

An additional limitation is that Schumpeter's emphasis on new firms is a high-level one that does not contain operational information to define entrepreneurial activity (EA) such as the age of ventures or details about the entrepreneurs themselves. The age of the firm is a very distinct criterion raised for defining entrepreneurship. In some of the literature, the age criterion is beyond just solely considering new ventures to also considering firms at an early age, or during their life cycle, from just prior to their conception (Audretsch and Keilbach, 2007). Section 2.2.1 on P.32 explores this issue. A different organisational criterion involves understanding entrepreneurship as the individuals who are categorised, (usually for tax purposes), as being self-employed (Audretsch, 2012). Attention in particular has been paid to the personal characteristics of the entrepreneurs themselves such as their age (Audretsch, 2012) amongst other characteristics like education and gender.

This explanation in the paragraph above demonstrates a Schumpeterian emphasis on entrepreneurship as new ventures, supplemented by operational considerations like the categorisation of entrepreneurs themselves, discussed in the Methodology Chapter. This explanation in the paragraph above corresponds more strongly with the dependent

variable (TEA) used in the thesis. TEA is defined as the percentage of the adult population (aged 18–64 years) within a nation that is either currently engaged in the process of creating a new venture or are operating a venture that has paid salaries or other forms of payment for at least 3 months but no more than 42 months (GEM, 2021).

However, there is no one, generally accepted definition of entrepreneurship within research (e.g., Van Praag, 1999; Thurik and Wennekers, 2004). Many definitions are united by the notion that entrepreneurship is about producing something new or with other defining traits. This can mean a generation of new products, services, or production processes. It also means finding gaps in the market for products and services that did not previously exist (Shane and Venkataraman, 2000). An entrepreneur has a variety of strategies available in relation to the value of the firm's resources (Alvarez and Busenitz, 2001). Indeed, an issue with the definition above is that it lacks inclusion of other features (processes) through which entrepreneurs facilitate TEA.

Figure 3 (*below*) demonstrates some of the main characteristic traits of entrepreneurship. The different characteristics and scholarly views of entrepreneurship will now be examined.

	Start as entrepreneur	Having **success** as entrepreneur	Start *and* **be a successful entrepreneur**
Cantillon			Alertness and foresight Bear risk
Say	(Sufficient reputation to obtain) capital	Judgment, perseverance, knowledge of the world, business and occupation	Bear risk
Marshall	(Young) risk-lovers	Intelligence, general ability (dependent on family background and education) Knowledge of the trade Bear risk Leadership Own capital	Good fortune Father entrepreneur
Schumpeter	Willingness to start (higher if less alternative opportunity for social distinction, more ambition, energy, creativeness)		Leadership
Knight	Ability to obtain capital Willingness/motivation important	Ability to deal with uncertainty: self-confidence, foresight, intellectual capacity	Good luck
Kirzner	Alertness	Creativeness and leadership to *exploit* profit opportunities	

Figure 3: Defining features of entrepreneurship. *Source: Van Praag (1999).*

Looking at Figure 3 (*above*), Van Praag (1999) summarises the key authors surrounding what entrepreneurship is as well as the core traits necessary for entrepreneurship to function. The traits depicted by Schumpeter, Knight and Kirzner are the ones the thesis focuses on due to their popularity of traits being used in the literature as demonstrated in Figure 3. The reason the traits mentioned by the three authors above are examined is their relevance in attempting to understand the associations between institutions and TEA. For example, risk taking (Section 2.1.2 on P.29) is a feature that is mentioned by all the main scholars within the figure in the entrepreneurship field, this is a central component that all potential entrepreneurs must deal with.

2.1.1) Innovation

The qualities of an entrepreneur, as emphasised by Schumpeter, include boldness, imagination, and creativity (Reynolds *et al*., 2005). The role of the entrepreneur is to facilitate innovations by acting beyond the range of familiarity, introducing *'new combinations'*, and bringing the economy to a new equilibrium (Schumpeter, 1942). Such innovations include but is not restricted to technological innovations (Schumpeter, 1942). Henrekson and Sanandaji (2020) understand that the entrepreneur brings about change by displacing the prior market arrangement disrupting a stagnant market. If successful, this produces entrepreneurial profits that surpass the risk-adjusted market rate of return (Henrekson and Sanandjiani, 2020). Schumpeter's comprehension is established on the function of entrepreneurs, not their employment status. Wennekers and Thurik (1999) denote *'Schumpeterian entrepreneurs'* as entrepreneurs being viewed as engines of innovation and creative destruction. Indeed, the thesis talks about innovation as a route for entrepreneurship to occur as innovation allows the ***conversion of intents*** into entrepreneurial acts and will thus affect TEA (Bogatyvera *et al*., 2019). This why it is written as synonymous with the assumption that innovation is a route for TEA. According to Szerb, Lafuente, Horvath and Pager (2019), Schumpeter understands entrepreneurship revolves around the introduction of disruptive technologies creating new value-adding input combinations that enhance the entrepreneur's productive capacity. Entrepreneurial creativity disrupts what could be a static market. Because neo-Schumpeterian theory recognises the significance of entrepreneurship for economic growth, scholars have come to focus on the foundations of the Schumpeterian qualities of boldness and creativity to understand how to promote entrepreneur-driven economic development (Kirzner, 2009).

Although, Henrekson and Sanandaji (2020) conclude that Schumpeter's theoretical definition of entrepreneurship is influential but abstract and not easily operational at the empirical level. They comment that data rarely indicates whether a venture activity is innovative or disrupt market equilibria. Whilst Schumpeter postulates about entrepreneurship as a unique economic function in which inventions are transformed into innovations, such innovative ventures can produce novel opportunities and enter specific market niches. This view is opposed to Kirzner (1973) who emphasises entrepreneurs as arbitrageurs, moving resources towards an equilibrium exploiting market opportunities. This is explored in Section 2.1.3.

2.1.2) Risk taking components

A characteristic an entrepreneur may possess is the risk taking element. Shane (2000) explains that the discovery of entrepreneurial opportunities requires assumptions about the nature of the entrepreneurial process itself. This process involves elements of risk that an entrepreneur experiences and ultimately uncertainty, as proposed by Knight (1921).

Risk is the possibility of financial (economic) losses or gains, due to the uncertainty associated with following a course of action (Chapman and Cooper, 1983). It can be predicted and calculated as a probability distribution based on prior experiences which can help entrepreneurs comprehend situations. Knight (1921) stressed that the core issue is the classification of the outcomes. This situation arises from knowledge gaps and emphasises a lack of predictability of future events (Langlois and Cosgel, 1993). Knightian uncertainty is understood when entrepreneurs begin the opportunity formation process in conditions of uncertainty, before the outcomes of the creation process can be anticipated even probabilistically (Alvarez and Barney, 2020). The theory suggests that entrepreneurs often begin the process of forming opportunities with limited or no information about the characteristics of the opportunity they may ultimately create (Alvarez and Barney, 2020).

Via a path-dependent learning process conducted through a series of actions, entrepreneurs can sometimes end up creating an opportunity that did not exist before they acted to create it. A key feature of Knightian uncertainty is that initial efforts to reduce uncertainty are, at best, informed guesses (Alvarez and Barney, 2020).

2.1.3) Opportunity seizing

Moreover, an entrepreneur may be someone with initiative and imagination who makes new opportunities (Kirzner, 1979). Examining the concept of entrepreneurship underscores the reasons for precisely predicting market imperfections or the capability to innovate by creating a '*new combination'* of products (Schumpeter, 1942). Entrepreneurship encompasses the concepts of creation, risk taking, or innovation inside or outside an existing venture (Cuervo *et al*. ,2007).

Entrepreneurship may be understood to follow Kirzner characteristics if they respond to opportunities that arise from market inefficiencies. Ali, Kelley and Levie (2020) understand that entrepreneurs are self-determined and choose activities on the opportunities they present. Kirzner (1973) bases his research on Von Mises' work and understands a different way of understanding entrepreneurial decision making with market phenomena. In comparison with Schumpeter's perspective of an entrepreneur holding a position that disturbs equilibria (Wennekers and Thurik, 1999), equilibrium is understood as a situation where no further opportunities for arbitrage exist (movements of resources for higher rates of financial returns). Schumpeterian (Schumpeter, 1934) entrepreneurs disrupt and cause destruction in existing industries and even promote new industries via innovation (Kirchhoff, Linton and Walsh, 2013). This disruption gives opportunities for the Kirznerian entrepreneurs who may subsequently move resources back into equilibrium. Kirzner alternatively understands that the entrepreneur does not disturb equilibria but facilitates a new state of equilibria via arbitrage (Kirzner, 1973). In this analysis, the market is viewed to be gravitating via EA towards the state of equilibrium absent of autonomous, exogenous changes. Kirzner (2009) understands that opportunities exist speculatively (in relation to the future) but also in the present. Szarb *et al.* (2019) comment that Kirzner's opportunities are characterised by opportunity '*alertness*' as a market-discovery process in which entrepreneurs discover and exploit market failures. By sensing an opportunity in the present time, an opportunity arises to buy inputs cheaply and sell products at higher prices. The opportunity to sell is one that will come into full reality only in the future (Szarb *et al*., 2019). In essence, opportunities exist now for the pure arbitrageur.

One must be cautious of looking at all entrepreneurship activity as solely opportunistic. As this thesis will later discuss, there are various types of entrepreneurship present. In contrast to opportunity-motivated entrepreneurship (OME), there are necessity-motivated entrepreneurship (NME) who have no better choice for work (McMullen, Bagby and Palich, 2008). Approximately 1 billion people globally are considered "*necessity entrepreneurs*" (Brewer and Gibson, 2014). Margolis (2014) understands that more than half of the workers in the developing world are self-employed, and a significant

proportion of such individuals engage in entrepreneurship because they have to.

2.2) Types of entrepreneurships

A point to consider now is what types of entrepreneurship exist. Section 2.1 on P.24 looked at entrepreneurship traits and noted that not all entrepreneurship is opportunistic and introduced the concept of necessity-based entrepreneurship. This section will look at other forms briefly but focus primarily on OME.

2.2.1) Nascent and established entrepreneurship

One type of entrepreneurship depends on whether new ventures are founded or not. Johnson, Parker and Wijbenga (2006) define a '*nascent entrepreneur*' as somebody who is currently trying to start a new venture. They expect the entrepreneurs to have been active in trying to start the new firm in the past 12 months. The start-up must be an independent firm (Zhang, Zwiegelaar and Kumar, 2020). Established entrepreneurship, on the other hand, are entrepreneurs who have already held and operated their venture for at least 42 months (GEM, 2017).

Nonetheless, success rates of nascent entrepreneurship are also dependent on economic development levels. Wennekers, Van Stel, Thurik and Reynolds (2005) analyse data for nascent entrepreneurship in 36 countries based on their level of economic development and found support for a U-shaped relationship. The U-shaped relationship (mentioned in Section 4.7.5 on P.136) is a pattern relating TEA to economic development. There are three stages (Porter, Sachs and Arthur, 2002): a factor-driven stage, when the economy is mainly composed of the agrarian sector. Productivity and TEA are seen to be improving here (Martínez-Fierro, Biedma-Ferrer and Ruiz-Navarro, 2016). The next stage is the efficiency-driven stage, economies of scale are facilitating economic development at this stage. TEA rates decrease as larger ventures hire most of the workers (Martínez-Fierro *et al*., 2016). Finally, in the innovation-driven stage, the service industry is seen as essential and venture size is no longer considered important. OME rates of TEA are seen at this stage (Martínez-Fierro *et al*., 2016). This suggests that a natural rate of nascent entrepreneurship is to some extent regulated by opportunities related to the level of economic development within a country.

Established entrepreneurship is seen to constitute the bulk of productive economic activity in a country (Henrekson and Sanandjiani, 2020). Acs, Desai and Klapper (2008)

assess cross-country rates of entrepreneurship studying nascent entrepreneurship rates and registered formal businesses. In several countries, the nascent entrepreneurship rate from the Global Entrepreneurship Monitor (GEM), a research program examining entrepreneurship, is less than a formal business registration (Wennekers, 2006).

2.2.2) Opportunity and necessity-motivated entrepreneurship

OME is one of the concepts discussed earlier in Section 2.1. (P.24), OME is focused on due to its importance in TEA within the OECD context, Alvarez and Busenitz (2001) recognise opportunity as a central component of entrepreneurship and the initiatives that stem from it arise because of the desire for income, wealth, and accomplishment (Hessels, Gelderen, and Thurik, 2008; McClelland, 1961). Nikolaev, Boudreaux and Palich (2018) comment that individuals engage in OME when they perceive valuable business opportunities that can improve their lives. Decisions to engage in OME is not pushed, but rather individuals are enticed into new venture creation because of the potential of high extrinsic or intrinsic future rewards (e.g., Gilad and Levine, 1986). Prior research suggests that OME is associated with high-growth ambitions, export production, and new product advancement (Hessels *et al*., 2008). Additionally, OME are encouraged by opportunities that suggest high individual incentives that include greater income or a superior sense of autonomy (GEM, 2016). OME are significantly more likely to create jobs and grow their business in the long-term (Block, Sander and Speigel, 2015; Reynolds, Carter, Gartner and Greene, 2004).

However, NME is also an important type of entrepreneurship globally. This involves entrepreneurs being motivated by needs rather than just opportunity. Considerable differences in the levels of NME across countries have been reported (Reynolds, Camp, Bygrave, Autio and Hay, 2002). Countries that are more developed economically tend to have higher ratios of opportunity-to-necessity entrepreneurs (e.g., the United States with 1 NME to every 6.4 OME) compared to developing countries (e.g., Nigeria at 2.5 NME to 1 OME) (Nikolaev et al., 2018). This displays a complex picture in understanding the types of entrepreneurship activity present in societies globally as demonstrated with the data above.

NME is based on need, owing to the lack of other options (Boudreaux and Nikolaev,

2019). Data from GEM demonstrates that the proportion of NME as a proportion of entrepreneurship equates to 18.6 % in Germany, 25.9 % in Spain, and 21.2 % in the U.S. (Kelley, Singer and Herrington, 2012). Research also finds that NME display different socio-economic characteristics than other entrepreneurs (Block and Wagner, 2010).

However, looking at OME and NME in isolation is itself not a useful exercise. The measure used to examine entrepreneurship (TEA) deployed in this thesis consists of both OME and NME components but the main focus is on OME. Instead, one can further examine the role of the environment and in particular, institutions. It is understood that efficient institutions may provide individuals with more choices and stability to pursue their ventures as lenders often accept collateral (Adelino, Schoar and Severino, 2015) and offer greater protection generally (Boudreaux and Nikolaev, 2019). Institutions themselves can reduce any over-reliance on self-funding for new venture start-ups by providing facilities. These institutions help to guide entrepreneurship by facilitating economic activity.

The author raises the concept of OME and NME for the reader to better understand what underpins the main entrepreneurship variable that the thesis will use (TEA). Whilst the OECD nations are more developed countries and will have relatively more OME, explaining the concepts of the different types of entrepreneurships will help the reader interpret the results later found in the thesis. For example, most of the ATF hypotheses do not appear to be supported. A potential explanation involves the idea that possessing easier ATF resources positively associates with the amount of OME when there is a lower-quality institutional environment present as opposed to a higher-quality environment (as in OECD nations). Thus, understanding the type of entrepreneurship arising allows a richer understanding of the specific mechanisms of institutions and their association with TEA (specifically the OME component) which is a literature gap the thesis attempts to address. The literature gaps (covered in Section 2.12 on P.86) in institutional theory and entrepreneurship exists (Sun, Shi, Ahlstrom and Tian, 2020), Sun *et al.* (2020; P.958) stress that research needs to investigate how institutions moderate and positively influence entrepreneurship through various mechanisms. Further, Langlois (2016) emphasises that scholars need to identify additional institutional factors influencing entrepreneurship. Bruton *et al*. (2010) conclude that there is a focus significantly on culture as the main

association in institutional theory studies noting institutions and their impact on entrepreneurship. They state that examining strong moderators such as specific institutional measures could help address this gap.

2.3) Institutional theory: Introduction

This thesis will analyse entrepreneurship via the lens of institutional theory, this is understood as examining interactions between set groups and organisations (who attempt to secure their positions in society via legitimacy). These organisations must conform to the rules and norms within an institutional environment (Scott, 2007).

Institutional theory is ultimately focused on regulatory, social, and cultural influences that promote the survival and legitimacy of an organisation (Roy, 1997). Bruton, Ahlstrom and Li (2010) comment that an advantage of utilising an institutional perspective in entrepreneurship research lies with the incomplete picture presented by theories that stress efficiency but disregard social elements as motives of entrepreneurial action (Barley and Tolbert, 1997). Entrepreneurship research can be better understood by finding out what is institutionalised. This emphasises the actions, beliefs, and mindsets which have come to acquire rule-like status enabling and restricting entrepreneurship in the environment being observed (Bruton and Ahlstrom, 2003).

FIs are understood to affect entrepreneurship in a variety of ways, ranging from improving the rule of law, encouraging entrepreneurs, and protecting innovators and their intellectual property (IP) via effective PRs (e.g., Acemoglu and Robinson, 2012; Autio and Acs, 2010; Romer, 1990). Informal institutions can also influence entrepreneurship through norms, values and culture (e.g., Hasan, Kobeissi, Wang and Zhou, 2017; Stephan, Uhlaner, and Stride, 2015; Kristiansen and Indarti, 2004). Autio, Pathak and Wennberg (2013) analyse the influence of culture on aspects such as entry behaviours and post-entry objectives. Linan and Fernández-Serrano (2014) alongside Hechavarria and Reynolds (2009) show that informal institutions are a significant factor in predicting entrepreneurship rates at the country level.

2.4) Institutional theory

2.4.1) Institutional theory's link with entrepreneurship

The environment and its influence on entrepreneurship has spurred interest in researchers (Valdez and Richardson, 2013). Research on institutions and entrepreneurship has embraced the micro-economic level (e.g., microfinance) of entrepreneurship as well as the macro-level. It has examined differences at various levels, from social, cultural, and indeed economic and institutional environments and their respective effects on entrepreneurship (Bruton *et al.*, 2010). The thesis will now examine institutions and their interactions with entrepreneurship. Historically, an early example of using institutional theory in an entrepreneurship context is the article by Nee (1992). This identifies interactions between state and market actors in China. In the article, Nee gains insight from institutional theory developed by academics such as North (1990) and Williamson (1991). Nee (1992) started looking at the influence of the state via a regulatory lens. However, there are the social and cultural elements that are seen to be equally vital to the functioning and legitimacy of organisations rather than just efficiency-oriented behaviour via regulations (Roy, 1997). A relevant discussion revolves around how rigid institutions are. This has been demonstrated in an era of globalisation where unprecedented rates of change have occurred (e.g., Mullings, 2018). This is discussed in Section 2.4.3 below.

2.4.2) Characteristics of institutions

Institutional theory has a precedent of being used by scholars studying environmental effects on entrepreneurship (generally) (Su, Zhai and Karlsson, 2017; Tolbert, David, and Sine, 2011; Aldrich and Fiol, 1994). Mentioned earlier, institutional theory examines interactions between groups and organisations who, to secure legitimacy, must conform to the rules and norms within an institutional environment (Scott, 2007). These are derived from rules such as regulations and from organisations such as governmental bodies, courts, professions, alongside other societal and cultural practices that exert conformance pressures (DiMaggio and Powell, 1983). Chizema and Buck (2006) state that organisations comply with institutional norms with the aim of gaining legitimacy, stability,

and enhanced survival prospects. These institutions create a precedent that determine suitable behaviours for organisations (Meyer and Rowan, 1991), and form the logic by which laws, rules, and behavioural expectations appear natural and abiding (Zucker, 1977). Therefore, institutions essentially specify what is acceptable (DiMaggio and Powell, 1991).

Nonetheless, Alvesson and Spicer (2019) observe that definitions of institutions involve tautologies. They note that scholars criticise institutions as '*a vapid umbrella term'* which can include anything (e.g., David and Bitektine, 2009). Alvesson and Spicer (2019) further state it is difficult to agree on what an institution is not, as institutions encompass everything. When the word institution is defined, it is done so in broad ways. There are rarely clear indications about what is meant by institution, asides from being *'social'*.

2.4.3) Discussion around the rigidity of institutions in general

A critical debate in the literature looks at the state of institutions as being fixed and rigid (Hwang and Powell, 2005). Institutional rigidity refers to the degree to which institutions are resistant to change (Goel and Karri, 2020). This rigidity is often upheld by the lack of a substitute for the institution (DiMaggio and Powell, 1991). Various kinds of factors may lead to institutional change (Kingston and Caballero, 2009). Even with these factors present, however, institutional change may not occur. The durability of institutions makes them meaningful, but it also obstructs efforts at institutional change (Kingston and Caballero, 2009). Ultimately, it is probably this durability that makes institutional change '*overwhelmingly incremental*' (North 1990: P.89) setting institutional inertia. Goel and Karri (2020) comment that once institutions are established, the forces that sustain institutionalisation may become resistant to change, regardless of their benefits (Kirby 1992; Bartunek and Moch, 1987). Resistance to change can occur because it can threaten an individual's sense of security and increase the cost of information-processing alongside disrupted routines (Powell, 1991). Peng (2004) understands '*institutional inertia*' as the delay in granting full rights to private entrepreneurs signalling ideological rigidity against changes in an economy. Per se, the rule systems are weak and uncertainties surrounding ventures are relatively high (Ge, Stanley, Eddleston and Kellermanns, 2017; Zhou, 2016). Since instability cannot be associated with changes in values, it must be produced by the impact of unmeasured variables. Reasons may include changes in the global markets

leading to growing tensions for innovation causing increased investments by governments and businesses alike (Hayton and Cacciotti, 2013). Institutional rigidity also diminishes opportunity through affecting the degree of embeddedness. With institutional rigidity, entrepreneurs may be negatively impacted from network over-embeddedness. This is where they may face strong institutional pressures to conform to set norms and maintain suitable relationships institutionally to avoid illegitimacy. With institutional rigidity, entrepreneurs may be negatively impacted from network embeddedness. This is where they may face strong institutional pressures to conform to set norms and maintain suitable relationships institutionally to avoid illegitimacy. By doing so, they miss an opportunity cost of connections that may be present outside of the current institutional framework they are operating in, making TEA more efficient overall (Bensemann and Anderson, 2018).

However, institutions are also subject to change over time (especially FIs), much like the individuals that compose them. Legal or political change can provide moments for entrepreneurs to act in a way that may have been overlooked by the regulators (Hwang and Powell, 2005). An example is the FI of the 1965 Medicare and Medicaid medical insurance program in the U.S. Both programs were added to existing employment forms of insurance. However, issues with the price of health services resulted in Medicare being substituted with a case assessment basis in 1983. By standardising health care prices and enabling cost controlling, the unintended effect created an opportunity for investor-owned corporations to enter the health care industry to provide medical insurance thus altering the medical insurance industry institution (Hwang and Powell, 2005). The 1965 Medicare case study illustrates that although institutions may represent bodies with the same aim, their structures or policies can be subject to change and are therefore not necessarily rigid.

2.4.4) Formal/Informal institutions

The work of Scott and other authors around institutional theory shows that at the core of institutions is the idea of conforming via adopting new structures and practices, not because they are efficient per se, but because they give the organisation a sense of legitimacy (Scott, 1995). Fredström, Peltonen and Wincent (2020) state that North (1990) understands institutions as the humanly devised constraints which shape human

interactions. Institutional scholars have long distinguished between institutions imposed by socio-political factors (which include regulations) and cultural-cognitive (and normative) institutions. The latter represent internalised understandings of the world which are based upon humanly devised constraints such as historical culture, traditions, and appropriate behaviours (North, 1990). This links authors such Aldrich and Fiol (1994) with Scott's seminal work (1995).

Tonoyan, Strohmeyer, Habib and Perlitz (2010) stress that economic activities cannot be examined without consideration of both the formal and informal institutional context in which they arise. Institutional frameworks interact with both individuals and organisations (Goel and Karri, 2020). Institutions affect an individual's decision making through signalling which choice is acceptable and determining which norms and behaviours are socialised into a given society (Bruton, Fried and Manigart, 2005). Institutions therefore have an impact on the cognitive and ethical considerations that form society's judgement and behaviour (North, 1990; Scott, 1995). Additionally, they impact organisational behaviour by limiting and classifying which actions are acceptable and tolerable both within and amongst organisations (Aldrich and Fiol, 1994). They support '*the rules of the game*' under which individuals and organisations act and take part. This demonstrates the connection between both North's and Scott's work.

Alternatively, informal institutions affect entrepreneurial capacity and contribute to the shaping of FIs (see Section 2.9 on P.70) and ultimately, the behaviours of entrepreneurs (Frederking, 2004). This thesis will examine each of these institutional categories in depth later, where Scott's NIT framework will be categorised in this manner.

2.4.5) Streams of institutional theory

Following on from the categorisation of institutions, focus is shifted to the various streams of institutional theory. These categories are examined to better appreciate the components of informal and FIs. Kostova, Beugelsdijk, Scott, Kunst, Chua, and van Essen (2020) review 20 years' worth of literature on institutional theory and conclude that three main streams are present:

i) *Organisational institutionalism:* This stream is entrenched in sociology. Here,

institutions are understood to be quite stable (consciously constructed) structures composed of regulative, cultural-cognitive, and normative elements. Along with related activities and resources, institutions promote steadiness and attach value to social life (Scott, 1995; Powell and DiMaggio, 1991; Selznick, 1957). In this stream, institutions determine both what is legal and legitimate (the appropriate approach of conducting tasks within a particular society). Considering pressures for legitimacy in the greater institutional environment, organisations belonging to the same area become similar (isomorphic). They embrace the legitimate structures and practices, which assume a *'taken for granted'* status over time (Meyer and Rowan, 1977; Powell and DiMaggio, 1991). Organisational institutionalism emphasises the legitimacy mechanism.

ii) *Institutional economics*: Originating from the economics stream initially, institutions are understood as *''the humanly devised constraints that structure human interaction''* and are categorised into formal (rules and laws) and informal (norms of behaviour, agreements, and self-imposed codes of conduct) (North, 1990: P.3). In this category, FIs determine the regulations that manage economic activity. Therefore, they may diminish uncertainty, risk, and transaction costs (Kostova *et al*., 2020). Informal institutions may align economic action and become especially crucial in the lack of robust formal institutions (Kostova *et al.*, 2020). Institutional economics emphasis rests not on legitimacy, but rather on liability of newness, and adaptation. Instead, it focuses on the quality of institutional environments, and the extent to which the current institutions within a country encourage efficient activity and synchronisation between economic actors (Trapczynski and Banalieva, 2016). Generally, less developed FIs tend to increase transaction costs due to the incompetence of market structures in economic co-ordination. They further suggest more unclear and volatile institutional rules that are difficult to decipher and adhere to (Khanna and Palepu, 2000).

iii) *Comparative institutionalism:* Emphasis in this stream is upon the arrangement of symbiotic institutional activities in various aspects of socio-economic life for each country (e.g., economic models, legal frameworks, educational systems) (Kostova *et al*., 2020). Theory suggests that typologies of national institutional systems are usually present in the *'varieties of capitalism*' literature, such as the liberal market economy (Hall and Soskice, 2001; LaPorta, Lopez-de-Silanes, Shleifer, and Vishny, 1998). Institutions reflect the

different aspects of a country's institutional environment; they are complementarily working with each other. They exist in national structures that create a specific organised rationale of economic action and consider the overall institutional *'character'* of the nation (Jackson and Deeg, 2019). Recognising the interrelationship between the various institutional systems is an insightful benefit of this approach as it allows the capturing of diverse systems across countries via *''differences not of degree but of kind''* (Jackson and Deeg, 2019: P.5). It is still a separate approach from the traditional analysis of institutional theory and presents certain empirical and theoretical issues to scholars.

2.5) Neo-institutional theory and entrepreneurship

Looking at entrepreneurship from an institutional perspective means embracing the normative, regulative and cultural-cognitive components. Therefore, the lens of NIT is utilised in this thesis. NIT was introduced in 1977 in papers by Meyer and Rowan (1977) and Zucker (1977) (Alvesson and Spicer, 2019). These publications were combined with DiMaggio and Powell's (1983) analysis of isomorphism. These three papers argued that organisations adopt new structures and arrangements not because they are particularly efficient, but because they legitimise an organisation (Alvesson and Spicer, 2019). These papers ask fundamental questions regarding what constitutes an organisation. They propose that formal structures are a matter of *'myth and ceremony'* which create an impression of logic and a perception of legitimacy (Meyer and Rowan, 1977). This early work allowed a new explanation for formal structures (Scott, 2008).

Scott (1995) has tailored a model to argue for the maturity of institutional theory (Alvesson and Spicer, 2019). NIT aims to provide institutional order and conformity within a social group through three pillars: regulative, normative, cultural-cognitive (Scott, 2008). The pillars' main concepts, research areas and findings are illustrated in Table 1 (*below*).

Pillar/Concept	**Prior research contexts**	**Research**	**Findings**
- Regulative: Concerned with the standardisation of actions and limiting them through mechanisms of formal rules (Valdez and Richardson, 2013).	- Macro-level institutional environments (laws/regulations). - Political integrity. - Trade openness/ liberalisation. - Cross-country institutional context.	- Mickiewicz, Stephan and Shami (2021): Study how short-term institutional change impacts entrepreneurship in a cross-country multilevel study via the rule of law examining Polity IV database (the institutionalised democracy index) in 69 countries from 2001–2015. - Holmes Jr., Miller, Hitt and Salmador (2011): Examine	- Mickiewicz *et al.* (2021): Find that short-term change in the rule of law affects entrepreneurial entry. Institutional deterioration weighs heavier than institutional improvement. - Holmes *et al*. (2011): The results imply that each of the

		effects of FIs on inward foreign direct investment (FDI) when studying 50 countries noting nine years of data (1994-2003). - Broadman (2004): Analyses four areas of regulatory changes to enable investment and growth. Broadman examines 40 entrepreneurship case studies amongst eight South-Eastern European countries in 2002.	three FIs (political, economic and regulatory) affects the country's level of inward FDI differently. - Broadman (2004): The study concludes that making regulatory processes smoother, and better aligning all the interests of the various institutions helps enhance performance of ventures.
- Normative: The normative institutions guarantee a level of stability through the obligation and internalisation of norms on an individual, organisational , and societal level (Scott, 1995).	- Impression of entrepreneurs. - Societal feelings towards entrepreneurship and venture rates. -Institutionalisation processes within a country.	- Xie, Wang, Xie, Dun and Li (2019): Examines an integrative framework (including normative elements) to understand the configurational effect of multiple institutions on the growth expectation among female entrepreneurs. Data examines 49 economies using GEM 2018-2019 data. - Stenholm, Acs and Wuebker (2013): The study introduces a multidimensional model (including normative components) to examine institutional arrangements influence on both the rate and the	-Xie *et al.* (2019): Entrepreneurial norms play a decisive role in promoting female entrepreneurship. - Stenholm *et al.* (2013): The findings suggest that differences in institutional arrangements are associated with variance in both the rate and type of entrepreneurial activity across countries. The normative

		type of entrepreneurial activity within 43 countries (in 2008). - Trevino, Thomas and Cullen (2008): Observe the process of institutionalisation (normative pillar) and legitimisation of inward FDI in 16 Latin American countries from 1970-2000.	dimension is positively associated with entrepreneurship motivation and value. - Trevino *et al.* (2008): The results indicate that the institutional processes that legitimise more effectively through the cognitive and normative pillars (e.g., educational attainment) are better indicators of inward FDI than the regulative pillar.
- Cultural-cognitive: This component consists of the shared comprehension of social reality, allowing for the contextualising of meaning within a society (i.e., informal institutions) (Valdez and Richardson, 2013).	- Entrepreneurship '*traits*'. - Entrepreneurial characteristics (e.g., self-efficacy). - Culturally shaped cognitions.	- Bu and Cuervo-Cazurra (2020): Study the impact of informal entrepreneurship on innovation in 71 emerging markets during 2010–2016. - Hmieleski and Baron (2008): Intend to examine moderators of entrepreneurial self-efficacy on firm performance (dispositional optimism and environmental dynamism) of 1,000 firms drawn from the Dun and Bradstreet Market Identifiers Database. - Thomas and Mueller (2000): Examine the relationship between culture and four personality	- Bu and Cuervo-Cazurra (2020): Informal entrepreneurship created ventures engage in imitative entrepreneurial activity and less in innovative venture development. - Hmieleski and Baron (2008): Results suggest the factors do moderate the effects of entrepreneurial self-efficacy. Overall, results suggest that high self-efficacy is not always beneficial for entrepreneurs and may, in fact, exert negative effects under set conditions. - Thomas and Mueller (2000): The study suggests that innovativeness does not vary systematically with cultural

		characteristics commonly associated with entrepreneurial motivation (innovativeness, locus of control, risk taking and energy levels) using approximately 1800 responses to a survey of third- and fourth-year students at universities in nine different countries.	distance from the U.S. An internal locus of control orientation decreases as the cultural distance between countries increases. Risk taking also varied systematically with cultural distance. Finally, high energy level decreases with cultural distance.

Table 1: The pillars of NIT, concepts, prior research contexts and findings. *Source: Author*.

2.5.1) Regulative pillar

The regulative component standardises and limits actions (Valdez and Richardson, 2013). Central to this pillar is the capability to establish rules (formal) and establish incentives or penalties that impact future actions (Scott, 1995). Regulations are seen to have an impact on economic activity. Miller and Holmes (2009) comment that previously governance systems have enforced a wide range of restrictions on economic activity. Limiting economic choice alters and decreases production, delivery, and demand of goods and services. Entrepreneurship rates can be affected by policies in many ways (Storey, 1999).

Regulation can negatively impact entrepreneurs. Valdez and Richardson (2013) explain that SMEs (compared to larger organisations) are disproportionately influenced by administrative expenditures associated with observing government legislation (Wennekers, Verheul, Audretsch, and Thurik, 2002). Guerrero, Liñán and Cáceres-Carrasco (2020) comment that nascent ventures can be negatively impacted by government intervention (e.g., taxation policies). The OECD (1998) further conclude that vague as well as copious amounts of legislation can impede TEA. As explained earlier in Section 2.1 (P.24), the definition of TEA adopted from GEM is similar to Schumpeter's understanding of entrepreneurship combined with Audretsch's (2012) understanding of the age of the firm along with the individuals who are categorised as being self-employed. To illustrate this, bankruptcy laws can influence an individual's comprehension of the risk

and chances of becoming insolvent compared with potential earnings of as a nascent entrepreneur (Valdez and Richardson, 2013). Bankruptcy can furthermore have normative repercussions due to induced social stigma worries (Valdez and Richardson, 2013).

However, simply stating that regulations hinder TEA is an over-simplification. McMullen *et al.* (2008) show that regulatory institutions are associated with the rates of TEA. They concluded that these dimensions are understood to affect OME and NME differently (McMullen *et al*., 2008). Utilising gross domestic product per capita (GDP p/c), the research claims that a wealthier country has higher wages and hence greater opportunity costs of lost wages even as starting a new venture (Valdez and Richardson, 2013). They discover that opportunity costs appear to have a much greater influence compared to transaction costs related with government regulation (McMullen *et al*., 2008).

2.5.2) Normative pillar

The normative component entails both societal values (what is deemed as attractive) and societal norms (what behaviours are deemed socially acceptable) (Valdez and Richardson, 2013). The normative institutions guarantee a level of stability through the obligation and internalization of norms on an individual, organisation, and society (Scott, 1995). Societal norms imply that individuals aim to behave in a socially appropriate manner (March and Olsen, 1989). Research examining values and norms in combination with TEA is limited. Discoveries from Reynolds, Levie, Autio, Hay, and Bygrave (1999) indicate a positive association between the nascent entrepreneurship and a good impression of entrepreneurs within a country. Additionally, they find a harmful impression ascribed to entrepreneurs who have failed in TEA. Societal views negatively correlated to the founding rates of a new venture (Reynolds *et al.*, 1999). Meolia, Finia, Sobrero and Wiklund (2020) conclude that prestige around entrepreneurship positively affects new venture creation, with individuals beginning a new venture ascribing high value to pursuing a prestigious profession.

Other research has discovered societal feelings towards TEA are crucial to the supply of entrepreneurs in a country (e.g., Canestrino, Ćwiklicki, Magliocca, and Pawełek, 2020; Stephan and Uhlaner, 2010; Dutz, Ordover and Willig, 2000). For an individual to action

an entrepreneurial opportunity, they must feel reassured to engage in TEA (Wennekers *et al*., 2002).

2.5.3) Cultural-cognitive pillar

Lastly, the cultural-cognitive component denotes the shared comprehension of social reality, allowing for the contextualising of meaning within a society, including organisational and individual levels of analysis (i.e., informal institutions) (Valdez and Richardson, 2013). This mentions that cognitive contexts promote the formation of individual understandings and beliefs (Scott, 1995).

Cognitive distinctions between societies build on character or *'traits'* research in entrepreneurship (Valdez and Richardson, 2013). Much of the entrepreneurship literature is concentrated on the cognitive traits of individual entrepreneurs by replicating psychology research and through conducting individual-level studies (Valdez and Richardson, 2013). This research follows the characteristics mentioned in Section 1.1 (P.16) and has looked at such traits as innovativeness (Bu and Cuervo-Cazzura, 2020; McClelland, 1987; Schumpeter, 1949), risk-propensity (Burch, Murphy and Tocher, 2020; Shaver and Scott, 1991; Bird, 1989) and self-efficacy (Yang, Li and Wang, 2020; Hmieleski and Baron, 2008; Chen, Greene and Crick, 1998).

The stream that this thesis will focus on is the cultural-cognitive (with the normative pillar) related entrepreneurship. To deal with the limitations of the trait-based literature, the level of research has been stretched to the national level (Valdez and Richardson, 2013). These studies consist of cross-national assessment of discrepancies between countries centred on national cultural-cognitive qualities (Valdez and Richardson, 2013). National cultural attributes indicate the frequently held beliefs and are meant to be indicative of behaviour (Valdez and Richardson, 2013). This higher (macro) level concept avoids the powerful predictive hypothesis that innate individual attributes define individual behaviour. Rather, culturally shaped cognitions (cognitions generally shared within a society) influence aggregate behaviour. Research conducted by Hofstede, Noorderhaven, Thurik, Uhlaner, and Wildeman (2002) analyses national cultural dimensions to provide insight into discrepancies in TEA between countries.

A drawback, however, is that the entrepreneurship research, especially cross-national (e.g., Baum *et al.*, 1993), has concentrated predominantly on the U.S. and Western Europe (Thomas and Mueller, 2000), and relied heavily on Hofstede's concept of national culture (Hayton, George, and Zahra, 2002). This thesis will cover the issues surrounding Hofstede and other national cultural indices later (Section 4.7.2 on P.127).

A distinction needs to be drawn between the normative component and the cognitive component. ***It must be stressed that cultures embrace both components. These components are distinct in both mechanisms and content (Valdez and Richardson, 2013).*** The normative component constitutes the acceptable ways of gaining something that has general approval societally (Valdez and Richardson, 2013). Meanwhile, the cultural-cognitive component reflects beliefs that are rooted in individuals and have been internalised (DiMaggio and Powell, 1983). Smallbone and Welter (2009) offer additional insight. They recognise that the normative elements encompass the mutual sense-making of a society, whereas cultural-cognitive elements refer to the individuals' understanding of meta values and rules (Valdez and Richardson, 2013). This culture-cognitive understanding is shaped by individual experiences and backgrounds.

2.5.4) Categorisation of NIT

NIT and its various components show that as a subset it contains elements present in the institutional literature streams. Understanding which literature stream NIT belongs in now needed to be examined. ***The author believes that NIT belongs in the organisational institutionalism literature stream of institutional theory***. This is justified by two major factors:

i) *NIT's disciplinary affiliations:* When looking at the prominent authors and their academic backgrounds (e.g., Scott; Meyer and Rowan; Zucker), one must look at their professions and the journals in which they are published. They are all sociology journals (Theory and Society; American Journal of Sociology; American Sociological Review) and Scott himself is a sociologist. As a result, the research is more sociology orientated, rooting organisational institutionalism in sociology (Kostova *et al.*, 2020).

ii) Characterisation of literature streams: Kostova *et al.* (2020: P. 469) describe institutions

as *''…relatively stable social structures composed of regulative, cultural-cognitive, and normative elements that…provide stability and meaning to social life''*. This definition bears an uncanny resemblance of NIT via the three pillars (Section 2.5). The fact that Scott was a co-author of this paper would suggest that he would agree with the categorization of NIT in this literature stream.

There is a lack of consensus around what defines an institution, and by implication NIT. Frequently, these definitions are only loosely stated (Alvesson, Hallett and Spicer, 2019). This makes it difficult to identify commonality across the definitions as they emphasise different aspects. Meyer, Boli, and Thomas (1987) drift further from '*institutional myths*' (rationalised processes which identify numerous social principles as technical ones and indicate in a law-like method of pursuing them) and toward '*cultural rules*'. Rules imply less leeway for organisations and institutions compared to the imagery of '*myth and ceremony*' (Meyer and Rowan, 1977). These citations demonstrate the lack of consensus around what institutions, and indeed various stream of NIT, pertain. The author attempts to better understand this by examining the regulative pillar moderating both the normative and cultural-cognitive pillars to further comprehend all three of these and their associations with TEA (especially the latter pillar). The study is an empirical one where the relationships appear to be moderated and subtle.

2.6) Informal Institutions

2.6.1) Revisit to North's typology (informal institutions)

To recap, informal institutions are societal norms, value systems and codes of conduct, which affect entrepreneurial capacity and shape the behaviours of entrepreneurs and their activity (Frederking, 2004). Fredström, *et al.* (2020) comment that an informal economy reflects both cognitive and normative institutions. Felix, Aparicio and Urbano (2019) explain that principles of social order (e.g., laws and traditions) do not determine organisational structure. Rather, they establish parameters as to which organisational forces are conceivable and which alternative forms are impossible. Most recent research suggests a small but significant relationship between informal institutions (such as cognitive ability, values, attitudes) and effectiveness (Felfe and Schyns, 2014). A similar relationship is also seen with informal institutions and organisational strategies (Koryak, Mole, Lockett, Hayton, Ucbasaran, and Hodgkinson, 2015).

2.6.2) The alleged equivalence of national culture and informal institutions

An ongoing debate considers whether national culture and informal institutions are one and the same. Accordingly, Prince, Prince and Kabst (2020) note that culture is frequently considered a component of informal institutions (e.g., Dikova, Sahib and Van Witteloostuijn, 2010; Peng, Wang and Jiang, 2008). In addition, a seminal review paper by Alesina and Guiliano (2015) view them as synonymous. They suggest culture is both values and beliefs ('*informal rules'*). The authors comment that it is counterproductive to identify culture (values and beliefs) as informal institutions, emphasising the label '*informal institutions*' implies that formal institutions determine informal ones, and that the latter are of secondary importance. This thesis adopts various dimensions of national culture such as collectivism (low IND) and power distance (PD) which are used to measure informal institutions (*covered later*) (e.g., Cao, Jayaram, Liu and Lumineau, 2018; Liou, Chao and Yang, 2016; Holmes *et al*., 2013). Papageorgiadis, McDonald, Wang and Konara (2021) state that authors like Hofstede (2011) and House, Javidan, Hanges and Dorfman (2004) often use national culture as a proxy for informal institutions. These authors are considered as creating the foundations for work on national culture and are known for equating the term with informal institutions. Meanwhile, national culture is the "*shared*

motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives…transmitted across generations" (House, Javidan, Hanges, and Dorfman,2002: P.5). North (1990: P.6, P.42) himself sees a connection between both culture and informal institutions where culture is the core of informal institutions. He mentions that *''… informal constraints embodied in customs, traditions, and codes of conduct …these cultural constraints not only connect the past with the present and future… Culture provides a language-based conceptual framework for encoding and interpreting the information that the senses are presenting to the brain… Conventions are culture specific, as indeed are norms*''. This explanation from North chimes with Hofstede and House and their understanding of national culture. Indeed, North (1990, P.42) explicitly states that culture is the core from which conventions and norms arise. These citations demonstrate that the precedent of equating national culture and informal institutions is present in the literature with leading authors in the field.

However, there is still a debate as to whether national culture and informal institutions are synonymous. Newman and Nollen (1996:P.755) refer to national culture as the *"…central organizing principle of employees''*, with the understanding of work, their approach to it, and how they expect to be treated. Moreover, Muralidharan and Pathak (2017) comment that informal institutions refer to culturally shared understandings associated with values and social expectations about appropriate actions. These understandings are based on dominant practices or norms prevalent in a society. Boddewyn and Peng (2021) comment that whilst informal institutions and culture do overlap, they are distinct entities (Cantwell, Dunning and Lundan, 2010). Sauerwald and Peng (2017) see informal institutions as socially shared rules (usually unwritten) that are created outside of the coercive power of the state.

Sauerwald and Peng (2017) conclude that culture can be used as an informal institution solely if it generates shared social expectations (Helmke and Levitsky, 2004). This shows that Peng does not comprehend informal institutions and national culture as synonymous. Using national cultural measures, some research asserts that informal institutions may end up establishing a limited set of norms, rather than engaging with the broad impression of informal institutions that cannot be captured exclusively by cultural

values (Singh, 2007). Such citations demonstrate varied understandings of what national culture entails.

Ultimately, the author proposes that national culture and informal institutions may be argued to be equivalent**, **this thesis will use these terms interchangeably, mainly based on authors like North (1990), Hofstede (2011) with Alesina and Guiliano's (2015) seminal work.

2.7) National culture and entrepreneurship literature streams

As the assumed equivalence of national culture and informal institutions has now been explained. Various streams of literature examine national and its association with entrepreneurship e.g., Hayton *et al.* (2002) review behavioural research. They understand that culture is specified as a set of shared values, beliefs, and expected behaviours (Hofstede, 1980). This thesis will focus on two main literature streams examining national culture and entrepreneurship: national culture and traits; and national culture and aggregate measures of entrepreneurship.

2.7.1) Culture and traits

This stream focuses on a diverse set of factors: entrepreneurial motives, values, traits, and cognitions. Most studies take one of two distinctive routes to the question of the influence of culture on entrepreneurship (Mitchell, Smith, Seawright, and Morse, 2000). The first group deals with the research question of whether national culture is associated with different entrepreneurial characteristics (Mitchell *et al*., 2000). The second group investigates whether entrepreneurs are alike or separate from their non-entrepreneurial counterparts within cultures and countries.

Looking at entrepreneurial motives, early studies examined the association between national culture and entrepreneurial motives (Hayton and Cacciotti, 2013). These studies show strong evidence that self-reported reasons for starting a venture vary systematically with variations in culture along the dimensions of IND, PD, and masculinity (MAS) (Scheinberg and MacMillan 1998). A study by Pruett, Shinnar, Toney, Llopis, and Fox (2009) examines discrepancies in motives and barriers regarding ventures in the U.S., China and Spain. Chinese respondents emphasise money as the primary motive to start a venture, compared with Spanish and U.S. individuals. This is clarified through differences in the PD dimension of culture (China has high scores). Such discrepancies in cultural acceptance of status inequality might explain Chinese entrepreneurs' greater desire for income (and social status) as a cause for entrepreneurship.

Nonetheless, evidence of culture varying between countries is seen when studying growth and non-growth-oriented entrepreneurs in the U.S. and Russia (Stewart, Carland, Carland, Watson, and Robert, 2003). Whilst U.S. growth-oriented entrepreneurs are

consistently higher than all others on the three motive disposition measures (achievement, risk taking and innovativeness), the Russian entrepreneurs vary drastically from U.S. entrepreneurs only on need for achievement. Accomplishment motive theory indicates that this is a learned disposition (McClelland, Atkinson, Clark, and Lowell, 1961). This would therefore be contingent to the influence from cultural norms and values. Similar to McClelland's (1961) study, the findings of Stewart *et al*. (2003) endorses this analysis. They understand that significantly higher levels of achievement motivation in the types of U.S. entrepreneurs relative to their Russian counterparts are suggestive of the influence of the IND, MAS nature of U.S. culture in contrast to the more feminine (low MAS) and collectivistic (low IND) and high PD culture that characterizes Russia (Hofstede, 2001).

Additionally, values and traits (Schlaegel and Koenig, 2014) are another branch of the literature. Thomas and Mueller (2000) observe whether traits associated with entrepreneurship (innovativeness, locus of control, risk taking propensity, and energy) contrast with cultural distance from the U.S. Mueller and Thomas (2000) offer evidence that innovativeness and internal locus of control are widespread in cultures high in IND, whereas UA is low. Kristiansen and Indarti (2004) do not discover great disparities in locus of control among their Indonesian and Norwegian students. Instead, they exhibit that in these countries, which vary in cultural traits such as high/low IND, disparities in entrepreneurial intentions are understood by variations in the requirement for attainment and self-usefulness. This study contributes to the conclusion that there are connections between culture and entrepreneurial traits.

A limitation is that the subjects within Kristiansen and Indarti's study were students rather than entrepreneurs, and neither study linked these traits to entrepreneurial outcomes. Additionally, confirmation of high rates of entrepreneurship in traditionally low IND and UA cultures (e.g., Pinillos and Reyes 2011) indicates that caution should be exercised in deriving robust conclusions on characteristics of low IND and UA.

The second research stream seeks to determine whether entrepreneurs are alike or distinct from their non-entrepreneurial members across cultures (Baum *et al.*, 1993). The effect of culture and nation on entrepreneurial cognition is an issue to address. Such

inadequacy is discussed by Tan (2002) (cited by Keith, 2019). Tan compares the impact of cultural context on the perceptions and inclinations of mainland Chinese, Chinese American, and Caucasian American entrepreneurs. Tan (2002) concludes that, although mainland Chinese entrepreneurs diverge substantially in perceptions and orientations from both Chinese American and Caucasian Americans, the latter two groups do not differ drastically. This leads Tan to advise that differences attached to culture might arise from discrepancies in the national environment. Similarly, Baum *et al.* (1993) compare entrepreneurs in the U.S. and Israel regarding motivation. They realise that in both countries the requirement for self-sufficiency and association needs are elevated in entrepreneurs than in non-entrepreneurs, although association is only seen as marginally significant. Discoveries for an ideal entrepreneurial across cultures are therefore weakly supported in this research.

While it makes a fascinating impact in terms of the ubiquity of motives, a shortcoming of Baum *et al.*'s (1993) study is that the authors do not make a powerful link between dimensions of national culture and the entrepreneurial traits. Rather, McGrath *et al.* (1992) examine whether entrepreneurs and non-entrepreneurs vary in terms of the dimensions of national culture. Mitchell, Smith, Morse, Seawright, Peredo, and McKenzie (2002) survey 990 individuals in 11 countries to investigate disparities in cognitions between entrepreneurs and non-entrepreneur's demographic. They examine the generalisation of entrepreneurs' ways of thinking and the effect of national culture on cognitions. Their findings demonstrate that entrepreneurs and non-entrepreneurs differ on schedules, commitment, and capability cognitions cross-country. This is alongside the country-based variations in cognitive scripts amongst entrepreneurs. These types of studies suggest that there may be a common entrepreneurial *'culture'* or *'type'* that go beyond national culture.

2.7.2) National culture and aggregate measures of entrepreneurship

Studies have also investigated the association between dimensions of culture and entrepreneurship at the international or regional level (e.g., Hasan *et al.*, 2017; Beugelsdijk, 2010; Davidsson and Wiklund, 1997).

Research surrounding national culture can explain cross-country variation in

entrepreneurship (Uhlaner and Thurik, 2007; Scott, 1995). These studies conclude that disparities in cultural values and beliefs may impact national behaviour, including the decision to become an entrepreneur (Mueller and Thomas, 2000). Some level of conformity does exist in the literature. Entrepreneurial culture emphasises entrepreneurial behaviour by inspiring the pursuit of demanding work and supporting the required resources to behave accordingly, rewarding creativity and risk taking (Akhtar and Ort, 2018). Such dynamism in culture makes entrepreneurs more positive about the future accomplishments of their innovations.

From an institutional perspective, Hasan *et al.* (2017) presume that while FIs positively influence TEA, informal institutions (national culture) can replace and complement the role of FIs. Informal institutions can encourage individuals to become entrepreneurs by making their selections as being socially desirable and displaying a positive sense of legitimacy (Scott, 2002). In addition to the cultural authenticity of entrepreneurship, informal institutions act as motivational stimulants to accelerate programs and provide resources to assist entrepreneurs (Stephan *et al*.,2015).

McGrath, MacMillan, and Scheinberg (1992) find that cultural dimensions (covered later in Section 2.8), such as IND and UA, are relatively enduring cultural values and only attitudes towards PD appears to change significantly over time.

Various studies examine how national cultures influence entrepreneurship, and earlier research includes works of Davidsson (1995), Davidsson and Wiklund (1997), and Shane (1993). Shane (1992) primarily employs cultural dimensions to determine their association with innovation. Shane discovers that IND is positively associated with innovation, whilst PD appears to be negatively associated with innovation. Davidsson and Wiklund (1997) propose that cultures which foster a higher demand for accomplishment, independence, and self-efficacy have a greater entrepreneurship rate. There have multiple studies suggesting that IND, uncertainty acceptance, and PD are all associated with this outcome (Rinne, Steel, and Fairweather, 2012).

Nevertheless, contemporary literature is revealing with the interfaces between culture and economic development with mechanisms that allow for vigour in the influence of

culture without implying uncertainty in the cultural values themselves (Hayton and Cacciotti, 2013). Pinillos and Reyes (2011) demonstrate that the association between IND and TEA with the stage of economic development. Stephan and Uhlaner's (2010) research appears to directly disagree with established views on which cultural dimensions are most supportive in establishing TEA by revealing the significance of socially supportive (low IND) cultures. They also discover the high masculinity (MAS) which are performance-oriented and IND characteristics are insignificant.

TEA has been clarified in Section 2.1 on P.24 as the author has adopted Schumpeter's definition of entrepreneurship generating '*new combinations*' altogether resulting in '*creative disruption*' of stagnant markets. However, limitations arise where the definition lacks an inclusion of the age criterion of a venture as one that is new (i.e., nascent entrepreneurship) is often used to define entrepreneurship (Audretsch, 2012) and details on the entrepreneur themselves (e.g., age)). The definition mentioned by Audretsch here corresponds to the official TEA definition used by GEM where the percentage of the adult population (aged 18–64 years) within a nation that is either currently engaged in the process of creating a new venture for at least 3 months but no more than 42 months (GEM, 2021) is noted.

As stated in the previous section, this stream of literature will be extended in the thesis by utilising measures and indices prominent in the literature.

2.8) National culture (informal institutions) dimensions and impact on TEA

This thesis has looked at the types of literature surrounding national culture and entrepreneurship. The thesis earlier in Section 2.6.2 (P.51) justified the equivalence of informal institutions and national culture. This section will now elaborate on the six dimensions of national culture (Hofstede's index) and the literature addressing their impact on entrepreneurship.

2.8.1) Power distance

The first dimension looks at the PD dimension. PD is understood as the degree to which hierarchical relations and an unequal distribution of power are tolerated and anticipated in a society (Hofstede, 2011). Prior empirical evidence regarding PD and entrepreneurship is nuanced with both positive and negative relationships estimated (e.g., Zhao, Li and Rauch, 2012; Autio *et al.*, 2013).

It is usually assumed that PD is negatively related to entrepreneurship (Hechavarría and Brieger, 2020; Dubina and Ramos, 2016; Autio *et al*., 2013). Hechavarría and Brieger (2020) understand societies high in PD view power as a mechanism to provide social order. Such societies are typified by social classes that differentiate groups and restrict upward social mobility. Radziszewska (2014) sees that the lower a country's PD, the greater the access to resources and entrepreneurial opportunities present, thus supporting entrepreneurial initiatives. In societies with a higher prevalence of PD, there are recognised power structures where resources are disseminated less equally (Arrak, Kaasa and Varblane, 2020). This could make it hard for lower power groups to obtain information, and resources making it problematic to benefit from rewarding opportunities (Morales, Holtschlag, and Marquina, 2015). Furthermore, high PD cultures can be more detrimental to TEA and there might be little tolerance of initiative (Arrak *et al.*, 2020). Societies high in PD view entrepreneurs as those attempting to challenge the status quo (Morales, Holtschlag, and Marquina, 2015). Moreover, the degree of PD in society can influence how power is concentrated, which affect one's ability to challenge power structures (Meek, Pacheco, and York, 2010). The lower-power groups within a society may perceive EA as something that is only accessible to high-power groups, and not view it as a route for themselves (Mitchell *et al*., 2000). It can be anticipated that

there will be less entrepreneurship activity in the instance of high PD (Arrak *et al*., 2020). This is because the number of established entrepreneurs will likewise be low as culture does not change quickly. The opposite may be true for low PD situations.

However, positive effects of PD on entrepreneurship are also observed in studies. In societies with high PD, entrepreneurship may be the sole route for individuals to gain economic autonomy from the state and other hierarchies. This mechanism is anticipated to hold in low and medium-level GDP countries as opposed to high-level GDP countries (Zhao *et al.*, 2012). Bandera, Eminet, Passerini and Pon (2018) observe 47 university students in France and the U.S. They confirm that high PD (along with low IND and high UA) are associated with more entrepreneurship because of the frustration at the dominant cultural values present in countries. Additionally, Urbano, Aparicio and Querol (2016) review 106 studies to determine entrepreneurial motives (individual and macro level analyses). They conclude that hierarchical (high PD) societies impact OME and NME differently, whereas egalitarian societies with low PD tend to be more beneficial for OME TEA whilst hierarchical societies boost NME TEA. This citation therefore depicts a complicated relationship between PD and TEA. Simón-Moya, Revuelto and Guerrero (2014) reach a similar conclusion in their paper. When PD is high, individuals may be more entrepreneurial, and members of society seek greater independence. The lack of access of resources via unequal power distributions means the experience of individuals in such nations pushes them to consider alternative routes to attaining economic returns (Simón-Moya *et al.*, 2014). Inconclusive evidence for developing countries also points to TEA with high PD scores (e.g., India, Brazil) (Fischer, Queiroz and Vonortas, 2018). The lack of availability of resources for entrepreneurs in emerging nations shows resource allocations can be inefficient and therefore faulty with those in power. This provides incentives for entrepreneurs in lower levels of power to seize opportunities.

To summarise, higher levels of PD are generally associated with a lack of opportunities and equal access to resources being actualised to prospective entrepreneurs. Whilst in medium-low GDP countries this may not deter entrepreneurs as they aim to secure greater economic gains.

2.8.2) Individualism-collectivism

As PD revolves around the actual individuals who establish hierarchical relationships, IND on the other hand (compared to low IND) reveals the extent to which people tend to act as individuals rather than a particular group (Hofstede, 1980). The influence of IND on entrepreneurship is also mixed (Dheer, 2017). There is both a positive and negative relationship with IND and entrepreneurship which is moderated by GDP p/c.

People in high IND societies tend to be more geared to self-interest, self-sufficiency, and accomplishment of personal aims (Dubina and Ramos, 2016; Kirkley, 2016). As entrepreneurship includes showing innovation (covered earlier in Section 2.1.1), and risk-taking means being rewarded, it is assumed that IND is positively related to EA where studies provide empirical support (Nikolaev *et al.,* 2018; Stephan and Uhlaner, 2010) and innovation (Bennett and Nikolaev, 2020; Rinne, Steel and Fairweather, 2012). Assman and Ehrl (2021) study 69 countries in 2017 and discover that in high IND countries, OME rates (a component of TEA) are usually higher. IND impacting TEA may have an indirect effect as entrepreneurs in high IND countries may perceive better opportunities arising (Assman and Ehrl, 2021). In high IND cultures, entrepreneurship may be anticipated to be promoted, whereas individuals placing their own objectives above others in the group might get a negative reaction in collectivist societies (Fayolle, Liñán and Moriano, 2014; Autio, Pathak and Wennberg, 2013). Canestrino *et al.* (2020) stresses the relationship of a positive link between entrepreneurship and IND. The research indeed demonstrates that cultures high in IND are supportive of entrepreneurship.

However, it has been argued that the positive association between IND and entrepreneurship is conditional for high-level GDP countries (Pinillos and Reyes, 2011). Low IND societies might not have the ability to fulfil their motivational requirements within an organisation. Therefore, people are more predisposed to engage in TEA in a low IND setting (low IND). Also, in low IND societies, entrepreneurs get greater help from family and friends via their social networks (Dubina and Ramos, 2016). Furthermore, even if high IND is positively associated with nascent entrepreneurship, established venture owners are frequently perceived positively as job makers who produce gains for society generally (Autio *et al*., 2013). It has also been proposed that high IND and low IND may be viewed as two distinct entities, as both could generate separate effects on entrepreneurship. For example, it may be that high IND impacts innovation, but low IND

may help to improve collaboration (Mitchell *et al*., 2000), which may be more useful for maintaining the venture.

In conclusion, high IND might associate with high TEA in high-GDP countries, as entrepreneurs will be oriented towards self-interest, autonomy, and risk taking which will be rewarded.

2.8.3) Masculinity- femininity

Whilst individuals compose national culture, they will have different traits when engaging in TEA, MAS (compared to femininity (low MAS)) is the next dimension which considers the degree to which conventionally masculine societal ideals, such as preference towards objective measures of achievement and success, are appreciated more than those traits which are considered feminine (Arrak *et al.*, 2020). High MAS (more masculine) societies have traits like assertiveness, competitiveness, and accomplishment (Arrak *et al*., 2020). Low MAS values can include values like solidarity or tolerance (Kaasa *et al.*, 2014). Also, in low MAS societies the emphasis may be on subjective factors e.g., inter-personal associations and a welcoming environment (Dubina and Ramos, 2016). The literature encompassing the association between MAS and entrepreneurship is rather thin as MAS has not obtained as much interest as a potential influence on entrepreneurship (e.g., Calza *et al*., 2020). On one side, low MAS may mean lower enthusiasm for entrepreneurship, but on the other hand, the social help might encourage prospective entrepreneurship (Stephan and Uhlaner, 2010).

It could be expected that MAS is positively associated to TEA (Kirkley, 2016; García-Cabrera and García-Soto, 2008). Martiarena (2020) examines 710 entrepreneurs for two months (August-September 2017) from 10 countries and reports that female entrepreneurs expect lower TEA rates when identified with feminine behaviours and attribute masculine features to higher EA growth. Likewise, Zhao *et al.* (2012) discover a positive association between high MAS and entrepreneurship due to the disposition to be firm and goal driven, and the awareness of various roles and disparities (House *et al*., 2004). Scholars generally agree on the positive relationship between high MAS and entrepreneurship (Hamilton, 2013; Hofstede *et al.*, 2004; McGrath *et al*., 1992). Also, Gupta, Turban, Wasti, and Sikdar (2009) showcase fascinating research about gender

stereotypes and adult entrepreneurial intentions in three nations (India, Turkey, and the U.S.). They understand that entrepreneurship is seen as high MAS generally and entrepreneurs are mainly viewed to have high MAS characteristics. The results, when controlled for female-entrepreneur comparisons, indicate that entrepreneurial intents of men are greater than women. It has been understood for a while that literature of entrepreneurship depict TEA being associated with high MAS by examining the experience of men as the main focal point of analysis, causing in andro-centric theory generation (Baker, Aldrich, and Liou, 1997). Regarding various phases of entrepreneurship, it can be thought that high MAS success-oriented principles facilitate the enthusiasm for starting a new venture.

To summarise, high MAS levels may imply traits like desire for material rewards, assertiveness, competitiveness, and material accomplishment which might be positively related to TEA (Kirkley, 2016). It is assumed that high MAS success-oriented values may inspire the enthusiasm for setting up of a new venture.

2.8.4) Uncertainty avoidance

Any type of TEA (especially nascent entrepreneurship) involves a degree of dealing with the unknown. As such, UA refers to *"…the extent to which the members of a culture feel threatened by uncertain or unknown situations*" (Hofstede, 1991: P.113). The empirical evidence regarding UA and entrepreneurship is mixed (Stephan and Pathak, 2016; Hofstede *et al*., 2004). UA may be seen to be positively associated with TEA if a particular combination of other informal dimensions present; however, UA can also be seen to deter entrepreneurship due to potential entrepreneurs being risk-averse.

Cultures characterised by low levels of UA are more encouraging to entrepreneurial entry because they cultivate values such as openness to ideas, extraversion and performance-based orientation (Bräandstatter, 2011; Thomas and Mueller, 2000). Individuals who are more unconcerned with uncertainty and ambiguity can obtain a first-move rent, which is a strong incentive to transition from intent to action (Falck, Heblich and Luedemann, 2012). Damaraju, Barney, and Dess (2021) explain that countries with a high UA culture are reported to have individuals who are less comfortable in surprising situations compared to known ones, thus reducing TEA rates. Indeed, such favourable perceptions

of the environment will mean more entrepreneurs will be more willing to act as '*first-movers*' increasing TEA and developing new goods (or industries) (Marino, Dickson and Weaver, 2010). In low UA countries, individuals do not like excessive regulations. It is thought that rules are not required to solve issues (Hancıoğlu, Doğan and Yıldırım, 2014). Referring to Section 2.1.2 (P.29), which examined risk and uncertainty distinctions, firms face different uncertainties as decisions are made. Judgements are regularly revisited, renewed, and revised (Packard *et al*., 2017). The process of establishing a venture starts with some levels of uncertainty, which over time become a quantifiable probability of risk. This means that entrepreneurs should gradually move to a low UA setting. Yet, in low UA settings, individuals within society may be comfortable with their employment situation within organisations, and thus are deterred from entrepreneurship activity (Wennekers, Thurik and Van Stel, 2007). Indeed Wennekers *et al.* (2007) conclude that there is a negative relationship between GDP per capita and TEA for countries with low UA. This is because the opportunity-costs associated with self-working play a less significant part and this is specifically applicable to a culture that is high on UA, high on PD, low on MAS and low on IND (Verheul, Wennekers, Audretsch and Thurik, 2002).

On the other hand, countries (national cultures) with high levels of UA are also expected to have customers that are hesitant to try and embrace novel products and services, which are frequently the result of OME. Certainly, examining a sample of 20 European countries, Kaasa and Vadi (2008) understood that countries with a lower threshold of uncertainty (high UA) tend to have less patent submissions. This can be seen as a gauge of individuals' enthusiasm to consider and chase entrepreneurship because of a gap in the market. Action preparation is a crucial mechanism of converting entrepreneurial intentions into behaviour (Bogatyreva, Edelman, Manolova, Osiyevskyy and Shirokova, 2019). Cultures with high levels of UA aim to avoid unusual circumstances and wish to deviate from potential conflicts (Hancıoğlu *et al*., 2014). They may also try to ideally have stability with negligible risk (Hancıoğlu *et al*., 2014). Countries with high UA have high levels of regulations to help reduce uncertainty. Such regulations provide prospective entrepreneurs with assurance and may also increase the long-term outlook for beginning ventures (Arrak *et al.*, 2020). When Wennekers *et al.* (2007) examine UA and its impact on entrepreneurship rates in OECD countries, they note that without uncertainty, entrepreneurship would be unnecessary. In cultures typified by strong UA, the

commitment into the entrepreneurial process itself is anticipated to conjure levels of doubt. This doubt is found to hinder the change of intent of entrepreneurs into meaningful behaviour (Van Gelderen, Kautonen and Fink, 2015).

Lower levels of UA may mean that a first-mover advantage is available, with more patent applications being submitted. Yet, this depends on the level of economic development, as negative relationships between GDP and TEA occur when OME is not as necessary.

2.8.5) Long-term orientation

Any type of uncertainty encountered by an entrepreneur has a time element within it. A long-term outlook is required since TEA only considers nascent entrepreneurship which is a venture that been functioning no longer than 42 months (three and a half years) (Hechavarría, Matthews and Reynolds, 2016). LTO (as opposed to short-term orientation (low LTO)) refers to *''…the extent to which a culture programs its members to accept delayed gratification on their material, social, and emotional needs''* (Hofstede 2001: P.20). Buck, Liu and Ott (2010) understand that LTO (also known as Confucian Dynamism) is probably the most important cultural dimension via its association with a nation's propensity to save, invest, and thus its GDP p/c growth potential (Hofstede, 2001). Wood, Bakker and Fisher (2021) comment that an entrepreneur's conception of time significantly impacts on their activities. They understand that entrepreneurs across industries universally emphasise the importance of time in their actions as critical to the effectiveness of their activities. LTO related values include perseverance, ordering relationships by status, and thrift. The opposite is low LTO, which entails flexibility and adaptiveness (Galariotis and Karagiannis, 2020). ***Research surrounding the association of the LTO dimension with TEA is sparse relative to the other four dimensions mentioned earlier. The author aims to add to this literature by examining the LTO dimension on two fronts, one by looking at its direct association with TEA and also within a FI moderation context (covered later).***

Tiessen (1997) summarises the key characteristics of LTO, where people tend to pursue growth objectives. Low LTO emphasises an IND culture and whilst LTO focuses on low IND cultures. Ashkanasy, Gupta, Mayfield and Trevor-Roberts (2004) mention that LTO is understood as a dimension of a broad concept of '*time orientation*'. Societies exemplified

by a LTO show a high inclination to save currently for future usage and emphasise working for long-term achievement. This should therefore result in higher TEA rates.

Bogatyreva *et al.* (2019) conclude that LTO produces more pragmatic attitudes and is thought to have a positive effect on entrepreneurial reasoning. Involvement in TEA supposes high risks that ordinarily take considerable time to be realised. Hechavarrıa, Matthews and Reynolds (2016) emphasise that, typically, nascent entrepreneurs take approximately 46 months to reach an outcome (establishing a venture), which suggests an LTO perspective. This excludes the time the entrepreneur must wait before any profit is made. Therefore, a culture characterised by low LTO may persuade individuals to choose employment in a founded venture with expected salary payments. They may not act on their intentions if the rewards are great and fast. This rarely happens with ventures generally (Bogatyreva *et al*., 2019). Simultaneously, individuals from LTO societies are more equipped to be patient for their rewards. Therefore, a LTO may hasten the transformation of intentions into actions (Bogatyreva *et al*., 2019).

Gupta, Hanges, and Dorfman (2002), Gupta, Levenburg, Moore, Motwani, and Schwartz (2008) all conclude that LTO is useful for differentiating between the values and practices of distinct types of family firms. Zahra, Hayton, and Salvato (2004) identify LTO as a dimension of entrepreneurial culture that can promote unique benefits in family firms. Lumpkin and Brigham (2011) analyse how an entrepreneur views a time-sensitive decision, which depends on how they use temporal referent points (past, present, and future) as outcome conditions in the decision-making procedures (Mosakowski and Earley, 2000).

LTO values extend time horizons and assign significance to the future. Decision makers with LTO are aware that the costs of many of their entrepreneurial decisions will be recognised only after a time delay (Le Breton-Miller and Miller, 2006). Indeed, Wood *et al.* (2021: P.149) state that *‘‘…entrepreneurs attend thoughtfully to key aspects of pursuing new introductions… It [a new venture] involves a commitment of time, talent, money, and other resources that, once expelled, are difficult to recoup (Bhawe, Rawhouser and Pollack, 2016)’’*. Such a comment demonstrates a LTO is ultimately inevitable with TEA to be realised.

In contrast, cultures with low LTO can be spontaneous; they are devoid from both past concerns and future worries (Lumpkin and Brigham, 2011). Concurrently, these cultures are unable to determine a plan to realise their own goals, therefore impacting rates of TEA (Keough, Zimbardo and Boyd, 1999). Low LTO means entrepreneurs are inclined to be adaptable and contemplate material success and spiritual satisfaction as an incorporated whole (Chui and Kwok, 2009; House *et al*., 2004). Barretto, Lanivich and Cox (2022) conclude from studying 93 countries and examining relationships between social temporal orientation and innovation levels (using 2015 multiple national culture indices) that LTO has an initial significant effect on implementing TEA but the perseverance present in high LTO contexts can be unfavourable. Entrepreneurs from LTO are supposed to support social concerns and try to solve the existing societal gaps. Additionally, LTO might be an obstacle in circumstances where quickly changing situations require decision makers to modify long-standing commitments (Lumpkin *et al*., 2010). Low LTO reflects concerns with more instant results of decisions and actions, involving shorter time horizons (Lumpkin *et al*., 2010).

Also, low LTO may be favoured in volatile situations because it facilitates strategic vigilance and rapid reactions to altering conditions. But Laverty (1996) explains that low LTO is often criticised as it potentially encourages decision makers to be excessively fixated on the present and prospects for short-term financial returns (cited by Jacobs, 1991). Thus, economic considerations often decide whether a venture bases its decisions in a short-term versus long-term criteria (Lumpkin *et al.*, 2010). Lee, Trimi and Kim (2013) inspect cultural differences of the U.S. and South Korea (S.Korea) from 1985-2008 looking at mobile phone adoption patterns. They learn that in high LTO nations, previous commitments are barriers to change. Yet, once new arrangements are accepted socially, the rate of such changes is very quick. A high LTO as seen in S.Korea is related to low innovation effect but may have a high imitation effect where ventures imitate each other, it is this low innovation effect which may dampen TEA rates. Worrying about the future is a key feature of LTO, but it is not the only feature (Lumpkin *et al.*, 2010). On the surface, LTO may be considered as one-dimensional, but scholars understand LTO to be a multidimensional construct. LTO involves comprehending time holistically by evaluating both the past and the future (Lumpkin *et al*., 2010). Emphasis is not placed only on

contemporary current effects (Bearden, Money and Nevins, 2006).

To conclude, LTO is related to a nation's tendency to save, invest, and its per capita income growth capability (Buck *et al*., 2010). Its values include perseverance, ordering relationships by status, and thrift. Involvement in TEA assumes high risks that take considerable time to be realised (Bogatyreva *et al.*, 2019). A culture with low LTO may push people to choose work in an already founded venture with a regular salary. They may not engage on their entrepreneurial intentions unless they receive swift and great rewards (Bogatyreva *et al.*, 2019).

2.8.6) Indulgence vs. restraint

Finally, any type of venture, despite its time frame, may have entrepreneurs wishing to fulfil their aims of establishing a successful venture. The last, and most recent dimension, is IVR. This relates to immediate gratification versus deferment of simple human desires concerned to enjoying life (Hofstede, 2011). Hofstede, Hofstede, and Minkov (2010: P.281) define IVR as *''…indulgence stands for a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun. Its opposite pole, restraint, reflects a conviction that such gratification needs to be curbed and regulated by strict social norms''*. This is the latest dimension to be added to Hofstede's index and is absent from studies involving entrepreneurship.

Indulgence (high IVR) is a feature of a society with unrestricted gratification of aspirations related to enjoyment and pleasure. In cultures high on IVR, an importance on the individual's immediate happiness and well-being is present (Guo, Liu, Li and Qiao, 2018). Freedom and personal control are seen in society, and this increases the chance of an individual moving from intent into action (Carter, Gartner, Shaver and Gatewood, 2003). Also, high IVR increases the prospect that individuals will leave their workplace if they are not satisfied (MacLachlan, 2013). The discontent with life as a salaried worker may make them start their own venture. The research further suggests that high IVR is positively associated with country level innovation performance (Lažnjak, 2011). Innovation, therefore, may be favourable to the conversion of intents into entrepreneurial acts affecting TEA. Innovation, therefore, may be favourable to the conversion of intentions into entrepreneurial acts affecting TEA. It should be noted that since innovation allows

the conversion of intents into entrepreneurial acts it will thus affect TEA (Bogatyvera *et al.*, 2019). This why it is written as synonymous as the assumption is made that innovation is the path for TEA to arise and clarified in Section 2.1.1. Boubakri *et al*.(2021) find that individuals in high IVR countries are generally optimistic and encourage debate in the decision-making processes. Such traits might promote innovation and therefore impact TEA positively (Boubakri *et al.*, 2021). Moreover, Choi (2020) emphasises that, after looking at 12,362 ventures in 40 countries from 1990-2006, high IVR might have a positive impact on innovation as it is necessary for creativity and risk taking which are necessary components of EA.

On the other hand, restraint (low IVR) stands for cultures that employ stringent social rules (Hofstede *et al*., 2010). Hence, in low IVR societies, chasing fewer traditional career routes may be regarded as illegitimate practices. Further, low IVR societies place more limitations on the perception of personal freedom. Bogatyreva *et al.* (2019) mention that individuals might proceed with more traditional, established career paths, especially if they perceive robust social pressures not to participate in planned entrepreneurial behaviour. Individuals from cultures characterised by low IVR are anticipated to display greater concern regarding failure (Hicks, Maroni, Stackpole, Gibson and Puia, 2015). This can alter the transformation of entrepreneurial intentions into actual behaviour, perhaps due to a higher perception of helplessness in low IVR cultures (Hofstede, 2011). In contrast, a change from entrepreneurial intent to start-up behaviour requires an effective place in life and belief in one's own capabilities (Bogatyreva *et al*., 2019).

In summary, high IVR (indulgent) countries emphasise the individual's contentment and quality of life (Guo, Liu, Li and Qiao, 2018). High IVR increases the chance that individuals will abandon their workplace if they are not satisfied (MacLachlan, 2013) and this dissatisfaction with employee life may push them towards TEA. Empirical evidence also suggests that higher IVR is positively associated with country level innovation, and thus TEA.

2.9) Formal institutions

2.9.1) Formal institution debates

Well-defined FIs are anchored in centuries of political, economic, and social developments (De Soto, 2000). Alesina and Guiliano (2015) comment on the co-evolution of culture and FIs. They explain that such interactions can lead to multiple equilibria characterised by a combination of culture and various FIs. The measurement of FIs is problematic, and this thesis focuses on specific FIs argued below to be crucial to TEA.

FIs thus tend to be extremely specified in legislature and practice codes. They are enforced with penalties. Whilst regulatory, normative, and cognitive institutions (components of NIT) may overlap, eventually a consensus emerges. From this consensus, a FI context is established (Fligstein, 1996; North, 1990). Well-defined FIs lead to an efficient institutional infrasturcture (Fuentelsaz, González, and Maica, 2019), providing the infrastructure necessary for new venture creation. Looking at the literature, institutions are composed of a formal rule set (North, 1990), and taken for-granted assumptions (Meyer and Rowan, 1991), which organisations and individuals are expected to follow. An example is competitive markets, which are one of the strongest predictors of entrepreneurship across countries (Boudreaux and Nikolaev, 2019; Bradley and Klein, 2016; Schumpeter, 1934). The evidence firmly indicates that in high-quality institutional environments, where intellectual and private property is protected, there is minimum government involvement (e.g., low taxes, less stringent regulation and trade restrictions). Individuals in such settings are more likely to engage in OME (Nikolaev *et al.*, 2018; Gwartney, Lawson and Holcombe, 1999). In high-quality institutional settings, entrepreneurs face less uncertainty due to lower costs (e.g., administrative, labour, and financial). This lowers the costs of starting and operating EA (De Soto, 2000). High-quality institutional environments are more biased towards the institutions of capitalism preferring less government involvement, reducing the allocation of prospective entrepreneurs to less productive sectors of the economy (Boudreaux, Nikolaev and Holcombe, 2018).

If formal market institutions (such as economic freedom (EF) and PRs) are ill-defined,

entrepreneurs lack protection and TEA is discouraged. Entrepreneurs in such settings are doubtful about getting the rewards from their investments and efforts (Williamson and Mathers, 2011). As Chowdhury, Audretsch, and Belitski (2019) conclude, any regulations that hamper an entrepreneur's opportunity can reduce nascent entrepreneurship and their motivations towards high-quality entrepreneurship.

The empirical research on the relationship between the FI of corporate taxation and entrepreneurship is mixed (Belitski *et al*., 2016). High taxation on the income of entrepreneurs reduces the portion of income available to them. If the tax rate is set equal, irrespective of size, then SMEs may bear a higher burden of taxes (Chowdhury *et al*., 2019). This leads to a moral hazard problem (Keuschnigg and Nielsen, 2004). The extant research also suggests that the taxation of business profits, and the ability to offset losses in dire times, serve as a type of insurance to entrepreneurs (Belitski *et al*., 2016; Keuschnigg and Nielsen, 2004). Freytag and Thurik (2007) report that lower tax rates (or relatively low government involvement) may hamper entrepreneurship. On the other hand, relative freedom from coercive labour restrictions may promote entrepreneurship (Bjørnskov and Foss, 2010). The following sections examine the FI of PRs and ATF.

2.9.2) Legal systems and Property Rights

An understanding of well-defined FIs and their impact has been addressed. Now, an examination of legal systems is needed. Increasing the level of transparency and improving the functioning of the legal systems can allow an organised market system to function (Broadman and Recanatini, 2001). Formal market institutions that are often ill-defined and ambiguous are understood as institutional voids (Chaux and Huang, 2020). This can mean ineffective legislation and inadequate enforcement ability of the formal legal institutions (Bruton *et al.*, 2013). Empirical studies understand that the key trait of institutional voids is the deficiency of harmonised institutional environments (Ahlstrom and Bruton, 2006). Ambiguous PR (Puffer, McCarthy, and Boisot, 2010), and a lack of regulatory systems and contract-enforcing mechanisms (Web, Khoury and Hitt, 2020; Khanna, Palepu, and Sinha, 2005), are further traits of institutional voids.

A significant body of literature (theoretical and empirical) suggests that the historical origins of a country's legal system and regulatory policies can affect various

developmental outcomes (e.g., La Porta, Silanes and Shleifer, 2008). Cline and Williamson (2020) demonstrate that legal origins are strong predictors of financial institutions, government regulation, and judicial institutions. Examining legal origins as causes of entrepreneurship started with the important research of McNeill and McNeill (2003), who stress the mechanisms of the spread of information which has shaped human societies.

PRs (The Heritage Foundation, 2021) are laws examining the ability of individuals to accumulate property, secured by clear laws that are fully enforced by the state. Institutions establish the conditions in which TEA will be developed. FIs may have a direct effect on economic growth through economic activity being enhanced by regulatory reform, and the resulting standards establish the associations of economic agents and markets (Galindo-Martína, Castaño-Martínez and Méndez-Picazo, 2021). Similarly, the allocation of the economic resources acquired by institutions will encourage growth (Alam, Uddin and Yazdifar, 2019; Elert and Henrekson, 2017). Indeed, Galindo-Martína *et al.* (2021) assert that institutions positively influence economic growth (and TEA) in the time periods examined in their study (three-periods from 2004-2016).

However, if an environment has inadequate PRs, entrepreneurs may be more willing to place their resources in stable assets, such as land and precious metals (Guerrero, Pérez-Moreno and Abad-Guerrero, 2017), rather than in creating new ventures (Autio *et al*., 2014). Bosma, Content, Sanders, and Stam (2018) note that an adequate regulatory framework (generally), and the protection of PRs, together with efficient implementation of public policies, will be more effective than just specific regulations related to entrepreneurship. Misalignment of PRs implies that institutional constraints poorly match (or even burden) entrepreneurs by affecting their ability to form proper expectations about the future institutional order (Bylund and McCaffrey, 2017). The question is asked of how institutions will affect actions at certain levels, and how (or if) specific '*rules of the game*' will be enforced. In other words, the entrepreneur faces uncertainty when acting in institutional environments with weaker PRs (Bylund and McCaffrey, 2017).

2.9.3) Access to finance

An additional component of FIs to consider is ATF for entrepreneurs. This section argues its relevance for entrepreneurship.

Finance is crucial for entrepreneurship (Cassar, 2004), as additional funding allows entrepreneurs to sustain or grow their ventures. Yet due to the opaque nature of innovative TEA, firms are often deemed risky and unsuitable for bank finances due to their lack of collateral and unstable cash-flows (Berger and Udell, 1998). Entrepreneurs usually seek alternative sources of finance ranging from crowdfunding sources, business angels and venture capitalists (VCs) (Kerr, Nanda and Rhodes-Kropf, 2014). Such types of financing may be particularly beneficial for high-growth firms as they are more likely to use equity finance (raising capital through the sale of shares) than non-high-growth firms (Brown, Rocha and Cowling, 2020; Brown and Lee, 2019). Outside equity, investors may enable venture growth not just through financial capital but also bring additional benefits and additional value via their experience, expertise, and networks of contacts for the entrepreneurs themselves (Bernstein *et al*., 2016). Entrepreneurial finance is also seen as imperative for facilitating TEA in the form of scale-ups (Cumming *et al.*, 2018). Dai, Ivanov and Cole (2017: P.289) mention that *"…optimistic entrepreneurs are not rationed by lenders."*. Puri and Robinson (2007) understand that optimistic entrepreneurs strive hard for success and thus have greater productivity. Therefore, factors that affect the market for ATF for entrepreneurs may have a strong influence on the rates of entrepreneurial dynamism and innovation within a nation (Brown *et al*., 2020).

A well-functioning economic state, coupled with strong institutional conditions, helps to develop the confidence of outside investors (such as VCs) (Cumming and Zhang, 2016). As the existing literature suggests, an increase in the supply of outside financing sources has a positive relationship with entrepreneurship (Brown *et al*., 2020). Samila and Sorenson (2011) include VCs as an explanatory variable in their analysis of U.S. metropolitan areas during the period 1993–2002. They stress that the increased availability of VCs increases the numbers of firms and causes employment and aggregate incomes to grow. Similarly, Cole, Dunning and Li (2016) find that VCs have a similar positive effect on U.S. states during the period of 1995–2011. ATF might improve the quality of entrepreneurship via channelling TEA in more productive activities (Sobel, 2008). Haselman and Wachtel's (2010) work include 20 transitioning economies and understand that banks expand credit access to SMEs in a particularly operational legal environment more than their counterparts in countries with a lower functioning legal environment. Similar results were

obtained by La Porta *et al*. (1999) and Djankov, Caralee, and Shleifer (2007). Generally, it is well established that stronger regulation of financial institutions promote entrepreneurship and entrepreneurial finance, as regulation can lower the cost of entry and ensure contractual certainty and thus increase TEA (Block, Colombo, Cumming and Vismara, 2018).

However, in some cases, the absence of a regulatory enforcement can also positively affect the presence of start-ups. For example, the absence of banking regulations has enabled a comparative growth of financial technology (FinTech) ventures in countries without a major financial centre (Block, Colombo, Cumming and Vismara, 2018). Indeed, governments around the world are concerned with ATF for SMEs, which has encouraged policy initiatives (Block, Colombo, Cumming and Vismara, 2018). The JOBS act in the U.S. altered several regulations allowing SMEs to gather funds through crowdfunding. Many governments installed GVC (government venture capital) funds to complement the market for private VC funding (Leleux and Surlemount, 2003). GVC is infantile in many countries outside of the U.S. Another area of start-up policy concerns subsidised debt financing through state-owned banks and loan schemes which guarantee state subsidies for ventures. Such policy initiatives reduce either the costs of a particular financing instrument or provide direct funding to new ventures through state subsidies (Brown and Lee, 2014). These policies appear appropriate because substantial evidence suggests that increasing the accessibility of data on SME credit worthiness enhances the supply of ATF for them (Love and Mylenko, 2003). Until well established institutional frameworks are properly addressed, alterations to current policy frameworks are unlikely to produce considerable transformations in institutional environments. These citations demonstrate that well-functioning states and institutions are not wholly necessary to enable ATF for entrepreneurs.

2.9.4) Relevance of selected formal institutions

This section will attempt to not only justify the inclusion of the two FIs listed above, but why other FIs (such as governments, taxation and labour market regulations) are omitted.

PRs are an institution worth inclusion. Pacheco, York, Dean, Saravasthy (2010) propose that PRs modify entrepreneurial expectations in countries, and that such expectations are

necessary within markets for their existence and functioning (Barzel, 1997; Bromley, 1989). PRs ultimately address the direct incentives that drive individuals to create new arrangements with resources (Alston, Libecap, and Mueller, 1999; Anderson and Hill, 1975). PRs are the governance mechanisms that are used for venture inception (TEA) (Casari, 2007). Angulo-Guerrero, Pérez-Moreno and Abad-Guerrero (2017) understand that an institutional environment providing a high-quality legal system and protection of PRs tend to facilitate innovations and risk taking adequately resulting in opportunities for entrepreneurs stimulating TEA (cited by Bjørnskov and Foss, 2013).

Although, effective PRs in themselves are necessary but insufficient conditions for TEA, this is dependent on such rights being adequately enforced (Bylund and McCaffrey, 2017). Entrepreneurs may be highly doubtful about the willingness of political institutions to provide support for TEA (Bylund and McCaffrey, 2017). Higgs (1997) explains that '*regime uncertainty*' means that entrepreneurs are worried that their private PRs and the income they generate may be damaged by government action. These regime uncertainties can arise from many sources, ranging from simple tax changes to the confiscation of private property violating rights. Higgs (1997: P.568) stresses that *''…the security of private PR rests not so much on the letter of the law as on the character of the government that enforces, or threatens, presumptive rights''*. The '*regime uncertainty*' concept demonstrates the influence governmental institutions play in facilitating the effectiveness of PRs. In essence, PRs may influence TEA within a country.

Second, ATF is another FI included in the theoretical framework of this thesis. As mentioned in the previous section, the relationship between TEA and ATF is observed by Chowdhury *et al.* (2019) who argue that a country's financial system (such as its credit market or capital market) is directly responsible for shaping a country's economic behaviour. Entrepreneurs often rely on their personal wealth or inheritance (Holtz-Eakin, Joulfaian, and Rosen, 1994) for funding. This lack of ATF resources may lead to a lack of investment in activities needed for entrepreneurship generally (Chowdhury *et al*., 2019).

However, Demirel, Li, Rentocchini and Tamvada (2019) stress that extant research suggests that ATF for ventures can also be adversely impacted by informational asymmetries. These can arise for a variety of reasons such as the complexity of underlying

technologies utilised by ventures themselves, ambiguity in the criteria used by creditors and weak institutional environments (Demirel and Parris, 2015; Lerner and Hall, 2010). The issue of financial constraints on entrepreneurship remains a prominent issue academically (Omri, 2021). The World Bank (2013) reports that, out of approximately 400 million SMEs operating in developing countries, more than half have insufficient ATF. Prior research discovers that the lack of ATF encountered by entrepreneurs is commonly explained to be ***the biggest constraint*** to the creation and development of ventures (e.g., Omri, Ayda-Frikha and Bouraoui, 2015; Choo and Wong, 2006; King and Levine, 1993). Urbano *et al.* (2019) understand that financial assistance may affect each stage of the entrepreneurial process from opportunity recognition to new venture creation (TEA). Aggarwal and Goodell (2014) understand transactions costs may be associated with ATF. Transaction cost economics (TCE) suggests that when the costs of TEA is high, entrepreneurs may obtain cheaper financing through alternate means (Aggrawal and Zhao, 2009; Williamson, 1988). Such alternatives may involve entrepreneurs utilising their own savings or getting loans from family (or friends). This citation shows that whilst ATF is crucial, entrepreneurs may be willing to find alternative sources if the transaction costs are too high. This demonstrates the influence ATF has on TEA.

Whilst PRs and ATF may interact with informal institutions in relation to TEA, there are other FIs that have been disregarded due to their tenuous influence on entrepreneurs. Economic development levels as a proxy for FIs are one of those not examined in this thesis (as independent variables). Acs, Desai and Hessels (2008) note that when examining entrepreneurship cross-nationally, interactions between entrepreneurship and economic development levels represent a crucial area of inquiry. These interactions are vital in helping understand why the relative contributions of entrepreneurship can vary significantly across countries (Urbano *et al.*, 2019). Utilising economic development levels to understand TEA may be useful for advancing and providing new insights in research which may be complementary and interdisciplinary. Aparicio, Urbano and Audretsch (2016) conclude that when looking at interactions between formal and informal institutions, FIs (including the proxy of economic development levels) could be efficient, depending on informal institutions. Thus, FIs modify the influence of informal institutions.

Although, the relationship between TEA and economic development may be thought to

be mediated by innovation. Schumpeter (1934) states that innovative entrepreneurs can generate '*shocks*' in the economy at higher income levels. Schumpeter (1934) indicates that innovations executed within the markets lead to new path dependency and encourage nascent entrepreneurs to maintain the innovation process. Aparicio *et al.* (2016) argue similarly that innovative entrepreneurs who invest in the inception of new products created by new knowledge as a business opportunity can then benefit compared to other entrepreneurs. Wong, Ho and Autio (2005) reach a similar conclusion where OME rates (rather than economic development levels) reflect the creation of knowledge and technology, these impact positively on economic development levels.

The government is another one of such institutions. Dai and Si (2018) examine the role of government policies in stimulating or constraining TEA. They point out that prior research tries to link government initiatives with TEA, but mixed results are seen (Zhou, 2017; Minniti, 2008). Indeed, Van Cauwenberge, Bauwhede and Schoonjans (2013) argue that government policy support (excluding PRs) is not always effective for generating TEA. Baumol (1990) similarly notes that the supply of entrepreneurs has remained largely stable historically. Mises (1949) states that entrepreneurs could be found anywhere and anytime. Essentially, the supply and rate of entrepreneurship remains independent of government policies (Dai and Si, 2018). One can look at developing countries which are largely devoid of government policies yet still generate TEA.

Although, Dai and Si (2018) explain that analysing the impact of government policies on TEA may not be wholly appropriate. Their approach is based on evaluation of the environmental determinist perspective. This perspective suggests that the environment (including the institutional environment) can shape entrepreneurial behaviours and performance. In contrast, the voluntaristic view (also the strategic choice theory) emphasises that the environment is composed by a dominant alliance of existing economic actors (Child, 1972). Thus, the way that environmental changes will influence entrepreneurs is determined by the view of the dominant group of actors rather than just the government (Aldrich, 1979). It is the interpretation of environmental changes, rather than the changes themselves, that ultimately matter to an entrepreneur.

Taxation is another institutional variable that is not examined in this thesis. Empirical

research on the relationship between taxation and entrepreneurship is indecisive (Belitski, Chowdhury and Desai, 2016). High taxation on the income of entrepreneurs reduces their residual income but may have substitution as well as income effects. If the tax rate is applied equally across (notwithstanding business size) then SMEs will be impacted disproportionately leading to a moral hazard problem (Keuschnigg and Nielsen, 2004). Henrekson and Sanandaji (2011) note that by the late 1980s, higher taxes were seen to negatively impact entrepreneurship. They noted the fifty largest firms in Sweden in the year 2000 that were founded before 1970 (Henrekson, 2005) and concluded that taxation can be seen to adversely impact TEA.

However, Chowdhury *et al*. (2019) comment that the literature suggests that taxation of business profits and the ability to offset losses when entrepreneurs face troubling times can serve as a form of insurance. Henrekson and Sanandaji (2011) point that despite entrepreneurship being impacted in Sweden with higher taxation rates, a proportionate increase in unproductive entrepreneurship did not occur. Asides from a decrease in total entrepreneurship occurring in Sweden, studies of political entrepreneurship (McCaffrey and Salerno, 2011) show political entrepreneurship, which is state-owned resources being diverted towards production processes which would not otherwise have taken place, did increase and was not considered unproductive. This shows that whilst taxation may adversely impact TEA by limiting income, a trade-off is present with less regulation over the economy.

Lastly, labour market institutions are something that this thesis disregards. Empirical studies have shown a mixed relationship between labour market institutions and TEA. Stricter labour laws may reduce the survival chances of entrepreneurs who have employees (Parker, 2007). Individuals who consider engaging in entrepreneurship expect the prospect of becoming employers in the future, as such, labour costs and regulations might discourage them from TEA (Román, Congregado and Millán, 2013). Additionally, stricter labour market regulation may contribute to the development of atypical employment forms (e.g., zero-hour contract workers) making self-employment a more likely outcome (Román *et al.*, 2013). To facilitate TEA, many countries have begun labour market policies which provide social expenditure for entrepreneurial activities (Herrmann, 2019). Given that start-up enticements increase the attractiveness of

entrepreneurship, such programmes may influence the career choices of the labour force and offset the effect of labour-market flexibility or rigidity of career options (Hessels, Van Stel, Brouwer, and Wennekers, 2007).

However, strict levels of labour regulation might have no real effects on TEA as they can induce employers to make workers pre-pay the severance costs of termination (Leonardi and Pica, 2007). Therefore, in more stringent labour-oriented institutional environments, employers may try to evade the consequences of laws on their ability to employ and remove workers by contracting them as self-employed workers (Klapper, Laevena and Raghura, 2007; Grubb and Wells, 1993). Herrmann (2019) comments that overly rigid labour institutions may encourage the unemployed individuals who fare worst in the labour market to become self-employed as a last resort due to a lack of opportunities in the paid employment sector. Labour trade unions' bargaining power may also offset the impact of labour regulation on TEA. Fonesca and Utrero (2017) conclude that entrepreneurs will be less flexible in relation to labour regulations because they have weak bargaining power compared with trade unions and are less able to reallocate labour. Henrekson and Johansson (1999) argue that new ventures may be less attractive to workers because of the lack of flexibility to hire and fire workers in stringent labour regulation environments. This may induce more risk for new ventures.

2.10) Interactions between formal and informal institutions

So far, this thesis has looked at formal and informal institutions and their respective impact on TEA in isolation. Interactions between these two groups may need to be identified for a more accurate analysis of TEA within a country. This section will look at the interaction effects of both institutions within the literature.

Institutions greatly affect entrepreneurial processes and TEA ultimately (Bylund and McCaffrey, 2017). ***It is less straightforward as to how this happens as sparse research on institutional conditions exists and whether it may assist or obstruct entrepreneurial engagement (Dorado and Ventresca, 2013).*** It is widely held that entrepreneurship can contribute greatly to economic growth and therefore to the well-being of society (e.g., Audretsch, Kielbach and Lemann,2006). For this to be the case, however, a society's institutional framework must encourage policies that enable TEA.

Alesina and Guiliano (2015) comment that papers examining interactions amongst institutions are consistent. Citizens within a country internalize social norms that emerge from specific circumstances and are further moderated by the institutional environment which plays a role in the prevalence of various types of norms. Greif (2006) emphasises that the behaviour of actors who enforce the rules of the game must be explained by institutions. According to Greif (2006) institutions represent the outcomes from a game, rather than the rules of the game itself. This indicates national culture as more of a stable, long-term influence, while FIs, which are humanly-devised, are more temporary, and may therefore may be more suitable as moderators.

The '*Strict Hierarchy of Institutions'* hypothesis (Davis and Williamson, 2016) alludes to the fact that informal institutions interact proportionately with FIs on their influence on policy. Brinekrink and Rondi (2021) argue that innovation motivations of entrepreneurs are created by more than just strong FIs. It is likely reliant on the interactions of informal institutions (Filatotchev, Chahine and Bruton, 2018) alongside the FIs. North (1990) also endorses this viewpoint of an interdependent understanding of formal and informal institutions. He argues that the same FI rules adopted in different countries with different cultures can lead to different economic outcomes. Research supports the view that informal institutions can work together with FIs (Greif, 1993). Greif (2006) further

explains formal and informal institutional complement each other. Grief (2006) concludes that differing informal institutional norms towards co-operation require a different set of FIs. Different societies have relied on various combinations of formal and informal institutions to sustain co-operation (Davis and Williamson, 2016). Thus, the functioning of FIs may be sensitive to preferences over set policies. The effect of cultural values on policies will depend on the make up a society's FIs. Davis and Williamson (2016) believe that both legal and political FIs may interact with culture in determining social policies. Bruton *et al*. (2010) mention that studies examining entrepreneurship rates are lacking institutional factors, with the focus is mostly placed on culture as the main effect on TEA. Bruton *et al.* (2010) conclude that FIs could be strong moderators of culture's influence, clearing up confusion surrounding institutions and entrepreneurship. This depicts that interactions between both formal and informal institutions will help illustrate a clearer picture of their roles on TEA.

However, many studies have examined regulations such as taxes, labour regulations, and other policies (mentioned in Section 2.9.1 on P.70) identifying their influence on TEA (Kirzner, 1985; Henrekson and Stenkula, 2010; McCaffrey, 2015). Malik, Xiang and Huo (2021) stress that informal institutions shape formal policies in an innovation process when looking at relationships between patents and TEA (North, 2005). Misunderstanding such informal institutions may lead to incompetent policies that can influence the venture itself (Malik *et al*., 2021).

Scholars believe that informal institutions influence FIs, rather than interact with them (Holmes *et al*., 2013). Another line of argument is that when economies evolve, FIs replace many informal mechanisms of rule enforcement (Guiso, Sapienza and Zingales, 2015). Indeed, a dominant argument says that economic success of nations is not driven by culture or value systems but rather by inclusive political institutions (Acemoglu, Johnson and Robinson, 2001) or by prominent legal FIs (La Porta *et al.,* 1998). La Porta *et al.* (2008) identify a pattern of correlations between a country's legal origin systems and its PR.

Similarly, Acemoglu, Johnson and Robinson (2001) attribute economic success to the type of legal institutions designed by the colonising power. Although, if FIs were the sole factor

in generating TEA, copying the U.S. constitution would allow countries to be economically successful (Guiso *et al*., 2015). This was tried unsuccessfully in Latin American (L.A.) countries (e.g., Venezuela in 1811). Social norms are needed to maintain formal norms. When laws clash with social norms, compliance and implementation of regulation is weaker (Acemoglu and Jackson, 2015). Importantly, the relationship between institutions and entrepreneurship is not one way; it can also be directed specifically toward the formal institutional side altering the *'rules of the game*' (DiMaggio and Powell, 1991; Shepsle, 1989). Xing, Liu and Cooper (2018) understand institutional entrepreneurship to be the activities of actors who have an interest in changing or creating new institutional arrangements. Cooperative and concerted action has been recognised as a key action carried out by institutional entrepreneurs (David, Sine and Haveman, 2013). Government policies are understood to be an example of institutional entrepreneurship. These policies (instigated by consultation and recommendation of entrepreneurs) can create innovative solutions that foster the development of TEA via contributing to the development of institutional arrangements (Xing *et al*., 2018). Examples include policies involving tax breaks and financial subsidies (Xing *et al*., 2018). The concept of institutional entrepreneurship illustrates that entrepreneurs can influence institutions and their respective policies.

2.11) Justification for informal institutions as independent variables

With definitions and explanations of both formal and informal institutions established, this raises the question of the importance of the hypotheses on examining informal institutions as opposed to FIs. This section looks at the debate surrounding the significance and importance of viewing informal institutions as the dominant influence on TEA.

The framework for examining the significance of both sets of institutions used in this thesis has been introduced by Williamson (2000). Alesina and Guiliano (2015) stress a feedback effect between both institutions. This interdependence means that culture and FIs co-evolve. This may generate multiple stable equilibria with different sets of self-enforcing FIs and cultural norms. Williamson's typology is known in the context of entrepreneurship research (Elert and Henrekson, 2017). Bylund and McCaffrey (2017) adapt this model to examine entrepreneurship within an institutional context. The Williamson framework (cited by Bylund and McCaffrey, 2017) explains how social processes can be understood via orders of '*economising*' on four distinct levels, see Figure 4 (*below*).

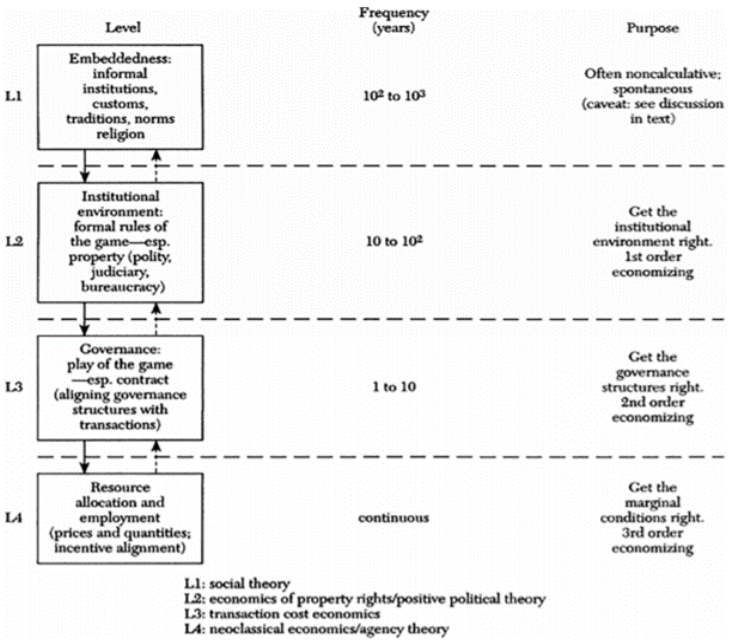


Figure 4: Levels of the economics of institutions. *Source: Bylund and McCaffrey (2017).*

Figure 4 illustrates the various levels of institutions present. Level L4 demonstrates resources are allotted through the market exchange. Economic activity is achieved via the

price mechanism and economic actors *'bidding'* for resources, which provides high-powered motivations for resource restructuring (Williamson, 1985). At L3, governance structures (enforcement) set relative prices to benefit from the frictional costs in the market that obstruct economical resource allotment (Williamson, 1996). L3 primarily consists of longer-term market relationships (e.g., contracts). Activities engaged in L3 and L4 generally constitute what is known as '*the market*'. L2 represents the formal institutional framework, or the '*rules of the game*', for how the economy operates (North, 1990). The institutional aim of this level is principally to define and assure PRs via the judiciary and government institutions (Bylund and McCaffrey, 2017). This further controls economic action via specific policy action. Finally, L1 encompasses and entrenches the lower institutional levels in a broader setting of cultural values and norms that are not constrained by tight economising. ***Each level includes specific institutions that constrain specific actions at lower levels.*** The necessity for the functioning of the entire system begins at level L1. Williamson comprehends this as *"…an evolutionary level in which the mechanisms of the mind take shape"* (2000: P.600). The higher levels constrain the lower ones via lessening the relative cost of taking action and raising the cost of illegitimate action. Over time this creates a precedent of expectations amongst entrepreneurs. This system creates an institutional order based on hierarchical interdependence (Bylund and McCaffrey, 2017).

Davis and Williamson (2016) explain that organisations and contracts (L3 in Figure 4) change less frequently and at greater cost (every 1– 10 years). Likewise, L2 is limited to changes every 10–100 years, making institutional (regulatory) changes rare. This inertia impacts even more to variations in norms and values on L1, which signifies a longer time perspective (e.g., 100– 1000 years). Whilst changes to L2-L4 may be brought about through direct action, the social-embeddedness level (L1- culture and norms) is far less responsive to immediate and recurrent changes (Bylund and McCaffrey, 2017). Entrepreneurs are usually obligated to work contained in the limitations of L1. This framework demonstrates that due to informal institutions changing relatively slowly over time, the dominant influence is from informal (cultural) institutions to FIs (Roland, 2004). This justifies why informal institutions are viewed as the independent variables, e.g., in the hypotheses generated in Section 3.2 (P.95).

However, Davis and Williamson (2016) note that, when examining the role of culture and the regulation of entry into specific countries, that an interdependence between both institutions appears to exist (covered earlier). This basically indicates that rather than informal institutions being the dominant influence, both formal and informal institutions interact (and co-evolve) with each other in determining policies. Most scholars view culture as changing very slowly and may constrain policymakers (Davis and Williamson, 2016) and interdependence between informal and FIs may require policymakers to proceed with caution in forming expectations regarding the potential gains from institutional transfers (Davis and Williamson, 2016). The policies of FIs may function very differently in different cultural environments (Brinkerink and Rondi, 2021). Guiso *et al*. (2015) establish that countries adopt common legal systems based on cultural similarities. Economic success is often attributed to the legal institutions of countries (Acemoglu *et al*., 2001). These citations imply that informal institutions may not be the dominant influence but reveal a more nuanced picture combining both institutions in a process of co-evolution (Alesina and Giuliano, 2015).

2.12) Research Gap and Research Question

Now that a review of the relevant literature and various debates has been presented, the next step is identifying the research gap and subsequently the research question. Apart from the recognition that informal institutions are independent variables when examining TEA, a literature gap also emerges in its omission of (a) LTO/IVR dimensions of informal institutions (i.e., LTO is totally absent from Table 1, *below*) and of (b) the interaction of informal institutions with two FIs, PRs and ATF.

It has been noted from Section 2.8.5 (P.65) that the LTO dimension might be vital to TEA. There are no studies which examine LTO and IVR in detail as main effect variables at a country's TEA (national level). Indeed, Kirkman, Lowe and Gibson (2006) investigate studies examining the different levels of analysis conducted for each informal institution dimension. It is noted that only two papers have examined LTO at a country level (Table 2, *below*) and none at the group/organisational level (no information is available on the IVR dimension). A further interesting examination of the various dimensions is the fact that no studies examine LTO in a moderating context at the country level either (see '*Confucian dynamism'* in Table 2). Table 2 summarises the literature examining the various informal institution dimensions, both as main and as a moderated associations (on an individual, group/organisational and country level analysis) depicting the dimensions the literature could explore due to sparsity.

	Individualism–collectivism	*Power distance*	*Uncertainty avoidance*	*Masculinity–femininity*	*Confucian dynamism*	*Cultural distance*
Main: individual	58	11	8	8	3	1
Main: group/organizational	8	1	1	1	0	0
Main: country	27	27	26	20	2	54
Moderating: individual	19	9	3	3	0	0
Moderating: group/ organizational	5	1	0	0	0	0
Moderating: country	3	2	1	1	0	1

Table 2: Number of inclusions of cultural values via types of effects and levels of analysis. *Source: Kirkman et al. (2006).*

Further examination of these dimensions is conducted by Kirkman, Lowe and Gibson (2017), LTO and the IVR dimension (at the country level) is still absent. Some literature has been published addressing LTO and its impact on family firms (e.g., Fu, 2020; Lumpkin and Brigham, 2011) lacks generalisability beyond family firms. This is mainly the case due to the recent development of both dimensions but also due to a lack of prior research on these dimensions relative to the other four earlier dimensions and examining moderations generally.

It is vital to study LTO due to the time component within TEA and (established) entrepreneurship generally. This is explained by Hechavarrıa, Matthews and Reynolds (2016) who emphasise that nascent entrepreneurs take roughly 46 months to establish a venture, which suggests that LTO and entrepreneurship may be associated positively (as described in Section 2.8.5 on P.65). Bogatyreva *et al*. (2019) propose that involvement in TEA presumes high risks that usually take substantial time to be resolved. Entrepreneurs may not act on their intentions unless the rewards have a quick, large pay-off, which is rare. Wood *et al*. (2021) comment that entrepreneurship itself requires an LTO perspective as TEA involves time and other resources which are difficult to regain once used.

Meanwhile, examining the IVR dimension is also necessary as high IVR (indulgence) embraces freedom and personal control of individuals within society, and this increases the chance of an individual moving from intent into action with engaging in TEA (Carter *et al.,* 2003). As high IVR increases the chances that individuals will leave their current work situation if they are not satisfied (MacLachlan, 2013), this may motivate them start their own venture. Guiso (2012) comments that people in society who are more indulgent and optimistic are more likely to accept higher risks therefore engage in TEA. Given the fact that up to half of all nascent entrepreneurial ventures fail (BLS, 2012), this suggests that an IVR component is vital for TEA.

Whilst the literature gap predominantly focuses on LTO and IVR, the hypotheses for this thesis (outlined in Section 3.1 on P.91) include all the dimensions of informal institutions. The justification for this has been established previously in Section 2.11 where changes in

the FI environment may be brought about through direct action. The cultural and normative environment is far less responsive to immediate and recurrent changes (Bylund and McCaffrey, 2017). Entrepreneurs are usually obligated to work contained in the limitations of the cultural framework (Bylund and McCaffrey, 2017). By adding the informal institutional dimensions, a more holistic approach is achieved in understanding the various mechanisms and associations with entrepreneurship. International research on entrepreneurship should incorporate the latest developments in the field on which it depends. Exploring Hofstede's dimensions allows that to be fully realised.

The next literature gap on institutional theory is expressed by Sun *et al*. (2020) who comment that a research gap in relation to institutional theory and entrepreneurship exists. They stress that work is yet to be done on how institutions moderate and positively influence entrepreneurship through a variety of mechanisms (Sun *et al*., 2020; P.958). Entrepreneurship research can bridge the gap on the institutional influences of entrepreneurship and development (Ács and Storey, 2004). Langlois (2016) stresses that researchers need to identify additional institutional factors influencing entrepreneurship. Bruton *et al.* (2010) stress that there is almost a singular focus on culture as the main effect in institutional theory studies looking at institutions and their impact on entrepreneurship. Bruton *et al.* (2010: P.432) conclude that *''…In general…the effect of specific cultural dimensions on development, even after controlling for economic system, is inconsistent. This suggests that strong moderators such as specific institutional measures would be helpful in clearing up the confusion''*. The citations of Sun *et al*. (2020) and Bruton *et al*. (2010) clearly show a research gap in the form of a neglect of FIs as moderating influences on entrepreneurship. Sun *et al*. (2020) and Bruton *et al*. (2010) clearly show a research gap in the form of a neglect of FIs as moderating influences on entrepreneurship. This moderation is justified by Williamson's framework (2000) (cited by Bylund and McCaffrey, 2017) who explain that FIs are determined by the cultural (and normative) influences that are the foundation for all institutional order. This means that FIs can only operate in a relatively transitory state compared with relatively permanent cultural dimensions within a moderating context (since they are moulded by cultural and normative influences) as opposed to a main associations as explained in Section 2.11 (P.83). This thesis will attempt to close this gap in the literature, and the research question addressing both gaps is:

RQ: How do informal institutions moderated by two FIs (PRs and ATF) influence levels of TEA at a country level?

CHAPTER 3: Theoretical Framework

With the research gaps and question identified in Chapter 2, this chapter will develop hypotheses. Figure 5 (*below*) outlines the theoretical framework, with links between formal and informal institutions and TEA. The various hypotheses are stated, with justifications for their rationale briefly explained. A deeper consideration is available for each informal institution dimension listed in Section 2.8 (P.59) in the previous Chapter. The inter-relations and logic of formal and informal institutions are considered further in Section 2.10.

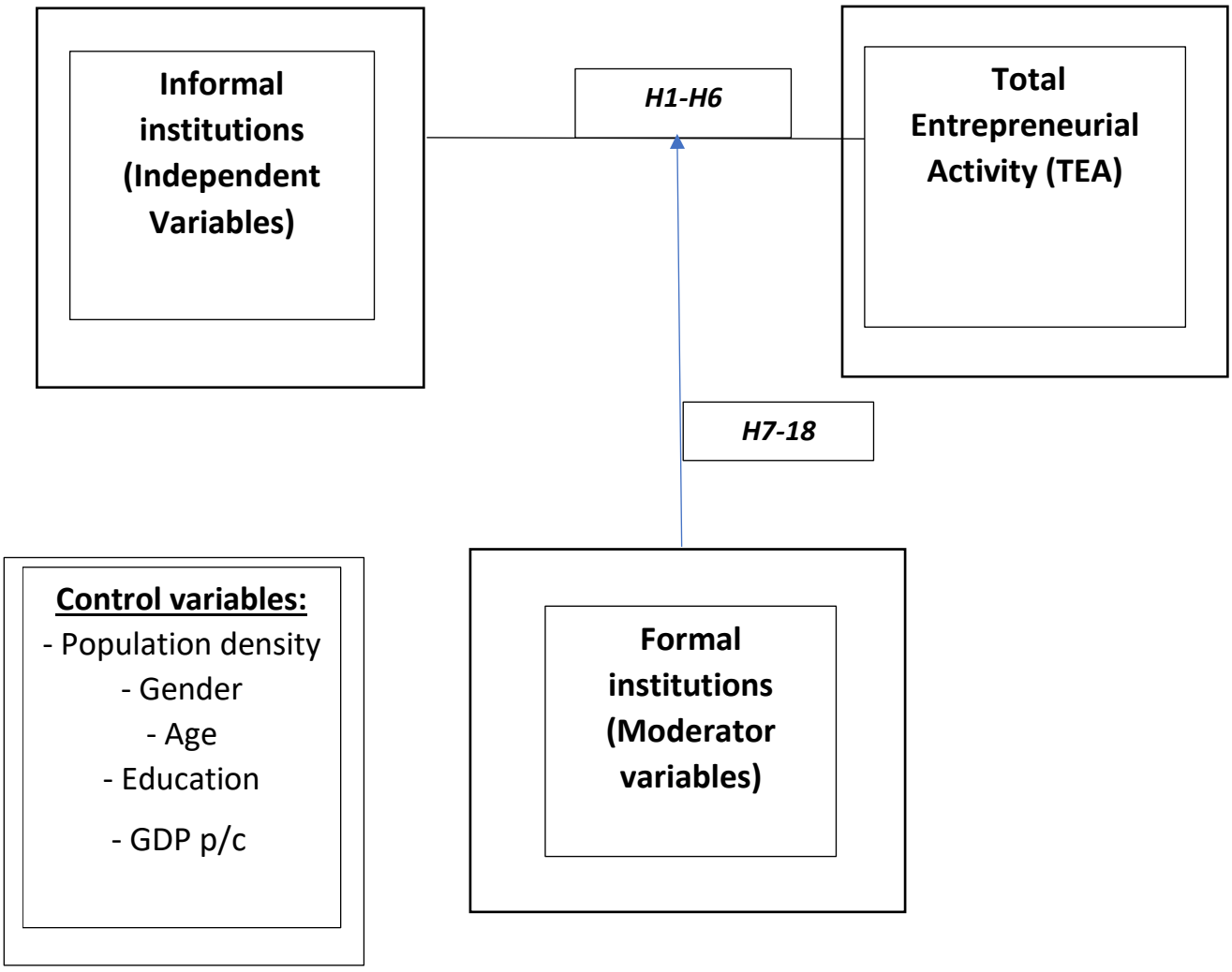


Figure 5: Theoretical framework for thesis. *Source: Author*.

3.1) Informal institutions (main associations with TEA)

The section below summarises the main associations of informal institutions on TEA and the hypotheses accordingly.

3.1.1) PD and TEA

In the literature, PD is understood to be mainly negatively related to entrepreneurship (Hechavarría and Brieger, 2020; Dubina and Ramos, 2016; Autio *et al*., 2013). Hechavarría and Brieger (2020) understand that societies high in PD view power as a mechanism to maintain social order. Such societies are structured via social classes that distinguish groups and restrict rising social mobility. Radziszewska (2014) sees that in countries with lower PD, citizens will rely on their own ventures and rely less on the state and other power structures. In societies with a higher level of PD, there are established power relationships and resources may be distributed less equally. This could make it hard for low power groups to access information affecting TEA.

H1: PD is negatively associated with TEA.

3.1.2) IND AND TEA

High levels of IND are likely to be positively associated with TEA, as entrepreneurs will be oriented towards self-interest, autonomy, and risk taking which may translate into rewards for entrepreneurs. High IND countries may tend to be more oriented towards the achievement of personal goals (Dubina and Ramos, 2016; Kirkley, 2016). IND is positively related to TEA in empirical studies (Nikolaev *et al.,* 2018; Stephan and Uhlaner, 2010) and to innovation (Bennett and Nikolaev, 2020; Rinne, Steel and Fairweather, 2012). In high IND cultures, entrepreneurship can be anticipated to be promoted, whereas individuals putting their concerns above the rest of the group might get a negative response in low IND societies (Fayolle, Liñán and Moriano, 2014; Autio *et al*., 2013).

H2: IND is positively associated with TEA.

3.1.3) MAS and TEA

High MAS levels imply traits like assertiveness, competitiveness, and measurable

accomplishment positively related to TEA (Kirkley, 2016). It is assumed that high MAS (i.e., material success-oriented values) is likely to be positively associated with motivations for starting a new venture. Similarly, in low MAS societies, the emphasis may be on relationships and a friendly atmosphere (Dubina and Ramos, 2016). It might therefore be assumed that high MAS is positively associated with entrepreneurship (Kirkley, 2016; García-Cabrera and García-Soto, 2008). Zhao *et al.* (2012) find a positive association between high MAS and entrepreneurship due to the inclination of entrepreneurs to be assertive and goal-oriented (House *et al*., 2004).

H3: MAS is positively associated with TEA.

3.1.4) UA and TEA

Low levels of UA in a country may promote EA because values such as openness to ideas and extraversion are prominent (Bräandstatter, 2011; Thomas and Mueller, 2000). Individuals who are more secure with uncertainty and ambiguity can take rent via first-move establishing ventures (Falck, Heblich and Luedemann, 2012). The process of establishing a venture may be associated with high levels of uncertainty, because of a lack of precedent for the entrepreneurs. Over time, as information and experience (knowledge) become more readily available for entrepreneurs, they can bear some level of risk (quantifiable cost) for TEA. This means UA changes as uncertainty overall decreases (with time) creating an opportunity that did not exist before (Alvarez and Barney, 2020).

Nevertheless, citizens of countries with high levels of UA may aim to avoid unknown situations and stay away from possible conflicts altogether. Individuals in high UA countries may be more risk-averse which may be negatively associated with TEA. Doubt is found to be effective in disrupting the translation of entrepreneurial intentions into actual behaviour adversely impacting TEA in high UA countries (Van Gelderen, Kautonen and Fink, 2015).

H4: UA is negatively associated with TEA.

3.1.5) LTO and TEA

LTO values include perseverance and favour high risk ventures that generally take time to

be realised. Bogatyreva *et al*. (2019) conclude that high LTO produces more pragmatic attitudes and is believed to have a positive impact on entrepreneurial cognition. The foundation of a firm takes on average 46 months to be realised (Bogatyreva *et al.*, 2019), already beyond the short-term. A culture characterised by lower LTO may push people to choose employment with a salary option. They may not promote their entrepreneurial intentions unless the rewards are high and quick, which may be rare with ventures (Bogatyreva *et al.*, 2019).

However, high LTO could be challenging in circumstances where rapidly changing circumstances require decision makers to disregard long-term priorities (Lumpkin *et al.,* 2010). Low LTO reflects a concern with the more urgent outcomes of decisions and actions, involving shorter time horizons. This may be favoured in situations that are volatile enabling quick responses. However, H5 is proposed, aligned with prior empirical studies. A factor to consider is the gestation periods (the rate at which investments reach maturity) that will differ both between and within industries depending on the type of TEA arising (see Section 6.2.3) (Fine, 1998).

H5: LTO is positively associated with TEA.

3.1.6) IVR and TEA

The IVR dimension relates to the gratification versus deferment of basic human desires with regards to enjoying life (Hofstede, 2011). The reader may note a striking similarity of this definition with the LTO description in Section 3.1.5. Countries with high IVR emphasise the individual's happiness (Guo *et al*., 2018). High IVR levels increase the likelihood that individuals will leave their workplace if they are not satisfied, implying low restraint (MacLachlan, 2013), causing them to pursue their own ventures. This increases the chance of an individual moving from intention into action thus positively associated with TEA (Carter *et al*., 2003). Discontent with life as a paid worker may drive them into engaging in nascent entrepreneurship. Empirical evidence also suggests that high IVR positively associates with national level innovation performance (Lažnjak, 2011) and therefore TEA.

H6: IVR is positively associated with TEA.

3.2) Moderating associations of formal institutions on the associations between informal institutions and TEA

As explained earlier, two FIs are investigated. This section examines how the effect of different cultural dimensions may be moderated by these FIs.

3.2.1) The association of informal institutions with TEA moderated by PRs

The first moderating formal institution (PRs) and relative arguments and hypotheses are explained below.

3.2.1.1) PD, PRs and TEA

H1 proposes a negative association between PD and EA. Fang, Lerner and Wu (2017) emphasise that recent evidence has shown that strong PR protection can encourage entities to more confidently engage in innovation-based TEA (e.g., Cohen, Gurun, and Kominers, 2019). In high PD societies, access to resources may be constrained to high power groups. Effective PRs protection will deter these powerful groups from impeding opportunities for entrepreneurs by giving PR protection to entrepreneurs in less powerful groups. Effective PRs might allow entrepreneurs to deter others from taking possession, imitating, or consuming any resources or attributes they hold. This may make it difficult for prospective entrepreneurs to engage in TEA if any of the attributes/resources resemble products from another venture. This will decrease PD between groups within a country as the PRs will not consider the distribution of power within society (Foss and Foss, 2008). Less effective PRs may arise because of the way institutions implement the law as social norms that place low emphasis on the rights of owners (specified by PR law) compared to the rights of society (Papageorgiadis *et al*., 2020).

H9: Effective PRs will positively moderate the positive association between MAS and TEA.

3.2.1.2) IND, PRs and TEA

H2 proposes a positive association between IND and TEA. The association of TEA with IND is seen to be positively moderated by the quality of formal institutions that further support TEA (Gantenbein, Kind and Volonté, 2019). Higher levels of IND may also be

associated with conditions that favour TEA. Zhang, Liang and Sun (2013) show that IND is related to investment protection (PRs), entrepreneurs will want to protect their property and will be concerned with the rewards (e.g., potential profits, status) associated with their TEA. Baughn and Neupert (2003) comment that well-defined PRs rights and the impartial enforcement of contracts may moderate the IND and TEA relationship by protecting the rewards entrepreneurs associate with TEA (Olsen, 1992). Bennet and Nikolaev (2020) argue that a high IND society provides rewards for the value created by an actual good/service and not on the quality of intentions, protecting those rewards will positively moderate the IND and TEA association. Further, Hayek (1948) states that entrepreneurship increases when effective PRs and long-run economic policies support a competitive market that provides individuals with the choice of how to utilize their resources further allowing effective PRs to positively moderate the IND-TEA association. High IND countries may depend on economic institutions to implement contracts, lessen transactions costs and offer economic inducements for TEA (Li and Zahra, 2012).

H8: Effective PRs will positively moderate the positive association between IND and TEA.

3.2.1.3) MAS, PRs and TEA

H3 asserts that MAS is positively associated with TEA. There is not enough empirical evidence to be decisive on the expected moderating influence of PRs on the relationship between MAS and TEA (Boubakri et al., 2021). Aidis, Estrin and Mickiewicz (2007) claim that countries with tight protection of PRs show better results in terms of innovation. Since MAS is associated with creativeness and innovation (Simón-Moya, Taboada and Fernández-Guerrero, 2014), strong PRs may support MAS guaranteeing entrepreneurs security and therefore facilitating innovation, thus stimulating TEA.

H9: Effective PRs will positively moderate the positive association between MAS and TEA.

3.2.1.4) UA, PRs and TEA

H4 proposes that high UA may be negatively associated with TEA. In addition, effective PRs protection may encourage TEA in high-UA societies. Entrepreneurs may be uncertain about whether the state will protect private PRs for their venture in high UA countries

(Alvarez and Barney, 2020). Therefore, effective PRs may reduce uncertainty quicker for entrepreneurs positively moderating the UA and TEA association. Sjaastad and Bromley (2000) insist that the concept of security and the assurance element in PRs is a necessary element for TEA, implying that PRs ultimately reduce uncertainty for entrepreneurs. Since any type of TEA is inherently associated with risk taking, the acceptance of uncertainty may be reduced via an effective PRs system.

H10: Effective PRs will positively moderate the negative relationship between UA and TEA.

3.2.1.5) LTO, PRs and TEA

H5 proposes that LTO may be positively associated with TEA. Inadequate PRs imply institutional constraints may negatively impact TEA by affecting an entrepreneur's ability to understand the current and future institutional environment. This raises questions regarding enforcement of the '*rules of the game*' (North, 1990). Wood *et al.* (2021) explain that once resources are utilised for establishing a venture, they are difficult to recuperate. Lortie, Barreto and Cox (2019) conclude that the protection of PRs encourages companies to make future-oriented investments regarding the venture's performance, as there is further assurance that they can guard and profit from the returns of their investments. The effectiveness of PRs may help reduce uncertainty in ventures by guaranteeing a set of long-term contractual obligations positively moderating LTO's association with TEA. Inadequate PRs imply institutional constraints which may negatively impact TEA by affecting an entrepreneur's ability to understand the current and future institutional environment. Lin, Shi, Prescott and Yang (2019) emphasise that a low LTO emphasises immediate returns rather than future returns and values contemporary efficiency and planning. During turbulent times with exogenous shocks, effective PRs may facilitate entrepreneurs in engaging with EA thus establishing a more long-term perspective.

H11: Effective PRs will positively moderate the positive association between LTO and TEA.

3.2.1.6) IVR, PRs and TEA

H6 proposes that high IVR be positively associated with TEA. High levels of IVR give more freedom for individuals to satisfy their desires (Hofstede *et al*., 2010). Effective PRs may allow the desires of entrepreneurs to be realised, providing some confidence in the process of establishing a nascent venture positively moderating the positive association between IVR and TEA. This enables innovation and potentially resulting in TEA (Michael and Pearce II, 2009).

H12: Effective PRs will positively moderate the positive association between IVR and TEA.

3.2.2) The association of informal institutions with TEA moderated by ATF

The next FI as a proposed moderator is ATF. Its influence is summarised with arguments in the section below.

3.2.2.1) PD, ATF and TEA

H1 proposes a negative association between PD and TEA. Prior literature suggests that in high PD countries, ATF is governed by dominant groups and nascent entrepreneurs may not be able to access financial resources as equal ATF may not be guaranteed for all potential entrepreneurs (Malul and Shoham, 2008). Nevertheless, allowing entrepreneurs easier ATF may help them realise their ventures thus positively moderate the negative association between PD and TEA.

H13: Easier ATF will positively moderate the negative association between PD and TEA.

3.2.2.2) IND, ATF and TEA

H2 proposes that IND be positively associated with TEA. IND fosters entrepreneurial attitudes as it may be a proxy for decentralised, pro-market attitudes (Ang, 2015). This would mean entrepreneurs would be more willing to use ATF positively affecting TEA, this means that easier ATF may positively moderate the positive IND-TEA association. IND is associated with competitive market-based systems that provide financing to innovative

and growing firms (Boubakri and Saffar, 2016). This points to a more decentralised ATF system that may reinforce the positive association between IND and TEA as individualistic entrepreneurs may approach managers of small finance providers.

H14: Easier ATF will positively moderate the positive association between IND and TEA.

3.2.2.3) MAS, ATF and TEA

H3 predicts that high MAS may be positively associated with TEA. In high MAS societies, entrepreneurs are more likely to engage in TEA (Khan, Gu, Khan and Meyer, 2021). This might increase competition and is widely recognised as stimulating the scale and efficiency of ATF where different finance providers may try to establish a presence in the market (Khan *et al*., 2021). Additionally, managers in high MAS countries are more open to using ATF facilities, ATF therefore positively moderates the positive MAS-TEA association (Haq, Du, Saff and Pathan, 2018). Abbasi, Alam, Du and Huynh (2021) consider that entrepreneurs may be associated with high MAS. In such settings, greater acceptance of challenges and initiatives arises suggesting that entrepreneurs may be more likely to innovate and will require funding to deal with their challenges (Tian, Deng, Zhang and Salmador, 2018). Having easier ATF might allow nascent entrepreneurs to realise their potential thus stimulating TEA. Entrepreneurs in high MAS countries may have greater trust in their ventures and will allocate resources to achieve success, independence, and recognition.

H15: Easier ATF will positively moderate the positive association between MAS and TEA.

3.2.2.4) UA, ATF and TEA

H4 proposes that high UA may be negatively associated with TEA. Li and Zahra (2012) analyse the decisions of VCs wanting to invest in new ventures, they are less responsive to the incentives offered by FIs in countries with higher UA levels. In the context of high UA, financial return is not the primary goal, easier ATF may help reduce UA of entrepreneurs thus positively moderating the negative association between UA and TEA (Di Pietro and Butticè, 2020). If ATF is uncertain, TEA may be reduced in high UA societies.

H16: Easier ATF will positively moderate the negative association between UA and TEA.

3.2.2.5) LTO, ATF and TEA

H5 proposes that LTO may be positively associated with TEA. Zhao and Jones-Evans (2017) explain that to achieve high TEA, investments made by growth-oriented ventures require long-term financing. It may take substantial time for entrepreneurs to transform investments into stable cash flows. Overdrafts from financial institutions are repayable on demand while loans are usually less than 10 years (Zhao and Jones-Evans, 2017). Loan repayments must be made on a regular (short-term) basis which requires stable income for entrepreneurs (Zhao and Jones-Evans, 2017). Such plans require a long-term strategy and allow a smooth transition via easier ATF. This additional funding might allow them to be more competitive via innovation or value enhancing products or services (Covin and Miles, 1999).

H17: Easier ATF will positively moderate the positive association between LTO and TEA.

3.2.2.6) IVR, ATF and TEA

H6 suggests that high IVR may be positively associated with TEA. Currently, there is a lack of literature available on this association. High IVR positively correlates with country level innovation (Hofstede *et al*., 2010). Therefore, easier ATF (alongside the benefits of expertise) might positively moderate IVR's positive association with TEA by allowing prospective entrepreneurs to engage in their happiness in high IVR societies but may not have the financial means necessary to do so. Easier ATF may therefore facilitate a positive moderation of the positive IVR-TEA association.

H18: Easier ATF will positively moderate the positive association between IVR and TEA.

Chapter 4: Methodology

So far, the thesis has analysed entrepreneurship in a cross-country study setting identifying the literature gap, hypotheses and intended contributions. This chapter will begin by summarising the progress of the thesis so far and will include a critical evaluation of positivism. Next, the justification for a deductive stance for the thesis will be investigated. A subsequent section will explore the context of the thesis looking at the OECD countries involved and the time-period chosen. Levels of analysis and their relevance are noted. Next, the measures that the thesis will use will be studied, the dependent variable (TEA) first, noting its prominence in other studies and its associated advantages and disadvantages. The independent variables of informal institutions using Hofstede's index will then be explored. A summary of Hofstede's index, its evolution and comparisons to other informal institution indices will be described. Next, FIs (constructs of PRs and ATF) which are dimensions within the Index of Economic Freedom (IEF) produced by the Heritage Foundation will be explained. Both constructs PRs and ATF will be defined and the IEF index will be evaluated. This chapter will end with examining the controls that will be deployed in the thesis, their occurrence in previous studies and will evaluate their respective merits.

4.1) Summary of thesis so far

The thesis examines the role of institutions, their interactions and associations with TEA. Informal institutions and their various dimensions are examined in relation to TEA. Then, FIs are defined and their influence on entrepreneurship in the literature is discussed. Specifically, this thesis places focus on the moderating influence of PRs and ATF as two key formal institutional mechanisms on the informal institutions-TEA association. Next, the research gaps are identified which relate to the neglect of LTO and IVR dimensions of informal institutions, alongside FIs moderating associations. A research question is subsequently posed, asking "*How do informal institutions moderated by two FIs (PRs and ATF) influence levels of TEA at a country level?''*. The author establishes 18 hypotheses which are categorised into three groups to address this question. The three groups are:

i) Informal institutions and their association with TEA
ii) Informal institutions moderated by PRs and their association with TEA
iii) Informal institutions moderated by ATF and their association with TEA.

4.2) Research philosophy

Research philosophy examines the nature and view of knowledge and contributing to its expansion (Saunders, Lewis and Thornhill, 2019). The '*research onion*' model (Figure 6) proposed by Saunders *et al*. (2019) depicts the various stages that a researcher must consider when evaluating a research strategy.

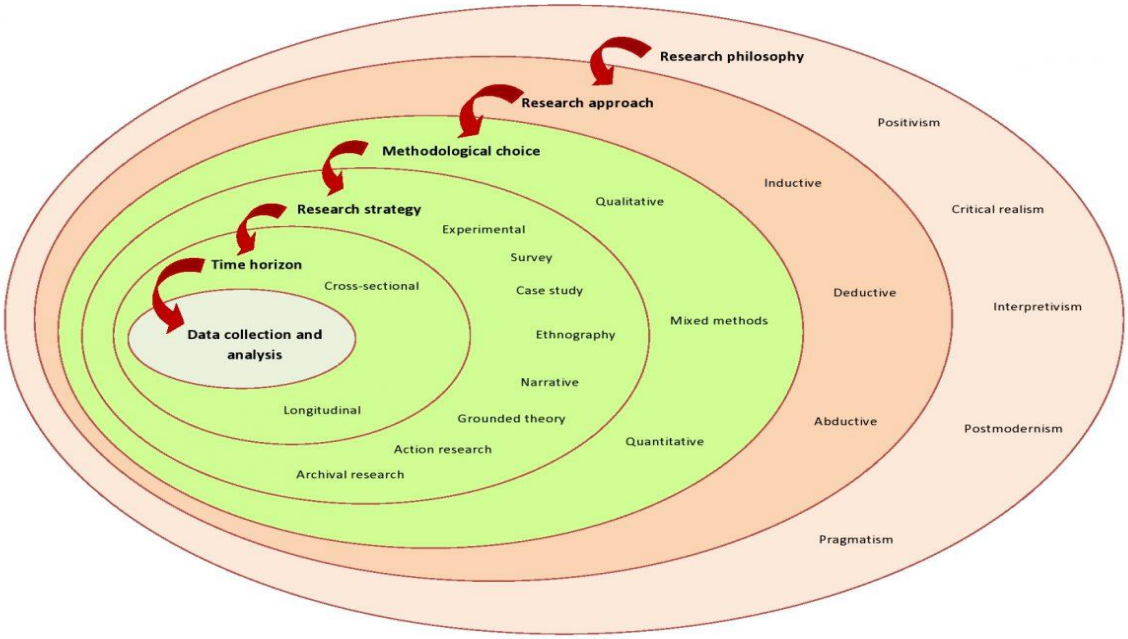


Figure 6: '*Research Onion*'. *Source: Saunders et al. (2019).*

Saunders *et al.* (2019) divide the '*research onion*' into three levels of decision making:

i) Research philosophy and research approach

ii) Research design which consists of : a) methodological choices, b) research strategy and, c) time horizon

iii) Data collection methods which is the inner core of the research onion that examines analysis of the data.

The model demonstrates that a researcher's choice of research philosophy influences the overall approach, which in turn shapes the selection of methodological choice, strategy, time horizon, and ultimately, data collection and analysis.

4.2.1) Research philosophy domains

According to Saunders *et al.* (2019), the term research philosophy refers to '*a system of beliefs and assumptions about the development of knowledge*'. In short, '*research philosophy'* addresses the assumptions that the researcher makes (Easterby-Smith, Jaspersen, Thorpe and Valizade, 2021). A researcher will make multiple assumptions while engaging with research (Burrell and Morgan, 2017).
These assumptions are built on three domains:

i) *Ontological*: Assumptions regarding the reality faced within the research and how the researcher understands existence (i.e., the nature of reality).

ii) *Epistemological*: Encompasses human knowledge and what constitutes *'valid'* knowledge (i.e., forms of valid and reliable knowledge).

iii) *Axiological:* Concerns assumptions about the level of influence of the researcher's values on the research process itself (what is valuable in the research).

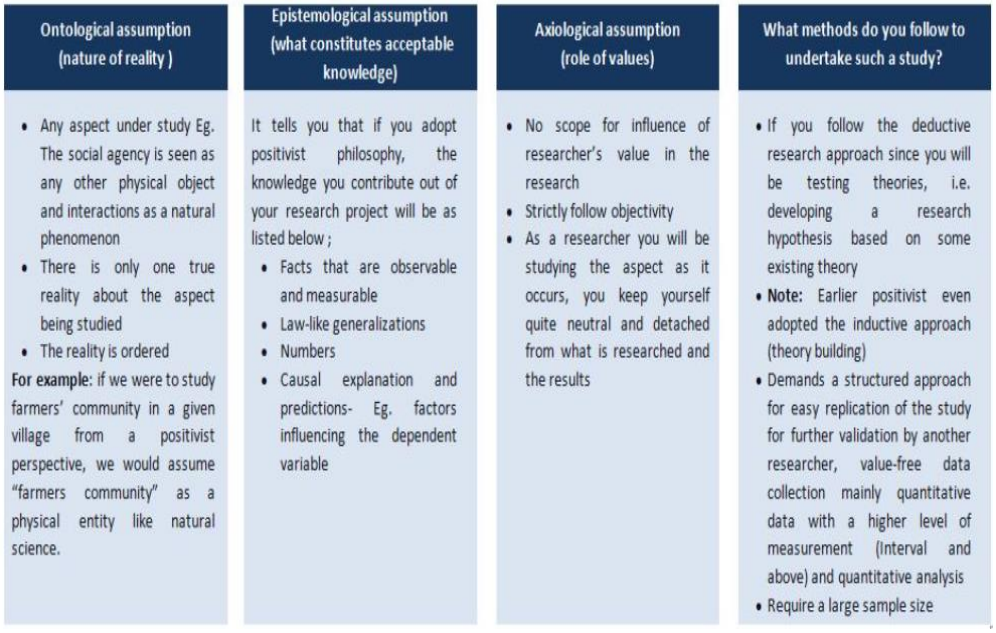
Saunders *et al.* (2019) note that the researcher tries to be independent of their beliefs from shaping the research method and the conclusions. Yet sometimes the researcher may need to decide on whether the values and beliefs of the respondents within the study should be considered or not.

According to Easterby-Smith *et al.* (2021), there are five research paradigms available to a researcher:
i) Positivism
ii) Critical Realism
iii) Interpretivism
iv) Postmodernism
v) Pragmatism
The paradigm this thesis will adopt will be covered in the following section.

4.2.2) Positivist approach

The selection of a particular philosophy mentioned earlier will determine the approach

chosen by the researcher for theory development and influence the choice of research design and methods (Babbie, 2010).



Ontological assumption (nature of reality)	Epistemological assumption (what constitutes acceptable knowledge)	Axiological assumption (role of values)	What methods do you follow to undertake such a study?
• Any aspect under study Eg. The social agency is seen as any other physical object and interactions as a natural phenomenon • There is only one true reality about the aspect being studied • The reality is ordered **For example:** if we were to study farmers' community in a given village from a positivist perspective, we would assume "farmers community" as a physical entity like natural science.	It tells you that if you adopt positivist philosophy, the knowledge you contribute out of your research project will be as listed below ; • Facts that are observable and measurable • Law-like generalizations • Numbers • Causal explanation and predictions- Eg. factors influencing the dependent variable	• No scope for influence of researcher's value in the research • Strictly follow objectivity • As a researcher you will be studying the aspect as it occurs, you keep yourself quite neutral and detached from what is researched and the results	• If you follow the deductive research approach since you will be testing theories, i.e. developing a research hypothesis based on some existing theory • **Note:** Earlier positivist even adopted the inductive approach (theory building) • Demands a structured approach for easy replication of the study for further validation by another researcher, value-free data collection mainly quantitative data with a higher level of measurement (Interval and above) and quantitative analysis • Require a large sample size

Figure 7: Positivist paradigm. ***Source: Saunders et al. (2019).***

The author approaches the positivist paradigm in the thesis. Figure 7 (*above*) summarizes features of positivism. Positivism alludes to a single objective reality that exists independently of the author's opinion (Friedman, 2008). A structured approached is required where a precise research question and hypotheses are formed. Ontologically, social agency is considered a physical object that may be observed and the interactions that occur as considered a natural occurrence (Zyphur and Cieredes, 2020). Positivism adopts a stance where facts are quantifiable and causal explanations amongst explanatory variables exist (Saunders *et al*., 2019). The axiological domain stresses that the researcher must remain impartial and follow objectivity (Saunders *et al.*, 2019).

Statistical analysis techniques may be applied in positivist research to obtain quantifiable and objective results (McLaren and Durepos, 2021).

Some of the advantages associated with positivism are as follows:

i) *Established precedence:* A strength of a positivist approach within the social sciences domain is that it is grounded within various topics (e.g., sociology) on a '*foundation*' of empirically testable data (Howell, 2013). Researchers acquire theories from the data from

which rules of social behaviour may be realised. Many social scientists perceive the positivist approach to the natural sciences allows greater objectivity, forecast and greater insight into phenomena than could achieved by other research methods philosophies (Rhoads, 2021).

ii) *Analysis of causal relationships:* Easterby-Smith *et al.* (2021) mention that positivism enables an analysis of causal relationships present between phenomena. Positivism allows the social sciences domain to make certain predictions about the phenomenal world (Easterby-Smith *et al*., 2021). This advantage allows the social sciences domain to reproduce the conditions of natural sciences creating some level of generalisation of the social phenomena.

iii) *Dissemination of knowledge:* The positivist philosophy means that the social sciences domain can constantly draw upon information via new empirical material published (Saunders *et al.*, 2019).

However, this is not to say there are no drawbacks of a positivist approach. The disadvantages are as follows:

i) *Methodological absoluteness:* Since its inception, positivists have tried to use this methodology to explain social phenomena. Researchers with this philosophy want to observe an object in its totality, tracing its evolution producing an absolute theory of knowledge surrounding the phenomena (Saunders *et al.*, 2019). The various streams of social sciences often lead researchers to the conclusion that there are too many variables occurring to be observed in their totality.

ii) *Inaccuracy of hypotheses:* Popper (2005) comments that the weakness of extreme positivism can be its inability to accurately prove its hypotheses via empirical experiments. Dowding (2015) stresses that investigation in the natural sciences usually includes the examination of fairly simple items which have consistency amongst their properties compared to social phenomena. Social phenomena may be vastly complex with many interactions present.

iii) *Lacking diverse interpretation:* Marsh and Furlong (2002) note that findings in the social sciences domain place more emphasis upon an individual level of analysis with more subjectivity. In such instances, the interpretivist approach assumes significance within the social sciences and is different from positivism (Hammersley, 2013). Thus, Marsh and Smith (2002: P.531) understand that *''…In the social sciences . . . subjective (interpretivist) ontological and epistemological positions should not be treated like a pullover that can be ''put on'' when we are addressing such philosophical issues and ''taken off'' when we are doing research''*. Such a citation demonstrates that interpretivist approaches are an alternative research philosophy to positivism.

4.2.3) Research approach

Following a positivist stance as explained above, this research will use a deductive approach. Flick (2018) comments that when examining the relationship between theory and data, the process to discover and/or verify new patterns or *'themes'* arises.

Figure 8 (*below*) demonstrates the process of deduction. In principle, deduction starts with a particular theory or rule which is so far unrefuted. Raw data is examined to see if the theory is supported (Reichertz, 2007). In this approach, variables are conceived first, and a research question/hypothesis is deduced via the literature (Trochim, Donnelly and Arora, 2006). However, the objective of a deductive approach is not to examine the theory *per se* but to adopt the theory as a '*lens*' through which to examine and make sense of the data available to the researcher (Flick, 2018). ***The author follows this approach in the thesis.***

There are several benefits and drawbacks of adopting such an approach, many of these are consistent with the general positivist approach and are displayed in the Table below:

Benefits:	Drawbacks:
i) *Time-efficiency:* This process will be less time intensive (and less expensive) as opposed to other approaches building on existing frameworks (Saunders *et al.*, 2019).	i) *False assumptions:* According to Ketchen, Thomas and Snow (1993), a critical issue is that deductive approach is accused of making analogous assumptions to disciplines in natural sciences domain.
ii) *Simplicity:* Overmars and Verburg (2007) comment that this is a straightforward approach where there is not much need for collecting extensive samples for analysis.	ii) *Context specific:* This approach follows a context specific setting, as such, the theory can vary depending on the context (i.e., not generalised) (Ketchen *et al.*, 1993).
iii) *Robustness:* Quantitative data collection techniques are considered more robust and trustworthy compared to other techniques (Gill and Johnson, 2002).	iii) *Over-interpretation of data:* Flick (2018) notes that an overinterpretation of data may arise. In such instances, the theoretical framework may force data into pre-existing theories that can distort the data not making theoretical sense.

Table 3: Benefits and drawbacks of a positivist approach. *Source: Author.*

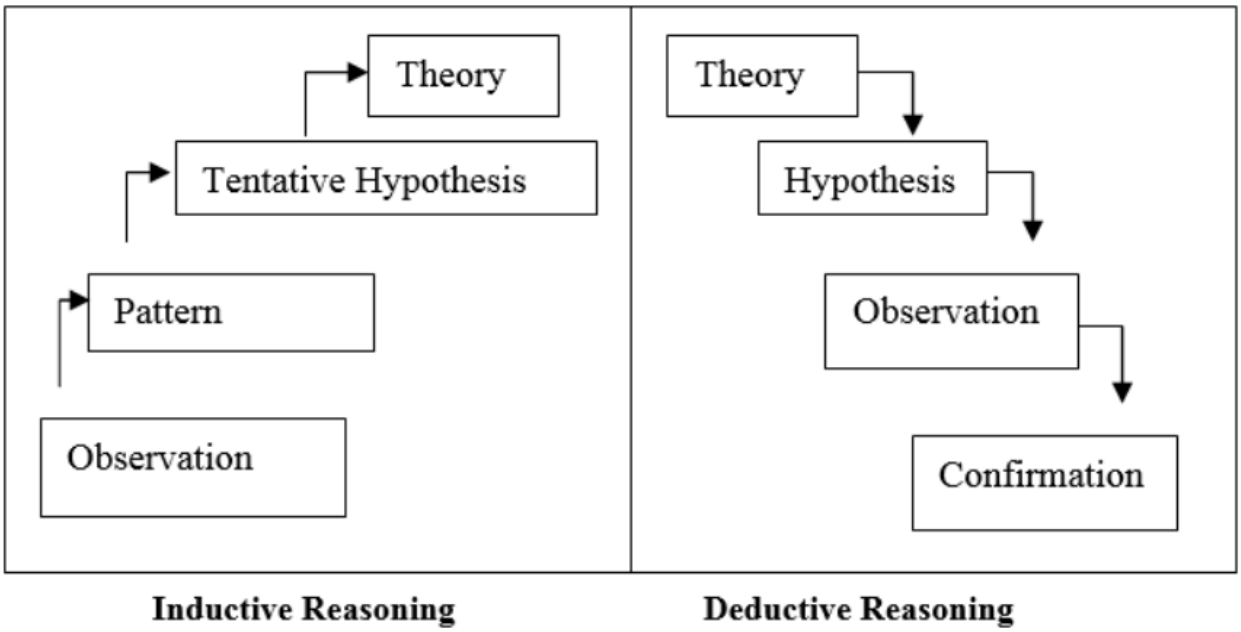


Figure 8: Inductive and deductive approach process. ***Source: Trochim and Donnelly (2006).***

4.3) Justification of '*research philosophy*' and '*research approach*' (looking at prior literature's stance)

After an examination of the thesis philosophy and approach, a justification from the literature is now needed. Kostova *et al.* (2020: P.468) summarise a 20-year literature review on NIT and its various pillars (see Section 2.5 on P.43 for the pillars of NIT). They comment that *"…introducing the institutional lens as an alternative to culture (Kostova, 1997)… provides a broader view of national contexts, encompassing not only cultural but also regulatory and cognitive elements (Kostova, 1997; Scott, 1995)… allows the capturing of the dynamic aspects of context... Theoretically, it can be more precise in its predictions than cultural distance if analysed with regard to a specific issue".* Such a citation illustrates that there are set pillars of NIT which have their own characteristics surrounding them providing a more holistic understanding of a phenomena. This appears to indicate a deductive approach. Kostova also refers to institutional theory as a '*lens*' further reinforces this. ***The researcher adopts a deductive approach***.

Additionally, Hofstede's informal institutional index used in this thesis (*covered later*) highlights a similar approach. Sent and Kroese (2020) mention that Hofstede was the first author to develop a serious empirical model with measurable and quantifiable informal institutional dimensions (showcased in Section 2.8 on P.59). Kirkman *et al.* (2006) further conclude that the '*tangibility*' of Hofstede's dimensions allows a standardisation of cultural values which have been replicated in thousands of studies. This demonstrates a positivist approach where the index is allowing dissemination of knowledge to allow researchers to conduct different empirical studies on the influence of culture and test a variety of hypotheses in comparative cross- country studies (Davis and Williamson, 2016; Beugelsdijk, Maseland and Van Hoorn, 2015).

However, the use of such indices might mean that a positivist approach is not always clear with NIT studies. Fortwengel (2017) comprehends that when looking at NIT studies in a cross-country context, the definitions, and proposed mechanisms on how the various NIT pillars influence an outcome have raised questions on how rigorous the concept of NIT pillars are cross-country (e.g., Bae and Salomon, 2010). Scholars have raised concerns around diversity surrounding the NIT pillars where NIT and institutional theory (by

default) are defined in a variety of ways depending on the perspective (covered in Section 2.4.4 on P.39). The streams illustrate different conceptualisations of institutions leading to ambiguity. This is further exacerbated in research surrounding NIT generally where explicit references to the perspective is absent in the research (Kostova *et al.*, 2020).

Furthermore, Veciana and Urbano (2008) observe that the macro-environment in which an entrepreneur is situated is always changing. Such evolution produces opportunities yet are not noticed objectively by all entrepreneurs (Veciana and Urbano, 2008). Shane (2000) comments that opportunities are situations in which a profit framework is created and are dependent on their discovery by entrepreneurs with relevant knowledge. This may facilitate the questioning of an independent reality. The entrepreneur here identifies opportunities and defines reality. Thus, an entrepreneur is the individual who is vigilant to opportunities that have not been discovered by others (Kirzner, 1973). These citations all illustrate that a positivist stance may not be possible in NIT research where a single reality, independent of what the author opinion is, may not be possible (Friedman, 2008).

4.4) Study context justification

The study notes the influence of institutions on TEA of 32 OECD nations examining the period 2010-2020. The OECD comprises 38 nations, but this study had to omit certain countries. New Zealand (N.Z.), Israel and Costa Rica are excluded due to incomplete data points. In addition, the L.A. countries (Chile, Colombia and Mexico) are removed because of the proportion of OME: NME ratio. This arises from extreme inequalities present in L.A. countries. Matteos (2021) comments "…*In terms of economic participation, there is a large difference between central regions and non-central regions"*. Structural inequalities present in L.A. generate a higher level of NME compared to the other OECD countries, and Matteos (2021) further comments that many other L.A. countries (e.g., Mexico) have highly concentrated socio-economic areas. Oyarzo, Romaní, Atienza and Lufín (2020) further examine municipalities in Chile where certain areas have poverty rates in some cases over 30% of the national average. L.A. is considered an outlier compared with other OECD countries and is thus excluded from the analysis.

A reason for studying the OECD group is the income group classification of the member countries. According to the World Bank (2021), OECD nations are either upper middle-income (e.g., Colombia, Costa Rica, Turkey) or high-income countries (e.g., Austria, Australia). As from 2022, income classification for an upper-middle income country is classed as GDP p/c of $4096- $12,695 (USD) and high-income countries are classed as having a GDP p/c of $12,696 or more (World Bank, 2021). With most of the OECD countries being upper-middle or high income, a focus on OME (Section 2.2.1) is more logical. Characteristics surrounding OME and EA (entrepreneurial activity, see abbreviation in abbreviations table in the beginning of the thesis) have different mechanisms compared to NME. The major feature of NME is that entrepreneurs are *'pushed'* into EA due to a lack of other options (Nikolaev *et al.*, 2018), so NME will be less prevalent in OECD countries.

Nonetheless, as mentioned in Chapter 2 (Section 2.2.1 on P.32), OECD nations (like all nations) will have a degree of NME occurring. Kelley *et al.* (2012) analyse data from GEM to discover that the proportion of NME as a proportion of entrepreneurship is 18.6 % in Germany, 25.9 % in Spain, and 21.2 % in the U.S. The literature also reports that NME display different socio-economic characteristics than other entrepreneurs (Block and

Wagner, 2010). This shows that OME is not completely as dominant in OECD nations as may be expected.

Finally, a reason to focus on OECD nations is their proportion of world GDP and geographic spread. The OECD covers five continents. This geographic spread allows generalisability amongst the findings from this study. Only countries on the African continent are not represented. Further, the OECDs (2020) share in world GDP (expressed in Purchasing Power Parities (PPPs)) stabilizes at approximately 50% between 2011 and 2017. The share of each country is summarised in Figure 9 (*below*). Figure 9 depicts that the U.S. has the largest of the OECD nations capturing 16.3% of world GDP. This figure demonstrates the economic dominance of OECD nations and their importance to researching EA.

A limitation of solely considering OECD nations is the fact that most of the global TEA arising will not be represented and explained by such studies. Whilst the paragraph above states that the OECD nations are present over five continents, as a proportion of the global population, OECD nations are not representative of the world. Many of the emerging nations encompass a significant amount of the global population and thus the type of EA that arises compared to the OECD nations which are more economically developed is different. For example, one out of every three people are either situated in China or India (two of the largest so called '*BRIC*' nations) (World Economic Forum, 2022). This questions the generalisation of the thesis and its findings (this issue is covered in Section 7.4 on P.210).

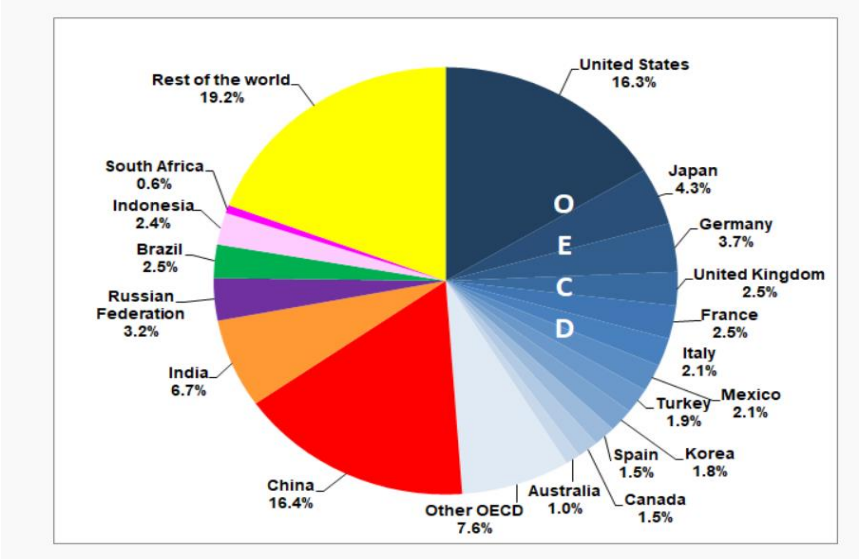


Figure 9: Share of World GDP based on PPP by country for 2017. *Source: OECD (2020).*

There are a variety of studies that use OECD as a cross-country examination group with varying timeframes. Abdesselam, Bonnet, Renou-Maissant and Aubry (2018) examine 26 OECD countries (1999–2012), examining EA, growth and labour markets. Additionally, Angulo-Guerrero, Pérez-Moreno and Abad-Guerrero (2017) study 33 OECD countries and the relationship to EF from 2001-2012. Their study examines OME and NME separately and examines 29 and 30 countries for both EA types. Wennekers *et al*. (2007) studies the relationship of UA and TEA across 21 OECD countries (1977–2004). The years are *'pooled'* so that three years (1976, 1999 and 2004) are analysed to account for the stability of the direct relationship of variables in question over time. Further studies look at the relationship of GDP p/c and ownership rates (nascent or established entrepreneurship).

Moreover, certain studies examine EA in OECD countries using only FIs. Nyström (2008) examines five types of FIs (including PRs, ATF and trade freedom) and their influence on EA in 23 OECD countries (1972-2002). Caree, Stel, Thurik and Wennekers (2002) study business ownership using a data panel of 23 OECD countries from 1976-1996. Also, Carree and Thurik (2002) look at the effect of shifts in the number of entrepreneurs via employment growth, GDP growth and labour productivity growth. The analysis looks at 21 OECD countries from 1972-2002. Such studies illustrate a precedence for the focus group the thesis uses as the thesis has 32 countries examined over 10 years from 2010-2020. This sample size and time frame is seen to be comparable to the other studies cited here.

However, from a literature perspective, numerous studies involve countries outside of the OECD. Fuentelsaz *et al.* (2019) examine a data set of 84 countries looking at OME interactions with both formal and informal institutions (2002-2015). Similarly, Nikolaev *et al.* (2018) evaluate the robustness of OME and NME looking at both institutions with a sample of 73 countries from 2001-2015. Aparicio, Urbano and Audretsch (2016) similarly study the influence of institutions and OME looking at data of 43 countries (2004–2012). Additionally, Freytag and Thurik (2007) determine EA attitudes by testing the relationship between institutional variables and cross-country differences utilising data from 25 member states of the European Union (E.U.) as well as the U.S. (1972–1992). Certain articles also look at the role of institutions on EA on a regional level (e.g., Puente,

Giovanni, Espitia and Cervilla, 2019; Bosma *et al*., 2018; Alvarez, Urbano, Coduras and Ruiz-Navarro, 2011) with varying timeframes of examination. For example, Puente *et al*. (2019) look at L.A. countries institutions from 2006-2012. These citations demonstrate a wide variety of research present looking globally rather than group-based institutions and their association with EA.

The period chosen for this study is 2010-2020. This time period was chosen by the researcher due to avoid the aftermath of the 2007 financial crisis (similar to other OECD studies cited earlier in this section). The inclusion of the 2007 financial crisis would have distorted the role of ATF. From 2020, Covid and Brexit together brought about a severe reduction in domestic and international trade and therefore entrepreneurial opportunity. It was therefore considered sensible to avoid these three institutional shifts.

4.5) Levels of analysis of EA

The literature surrounding entrepreneurship illustrates various levels of analysis. The research so far has either examined entrepreneurship impact on individuals or in an institutional setting. ***The thesis will employ a macro-level of analysis.*** *This is because of the stream of literature and measures deployed looking at both informal and FIs. For informal institutions, national culture (aggregate) measures of entrepreneurship will be used. FIs will also be examined at a macro-level. Both categories of institutions will be examined in the upcoming sections in this Chapter.*

Dacin, Goodstein and Scott (2002) understand institutional change can proceed from the most micro (interpersonal) levels to the most macro (national/global) levels. This level of analysis section is to make the reader aware that there are different levels to consider. These are summarised in Figure 10 (*below*).

Institutional pressures operate at many levels (Fini, Fu, Mathisen, Rasmussen and Wright, 2017). These levels can be viewed as interacting within a nested structure, where each institutional level may have a separate effect on involvement in entrepreneurship (Rasmussen, Mosey, and Wright, 2014). Figure 10 looks at work based on Hedström and Swedberg (1998). Causal mechanisms can be arranged through multi-level categories, including i) situational mechanisms, ii) action-formation mechanisms, and iii) transformational mechanisms. Situational mechanisms refer to the contextual and environmental stimuli on entrepreneurial opportunities, these mechanisms links macro and meso to the micro-level. Action-formation mechanisms necessitate the processes of TEA (micro-level) as well as entire markets (meso-level). Finally, transformational mechanisms clarify the combined effects of TEA (micro-level) on markets (meso-level) in an institutional setting (macro-level) (Kim, Wennberg and Croidieu, 2016).

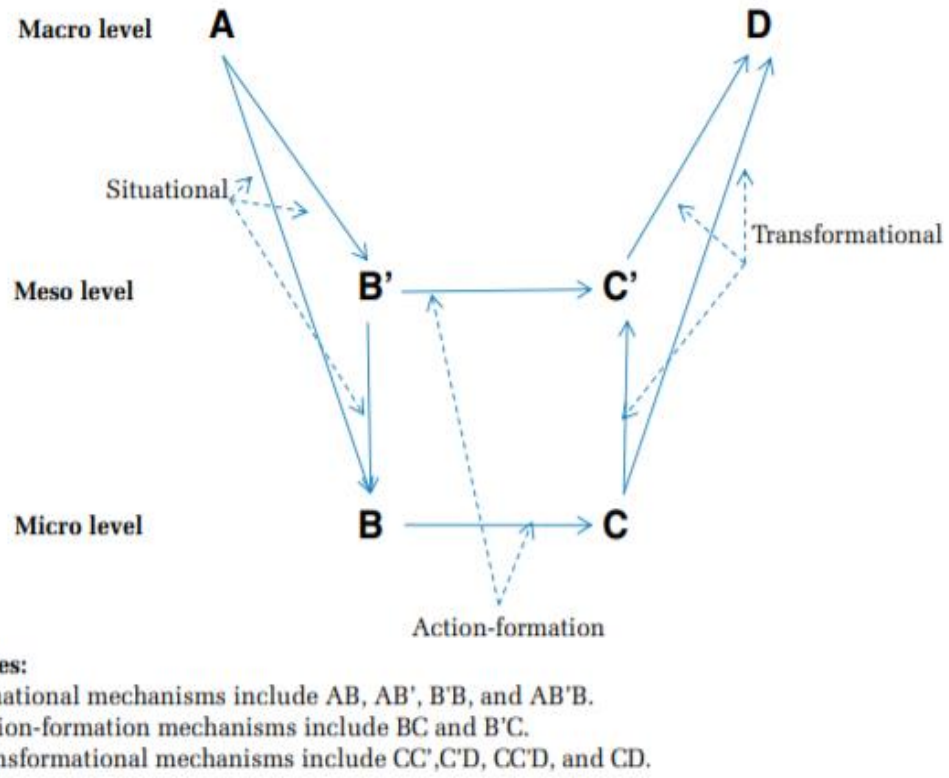


Figure 10: Multilevel causal mechanisms framework. *Source: Kim et al. (2016).*

Almost all the literature indicates a top-down entrepreneurial mechanisms from macro to micro-level mechanisms (ABC points in Figure 10). In such analysis, FIs have been most thoroughly studied because these are arguably the most regularly clarified in the literature (Williamson, 2000). They are easy to recognise and quantify across contexts and over time (Andersson and Henrekson, 2014).

Meso-level analysis involves studying the impact of social groups to explore the role of social norms and long held beliefs (Granovetter, 1985). As social creatures, people are naturally entrenched in social systems and are shaped by social norms. The impact of these norms rests on the degree to which individuals are embedded in relationships with others, even if individual characteristics within those groups vary (Greenwood, Suddaby, and Hinings ,2002).

A final mechanism route is macro, meso and micro-level integration research. Norms produced by social groups can serve as a moderating function between macro-level FIs and microlevel individual entrepreneurial outcomes (AB'BC in Figure 10). This arises mainly when social groups produce informal institutions, these have a strong effect on

individual outcomes, particularly when FIs are weak (Kim *et al*., 2016). If a social group functions as a component of a moderating role, the influence of FIs will exhibit a greater or lower influence on EA depending on the role of the social group or collective (Kim *et al*., 2016).

Multi-level analysis remain rare in the entrepreneurship literature (Zahra and Wright, 2011). Section 2.5.3 (P.48) explains that to deal with the constraints of the trait-based literature, the level of research is stretched to the national level (Valdez and Richardson, 2013).

However, caution should be exercised when utilising aggregated individual level data to clarify macro-level results. The examination of individual-level perceptual data on social influences can lead to intrinsically inadequate multi-level analysis. This because the association between an individual's perception of social influences and their actual behaviour is individual-specific and may not '*average out*' when aggregated (Manski, 1990). Macro level effects depend on both micro-level actions and their interactions. Research examining macro-to-macro associations do not expose which theoretical mechanisms determine the macro-level outcome. For example, research using perceptual data at an individual level (e.g., GEM) should consider statistical procedures that account for the variance in individual perceptions when studying group- or macro-level outcomes (Kim *et al.*, 2016).

To overcome the issue of multi-level analysis a maximum-likelihood regression model is used (Bickel, 2007). Although, other regression models can be used so long as the errors belong to a normal distribution in a model. This one of the assumptions that must be fulfilled with a regression model (*covered later*). Bickel (2007) further stresses that multi-level models are essentially regression analysis where the observations are '*nested*' (grouped) into identifiable contexts. The thesis does this by looking at TEA within specific OECD countries.

4.6) Constructs and their measures

Looking back at Figure 6 (Section 4.2 on P.103) the next layers are '*Methodological choice*', '*Research strategy'* and '*Time horizon'*. For the '*Methodological choice'* layer the approach will be a quantitative one. This follows from the positivist stance and deductive approach. The benefits and drawbacks are those stated earlier for a positivist and a deductive approach.

Next, the *'Research strategy'* that the thesis will adopt is multivariable regression analysis. Inferential statistics may be used to test hypotheses and generate a measure of effect for the variables (factors) involved (Osborne, 2013). These measures are used to describe associations (correlations) of the variables. Cleff (2019) comments that in multivariable regression analyses, the aim is to extract accurate estimations of relationships by looking at the dependent variable (*Y*-variable) and its connection with independent variables (*X*-variable) (Chatfield and Collins, 2018). This will be explored in the next Chapter. The rest of this section will go on to explain the response, explanatory and control variables accordingly.

Using multivariable regression has its strengths and weaknesses. The strengths of multivariate regression analysis are:

i) *Associations between variables*: Using the multivariate regression technique will help determine associations with the response variable (Field, 2013).

ii) *Outliers:* An additional advantage is being able to identify outliers in the data set. Using the outliers could establish a '*line of fit'* for the data points (residuals) and verify assumptions needed to be fulfilled for multivariate regression analysis (Field, 2013).

However, there are disadvantages with this method:

i) *Inefficient analysis:* This is associated with multivariable regression analysis (usually with the data) rather than the regression itself. This might be due to incomplete data which may result in data bias leading to overall inaccurate analysis (Cleff, 2019).

ii) *Causation and association:* The understanding of correlation does not equal causation is another constraint when interpreting coefficients (Pieters, 2017). For example, in Chapter 3, the first six hypotheses are all examining the role of informal institutions and their association with TEA. This essentially means that an increase in PD (for example) may be associated with lower TEA. The analysis does not allow the claim to be made that due to an increase in PD, TEA decreases *per se*. Such a distinction is worth remembering.

iii*) Benefits of exploratory research:* A noteworthy limitation is the singular linear combination approach of a regression analysis where a particular '*combination*' is solely examined. Certain analytical techniques like the *'Fuzzy-set Qualitative Comparative Analyses'* (fsQCA) approach can help deal with this limitation (Beynon, Jones and Pickernell, 2019). FsQCA is a prescribed theory-based data analysis technique that was introduced in Ragin's work (2008). FsQCA can analyse '*fuzzy'* sets, which are sets in which membership can be expressed in degrees.

To compare fsQCA against a more traditional quantitative approach (like regression), the regression-based approach investigates the effect of a condition variable on an outcome variable. Meanwhile, fsQCA examines what set conditions can lead to a particular outcome (Elliott, 2013). FsQCA offers some benefits as a comparative approach, an example is the matter of equifinality. This is where different configurations (combinations) may lead to the same outcome (Fiss, Sharapov and Cronqvist, 2013). Another benefit is asymmetric causality where a lack of causal conditions does not lead to no outcome.

Finally, conjunctional causation is another benefit that is lacking in a traditional regression approach. Beynon, Battisti, Jones and Pickernell (2021) understand conjunctional causation to comprise specific conditions only having an effect in conjunction with some set conditions, but not by themselves (Woodside, 2013). This might showcase a particular combination of conditions that may complement as well as substitute for other conditions allowing multiple explanations of TEA. These three conditions demonstrate that using an exploratory approach allows greater insight into understanding the associations with TEA compared to conventional regression approaches.

4.7) Variables used in the thesis

The variables and their indices the thesis will use now be explained, first the dependent variable (TEA), then the independent variables of informal and FIs. Finally, the thesis will look at the control variables chosen. The measures and their indices, their prominence and benefits (and drawbacks), will be examined in this section. Table 4 (*below*) depicts the summary of the variables the thesis will use to examine hypotheses and the research question set.

Variable	**Description**	**Source**	**Previous studies using variable**
1) *Dependent variable:* TEA	Total Entrepreneurial Activity: Depicts the percentage of adult population (18–64 years of age) within each nation that is either currently engaged in the process of creating a new business venture or are operating a venture that has paid salaries or other forms of payment for at least 3 months but no more than 42 months (GEM, 2021).	GEM (2021)	-Kiran and Goyal (2021) -Bosma *et al.* (2018) -Dheer (2017) - De Clercq, Danis and Dakli (2010) - Uhlaner and Thurik (2007) -Van Stel, Caree and Thurik (2005) -Stevenson and Lundström (2003) - Reynolds, Hay, Bygrave, Camp and Autio (2000)
2) *Independent variables:* Informal Institutions (National Culture)	National Culture: Is understood as the shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences	Hofstede's Index (2021)	-Bogatyreva, Edelman, Manolova, Osiyevskyy, and Shirokova (2019) - Wennberg, Pathak and Autio (2013) - Baskerville (2003) - Hofstede and Bond

	of members of collectives which can be transmitted across generations (Hofstede, 2011).		(1988)
Formal Institutions (FIs)	Formal Institutions: These institutions (e.g., regulations) comprise a part of the taken-for-granted rules that guide behaviour to make sense of a situation (North, 1990).	IEF (2021)	- Nikoleav *et al.* (2018) -Kuckertz *et al*. (2016) -Díaz-Casero, Díaz-Aunión, Sánchez-Escobedo, Coduras and Hernández-Mogollón (2012) - McMullen *et al*. (2008)
Property Rights (PRs)	PRs is the ability of individuals to accumulate private property and wealth (Kuckertz, Berger and Mpeqa, 2016).	IEF (2021)	- Yoon, Kim, Buisson and Phillips (2018) - Kuckertz *et al.* (2016) - Chowdhury, Terjesen and Audretsch (2015)
Access to Finance (ATF)	ATF is an efficient and accessible formal financial system (IEF, 2021) allowing opportunities and promoting EA.	IEF (2021)	- Raza *et al.* (2019) - Fuentelsaz, González, Maícas and Montero (2015) - Aidis, Estrin and Mickiewicz (2012)

3) *<u>Control variables:</u>* GDP per capita (p/c)	GDP per capita is GDP divided by the mid-year population. It is computed without accounting for depreciation of assets or of natural resources (World Bank, 2021).	OECD Database (2021)	- Fuentelsaz *et al*. (2019) - Nikolaev *et al*. (2018) - Yousafzai, Saeed and Muffatto (2015) - Wennekers *et al.* (2007) - Desai, Gompers and Lerner (2003)
Age composition (25-49 years old)	This is seen as the age composition of 25-49 years old as a proportion of a country's population.	World Bank (2021)	- Raza, Muffatto and Saeed (2019) - Wennekers *et al.* (2007) - Sobel, Clark and Lee (2007)
Female Labour Participation Rates	This is noted as the proportion of female labour force (15-64 years old) divided by the total working-age population (OECD,2021).	OECD Labour Statistics (2021)	- Gimenez-Jimenez, Calabrò and Urbano (2020) - Raza *et al*. (2019) - Fuentelsaz *et al.* (2019) - Williams and Horodnic (2016) - Wennekers *et al*. (2007)
Gross Enrolment Rates	This is defined for both genders as number of students at a given level of education (irrespective of age) enrolled in primary,	World Bank (2021)	- Brieger, Bäro, Criaco and Terjesen (2021) - Nikolaev *et al.* (2018) - Hechavarría (2016) - Hessels and

	secondary and tertiary education as a percentage of the population (WB, 2021).		Terjesen (2010) - Wennekers *et al.* (2007)
Population Density	Population density is understood to be the people living in an area. This is usually measured as people per square km within a country (UN, 2021)	UN World Population Prospects Index (2021)	- Raza *et al.* (2019) - Autio and Fu (2015) - Autio *et al*. (2013) - Sobel (2008) -Wennekers *et al*. (2007)

Table 4: Summary of variables chosen, definitions, index sources and prior studies using them. *Source: Author*.

4.7.1) Dependent variable: GEM- TEA

With the '*Research Strategy'* now explained, the chosen variables must now be justified. The dependent variable is TEA, since 1997 one of the most prominent variables, the most well-known and cited measure from the GEM database within the entrepreneurship literature (Kiran and Goyal, 2021; Bosma *et al.*, 2018; Dheer, 2017; De Clercq, Danis and Dakli, 2010; Uhlaner and Thurik, 2007; Van Stel, Caree and Thurik, 2005; Stevenson and Lundström, 2003; Reynolds, Hay, Bygrave, Camp and Autio, 2000). It considers the percentage of the adult population (18–64 years of age) within each nation that is either currently engaged in the process of creating a new business venture (nascent entrepreneurship) or are operating a venture that has paid salaries or other forms of payment for at least three months but no more than 42 months (early-stage entrepreneurship). This contrasts with established entrepreneurship which is 43 months or more (GEM, 2021).

The TEA measure is established on annual survey data which is administered by researchers globally via telephone or face-to-face interviews. A minimum of 2,000 respondents per nation are involved (Dheer, 2017). Whilst these surveys are conducted annually, some nations are reported intermittently. The measure is fundamentally based

on three questions posed:

i) Are you, alone or with others, currently trying to start a new business independently from your work?

ii) Are you, alone or with others, currently trying to start a new business as part of your work?

iii) Are you, alone or with others, currently the owner or manager of a business?

TEA treats all new independent economic activities equally and all types of EA the same (Bosma *et al*., 2018). Those individuals who respond positively to the questions posed above are also asked further questions to ensure they are actively engaged in venture creation as owners and managers. These include questions like how long they have been paying wages as well as other questions about cost start up timeframe, sources of finance and numbers of roles created (GEM, 2021). The TEA index is essentially the proportion of nascent entrepreneurs and new venture owner/managers (minus any double counting, i.e., those who respond positively to both are only counted once) in the working age population expressed as a percentage (GEM, 2021: P.5).

As indicated above, not every nation is surveyed annually. For example, N.Z. has no data since 2005 (GEM, 2021). Such missing cells mean that, to maximise the sample of OECD nations, ***TEA data (as well as all other measures used in the thesis) have been imputed for the years of 2010-2020***. Imputation refers to using the mean (average) of the values for specific data points where the data is missing or unworkable (Newman, 2003). An average (imputed) TEA measure is created based on this data for each nation during the period. Imputation of measures is justified by the author on the grounds of:

i) *Academic precedence:* This procedure of using an imputed TEA measure is consistent with existing studies (e.g., Nikolaev *et al*., 2018; Dheer, 2017; Liñán and Fernandez-Serrano, 2014; Pinillos and Reyes, 2011; Anokhin and Schulze, 2009). This benefits the study by increasing the sample size but also allows stability and validity to the results and minimizes the effect of any outlier observations that arise (González-Pernía *et al.*, 2012).

ii) *Theoretical:* The justification of imputation is also seen in a theoretical context. Commenting on the rates of cross-country OME and NME, Nikoleav *et al*. (2018: P.255) conclude that *"…we use country averages over the timespan of the sample to maximize country coverage…significantly increases our sample…Since institutional, cultural, legal, and geographic variables are unlikely to change significantly over a short period of time (Alesina and Giuliano 2015; Bjørnskov and Foss 2016) … this approach is appropriate".* Such a citation illustrates the fact that institutions, especially informal ones (covered in Section 2.11 on P.83), are stable and take long periods of time before any incremental changes occur. This justifies data imputation.

Using the TEA measure from the GEM index provides several benefits:

i) *Standardisation:* Lepoutre, Justo, Terjesen and Bosma (2013) explain that international data collection databases are extremely hard to implement. GEM offers a unique dataset, involving a research methodology that cements existing research efforts for cross-country comparisons of EA. The GEM index uses exactly same measurement approach in all countries involved in the study allowing a level of global comparisons (Reynolds *et al*., 2005).

ii) *Different levels of analysis:* As explained in Section 4.5, there are various levels of analysis that can be utilised in the entrepreneurship literature. GEM focuses on the collection and analysis of individual and institutional level data independently (GEM, 2021). This allows a focus on the unit of analysis that the researcher wishes to utilise, as both individual and national levels of analysis are represented in the literature (see Section 2.7.1 on P.54 and 2.7.2 on P.56). For example, GEM analyses various factors like entrepreneurial attitudes, activities and aspirations on an individual level basis.

Despite the benefits explained above, there are several shortcomings of the TEA measure from the GEM index that must be acknowledged:

i) *Quality differences*: A shortcoming of this measure is that it does not capture the quality differences across EA (e.g., opportunity recognition, skills, creativity). Simply examining EA in terms of its quantity results in a self-employed owner in Asia being as

'*entrepreneurial*' as a Silicon Valley entrepreneur (Lepoutre *et al*., 2013). When crucial qualitative differences are not considered, the results may be misleading in that EA can be found to be highest in the less developing (predominantly agricultural) countries (Shane, 2009). Such a measure may not reflect contextual differences even though the efficiency and degree of the institutional development may be a major factor on the quality of entrepreneurship that arises (Baumol, 1990).

ii) *Generic policy outcomes*: When analysing economic development and TEA relationships within entrepreneurship indices, Szerb, Aidis and Ács (2013) comment that most GEM-related policy recommendations are quite generic with recommendations made relative to the stage of economic development (*covered later*). This '*one size fits all'* approach does not allow tailoring of conditions needed for each nation individually.

4.7.2) Independent variable: National culture- Hofstede's Index

The main independent variable that this thesis will use for the informal institutions index is called Hofstede's Index. An understanding of the index, its popularity within the literature and what it entails is now required. Hofstede ranks as one of the most cited social scientists in Europe (Sent and Kroese, 2020). In 1964, Hofstede pursued a PhD in Social Psychology, whilst working on his research, Hofstede was hired as a psychologist on the international staff of the multinational technology company IBM Europe (Sent and Kroese, 2020). Hofstede was employed to examine the ways IBM personnel executed their tasks in different countries to retain IBM's strong market position. From this the Hofstede national cultural index was invented. Hofstede conducted personnel surveys on employees with questions on matters like salary, working relations and employees' expectations of their managers. Between 1968 and 1972, standardised paper-and-pencil questionnaires were filled in by 117,000 employees in 72 countries in 20 languages. Hofstede analysed data of the 40 countries for which the number of employees was deemed adequate to allow comparisons (Sent and Kroese, 2020).

National culture is seen as the set of shared values, beliefs, and expected behaviours (Hofstede,1980). Initially, four dimensions were utilised in the index. These are UA, IND (low IND), PD and MAS (low MAS). Hofstede and Bond (1988) added the dimension LTO.

This was included in his second book (entitled Cultures and Organisations: Software of the Mind) published in 1999. The final dimension IVR was added in 2010 with Minkov (Hofstede *et al.*, 2011). Even though Hofstede's index is not without limitations (Baskerville, 2003) it represents a concise taxonomy of significant cultural dimensions for explaining the behavioural preferences of people in a society and is used widely in entrepreneurship cross-cultural studies (e.g., Bogatyreva, Edelman, Manolova, Osiyevskyy, and Shirokova, 2019; Wennberg, Pathak and Autio, 2013). All six dimensions are scored out of 100, the higher the score means the higher the representation of the actual dimension within a nation. The dimensions included in Hofstede's index have been covered in Chapter 2 (see Section 2.8 on P.59 for an in-depth exploration of the dimensions and their relationship with TEA).

Hofstede's index is the most widely used model due to consistent research with similar dimensions in other indices and predictive of economic outcomes. Hofstede offers the most complete country coverage (Cox and Khan, 2017). Two major studies review research carried out with Hofstede's variables; the first is Kirkman, Lowe and Gibson (2006) who review 180 published studies. Søndergaard (1994) further reviews 61 empirical studies. Both find overwhelming confirmation of Hofstede's dimensions. The other large study by Beugelsdijk, Kostova and Roth (2017) state that Hofstede's work has become dominant within the literature, mainly as he was the first to develop a succinct national culture framework comprising multiple national cultural dimensions (covered in Section 2.8).

Zhou and Kwon (2020) analyse Hofstede's data and conclude that Hofstede's theory of cultural values was first published in 1980, but Hofstede's research did not grow noticeably, there were only 109 papers published then. After 2000, with globalisation occurring, researchers globally began to pay attention to the significance of the cultural disparities between nations (Zhou and Kwon, 2020). In 2015, Hofstede-related research papers reached 106 a year. In just the eight-year period (2011-2018), 671 papers used Hofstede's framework. This was over twice the amount of papers from 2000 to 2010 and is seen in Figure 11 (*below*). Figure 11 demonstrates Hofstede's citations utilising the collection of Web of Science criterion. The articles are in top journals of high quality and are influential. The Science Citation Index Expanded (SCI-Expanded) and Social Sciences

Citation Index (SSCI) are used by Zhou and Kwon (2020) as citation indices to make the samples more comprehensive. This demonstrates Hofstede's prominence academically.

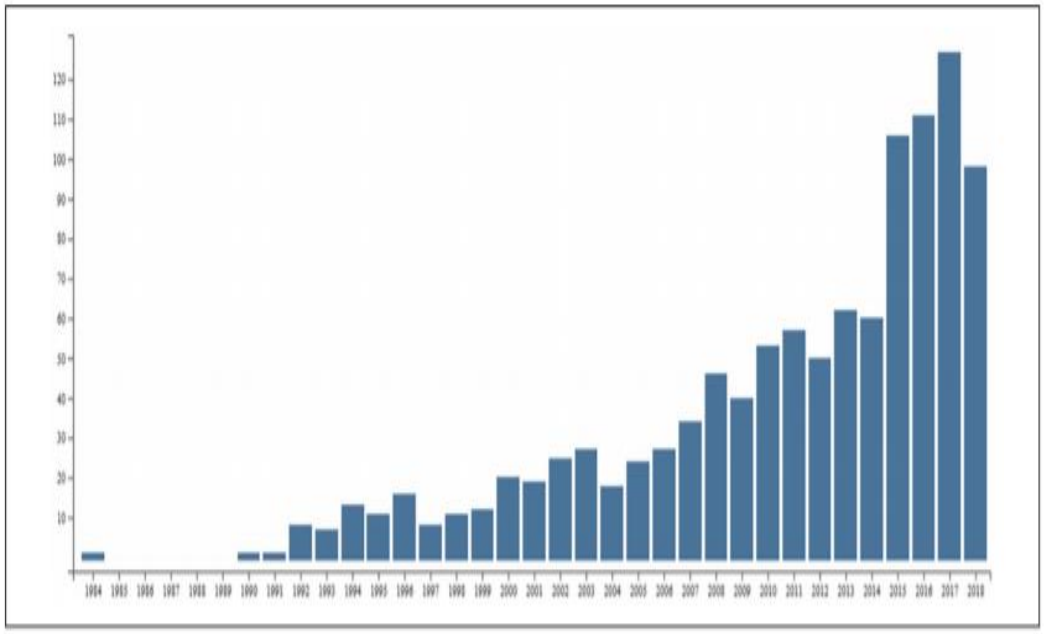


Figure 11: Hofstede citations using the '*Web of Science'* collection. *Source: Zhou and Kwon (2020).*

Now that the index, its contents and popularity has been illustrated, a critical evaluation of the index needs to be conducted. Several advantages of Hofstede's index include:

i) *Academic foundation:* When Hofstede's model was introduced, there were few studies of national culture. As they extended into multi-country research, many studies explored the dimensions of Hofstede's index (Leung, Bhagat, Buchan, Erez and Gibson, 2005). For example, social scientist Shalom Schwartz surveyed individuals in 49 nations between 1988 and 1993. He recognised seven values at the country level, resembling Hofstede's cultural dimensions (Schwartz, 1999). As a result, many scholars started to pay attention to culture, this illustrates Hofstede is considered an innovator in the field.

ii) *Comparability*: Venaik and Brewer (2013) compare Hofstede's index to the GLOBE index. The GLOBE project was started by House, Javidan, Hanges, Dorfman and Gupta (2004). It is understood that in the early 1990s, the late Professor Robert J. House from

University of Pennsylvania conceived the idea of an international study of cultural, leadership and organisational practices (GLOBE Project, 2021). As a result, the GLOBE project currently provides substantiated measures of descriptive norms (i.e., cultural practices) accessible for many countries (House *et al.*, 2004). It identifies nine dimensions and similarities exist, e.g., both GLOBE and Hofstede's index include the dimensions of UA and PD. However, Hofstede's MAS dimension corresponds with two dimensions of gender egalitarianism and assertiveness in the GLOBE study. Additionally, Hofstede's low IND dimension is measured with two constructs in GLOBE (institutional collectivism (collectivism I) and in-group collectivism (collectivism II)), i.e., they feature in both indices that are prominently used.

iii) *Consistency across indices:* Søndergaard (1994) attempted to replicate Hofstede's index and 61 duplications of similar indices were analysed. The result showed that most of these works matched Hofstede's findings, except for IND, while some replicated the same dimensions. Studies done by authors also confirmed the accuracy of Hofstede's cultural dimensions model (e.g., Calza, Cannavale and Nadali, 2020; Taras, Steel and Kirkman, 2012; Javidan, House, Dorfman, Hanges and de Luque, 2006).

iv) *Multi-level analysis:* A benefit of the index is its applicability to different levels of analysis. Research using Hofstede's index looks at national culture and also examine attitudes that may be directly measured and tested via this index for cross cultural groups within a country (Fischer, 2009; Kirkman *et al*., 2006; Smith and Bond, 1998; Poortinga and van de Vijver, 1987). For example, if a study notes differences in participation across various cultural groups, a researcher may need to consider which cultural variables could be responsible for these differences. This is typically done at the individual level (Leung and van de Vijver, 2008). Such an approach is highly popular. For example, Felfe, Yan and Six (2008) reported that low IND may explain differences in organisational commitment across samples of Romanian, German and Chinese employees. Such studies directly demonstrate the importance of culture for understanding which cultural values are important globally.

Nonetheless, several significant limitations have been associated with Hofstede's index, e.g.:

i) '*Tight' and 'loose' cultures:* With national culture indices (such as Hofstede's), researchers' use of characterisations may be criticised as stereotyping. Smith (2006) concludes that both Hofstede and GLOBE have intrinsic faults and that neither can be deemed as the best method to measure national culture. Indeed, Beugelsdijk *et al.* (2017) observe that intra-country cultural diversity is a literature issue that has been revived within the last decade (Dheer, Lenartowicz and Peterson, 2015). In 2011, Gelfand with others published an influential article establishing the theory of tight-loose cultures. They demonstrate that some countries have '*tight*' cultures in that they have robust social norms whilst other countries have 'l*oose*' cultures characterised by more varied values with higher levels of individual discretion (Gelfand *et al*., 2011). Gelfand *et al.* (2011) is relevant as it demonstrates that a degree of '*tightness*' can affect the strength of country level culture effects (Taras, Steel and Kirkman, 2016). Figure 12 (*below*) shows the degree of cultural tightness obtained from Gelfand *et al*.'s study. Figure 12 implies that countries with '*tight*' cultures (strict norms) have a higher extent of value harmony reflected by lower standard deviation (SD) values. This refers to the amount of variation of a particular set of values. Lower SD indicates that there is less discrepancy amongst the national culture values (Saunders *et al.*, 2019). A lower SD (tightness) in seen in countries like India, South Korea (S.Korea) as opposed to nations like the U.K. and Italy.

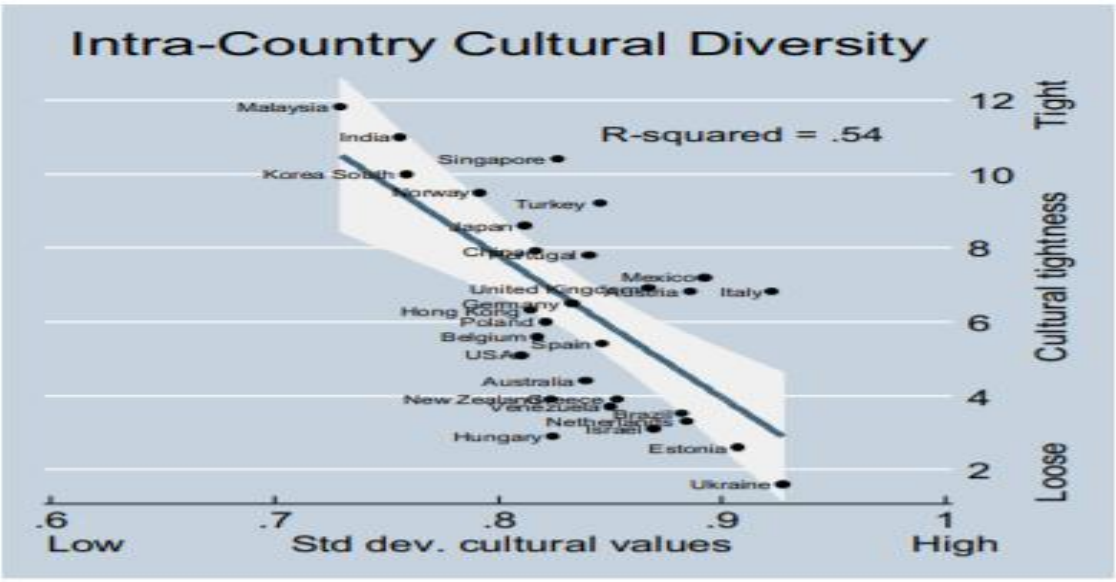


Figure 12: Scatter plot cultural '*tightness*' and SD cultural value orientation. *Source: Beugelsdijk et al. (2017).*

ii) *Supra-national cultural clusters:* This refers to cultural zones where similarities may be more obvious in certain regions than just at the country level (Akaliyski, Welzel, Bond, and Minkov, 2021). For example, the U.S. belongs to the Anglo-Saxon cluster that also includes N.Z., U.K. and Australia. Correspondingly, researchers have identified the Nordics and L.A. cultural areas (Beugelsdijk *et al.*, 2017). The existence of such zones is already incorporated in Hofstede's original research (Hofstede, 1980). This is additionally verified in a meta-analysis by Ronen and Shenkar (2013). The presence of supra-national cultural zones reinforces research on country institutional profiles (Kostova, 1997). For example, the Anglo-Saxon cultural zone from culture research is aligned with the free or liberal market model from the Varieties-of-Capitalism literature (Hall and Soskice, 2001). Classifying cultural zones where larger data sets can be used to characterise set zones is something the indices avoid.

iii) *Data collection issues:* Additionally, critics have claimed that surveys are improper for evaluating cultural differences (Sent and Kroese, 2020). McSweeney (2002) maintains that the average number of questionnaires per country in Hofstede's database is too small, and for some countries too little, to be used in an index. Also, the population studied is too small and exclusive to IBM, using solely marketing and sales employees. Hofstede (2001) himself emphasised that surveys should not be the sole instrument used for data collection. His survey questionnaire was designed very much based on IBM's needs (Javidan *et al.*, 2006).

iv) *Dimensional stability:* Scholars note that the accuracy of the scores on the index has diminished over time because of validity deprivation related to cultural changes, as suggested by the World Value Survey (WVS) (Inglehart and Baker, 2000). This may imply that Hofstede's scores no longer represent culture globally (Taras *et al*., 2012). Hofstede believes that the cultural dimensions are assumed to have centuries-old roots, and hence why culture remains stable across surveys (Hofstede, 2001). Hofstede's dimensions are calculated in such a way that country scores could shift over time, whilst keeping each countries' relative position secure (Sent and Kroese, 2020). Studies replicating Hofstede's index purport that the dimensions can be updated (e.g., Cline and Williamson, 2017; Beugelsdijk *et al*., 2015; Kaasa *et al*., 2014) without weakening the consistency of the original conceptual definitions of the index (Kaasa, 2015). Previous studies have also

indicated that Hofstede's index can be updated with sets of meta-analytic cultural scores (e.g., Taras *et al.*, 2012).

4.7.3) Moderating variables: Formal Institutions (FIs)- IEF

The next index represents the FIs in this thesis as moderators. Both components PRs and ATF are dimensions of FIs. To recap, FIs are institutions (e.g., regulations) which comprise a part of the tangible rules that guide behaviour to make sense of a situation (North, 1990). The IEF (Index of Economic Freedom) began in 1995, this is published by The Heritage Foundation (a Washington think tank) and the Wall Street Journal (IEF, 2021). IEF measures economic freedom (EF) based on 12 quantitative and qualitative dimensions grouped into four broad categories of EF:

i) *Rule of Law:* Involves PRs, government integrity and judicial effectiveness
ii) *Government Size:* Consists of government spending, tax burden and fiscal health
iii) *Regulatory Efficiency:* Covers business freedom, labour freedom and monetary freedom
iv) *Open Markets:* Entails trade freedom, investment freedom and financial freedom (ATF)

A country's overall score is derived by averaging these 12 components, with equal weight being given to each (IEF, 2021). For the following reasons below, this thesis examines two FIs represented in the IEF index (PRs and ATF).

PRs determine the ability of individuals to accumulate private property and wealth (Kuckertz, Berger and Mpeqa, 2016). Effective rule of law and PRs protect individuals in a fully functioning market economy (IEF, 2021). Secure PRs give entrepreneurs the confidence to undertake EA, conserve their income, and facilitate long-term plans because they are aware that their income and property (both real and intellectual) are protected by the law from unfair expropriation (Miller, Holmes and Feulner, 2013). Yoon, Kim, Buisson and Phillips (2018) use IEF to examine PRs amongst four other FIs as moderating variables with regards to innovation in nascent entrepreneurship in 47 countries from 2002-2012. Kuckertz *et al*. (2016) use IEF (including PRs) analysing data from 63 different countries with EA in factor-driven, efficiency-driven, and innovation-driven economies. Chowdhury *et al*. (2015) use IEF studying institutions (including PRs)

influence on three types of EA. They use five years of data from 44 countries. Simón-Moya *et al*. (2014) examine institutional contexts (incorporating PRs) and their influence on EA. They also use the IEF index.

ATF relates to an efficient and accessible formal financial system (IEF, 2021). This ensures the accessibility of credit and investment facilities to entrepreneurs thus expanding financial opportunities and supporting EA (IEF, 2021). Such an environment fosters competition to deliver the most effective financial channel between investors and entrepreneurs (Boudreaux and Nikolaev, 2019). Raza *et al.* (2019) use ATF from the IEF when looking at entrepreneurial behaviours moderated by FIs for 51 countries over seven years (2001-2008). Fuentelsaz *et al.* (2015) implement ATF as an independent variable (data is obtained from the IEF index) when studying the role of FIs on OME and NME of 65 countries between 2005-2012. Aidis *et al.* (2012) examine EA and the role of institutions via government size and '*market freedom*' (defined as a cluster of variables including ATF) for 47 countries from 1998-2005 using IEF for the institutional variables.

The choice of the IEF is explained succinctly by Nikoleav *et al.* (2018) who commented that there are two main reasons for this:

i) *Free market logic:* Most studies examining EA in a NIT perspective use the free-market logic which is implicit in the concept of EF (Su *et al*., 2017). Free market economies reward effort and creativity with high social status. This encourages entrepreneurs to enter new markets generating profits through risk taking and innovation (Nikolaev *et al.*, 2018). Since OECD nations will have an OME element focus, this logic seems appropriate.

ii) *Literature gap:* The literature links EF to different entrepreneurial outcomes. Bjørnskov and Foss (2016: P.298) understand that much of this literature is still being discovered with previous articles having "…*somewhat arrived at opposite conclusions*". This citation demonstrates that using IEF to examine TEA via an NIT lens may help address the gap.

However, using the IEF index contains some advantages such as:

i) *Variety of measures*: Unlike Hofstede's index or GEM, IEF is concerned with EF but

emphasises a diverse set of dimensions (Keseljevic, 2000). For example, the Fraser Institute and IEF indices attach great importance to institutions which secure PRs and support international activity involving goods and capital. This allows the researcher to explore different measures of freedom and its association with EA.

ii) *Geographic spread and frequency of updates:* It is understood that IEF is one of the most elaborate attempts to quantify EF. In 2020, IEF examined EF for 180 countries where the index was updated annually (IEF, 2021). This is an extensive country list for 193 nations compared to the Fraser Institute (for example) which only contains EF data for 162 countries that was published in 2019 for the year 2017. This shows IEF to be one of the more comprehensive indices available that regularly updates its dimensions for countries.

However, IEF also has some theoretical disadvantages, these include:

i) Statistical validity: Statistical validity appears to be an issue where criticism of the IEF rests on the methodological aspects of the index's construction. In particular, the choice of certain weights of variables as components within the index can be very subjective with no empirical evidence nor theoretical foundation presented (Stiglitz, Sten and Fitouzi, 2009). For example, section 4.4 mentions the fact that certain L.A countries were removed because of inequalities present. Such structural inequalities will not be reflective in the overall scores for countries where economic opportunity (and a lack of access to financial infrastructure) will be lacking in set areas as opposed to others. The estimation of weights for each dimension in the index is equivalent to that of substitution rates which implies a compensatory logic (Munda and Nardo, 2005). Compensability is understood as the existence of trade-offs, i.e., the possibility of offsetting a disadvantage on some dimensions by a sufficiently large advantage on another one. It may be the case that not all dimensions will be equally useful to entrepreneurs within a country (depending on the institutional context).

4.7.4) Control variables

With the dependent and independent variables now explained, the control variables need

to be inspected. The following sections within this Chapter will consider the five control variables being deployed in the thesis. Control variables are ones that are not the main interest to the researcher but are vital to properly understand the relationship between the independent and dependent variables (Allen, 2017). If these variables are not controlled, they can skew the results of a study (Allen, 2017).

Nielsen and Raswant (2018) examine 246 articles from the top five International Business (IB) journals (2012-2015) to understand the implementation of control variables. They comment that researchers need to consider these variables of their effects to avoid a false positive (Type I) error. This is when a false conclusion arises that the dependent variable may have a causal relationship with the independent variables. Future studies may benefit from testing the extent to which controls act similarly across different institutional settings (Neilsen and Raswant, 2018). This thesis will attempt to examine this by emphasising the different informal institutional contexts within OECD countries (see Section 4.4).

4.7.5) Economic development levels (GDP p/c)

The first control is economic development levels. Economic development is measured by GDP p/c divided by the mid-year population in this research (World Bank, 2021). Carree, Van Stel, Thurik, and Wennekers (2007) uncover that the level of economic development explains the quantity of entrepreneurs in each country. They further discover there is a '*U-shaped*' curve relating EA to economic development. The various stages are as follows (Porter *et al*., 2002):

i) *Factor-driven stage:* In this stage, the economy is mainly composed of the agrarian sector. Production and factors (particularly human capital) are deemed proficient at improving productivity and TEA (Martínez-Fierro *et al*., 2016). Countries lack institutional support at this stage.

ii) *Efficiency-driven stage*: Economies of scale are facilitating economic development at this stage. TEA rates decrease as larger ventures hire most of the workers. The productive sectors start to offer more jobs and new ventures declines. Such economies are more productive. Wages and thus economic development levels rise (Martínez-Fierro *et al*.,

2016).

iii) ***Innovation-driven stage:*** In this final stage, the economy is typified by the production of new goods and services (Martínez-Fierro *et al*., 2016). The services industry becomes imperative here and venture size is no longer of importance. In this stage, intent to start a business increase because of the increase in OME present.

However, OME/NME ratios may be more useful metrics, as opposed to GDP p/c, for understanding EA and economic development levels. Countries where entrepreneurship is motivated by perceived economic opportunity, usually have high-income levels (Martínez-Fierro *et al*., 2016). Amorós, Ciravegna, Mandakovic, and Stenholm (2019) understand that economic development is usually associated with higher opportunity costs of starting a venture because it entails higher formal registration processes (e.g., registration fees) and higher wages. This suggests that individuals who choose to become entrepreneurs despite high-level opportunity costs present are likely to do it for opportunity-related reasons and not NME.

There are numerous studies that use GDP p/c (proxy of economic development levels) as a control. Fuentelsaz *et al.* (2019) implement GDP p/c from the World Bank's (WB) database when studying the interactions of formal and informal institutions. They state that GDP p/c may be positively associated with entrepreneurship (Desai, Gompers and Lerner, 2003). Further, Nikolaev *et al.* (2018) use logarithm GDP p/c from the International Monetary Fund's database (IMF) as a control when looking at OME and NME. The rationale for using log functions is based on a statistical perspective, if residuals are skewed (asymmetrically probability distributed) of a variable, implementing the logarithm (log) function can help correct this skewness (Benoit, 2011). Additionally, using log functions can help illustrate magnitude of effects as large percentage changes are displayed asymmetrically. Yousafzai, Saeed and Muffatto (2015) use GDP p/c which is expressed in U.S. dollars from the WB's database when studying NIT pillars and EA for women. Wennekers *et al.* (2007) use GDP p/c as a control using pooled samples for the years 1976, 1990 and 2004 from the OECD database.

The thesis follows Wennekers et al. (2007) and uses the OECD database for GDP p/c.

There are several benefits of using the OECD database, these include:

i) *Accessibility:* The OECD (2020) comment that a contribution is the open data toolset to support particular policy goals in certain areas (e.g., public sector integrity and anti-corruption), which allows individuals a better understanding of various institutions that may need to be examined. The OECD (2015) recommendations report ensures that the data within indices are open, transparent and accessible to the public allowing cross-country comparisons.

ii) *Real-time accuracy and updates:* A new innovative feature the OECD is allowing the format of national open government data portals as open platforms which are used for collaboration and innovation with the public (OECD, 2020). Users can now publish their own information for particular datasets on central/federal open data portals in nine OECD countries (France, Finland, Estonia, Austria, Greece, Portugal, the Czech Republic, Sweden and Luxembourg). They can contribute to open data and combine data that could generate other types of innovative or information resources. This allows for an increased understanding of the value of user engagement and feedback improving both the quality and quantity of data available (OECD, 2020).

However, the OECD database has some limitations, these include:

i) *Data accuracy:* Despite the significant advantage mentioned earlier (point ii, above), it is rare to have OECD analysts conduct assessments to evaluate whether public sector organisations are only publishing data that do not damage privacy, security, confidentiality or intellectual property (OECD, 2020). For example, each publishing federal authority in Austria conducts an internal assessment to ensure that data published as open data do not damage any of the elements mentioned above. However, these assessments are not available online or shared with the public. That data audit transparency may overall influence the quality and type of data that users will share, potentially jeopardising the inferences and analysis researchers will conduct.

4.7.6) Age composition (25-49 years old) as a proportion of total population

Additionally, a demographic variable the thesis controls for is age composition of 25-49 years old as a proportion of a country's population. Brieger, Bäro, Criaco and Terjesen (2021) understand that when individuals go from mid-life to old age, they shift their value orientation from "*instrumental*" (e.g., financial security) to "*terminal*" values (e.g., social aims) (Kanfer and Ackerman, 2004). Blanchflower, Oswald and Stutzer (2001) comment that older people are more likely to be entrepreneurs. However, younger people prefer being an entrepreneur. Prior research indicates that people in the middle-age demographics have the highest proportion of business ownership (Storey, 1994). In many countries, start-up rates of nascent entrepreneurship are most prevalent in the 25-34 age group. Other research indicates a trend towards entrepreneurs being a younger age is also noticeable (e.g., Delmar and Davidsson, 2000). Therefore, ageing of the population in most developed countries indicates a risk to the future advancement of EA (Wennekers *et al*., 2007).

Various studies use age as a control variable. Raza *et al.* (2019) place age as a control variable when understanding the relationship between entrepreneurial willingness and entrepreneurial behaviours across countries and FIs moderation. Wennekers *et al.* (2007) use the 25-49 years old proportion of the population aged 25-64 in their study on UA and EA. They obtain their data from the U.S. Census Bureau. Sobel, Clark and Lee (2007) use median age as a control when examining the relationship of EA in OECD countries, the data is obtained from CIA world factbook.

This thesis uses the World Bank database for the ratio of 25-49 year-olds as a proportion of total population.

The World Bank database has several benefits, these are:

i) *Amount of dimensions available*: The World Bank database has a wide range of dimensions (indicators) covering a wide array of FIs ranging from charges for the use of IP receipts, labour force statistics to ATF indicators (World Bank, 2022). In total, there are 1,600 indicators for 217 economies with a time range of approximately 50 years (World

Bank, 2022). This will allow the researcher to gain exposure and potentially analyse a very rich and diverse number of institutional measures.

ii) *Comparative analytical tools:* Asides from a large array of dimensions available to a researcher, the World Bank database allows the user to visualise the dimensions and compare in a cross-country context. Examining any indicator allows the user to visualise in three different ways, these are line, bar graphs and map (shading scale). Having different visualisation tools makes it easier for the researcher to effectively illustrate any cross-country comparisons for the particular institution in question (World Bank, 2022).

However, this is not to say that there are no issues with the World Bank Database:

i) *Information quality:* The general data dissemination system (GDDS) is a framework used for assessing national statistical systems and promoting data dissemination and effectiveness and has been developed by the International Monetary Fund (IMF), in close collaboration with the World Bank for their dimensions (World Bank, 2022). Reviews concerning the assessment of data quality mention that a major limitation is the fact that monitoring of the information needs to go beyond the disclosure standards of the information to be useful (IMF, 2001). The focus is emphasised on solely defining the information compiled should be further complimented by a greater understanding of the specific mechanisms in place to reinforce the quality of information being released (IMF, 2001).

4.7.7) Female labour participation rates

The next control variable the thesis will implement is female labour participation rates. This is understood as the proportion of female labour force (15-64 years old) divided by the total working-age population (OECD,2021). The literature has shown that males are more active in EA than females (Adachi and Hisada, 2017) and males attain better performance and create more jobs overall (Bosma, van Praag, Thurik and de Wit, 2004). Gender has a strong influence on EA as females tend to exhibit lower rates of entrepreneurial behaviour compared to males (Raza *et al.*, 2019), although the difference is noticeable across nations (Verheul, Stel and Thurik, 2006). Econometric evaluations of a Swedish dataset of individual EA has revealed a '*pure*' gender effect after addressing

differences (e.g., education) (Delmar and Davidsson, 2000). Wennekers *et al*. (2007) conclude that a higher labour participation rate of females will mean a lower overall EA within a country.

Several studies implement female labour participation rates as a control variable. Gimenez-Jimenez, Calabrò and Urbano (2020) implement the female unemployment rate (proxy for labour participation) when studying the extent informal institutions influence the relationship between FIs and the likelihood of female EA. They use the International Labour Organisation (ILO) data. Raza *et al*. (2019) implemented male and female control variables using GEM's database looking at entrepreneurial readiness and EA. Additionally, Fuentelsaz *et al*. (2019) use the WB's database to account for the female population percentage within a country when examining OME and FIs (moderated by informal institutions) association with EA. Williams and Horodnic (2016) place gender (both separately) as a control variable via the results of a special Eurobarometer survey involving 27,563 face-to-face interviews conducted in April and May 2013 across the 28 member states of the European Union (E.U.-28) when noting the cross-country variation of SME's and the informal economy. Wennekers *et al*. (2007) set female labour participation using the OECD labour force statistics examining UA's association with EA in 23 OECD countries.

The thesis will follow Wennekers et al. (2007) and use the OECD labour statistics. An evaluation of the OECD database has been covered earlier (Section 4.7.5 on P.136).

4.7.8) Gross enrolment education rates

Further, gross enrolment rates is the third control implemented in the thesis. Education participation rates is defined for both genders as number of students at a given level of education (irrespective of age) enrolled in primary, secondary and tertiary education as a percentage of the population (WB, 2021). Fuentelsaz *et al*. (2019) mention that the allocation of resources toward high-growth EA is positively related to education (Bowen and De Clercq, 2008). Hechavarría (2016) states that regardless of circumstances, entrepreneurs are highly educated and is fundamental. Simón-Moya *et al.* (2014) explain that research establish education facilitates recognizing opportunities in the market, specifically education in entrepreneurship (e.g., Levie and Autio, 2008; Shane, 2000).

Levie and Autio (2008) further reveal that education has a cultural influence on students' behaviour which acts as a cultural factor that drives EA. In such settings entrepreneurs set more trust in their abilities and skills to undertake EA (De Clercq and Arenius, 2006). Moreover, an individual's level of education is positively associated with the possibility of becoming an entrepreneur (Langowitz and Minniti, 2007).

Countless studies implement gross education enrolment rates as control variables. Brieger *et al.* (2021) use GEM Adult Population Survey (APS) data from approximately 2000 adults to 21 OECD countries that is categorised depending on the entrepreneur's level of education. Nikolaev *et al*. (2018) additionally pick 14 control variables for which education is a control variable under the domain of '*human capital'* from when looking at OME by schooling and returns to education years from the Penn World Table (cited by Feenstra, Inklaar and Timmer, 2015). Hechavarría (2016) controls tertiary education rates of a population for 53 countries using data from 2009 from the GEM database. Hessels and Terjesen (2010) include the education of an entrepreneur with random sample of 1,665 Dutch SMEs participating in an Internet survey when noting resource dependency and institutional theory to explain choices facing SMEs exports. Finally, Wennekers *et al.* (2007) incorporate educational enrolment rates for both secondary and tertiary education. They do this for 23 OECD countries using the WB's education database.

The author uses the World Bank database for gross enrolment education rates in the OECD nations annually. An evaluation of the World Bank database is covered in Section 4.7.6 on P.139.

4.7.9) Population density

The last control variable the thesis will utilise is population density (P.Dens). P.Dens is understood to be the people living in an area. This is usually measured as people per square kilometre within a country (UN, 2021). Wennekers *et al.* (2007) explain that that every area needs a minimum standard of infrastructure (e.g., facilities in retail trade). Therefore, less densely populated areas will have a sparse infrastructure. Hechavarría (2016) reinforces this concept and concludes that higher P.Dens is significantly related to the rate of EA for an economy (Reynolds *et al*., 1994). Meanwhile, urban areas will allow conditions of economies of scale through which smaller firms are

disproportionately impacted (Bais, van der Hoeven and Verhoeven, 1995). Although, infrastructure and other supply side factors in urban areas (higher P.Dens) are beneficial to nascent EA in industries (Audretsch and Keilbach, 2004).

Numerous studies have utilised P.Dens as a control variable. Raza *et al.* (2019) implement the size of the country's population as a control variable which has been obtained from the Political Risk Services (PRS) index. They study 377,356 observations for 51 countries (2001-2008). Autio and Fu (2015) use P.Dens of established entrepreneurs (ventures that are more than 42 months old) to control for the domestic industry structure when studying formal and informal EA across 18 countries in the Asia Pacific region (2001–2010). This P.Dens measure is taken from GEM. Further, Autio *et al.* (2013) use population size as a proxy of the size for domestic markets. The control data is taken from IMF and EuroStat indices to explore effects of national cultural practices (via GLOBE data) on entrepreneurial behaviours by individuals from 42 countries (2005–2008). Sobel (2008) uses P.Dens values obtained from the U.S. Census Bureau when experimenting the association of inputs, FIs and EA using cross-sectional data from 48 states within the U.S. from 1995-2002. Wennekers *et al.* (2007) look at data for 23 OECD countries from 1976-2004 and uses P.Dens as a control variable. Data is obtained from the OECD Labour Force Statistics. The various citations above demonstrate that P.Dens has no dominant index used.

This thesis uses data from the United Nations World Population Prospects Index for P.Dens as a control.

The United National World Population Prospects Index has several benefits, these are understood as:

i) *Dimension composition*: A big advantage is the fact that analysts collect available data from a wide range of sources. These can range from census surveys to vital and population registers, analytical reports and other sources for a given country. In many cases, estimates derived from different sources or using different methods are varied (United Nations, 2022). For example, for the population demographics, approximately 23 various sources of data are used ranging from national/regional statistical offices to

micro-data archives (e.g., Demographic and health surveys (DHS) data) (United Nations, 2022).

ii) *Timeframe available for analysis:* The United Nations World Population Prospects Index covers a wide timeframe ranging from 1951 up to 2021 (United Nations, 2022). This is nine years longer than both the World Bank and OECD databases (both of which start at 1960). This provides a large source of data for panel data and time series analysis and has the greatest sample of years to study for researchers.

However, the Index has several limitations, these include:

i) *Quantity and quality of dimensions:* Despite the availability of data for the vast majority of countries, the quantity and consistency of data available for nations covering the entire estimation period from 1950-2021 varies greatly across countries (United Nations, 2022). An example given is the child mortality dimension, most of the information is largely up to date. Examining countries with 1,000 inhabitants (per square km) or more in 2021 (approximately 236 nations and areas), the most recent available child mortality data refers to 2017 or even earlier for another 195 countries (2012-2016). This is further explored by the United Nations who state that six locations had no child mortality data at all from 1950-2021 (Bonaire, Saint Eustatius and Saba; Guernsey, Jersey, Saint Helena, Tokelau, Western Sahara) (United Nations, 2022). This example demonstrates that certain dimensions are lacking any information altogether.

ii) *Time lags:* Another limitation noted in the index was certain dimensions were left incomplete in recent years due to the Covid-19 pandemic. Data surrounding mortality levels and patterns experienced during the pandemic were left incomplete (United Nations, 2022). Additionally, uncertainty surrounding the impact of the pandemic globally has meant estimates of the '*excess deaths*' from Covid indicated sizable increases in deaths associated with the virus, including those directly attributable to the virus itself. A complete understanding of these excess deaths is yet to be fully understood due to information time lags (UN News, 2022).

The variables this thesis will use have now been defined and explored from a literature

perspective. They have also been critically evaluated displaying the indices' strengths and weaknesses. The table below summarises all the variables mentioned in this Chapter. The next step is to understand the associations amongst these variables and test the hypotheses set out in Chapter 3.

Variable	**Variable type and description**	**Source**
1) *Dependent variable:* TEA	(Continuous variable) The percentage of adult population (18–64 years of age) within each nation that is either currently engaged in the process of creating a new business venture (GEM, 2021).	GEM (2021)
2) *Independent variables:* Informal Institutions (National Culture)	(Continuous variable, score out of 100) Understood as the shared motives, values, meanings of significant events that result from common experiences of members of transmitted across generations (Hofstede, 2011).	Hofstede's Index (2021)
Formal Institutions (FIs)	(Continuous variable, score out of 100) These institutions (e.g., regulations) comprise a part of the taken-for-granted rules that guide behaviour (North, 1990).	IEF (2021)
Property Rights (PRs)	Ability of individuals to accumulate private property and wealth (Kuckertz *et al.*, 2016).	IEF (2021)

Access to Finance (ATF)	Efficient and accessible formal financial system (IEF, 2021).	IEF (2021)
3) *<u>Control variables:</u>* GDP per capita (p/c)	(Continuous variable) GDP per capita is GDP divided by the mid-year population (World Bank, 2021).	OECD Database (2021)
Age composition (25-49 years old)	(Continuous variable) Age composition of 25-49 years old as a proportion (percentage) of a country's population.	World Bank (2021)
Female Labour Participation Rates	(Continuous variable) The proportion of female labour force (15-64 years old) divided by the total working-age population (OECD,2021).	OECD Labour Statistics (2021)
Gross Enrolment Rates	(Continuous variable) Both genders as number of students at a given level of education (irrespective of age)	World Bank (2021)

	enrolled in primary, secondary and tertiary education as a percentage of the population (WB, 2021).	
Population Density	(Count variable) The amount of people living in an area (usually measured as people per square km) within a country (UN, 2021)	UN World Population Prospects Index (2021)

Table 5: Summary of variables, variable type, description and sources of data used in the thesis. *Source: Author*.

Chapter 5: Results

The results of the thesis will be analysed in this Chapter. First, the hypotheses proposed in Chapter 3 will be restated. The model design will examine the multiple regression models, first with the variables involved. The model parameters, assumptions and interpretation will be explained. Subsequently, the descriptive statistics and the correlation table are both explained followed by the first six hypotheses will be examined and then the interaction models will be explained. The following 12 hypotheses (informal institutions moderated by FIs) will be examined. ANOVA (analysis of variance) type II tests and nested models are then explored to examine the significance of the variables. Lastly, robustness checks will be explored, checking the validity of the models and results.

5.1) Hypotheses revisited

In Chapter 3, 18 hypotheses are proposed. The three groups of hypotheses are:

i) Informal institutions and their associations with TEA

ii) Informal institutions moderated by PRs and their associations with TEA

iii) Informal institutions moderated by ATF and their associations with TEA.

Table 6 (*below*) recaps the hypotheses developed in Chapter 3. The justification for the hypotheses is also explained in Chapter 3.

Hypotheses Category	Hypotheses	Moderated Hypotheses
1) Informal institutions (main associations with TEA)		2) Informal institutions (moderated by PRs) associations with TEA H7-12 all hypothesise that effective PRs will positively moderate H1-H6
PD and TEA	H1: PD is negatively associated with TEA	3) Informal institutions (moderated by ATF) associations with TEA H13- 18 all hypothesise that easier ATF will positively moderate H1-H6
IND and TEA	H2: IND is positively associated with TEA	
MAS and TEA	H3: MAS is positively associated with TEA	
UA and TEA	H4: UA is negatively associated with TEA	
LTO and TEA	H5: LTO is positively associated with TEA	
IVR and TEA	H6: IVR is positively associated with TEA	

Table 6: Hypotheses recap from Chapter 3. *Source: Author.*

5.2) Model design

The research question, the hypotheses and variables that the thesis will use have been stated previously. An evaluation of using a multivariable regression analysis has also been discussed in the previous Chapter. Now the estimations of the equation model itself will be examined. The thesis will follow the general equation format of:

$$Y = \beta X_n (*\beta Y_n) + \varepsilon$$

Where:

Y= Dependent variable (TEA)

βx_n= Coefficient of the n^{th} predictor of the independent variable (Informal institutions)

βY_n = Coefficient of the n^{th} predictor of the moderating independent variable (FIs)

ε= Error term (difference between the predicted and the observed value of Y for the n^{th} observation)

The thesis examines two models:

i) TEA ~ Informal institutions+ Control variables

*ii) TEA ~ Informal institutions(*PRs) (*ATF) + Controls*

5.2.1) Model context

In this thesis, an unbalanced (where data is not collected annually) panel data is used examining TEA and its association with informal institutions (moderated by FIs) in 32 OECD countries from 2010-2020. A fixed-effects model will be used in the thesis. Fixed-effects models are a classification of statistical regressions in which the values of the independent variables are assumed to be constant (Salkind, 2010). Only the dependent variable changes in response to the levels of independent variables (Salkind, 2010). A common research setting assumes a fixed-effects model where analysis is conducted under conditions present in similar studies. If the study is to be replicated, the same analysis levels of independent variables need to be used (Montgomery, 2001). Hence, results are valid only at the levels that are explicitly studied, and no extrapolation can be made to levels that are not explicitly investigated in the study.

Theoretical justification for using a fixed-effects model in the thesis may be proposed, the same justification used for data imputation. Nikoleav *et al*. (2018) explain that informal institutions are stable and take long periods of time before any incremental changes arise. This reinforces the point where a fixed-effect models is appropriate as the informal institution (main independent variable) values remain constant in the period examined. Several studies implement a fixed-effects model; Fuentelsaz *et al.* (2019) examine 84 countries observations using a fixed-effects model. Nikoleav *et al.* (2018) use a fixed-effects model when looking at OME and NME in 73 countries. Aidis *et al.* (2012) implement a fixed-effects model when studying the role of institutional characteristics in determining EA, the study examines 47 countries.

The thesis uses a forced entry regression method. This is where all the independent variables are forced simultaneously into the model (Field *et al*., 2012). This is adequate, as Williamson (2000) in Section 2.11 (P.83) emphasises that informal institutions are seen as the foundation of institutions and economic action (and by proxy TEA). Therefore, all national culture dimensions are given equal weighting with no dimension denoted as being more significant than others. In this method, no decision about the order in which the variables are entered into the model is made. Studenmund and Cassidy (1978) believe that this is the only appropriate method for theory testing because other methods (e.g., stepwise regression, where each variable is added in succession) might be influenced by random variation in the data and will not give the same results if retested.

5.2.2) Model estimation (Ordinary Least Squares)

The dependent variable (TEA) is a continuous variable. In this context, a continuous variable is one that can take on any value and is divisible (can be broken down into a non-integer whole number on the measurement scale being used) (Field, Miles and Field, 2012). The variable TEA can be broken into decimal percentages demonstrating this. For example, Austria has a raw TEA score of 6.2% for 2020 in the GEM database.

The Ordinary Least Squares (OLS) model is a technique of finding the unknown parameters in a linear regression model. The OLS model generates a line that best fits the

data (finding a line that goes through as many of the data points as possible). This *'line of best fit'* is realised by establishing which line results in the smallest amount of difference between the observed data points and the line itself, this model is generated by the statistical programme (Field *et al*., 2012).

An OLS model contains several assumptions including:

i) Normal distribution: OLS does require that the error terms follow a normal distribution to produce unbiased estimates (Moutinho and Hutcheson, 2011). However, fulfilling this assumption allows the researcher to perform statistical hypothesis examinations and produce reliable confidence intervals (Hayes and Matthes, 2009).

ii) No correlation of independent variables with error terms: If an independent variable is correlated with the error term, the independent variable may be able to predict the error term, which means that the error term does not represent unpredictable random errors. When this correlation exists, it is understood as endogeneity and shows '*omitted variable bias'*. This can influence the coefficient (β) estimate (Moutinho and Hutcheson, 2011).

iii) *Linear regression model:* This assumption focuses the functional structure of the model. In statistics, a regression model is linear when all terms in the model are either the constant or a parameter multiplied by an independent variable (Frost, 2022). These models take the form of $Y = \beta X_n (*\beta Y_n) + \varepsilon$ (mentioned above).

5.2.3) Logarithmic transformation of dependent variable

A feature to consider with the dependent variable is the data distribution. Skewness is the measure of how much the probability distribution of a variable deviates from the normal distribution (Dismuke and Lindrooth, 2006). This is important as linear models work on the assumption of distribution of the dependent variable and independent variable should be similar implying a normal distribution (Field *et al.*, 2012). Therefore, knowing about the skewness of data helps a researcher in creating accurate linear regression models.

Looking at the dependent variable data point distribution (*below*), it can be noticed that a positive skew is present. This is where a higher number of data points have low values

(Lawrence and Arthur, 2019). In the thesis's context, TEA rates are low for OECD nations. Skewness tells the researcher about the direction of outliers. Figure 13 illustrates that a positive skew will mean most of the outliers are present on the left side of the distribution graph (Lawrence, 2019).

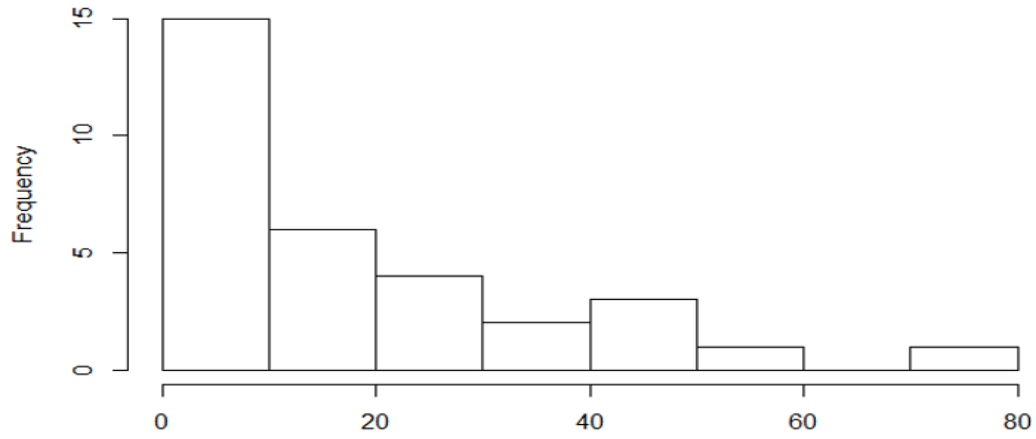


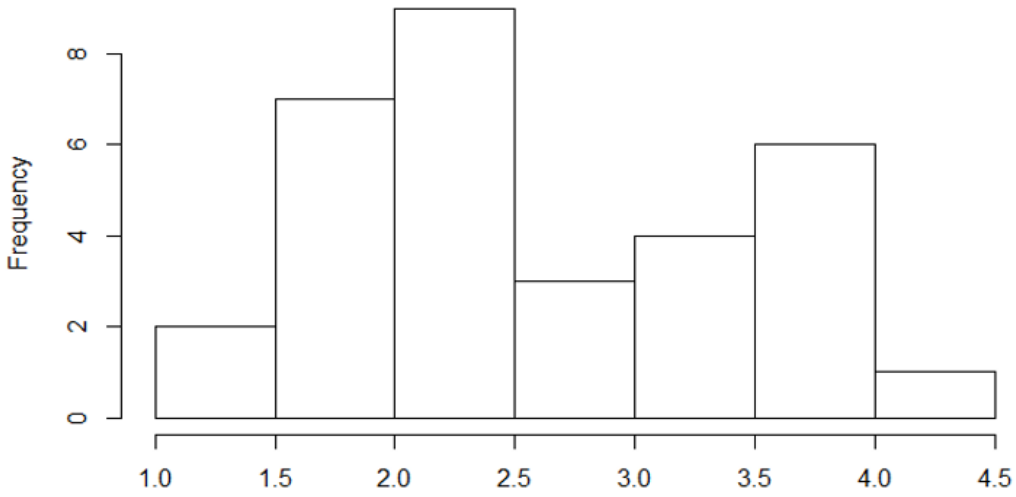
Figure 13: TEA data distribution. *Source: Author.*

To correct for the positive skew and have a normal distribution for the dependent variable a logarithm (log) function can be used. The rationale for using a log function can help correct skewness (Benoit, 2011). Also, using log functions can help illustrate magnitude of effects as large percentage changes are displayed asymmetrically and can be corrected using the log function (Benoit, 2011). Using the log function allows for a more normal distribution as can be seen in Figure 14 (*below*). In this figure, a more normal distribution is seen with the transformed dependent variable with the frequency of the TEA percentages now in the centre of the graph as opposed to a positive skew with the untransformed dependent variable. In regression analysis the logs of variables are regularly taken, not necessarily for achieving a normal distribution of the predictors themselves but also for interpretability of the models (and variables) overall (Field *et al*., 2012).

However, utilising a log transformation also means that the researcher must be wary of the interpretations arising from it. Feng, Wang, Lu, Chen, He, Lu and Tu (2014) comment that data arising from research does not approximate the log-normal distribution. Therefore, applying a log transformation might not reduce the skewness of the distribution. In some instances, applying the transformation can make the distribution

more skewed than with the original data (Feng *et al*., 2014). Also, caution should be drawn when inferring data from a log transformation as the transformation should make additive and linear models make more sense (Gelman and Nolan, 2017). A multiplicative model on the original scale corresponds to an additive model on the log scale but the changes will not be proportional as the log transformation is particularly relevant when the data vary a lot on the relative scale. For example, increasing prices by 2% has a much different monetary effect for a £10 item than a £1000 item (Gelman and Nolan, 2017). Indeed, the thesis dataset has some wide ranges of values for both the dependent (TEA) and independent variables (national culture dimensions).

Several studies examine TEA applied with a log transformation within an institutional research context, Álvarez and Urbano (2011) use a log transformation for TEA when analysing the influence of environmental influences on set FIs (e.g., political stability, corruption) within L.A. countries in a panel dataset from 2004-2009. Furthermore, Naudé, Gries, Wood and Meintjies (2008) implement a log function for TEA when examining venture activity in South Africa for determinants of venture rates across the country, particularly examining the role of ATF and its association with TEA across 2003 and 2004. These citations illustrate a TEA (log) precedence within the literature.



(Log transformed) TEA percentage rates in OECD countries

Figure 14: Transformed dependent variable. *Source: Author.*

The interpretation of the results will be adjusted to the fact that a log transformation was used. In a non-transformed multivariable regression model, this would mean that an increase in 1 unit of the independent (*X*) variable would result in a change of the magnitude of x units (coefficient of X variable) of TEA. For example, if the PD coefficient is 0.4, then a 1% increase in PD will result in a change of 0.4% in TEA.

With a log transformation, the underlying model is:

$$Ln(Y) = \beta X_n (*\beta Y_n) + \varepsilon.$$

This can be expressed as $Y=\exp (\beta X_n (*\beta Y_n) + \varepsilon)$. Therefore, the relationship between Y and X variable is not additive with a log form. When the dependent or independent variable is log-transformed, the interpretation of the coefficient is exponentiated, subtract 1 from this number, and multiply by 100. This gives the percentage increase (or decrease) for the dependent variable for every 1-unit increase in the independent variable. For example, if the PD coefficient is 0.198. then the interpretation would be: $(\exp(0.198) - 1) * 100 = 21.9\%$. For every 1-unit increase in PD, TEA increases by about 22%.

5.3) Descriptive statistics and correlation matrix

Descriptions of all variables is presented in the previous Chapter (Section 4.7), and descriptive statistics are summarised for the values of variables in Table 7 (P.292) see Appendix). The mean TEA taking place in the 32 OECD countries sample used in this thesis is 19% with a maximum of 72% and minimum of 3.7%. The SD of 17% illustrates that the data points for the countries are widely spread around the mean of 19%. Examining the six dimensions of national culture, the average values are situated around the centre of the scale, with the exception UA, where the OECD nations (on average) have a high UA threshold score of 66. The '*min*' and '*max*' values range massively for the six dimensions with MAS values going as low as 5 and as high as 100. Interestingly, both moderating FIs (PRs and ATF) have high mean values, which shows a high quality of regulations applied to FIs in OECD nations. This high standard is further reinforced by low SD values (10.3 and 13.6 respectively) demonstrating low volatility around average PRs and ATF values. Finally, the control variables all show various values: the '*age composition*' variable has the lowest SD of all the control variables with the mean, min and max values all within a similar range. The greatest range is seen with the '*GDP per capita'* variable with a SD of $15,720 USD and min and max values of $24,483 and $104,189.

The correlation matrix is also present in the Appendix (see table 8 on P.296). This matrix allows the researcher to understand the correlations between variables and summarises the dataset present (Field *et al.*, 2012). A Pearson correlation matrix serves as a regression analysis tool to determine issues of multicollinearity (along with the variance inflation factor (VIF) toolset covered later in Section 5.7 on P.173) and therefore help interpret the results of the regression (Thomson, Kim, Aloe and Becker, 2017). Justification for a Pearson correlation matrix is explained in the Appendix.

A difference is noted in the literature where a correlation matrix can be used to identify the correlation between a group of independent variables, if the correlation generates high values then the VIF test may be used to avoid a bias of multicollinearity (Gaie, Najar, Maalaoui, Kraus and El-Tarabishy, 2021). This can help to identify the correlation of one particular variable with a group of other independent variables. Hence, it is preferred to use VIF for greater clarification of a particular variable (TEA) (Thomson *et al*., 2017). Indeed, looking at the correlation values ('*r'*), most variables demonstrate a medium

correlation effect demonstrating suitability for the study. However, when looking at the control variables, some of the high '*r*' effect sizes (0.5 and above) are noted amongst some of the independent and control variables (e.g., PRs and female labour participation rates (r=0.52)).

Issues of multicollinearity are observed as a general issue in panel data analysis when looking at institutional theory and entrepreneurship. Gaie *et al*. (2021) explain when examining ATF developments association with TEA in 22 European countries from 2009-2017 that issues of unobserved individual effects, serial correlation and multicollinearity are prominent in such studies which can lead to biased estimates and interpretations. They study variables which include culture (values obtained from GEM), credit/GDP ratios, GDP p/c and the IEF index. Similarly, Yoon *et al*. (2018) detect issues of multicollinearity when noting moderations of scientific and technical knowledge. They look at the knowledge-nascent TEA association examining moderating associations of several institutional variables. These include legal systems (and PRs), sound ATF and GDP p/c. They mention that (P.247) *"…Despite some correlations, the value of VIFs for all the variables …do not exhibit multicollinearity"*. Aparicio *et al*. (2016) additionally conclude when exploring institutional factors examining OME and TEA using unbalanced panel data in 43 countries from 2004—2012 which include variables such as ATF coverage (using the WB's business index), corruption and implementing GDP p/c as a control that some correlations among independent variables are present. They then test for the problem of multicollinearity through VIF computations. ***The VIF test (shown in Section 5.7 on P.173) demonstrates that this check is fulfilled, eliminating multicollinearity bias concerns.***

Morgan and Winship (2015) comment in a social science research context, when selecting relevant variables for a study, researchers should not restrict themselves to set variables within a particular dataset but include all the variables that the theory suggests which influence the dependent variable of interest. This should reflect on how adding that specific control variable will influence the balance of factors that affect the dependent variable (Morgan and Winship, 2015). This issue is further mentioned by Nikolaev *et al*. (2018: P.253) who notes that in practice, the set of controls implemented do not correspond with precedented theoretical explanations on TEA in an institutional context. When only one variable is reported, these assumptions lead to '*dogmatic priors'* that the

data must be analysed with only a particular specification set of variables (Leamer, 2008). All the control variables selected in this study have been evaluated as well as having been justified from a theoretical context with literature backing discussing their relevance for inclusion in the models themselves (see Sections 4.7.4-4.7.9).

5.4) Empirical results

H1-H6 are all direct associations (without any moderation) whilst H7-18 include moderators. The results for both models are illustrated in Table 9 (*below*).

Variables	Model 1 (direct associations)	Model 2 (PR and ATF interaction)
Intercept	-4.3 [7.13]	144.1 [37.22]
PD	H1: 0.05*[0.02]	-0.30. [0.13] H7: 0.01* [0.003] H13: -0.009* [0.003]
IND	H2: 0.06*[0.02]	-0.53. [0.22] H8: 0.012* [0.005] H14: -0.007. [0.003]
MAS	H3: -0.04*[0.02]	0.15 [0.09] H9: -0.004. [0.002] H15: 0.003* [0.001]
UA	H4: -0.03*[0.01]	-0.78* [0.23] H10: 0.009* [0.003] H16: -0.0003 [0.002]
LTO	H5: -0.06**[0.02]	-0.69** [0.13] H11: 0.014** [0.003] H17: -0.006* [0.002]
IVR	H6: 0.07**[0.02]	-0.47* [0.16] H12: 0.015*[0.004] H18: -0.009* [0.003]
PRs		-3.05* [0.94]
ATF		1.42* [0.58]

Age (25-49)	0.3 . [0.2]	0.33 [0.19]
Female labour participation rates	-0.07**[0.02]	-0.18 [0.013]
GDP p/c	-0.00006*[0.00002]	-0.00003 [0.00001]
Gross enrolment rates	-0.03[0.02]	0.04* [0.013]
Population Density	0.002[0.002]	-0.001 [0.001]
R^2	0.54	0.88
Adjusted R^2	0.51	0.81

Key:

[ ]= Robust standard errors *= 95% significance level ***= 99.9% significance level

. = 90% significance level **= 99% significance level

Green = Hypothesis supported Red= Hypothesis rejected

Table 9: Estimation Results. *Source: Author*.

Model 1 in the table above displays coefficients, significance levels and standard error values for the variables displayed. The coefficients referred to are estimates of the unknown parameters that describe the relationship between the independent and independent variables (Field *et al.*, 2012). All the values are rounded to 2 significant figures after the decimal point (dp).

Statistical significance levels determine whether the results are likely to be explicable by chance alone (Lykken, 1968). Statistical hypothesis testing is the method by which a researcher makes a judgement regarding this. The statistical programme provides a p-value which examines the level of significance. A p-value of 5% (significance of 95%) or lower is often considered to be statistically significant (Lykken, 1968). A p-value of 5%

means that this means that if the regression was conducted on a random sample, the mean for TEA values could apply on 95% of the population parameter and have a 5% chance of the result occurring where there is no actual relationship between TEA and the national culture dimensions (Field *et al*., 2012).A significant value rejects the null hypothesis (the independent variables have no association with the dependent variable) and stresses a more systematic explanation opposed to chance. A researcher cannot accept the null hypothesis, they can only reject the null one or fail to reject it.

Standard errors refer to the standard deviation of the data points in a sample's mean value (Field *et al*., 2012). It is an indicator of how representative the sample is of the population. A larger standard error (relative to the sample mean) will imply high variability between the mean of the different data points and thus the sample may not be representative of the population (Field *et al*., 2012). Lower standard error values compared to the mean will that most of the sample is like the population mean and is therefore more representative of the population being examined.

Finally, the R^2 and adjusted R^2 values are examined. R^2 refers to the measure of the amount of variability present in the dependent variable that is explained by the independent variables in the regression model (Field *et al*., 2012). Meanwhile, adjusted R^2 is a version of R^2 that has been adjusted for the number of variables in the model (Field *et al*., 2012).

The adjusted R^2 increases when the new term improves the model more than would be expected by chance and decreases when a variable improves the model by less than expected (Woolridge, 1991). Typically, the adjusted R^2 is positive and is always lower than the R^2. Adding more independent variables or predictors to a regression model tends to increase the R^2 value, which incentivises researchers to add even more variables. This is called '*overfitting*' and might return a questionable high R^2 value (Woolridge, 1991). Adjusted R^2 is used to determine how reliable the correlation is and how much it is determined by additional independent variables (Field *et al*., 2012).

Generally, Model 1 illustrates different coefficient signs with all the national culture dimensions significant at different levels. Similarly, the standard error values appear to be much lower than the sample mean for the variables. This would indicate that the data

points are more representative of the 32 OECD nations being examined. The R^2 and adjusted R^2 appear to explain that approximately just over half of all the variability present in the model is explained by informal institution dimensions solely. The adjusted R^2 only drops below this value slightly, meaning that the informal institutional dimensions all contribute significantly to explaining TEA since generally, the more non-significant variables you add into the model, the gap between R^2 and adjusted R^2 should increase (Field *et al*., 2012).

Findings are now considered in three categories in relation to findings elsewhere in the prior lit: consistent, inconsistent and novel findings.

5.4.1) Consistent findings

This first category reports findings consistent with the prior literature. H2 appears to be supported where a unit increase in IND appears to increase TEA by 6% with results significant at the 95% level. Next, H4 appears to be supported where a unit increase in UA may reduce TEA levels by 3%. Finally, H6 looks to be supported where an increase in IVR appears to increase TEA by roughly 7%. This result is highly significant at the 99% level.

5.4.2) Inconsistent findings

Next, the finding inconsistent with the literature is seen in H3 where a unit increase in MAS may result in a 4% decrease in TEA. In this instance a country with low MAS (more femininity) may increase TEA.

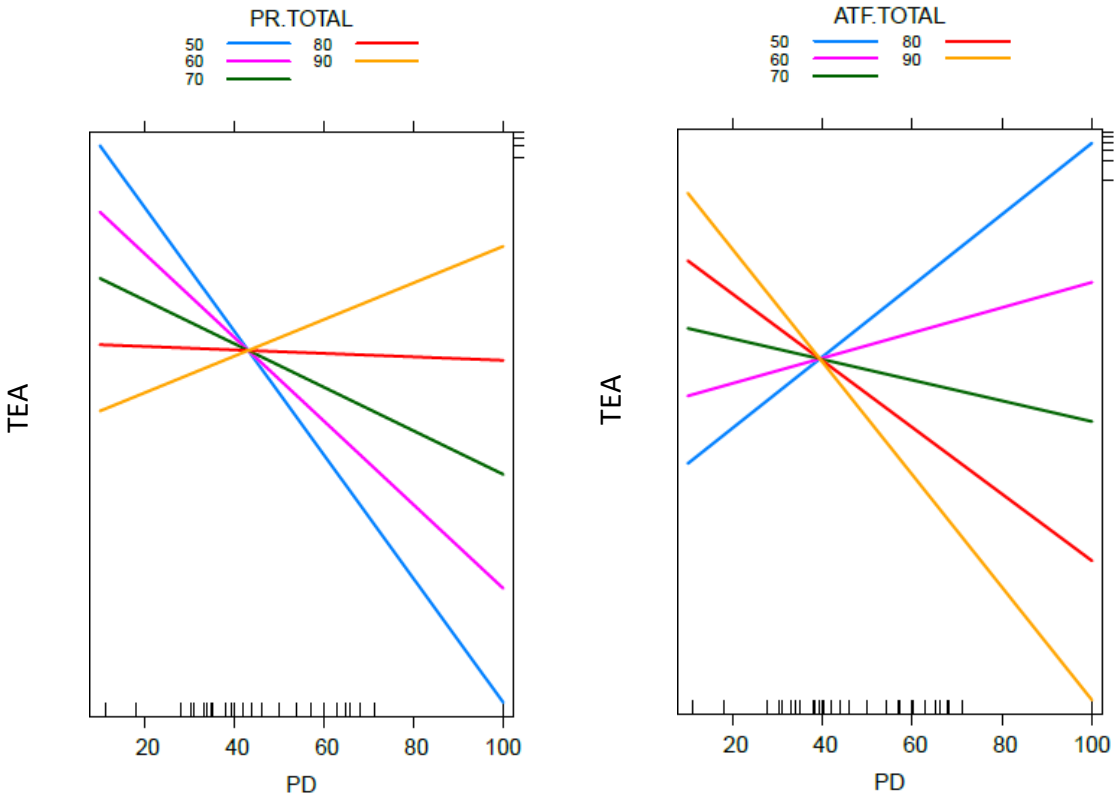
5.4.3) Novel findings

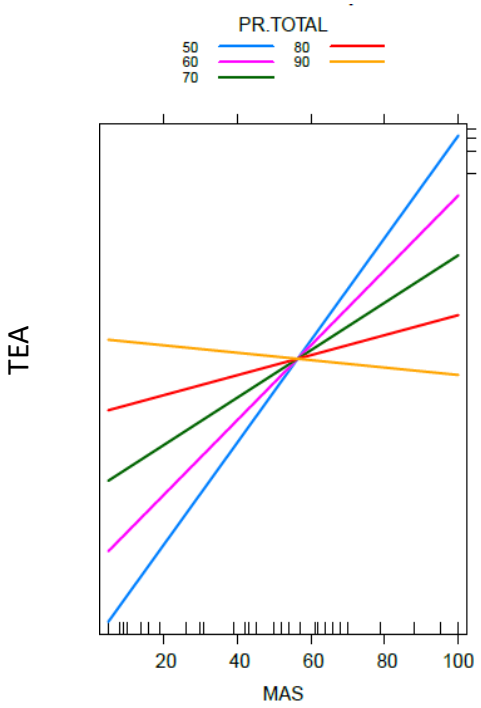
The last category compromises the novel findings; H1 reveals a surprising result where the PD coefficient appears to demonstrate a positive significant association with TEA. This coefficient has a small value (approximately 5%). Finally, H5 generates a novel finding where a unit increase in LTO may reduce TEA by approximately 6%. This would suggest a low LTO orientation prominent within the OECD nation sample. The results appear to be significant for H5 at the 99% significance level meaning that there is a 1% chance of the results occurring due to chance.

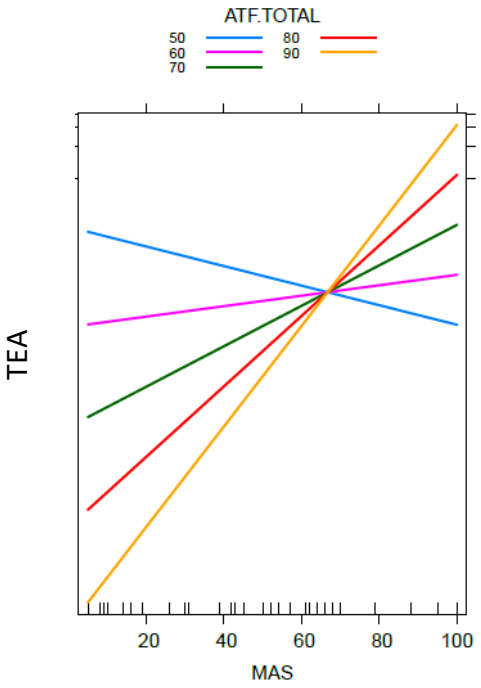
5.5) Interaction models

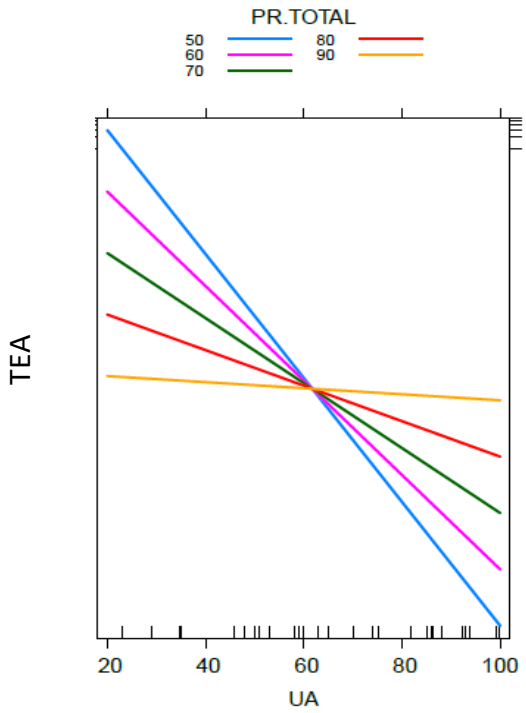
The following hypotheses all contain interactions, with national culture dimensions interacting with the FIs of PRs and ATF. H7-H18 predict that the moderations of FIs association on national culture dimensions and its association with TEA may change.

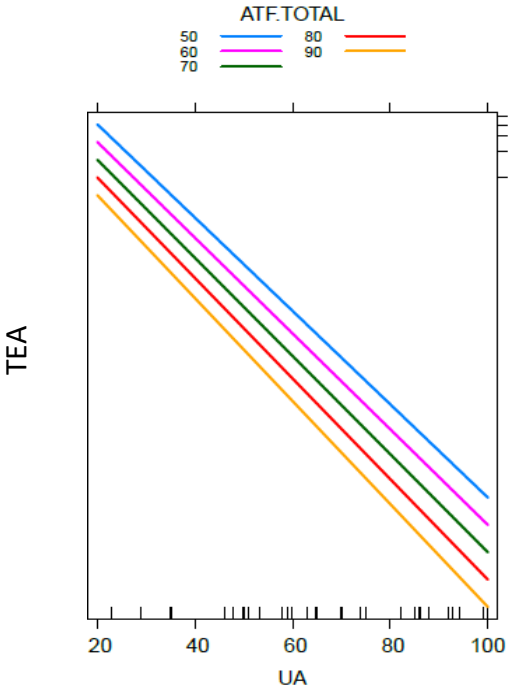
Interaction models will usually include the moderating variable's association by itself as well as interacting with the independent variables. Model 2 is written as TEA ~ Informal institutions (∗PRs) (∗ATF) + Controls. This is a short-hand format of: Informal institutions+ PRs/ATF (FI) + Controls+ Informal institutions: PRs/ATF (FI). Interpreting interaction models can be difficult, graphs illustrating the impact of moderating variables are displayed below to help visualise associations.




PR.TOTAL
50
60
70
80
90
TEA
20
40
60
80
100
MAS


ATF.TOTAL
50
60
70
80
90
TEA
20
40
60
80
100
MAS


PR.TOTAL
50
60
70
80
90
TEA
20
40
60
80
100
UA


ATF.TOTAL
50
60
70
80
90
TEA
20
40
60
80
100
UA

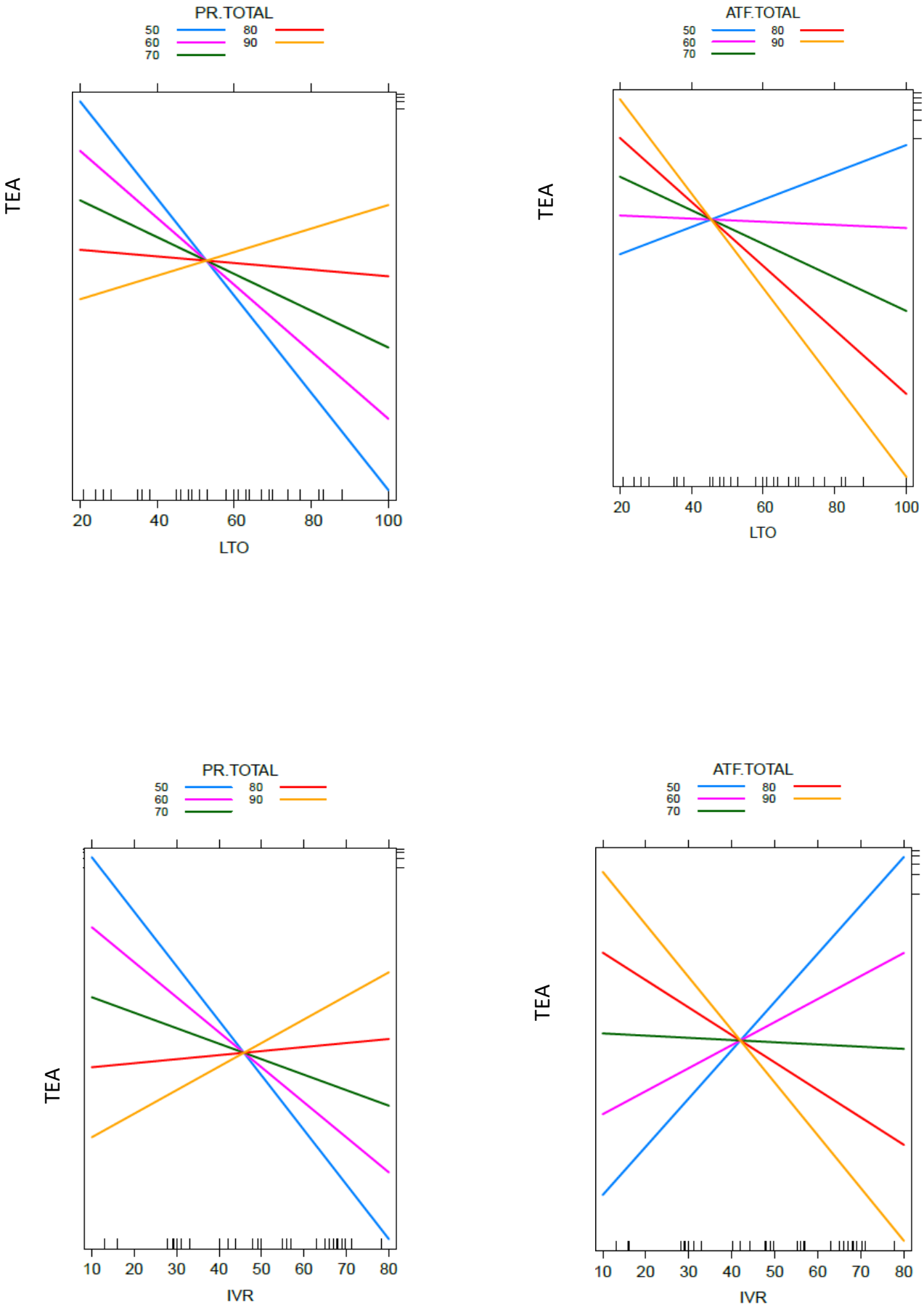


Figure 15: Model 2 (PRs and ATF moderation) variables and interactions. *Source: Author.*

Model 2 examines the parameters of the six national culture dimensions association with TEA with the moderation of PRs and ATF separately. Figure 15 also shows the coefficient direction at different levels of effective PRs and easier ATF. The first thing to note is the parameters (coefficients) of the six independent variables and PRs by themselves. For example, the LTO coefficient in Model 2 is much higher (-0.69) than the value in Model 1 (-0.06) which is not interacting with PRs. Model 2 provides somewhat mixed results depending on the FI interaction model. Additionally, R^2 and adjusted R^2 here appear to demonstrate less of a good fit where adjusted R^2 drops by 7% in explaining the variability arising from model 2 (from 0.86 to 0.81).

Again, moderated findings are now considered in three categories in relation to findings established in the prior literature: consistent, inconsistent and novel results.

5.5.1) Consistent findings

This first category is findings that are expected and consistent with prior literature, e.g., H7 predicts a positive moderation with a negative association between PD and TEA. H7 appears to be supported where Model 2 appears to show that increases in PD levels are positively associated with TEA, as effective PRs strengthen this association as seen in Model 2. However, including the interaction between PD and PRs has fundamentally altered the results of the analysis surrounding PRs and PD. Next, H8 appears to be supported where effective PRs positively moderate the association of IND and TEA. Figure 15 illustrates this for the interactions where more effective PRs results in a coefficient change to a positive association, which corresponds with prior studies.

Furthermore, H10 appears to be supported where effective PRs positively moderate the negative association of UA and TEA. Figure 15 illustrates the change in coefficient direction from a negative association to a neutral one with effective PRs. Effective PRs protection may encourage TEA in high UA countries. Also, H11 appears to support the notion that effective PRs will positively moderate the positive association between LTO and TEA. Figure 15 depicts a positive moderation of PRs positively influencing LTO and TEA. Additionally, H12 predicts a positive association between IVR and TEA. Figure 15 demonstrates that effective PRs moderate the coefficient of IVR to a positive one.

H15 states that easier ATF will positively moderate the positive association between MAS and TEA. The hypothesis appears to be supported where easier ATF results in a coefficient change to a positive association of MAS and TEA.

5.5.2) Inconsistent findings

Many tests of the ATF hypotheses (H13-H18) resulted in inconsistent findings. First, H13 predicts easier ATF may positively moderate the negative association of PD and TEA. Model 2 appears to illustrate that at lower levels of PD, easier ATF improves overall TEA. Additionally, H17 says easier ATF will positively moderate the positive association between LTO and TEA. Model 2 demonstrates a low LTO relationship with TEA where lower levels of LTO are associated with TEA. In this instance, easier ATF negatively moderates and weakens the LTO association with TEA. This coefficient changes from a positive value (with difficult ATF) to a negative moderation of ATF between LTO and TEA.

5.5.3) Novel findings

This final category is novel (interesting) findings. H14 proposes that easier ATF will positively moderate the positive association between IND and TEA. This hypothesis appears to be rejected where easier ATF appears to have TEA negatively related to IND as seen in Figure 15. Moreover, H16 states that easier ATF will positively moderate the negative association between UA and TEA. With easier ATF, the moderation reinforces a negative slope between UA and TEA just shifting it downwards at easier ATF rates. This result is the only moderation that is not deemed statistically significant. This means that the null hypothesis cannot be rejected. Finally, H18 predicts that easier ATF will positively moderate the positive association between IVR and TEA. The output from Model 2 (Figure 15) appears to reject this hypothesis: easier ATF negatively moderates the positive association with IVR and TEA.

Looking at the findings in Section 5.5.2 (P.167) and 5.5.3 (P.167), the reader may wonder if mediation is present as opposed to a moderating association. Alfons, Ateş and Groenen (2021) explain that researchers are interested in thorough understandings of mechanisms relating to how one phenomenon influences another. Mediation analysis explains how an independent variable affects a dependent variable (Y) through an intervening variable

(i.e., mediator) (Baron and Kenny, 1986). This is done via a method of random sampling with replacement data observations. It shows that on average if the experiment is repeated thousands of times, the estimation model should be within the confidence intervals (Salibián-Barrera and Yohai, 2006). To check for a mediating influence first it needs to be considered if a theoretical underpinning explanation that is available (Alfons *et al*., 2021). A check is conducted to see if an association is present with TEA and informal institutions, Model 1 illustrates this. Model 2 is then examined to have both PRs and ATF's association with informal institutions dimensions. The model is run with PRs and ATF as the Y variable together, this did not generate any significant results. PRs and ATF are also considered in separate models, again, this does not generate any significant results.

5.6) ANOVA type II tests and nested models

With the interaction model, the main associations of national culture, FIs and controls are provided in Type II ANOVA (analysis of variance) tests. The ANOVA test is used to analyse the difference between the means of more than two groups (Pampaka, Hutcheson and Williams, 2016). When looking at significance of variables in an interaction model, interactions can be estimated by comparing the deviances of nested models. Nested models arise whenever a researcher is interested in comparing two regression models that are identical except one model contains constraints that are not enacted on the other model (Allen, 1997). On the other hand, the regression equation that is free of any restrictions is referred to as the '*full*' model (Pampaka *et al*., 2016).

Using the full model will include lower-order terms (terms which are not considered statistically significant) (Hutcheson and Moutinho, 2011). With interaction models, the independent variables are not main effects which is how they would be interpreted if there were no interaction terms (Anderson, Cuervo-Cazzura and Nielsen, 2014). Rather, they are understood as conditional effects that are contingent on both independent variables and their interactions. The conditional effects should be included in the model, ANOVA type II tests are used to examine the significance of variables not interacting with the FIs (PRs and ATF).

Variables	Sum of squares (SS)	Degrees of freedom (DF)	F-value (F)	P-value associated with F statistic (Pr(>F))
PD	20.44	1	1.33	0.29
IND	27.62	1	1.81	0.23
MAS	17.75	1	1.16	0.32
UA	57.34	1	3.76	0.1
LTO	433.3	1	28.39	0.0018**
IVR	27.01	1	1.77	0.23
PRs	9.52	1	0.62	0.46
ATF	46.72	1	3.06	0.13
Age (25-49)	45.45	1	2.98	0.14

Female labour participation rates	25.47	1	1.67	0.24
GDP p/c	35.65	1	2.34	0.18
Gross enrolment rates	76.52	1	5.01	0.07.
Population density	28.96	1	1.90	0.22
PD∗PRs	95.89	1	6.28	0.046*
IND∗PRs	73.50	1	4.82	0.071.
MAS∗PRs	59.08	1	3.87	0.097.
UA∗PRs	105.61	1	6.92	0.040*
LTO∗PRs	178.41	1	11.69	0.014*
IVR∗PRs	116.55	1	7.64	0.033*
PD∗ATF	69.14	1	4.53	0.077.
IND∗ATF	57.04	1	3.74	0.10
MAS∗ATF	60.09	1	3.94	0.094.
UA∗ATF	0.29	1	0.019	0.89
LTO∗ATF	67.53	1	4.42	0.08.
IVR∗ATF	102.16	1	6.69	0.041*
Residuals	91.58	6		

Key:

*= 95% significance level ***= 99.9% significance level

. = 90% significance level **= 99% significance level

Table 10: ANOVA Test Type II for Model 2 (PRs and ATF interaction). *Source: Author*.

Table 10 summarises the significance of all the variables involved in Model 2, the values are all rounded up to 2 significant figures (after the dp). The sum of squares (SS) value expresses the total variation that can be attributed to a particular variable (Field *et al*., 2012). Degrees of freedom (DF) are the number of independent pieces of information that went into calculating that estimate. It is different than the number of items in the sample. It is calculated as *n* – 1 where *n* is the number of items in that data set. The F-value is a tool to help the researcher answer the question if the variance between the means of two populations significantly differs or not. The F-value in the ANOVA test also

determines the p-value. Whilst the p-value is a probability, the F-value is a ratio statistic. This is calculated as the variance of the group means divided by the mean of the within-group variances.

Table 10 shows only LTO as being significant in the main variables. LTO appears to be significant at the 99% level. This means that only one of the six independent variables imply rejection of the null hypothesis where national culture dimension may have no TEA association. The same cannot be said about the other five dimensions of national culture.

The ANOVA type II tests below test examine the two models surrounding national culture main effects and their interactions with FIs. This compares the full model to a nested model (without the FIs).

Residuals	**Degrees of freedom**	**Residual Deviance**	**Degrees of freedom**	**Deviance**	**F-value**	**P-value associated with F statistic (Pr (>F))**
1	20	3005.0				
2	6	91.58	14	2913.5	13.63	0.002071**

Key:
*= 95% significance level ***= 99.9% significance level
. = 90% significance level **= 99% significance level

Table 11: ANOVA Type II test comparing nested model to full model. *Source: Author*.

Table 11 concludes that adding PRs and ATF as moderators in the model generates highly significant results (at 99% significance level) thus improving the nested model fit in predicting TEA activity.

5.7) Robustness checks

Now that the OLS (log) model has been analysed and the respective models have been explored, a robustness check on the violation of assumptions must now be conducted. Field *et al.* (2012) stress that to draw conclusions about a population based on a regression analysis done on a particular sample, several assumptions must be fulfilled:

i) *Variable types:* All the independent (X) variables must be quantitative or categorical. The dependent (Y) variable must also be quantitative, continuous (measured at interval level) and unbounded (no constraints on variability of outcome). Looking at the previous chapter which explains all the measures, ***this condition is fulfilled***. All variables used in the thesis are quantitative scores, continuous (not integers) and unbounded.

ii) *Non-zero variance:* The independent variables should have some variation in their values where the variances are not zero. This can be checked within R (the programme used for regression analysis). ***This condition is met***. Table 12 (*below*) summarises the variance for all the independent variables (rounded to 2 dp).

Variables	Variance values
PD	327.73
IND	339.90
MAS	704.49
UA	452.45
LTO	456.04
IVR	346.26
PRs	177.75
ATF	112.71

Table 12: Independent variables variance values (Model 1). ***Source: Author.***

iii) *Multi-collinearity:* No perfect linear relationship between two or more independent variables should be present. The independent variables should not correlate highly. The VIF test can be used to check this. VIF for interaction terms can be problematic. This is due to the uncentered residuals as R does not centre the variables beforehand and end up with the un-centred coefficients as above (Field *et al*., 2012). ANOVA tables for the interaction models in Section 5.6 have been examined as a result. This shows the proper

effects and avoid variance inflation due to multicollinearity. Since the models include interaction terms, issues of multi-collinearity problems may arise (Fuentelsaz *et al*., 2019). This thesis in Model 2 considers both formal and informal institutions to better understand their mechanisms and impact on entrepreneurship holistically. To check for VIF in non-interacting models, Model 1 (informal institutions and TEA) was examined, with a VIF>10 being a cause for concern. Tolerance statistics can be calculated as 1/VIF (Field *et al*., 2012). A tolerance value below 0.2 indicates a potential problem while a value below 0.1 indicates a serious problem (Field *et al.*, 2012). Table 13 shows that none of the variables reach the threshold values, ***this condition is fulfilled***.

Variable	**VIF value**	**Tolerance statistic value**
PD	2.46	0.41
IND	2.04	0.49
MAS	3.06	0.33
UA	2.46	0.41
LTO	3.30	0.30
IVR	4.60	0.22
Age (25-49) composition	1.89	0.53
Female labour participation rates	4.53	0.22
GDP p/c	2.40	0.42
Gross enrolment rates	1.84	0.54
Population density	2.49	0.40

Table 13: VIF and tolerance statistic values for independent and control variables.

Source: Author.

iv) *Independent variables uncorrelated with 'external variables':* External variables are ones that have not been included in the regression model but may influence the dependent (Y) variable (Field *et al*., 2012). There should be no variables that correlate with any of the variables included in the regression model. If external variables do correlate with the independent variables, any conclusions drawn may be unreliable. A potentially important issue with the independent variables being correlated with an external variable is the control variable GDP p/c. Literature shows the relationship

between economic development levels and TEA, so GDP p/c is a control variable in the models used for the thesis. Omitted variable bias is an issue where higher confounding correlations exist in a lot of studies. Although, the issue of omitted variable bias is potentially more prominent in microlevel analysis research (Busenbark, Yoon, Gamache and Withers, 2022). The VIF test conducted in point iii can help deal with this. ***Therefore, this condition is fulfilled.***

v) *Homoscedasticity:* At each level of the independent variables, the variance of the residual terms should remain constant. This means that each level of the dependent variable should have the same variance. The scale-location plot below shows if residuals are spread equally along the ranges of predictors. A horizontal line with equally spread points should be seen. Both models are displayed below.

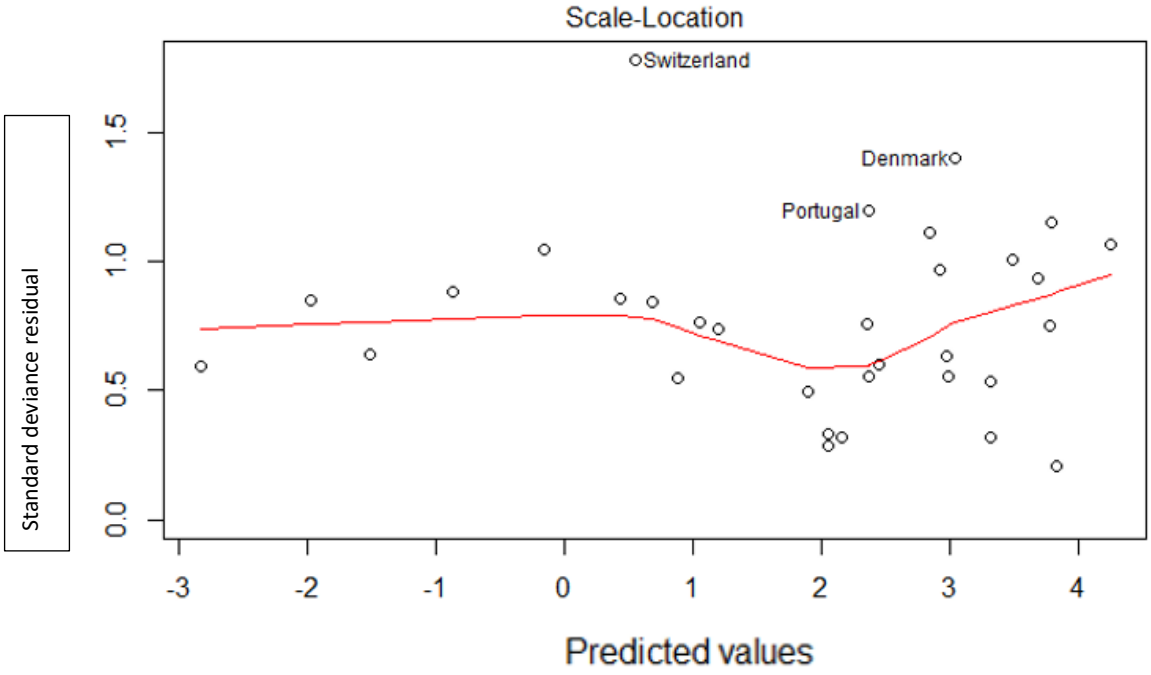


Figure 16: Model 1 (Informal institutions~ TEA). *Source: Author*.

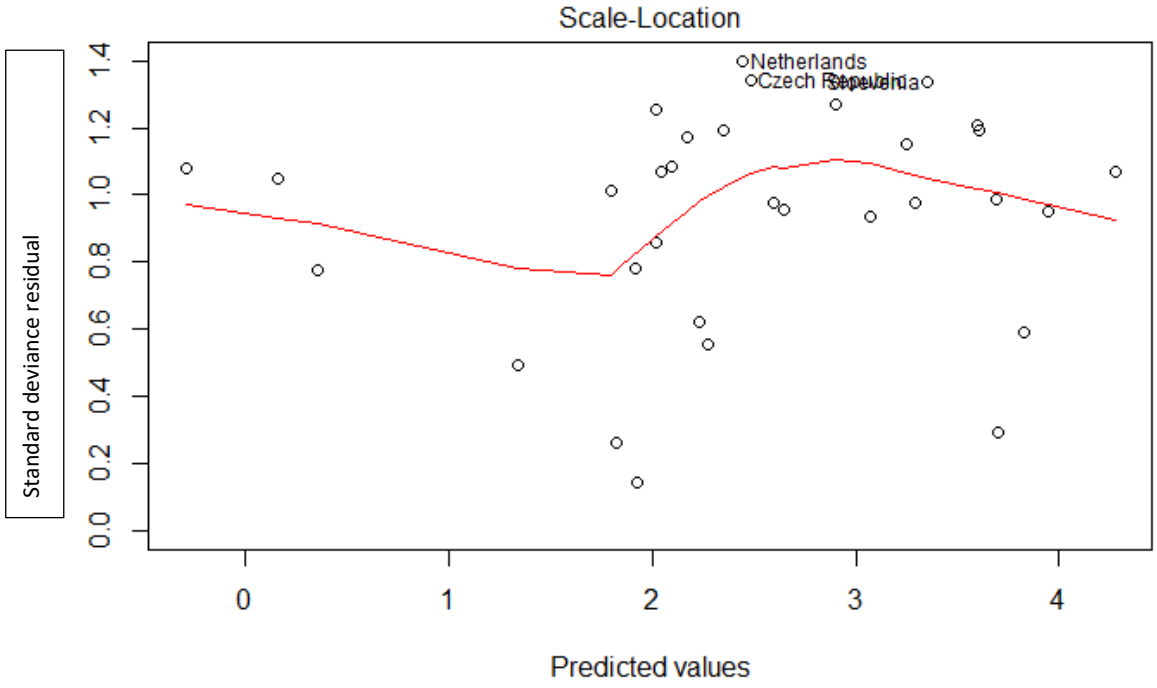


Figure 17: Model 2 (Informal institutions(∗PRs) (∗ATF)~ TEA). *Source: Author.*

The scale-location plot displays the fitted values of a regression model along the x-axis and the square root of the standardized residuals along the y-axis (Kleinbaum, Kupper, Nizam and Rosenberg, 2013). When looking at the plots, two things need to be considered:

. Check that the red line is approximately horizontal across the plot. If it is, then the assumption of homoscedasticity is likely satisfied for a given regression model. With that, the spread of the residuals is roughly equal at all fitted values.

. Validate that there is no apparent pattern among the residuals. Residuals should be randomly dispersed around the red line with approximately equal variability at all fitted values.

Looking at the two models, ***this condition does not appear to be fulfilled*** as both appear to have a skew of residuals on the graphs. In both models, the skew is seen on the right side. Having this (or any condition) not fulfilled means that the generalisability and conclusions drawn using this data cannot be drawn other than the sample in this dataset.

vi) *Independent errors:* Any observations of the residual terms should be uncorrelated. The Durbin-Watson (D-W) test specifically looks for serial autocorrelation at each level. Autocorrelation is an issue seen in unbalanced panel data studies (Fuentelsaz, González and Maíca, 2021). Interpretation of these is a statistic is obtained with a measure of autocorrelation and a p-value. Field *et al*. (2012) suggest that the D-W statistic must be a value greater than 1 or less than 3. The closer the value is to 2, the better it is for the data. The results in Table 14 below show the values all within the necessary range, ***this condition is fulfilled***.

Model	**Lag**	**Auto-correlation**	**D-W statistic**	**P-value**
1	1	-0.040	2.03	0.56
2	1	0.038	1.92	0.33

Table 14: D-W test statistics for Models 1 and 2. *Source: Author.*

vii) *Normally distributed errors:* If residuals in a model are random, then normally distributed variables will have a mean of zero. This assumption is usually confused with the idea that the independent variables must be normally distributed (Field *et al*., 2012) but do not have to be. This can be checked with the QQ plot which can be used to visually check the normality assumption. The normal probability plot of residuals should approximately follow a straight line and be equally distributed. ***This condition is fulfilled***.

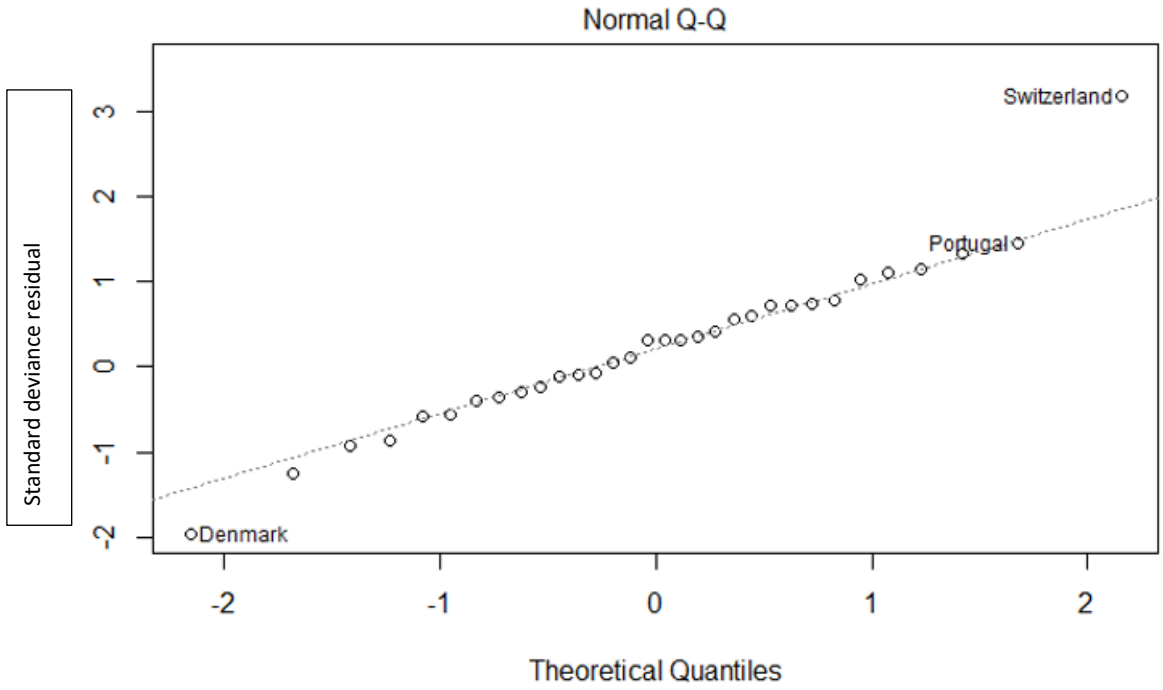


Figure 18: QQ plot for Model 1 (Informal institutions~ TEA). *Source: Author.*

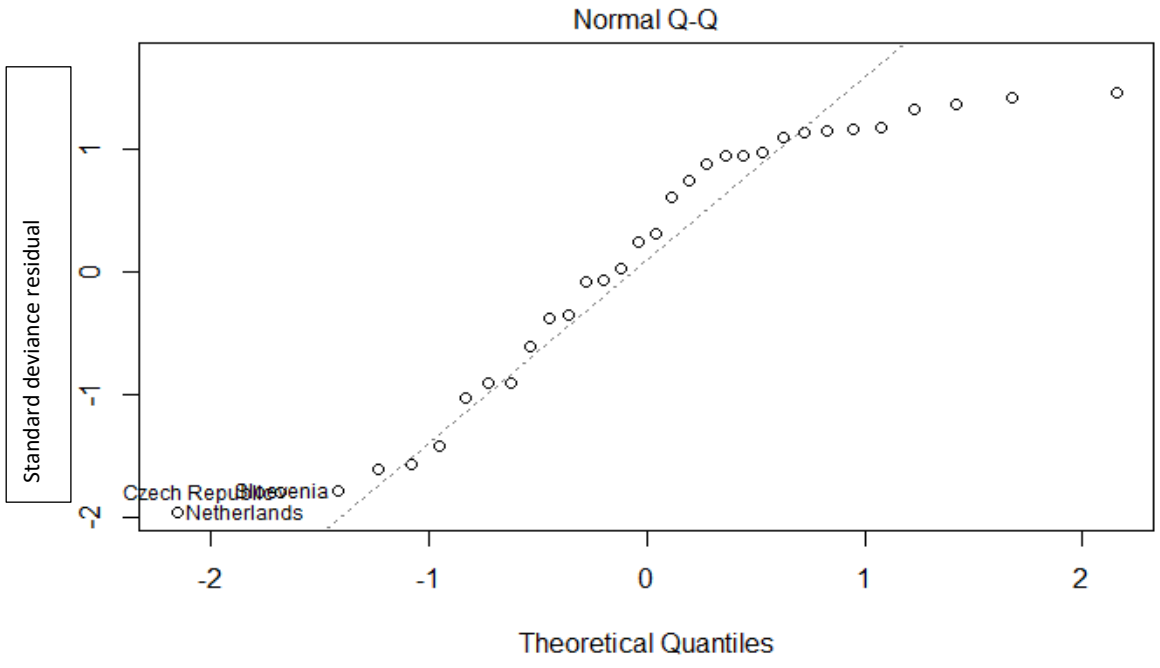


Figure 19: QQ plot for Model 2 (Informal institutions(*PR) (*ATF) ~ TEA). *Source: Author.*

Looking at Figure 18, most residuals follow the line, with only two outliers (Denmark and Switzerland). Figure 19 again shows overwhelming proportion of residuals following the line there are some residuals that diverge in the higher end of the theoretical quantiles

(top right). In Figure 19 the residuals are much more spread across the theoretical quantile scale as opposed to Figure 18.

viii) *Independence of dependent variable:* The dependent variable should be independent (each value of the Y variable should come from a separate entity). Each of the TEA value used for the dependent variables comes from a different OECD country, TEA has been imputated for 10 years. ***This condition is fulfilled***.

IX) *Linearity:* The values of the dependent (Y) variable for each increment of the independent (X) variable should lie along a straight line (Field *et al*., 2012). The relationships modelled are assumed to be linear ones. Ideally, a residual plot should show no fitted pattern. With the '*residuals versus fitted*' plots graph in R, the red line should be roughly horizontal at the zero value. The occurrence of a pattern may signal a problem with aspects of the linear models. ***This condition is met for the non-interaction model (Model 1) in Figure 20 below***.

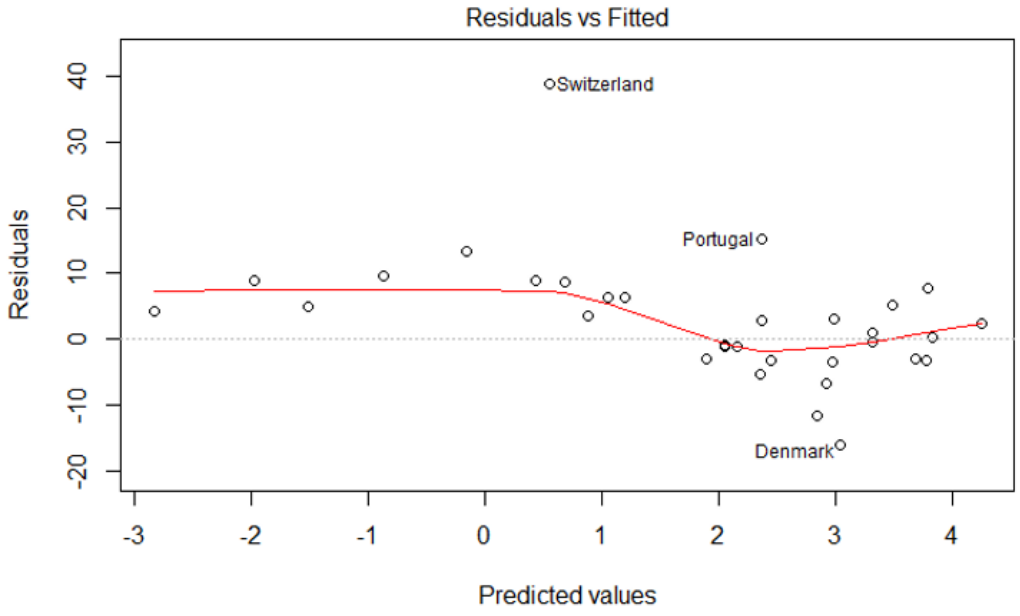


Figure 20: Residuals vs Fitted plot for Model 1 (Informal institutions~ TEA). *Source: Author*.

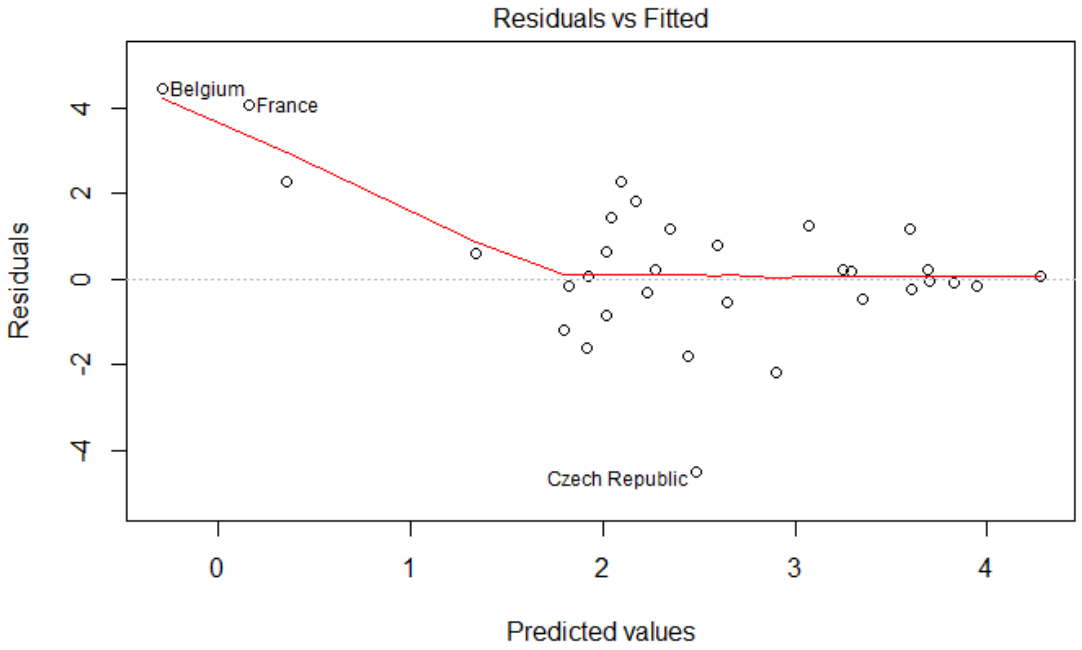


Figure 21: Residuals vs Fitted plot for Model 2 (Informal institutions (∗PRs) (∗ATF) ~ TEA). ***Source: Author.***

Looking at both models above, the residuals vs. fitted plot is a simple scatterplot which shows the difference between residuals and predicted values. The residual distribution should appear random. Figure 21 showing Model 2 demonstrates extreme outliers on the left-hand side of the graph with Belgium, France and Czech Republic with a higher residual value, the rest of the graph appears randomly distributed on the right-hand side.

Chapter 6: Discussion of Results

With the results analysed, this Chapter will attempt to explain the findings. The Chapter will first analyse the findings within Model 1 (H1-H6) by considering them as consistent, inconsistent and novel findings (as in Chapter 5). Then Model 2 (H7-H18) will be examined using the same categories as Model 1.

6.1) Model 1 findings

Model 1 examines the direct association between informal institutions (national culture) and TEA. The findings are categorised and explained in the following sections.

6.1.1) Consistent findings

H2 appears to be supported in this thesis where a unit increase in IND appears to be positively associated with a 6% increase in TEA. The literature has several findings that are also consistent with this hypothesis. Assman and Ehrl (2021) study 69 countries in 2017 using the Global Entrepreneurship Index (GEI) and discover that in high IND countries, OME rates (a component of TEA, see Section 2.2.1 on P.32) are usually higher. The main association between IND and TEA may involve an indirect mechanism as entrepreneurs in high IND countries may perceive a better rate of opportunities thus stimulating TEA overall (Assman and Ehrl, 2021). Bennett and Nikolaev (2020) confirm, after looking at cross-sectional data for a diverse sample of 84 countries, that because entrepreneurs often take substantial personal risks they also expect to be rewarded individually if they succeed. They confirm that high IND is positively associated with innovation which may help facilitate TEA with the introduction of novel products/services. Individual rewards and achievement recognition are more culturally acceptable in high IND countries (Shane, 1992). Liñán *et al*. (2016) examine a sample of 2,069 adults in Spain with a university degree. Their results support a dual-association of culture with entrepreneurial intention. A high IND culture appears to be positively associated with more members exhibiting higher entrepreneurial intentions and thus engaging in higher TEA with an outlier association (people who have an above-average IND trait are positively associated with higher entrepreneurial intentions which might promote TEA). The theoretical contribution is seen via the empirical positive association.

H4 appears to be supported in the thesis where an increase in UA is negatively associated with a 3% reduction in TEA levels. Multiple studies showcase countries with a high UA culture are reported to have individuals who are less comfortable in surprising situations compared to known ones (Damaraju *et al*., 2021). In such settings, the feeling that change may be dangerous might prevail (Hofstede, 1991) hence less people engage in TEA and have lower TEA levels present in high UA countries. Calza *et al*. (2020) mention, when examining 50 countries from 2007-2017, that a combination of high PD, IND, MAS and

low UA positively associates with higher levels of entrepreneurial orientation (EO) and therefore TEA (due to a higher rate of entrepreneurs acting on their EO inclination) consequently. Stephan and Pathak (2016) look at a multi-level study of 42 countries and 560,133 individuals from GEM during 2001-2008. They understand that national cultural values of UA and low IND may be associated with lower TEA rates indirectly through certain leadership traits of charisma and self-protection. Clarke and Cornelissen (2011) argue that the motivation of UA reinforces the process of reasoning in the creation of ventures and TEA. Entrepreneurs are in essence risk-takers who by default cannot avoid uncertainty and risk takers tolerate more uncertainty where UA is low which may be associated with helping generate TEA. Mueller and Thomas (2001) examine 1,800 survey responses from university students in nine countries. They find that entrepreneurs in low UA cultures believe they will perceive more opportunities that are present in the external environment compared to high UA nations. Such favourable perceptions of the environment will mean ventures will be more willing to act as '*first-movers*' (Kreiser *et al*., 2010). McGrath *et al.* (1992) perform a discriminant analysis on responses from 1,217 entrepreneurs and 1,206 non-entrepreneurs in eight countries. They similarly find a negative association between TEA and UA since entrepreneurship is a risk-based activity, however, entrepreneurs have a more positive mindset about risk compared to non-entrepreneurs (Calza *et al*., 2020). The theoretical contribution is confirming this hypothesis and adding this positive empirical association to the literature.

6.1.2) Inconsistent findings

An inconsistent finding is seen in relation to H1, where the PD coefficient demonstrates a positive significant relationship rejecting the thesis hypothesis. This coefficient has weak significance (approximately 5%) and this corresponds with previous studies. Hechavarría and Brieger (2020) look at GEM, GLOBE and WB data for 33 countries from 2009-2015. They comprehend that societies high in PD view power as a mechanism to provide social order. Such nations with high PD are exemplified by social classes that discern groups, and this may constrain upward social mobility hindering TEA by discouraging nascent entrepreneurs in achieving their material and social needs (Hechavarría and Brieger, 2020). Urbano *et al.* (2016) review 106 studies that use GEM data to determine entrepreneurial motives (both on an individual and macro level). They infer that hierarchical (high PD) societies impact OME and NME differently; egalitarian societies

with low PD tend to be more beneficial for OME TEA whilst hierarchical societies boost NME TEA. Moya *et al*. (2014) examine 68 countries from 2009-2010 using GEM data and the CIA factbook for innovation data. They find that positive effects of PD can prevail. When PD is high, individuals may be more entrepreneurial, because members of society seek greater independence from power structures, so PD may be positively associated with TEA. A lack of access to resources via unequal power distributions means the experience of individuals in such nations might lead them to seek alternate routes of acquiring economic returns (Moya *et al*., 2014). This is reinforced by Bandera *et al.* (2018) who look at 47 university students in France and the U.S. They conclude that combinations of high PD, low IND and high UA are associated with more entrepreneurship because of the frustration generated by the dominant cultural values. Finally, McGrath *et al.* (1992: P.119) perform discriminant analysis on responses from 1,217 entrepreneurs and 1,206 non-entrepreneurs in eight countries and state that "…*One might expect that entrepreneurs would tend to exhibit higher PD values than career professionals in the same culture, regardless of whether the culture is high or low on PD scores. Entrepreneurship is one route to a mobility and a higher position*". These citations here illustrate that a positive PD association with TEA is plausible.

Next, H3 appears to show that a unit increase in MAS may result in a 4% decrease in TEA rejecting the hypothesis. The literature indicates certain instances of this, a country with lower MAS (more femininity) is positively associated, and thus, may increase TEA. Low MAS nations underscore support, compassion, and consideration for others (Hofstede, 1980). Entrepreneurial failure is likely to be seen with compassion and sympathy, not penalised via social stigmatization as in a high MAS society (Damaraju *et al.*, 2021). This may encourage prospective entrepreneurs to engage in TEA who otherwise may have been worried about societal perceptions. Hofstede (1980) observes that in high MAS nations, decisions made on an individual level are perceived to be usually better informed compared to group decisions. Yet, the fact is that entrepreneurs operate within an ecosystem and are reliant on other actors for resources. Social interactions are more consensus-oriented in low MAS societies, they should therefore help TEA rates increase since entrepreneurs will be better able to realise their potential and the viability of their venture ideas when dealing with other actors (Gupta *et al*., 2018).

6.1.3) Novel findings

Novel findings are ones that are surprising due to a lack of prior literature. Tests on H5 generate a novel finding, i.e., a unit increase in LTO is negatively associated with a 6% reduction in TEA thus rejecting hypothesis H6. There are prior studies suggesting that LTO could be a hurdle in conditions where rapidly changing situations need decision makers to adjust long-standing priorities impacting TEA, as TEA requires a LTO perspective (Lumpkin *et al.*, 2010). Low LTO reflects concerns with more immediate consequences and shorter time horizons. This may be favoured in situations that are unstable or unclear because it allows prompt reactions from entrepreneurs to alter conditions and thus impact TEA negatively, making individuals hesitant about TEA. But low LTO is often criticised as it potentially stimulates decision makers to be excessively fixated on current conditions for short-term financial reward (Laverty, 1996). Hence, economic factors often affect whether a venture decides its decisions on a short-term versus long-term benchmarks. Barretto *et al*. (2022) discover from a study of 93 countries examining relationships between societal temporal orientation and innovation levels (using GLOBE, Hofstede and GII for 2015) that LTO has an initial positive significant effect on implementing TEA but the perseverance present in high LTO contexts can be detrimental for TEA as potential entrepreneurs may be hesitant in engaging in TEA, thinking about their long-term financial prospects and stability. Lee *et al*. (2013) examine cultural differences and mobile phone adoption patterns within the U.S. and S.Korea, 1985-2008. They discover that in high LTO nations, prior commitments may be barriers to change. However, once new arrangements are socially accepted, the rate of such changes is extremely fast. High LTO in S.Korea is related to low innovation but may have a high imitation effect where ventures imitate each other, and it is this low innovation effect which may dampen TEA rates as discoveries for novel products/services to enter a market might be at a lower rate, this will therefore mean potentially lower TEA. The contribution of this thesis arises from the low LTO empirical association that came from testing the hypothesis. This result was novel considering TEA is understood to have a positive LTO association overall.

Interpreting H6 is novel because the deployment of the IVR variable is new (see Section 4.7.2 on P.127). H6 is supported where a unit increase in IVR increases TEA by roughly 7%, highly significant at the 99% level. The literature cites a similar association, Hofstede (2011) argues that individuals living in high IVR countries are generally optimistic and

encourage debate in the decision-making processes. Such traits might promote innovation as individuals might explore opportunities that may look highly uncertain yet will still decide to proceed ahead. This therefore may positively associate with TEA (Boubakri *et al.*, 2021). Choi (2020) stresses (after looking at 12,362 ventures in 40 countries to better understand associations between national culture and investments in innovation from 1990-2006) that high IVR may have a positive impact on innovation because it is essential for creativity and risky investments, which are necessary functions for TEA to arise. High IVR emphasises feeling more freedom which will make an individual more likely to act on their entrepreneurial intention stimulating TEA (Carter *et al*., 2003). Empirical data indicates that a higher level of IVR positively correlates with innovation performance at a country level (Lažnjak, 2015). This may facilitate intentions allowing a clear route for prospective entrepreneurs to continue on with turning innovation into actions and positively associating with TEA. A contribution is generated through the empirical association contributing to the sparse literature on the newest dimension of Hofstede's index.

6.2) Model 2 findings

Model 2 examines the interactions between PRs, ATF and informal institutions (national culture) and TEA. The findings are categorised and explained using the same categories as Model 1 (above).

6.2.1) Consistent findings

H7 predicts a positive moderation by PRs of a negative association between PD and TEA. H7 appears to be supported where Model 2 demonstrates that increases in PD levels are positively associated with TEA as effective PRs may strengthen this association (seen in Model 2). Including the interaction between PD and PRs has fundamentally altered the results of the analysis surrounding PRs and PD from a negative association to a positive one moderated by effective PRs. The literature appears to illustrate similar situations, an explanation could be that individuals and groups in powerful positions may have the means to secure effective PRs first within a country (Semrau, Ambos and Kraus, 2016). Effective control of PRs can allow certain entrepreneurs to hinder other potential entrepreneurs from possessing, replicating, or utilising any resource attributes that they possess, making it difficult for prospective entrepreneurs to engage in TEA (Foss and Foss, 2008). Less effective PRs may arise because of the way institutions reinforce these laws. In such settings, institutions may be influenced by the social norms that place low emphasis on the rights of owners (specified by PRs law) compared to the rights of society and the hierarchies present within them (Papageorgiadis *et al*., 2020). Institutions may also be influenced by powerful stakeholders (e.g., political and economic actors) in their societies who may establish the parameters for what constitutes effective PRs. Ineffective PRs may result in institutional voids meaning PRs are largely governed by informal institutions. In such institutional contexts, infringements of PRs may be largely dealt with using the unwritten rules used by enforcement agents in institutions rather than formal punishments, this should stimulate TEA as entrepreneurs will not face official actions against them (Ostrom, 1990). The contribution is generated because of the empirical association explained here as well as the theoretical explanation explaining that social norms may have more of an explanation rather than FI rules themselves.

Next, H8 appears to be supported in the thesis, where effective PRs positively moderate the association between IND and TEA. Figure 15 (P.163) illustrates this for the

moderations where more effective PRs result in a coefficient change to a positive association. The literature appears to support this, Bennet and Nikolaev (2020) examine 84 countries looking at various timeframes to understand innovative EA and argue that an IND society provides rewards for the value created by a good/service and not on the goodness of intentions. This reward (whether it be financial, accomplishment or social impression) motivates potential entrepreneurs to engage in TEA. Hayek (1948) similarly claims that entrepreneurship increases when a system of effective PRs and long-run economic strategies encourage competitive markets which offers individuals with the choice of how to operate their resources, it may be this freedom that stimulates potential entrepreneurs to establish and operate their venture. High IND countries may rely on economic institutions to apply contracts, diminish transactions costs and provide economic enticements for TEA to arise (Li and Zahra, 2012). An empirical and theoretical contribution is noted. The empirical contribution stems from the moderation of PRs with IND whilst the theoretical contribution is the explanation citing literature and creating a narrative where effective PRs positively moderate the IND and TEA association since effective PRs are needed to apply legal contracts and provide incentives for entrepreneurs to engage in TEA.

Furthermore, H10 appears to be supported, where effective PRs positively moderate the negative direct association between UA and TEA. Figure 15 illustrates the change in coefficient direction from a negative association to a neutral one at effective PRs. A literature examination supports this notion: effective PRs protection may encourage TEA in high UA countries as entrepreneurs may be cautious about whether the state will protect private PRs for their ventures in high UA countries (Alvarez and Barney, 2020). Strong PRs will reduce this uncertainty giving prospective entrepreneurs the assurance to establish a venture. Sjaastad and Bromley (2000) insist that the concept of the assurance element in PRs is necessary for TEA, PRs ultimately reduce uncertainty for entrepreneurs. Since any type of TEA is inherently associated with risk taking, uncertainty is reduced via an effective PRs system which guarantees that the property of an individual is protected by the state. It is expected that effective PRs will be more present in higher UA societies due to the nature of cautious individuals within a high UA society. A contribution is claimed for both the empirical association looking at the moderation association of PRs on UA and TEA along with the plausible explanation of effective PRs providing further

assurance to entrepreneurs who have high UA levels giving them a level of guarantee of the protection of their ventures from external threats (e.g., competitors replicating their ventures).

H15 states that easier ATF will positively moderate the positive association between MAS and TEA. The hypothesis appears to be supported where easier ATF positively moderates a negative association of MAS and TEA. The literature provides limited insight on this moderation, Abbasi, Alam, Du and Huynh (2021) investigate 1,617 SME firms from 22 OECD countries, 2011–2018 and conclude that entrepreneurs can be characterised by MAS features. In high MAS countries, greater tolerance of tasks and creativity occurs suggesting that entrepreneurs might be more likely to innovate due to them being creative finding novel and more efficient routes to product goods or services thus increasing TEA (Tian *et al*., 2018). Having easier ATF may therefore allow nascent entrepreneurs to realise their potential stimulating TEA as the entrepreneurs will already have the motivation and tolerance for the work needed to establish a venture. Entrepreneurs in high MAS countries have greater trust in their ventures and may allocate more resources to achieve success, independence, and recognition. Therefore, those entrepreneurs are willing to accept lower profits and will thus have more discretionary resources (Shao, Kwok and Guedhami, 2010). High MAS countries usually have a broader and better array of options for ATF regarding investment decisions which should stimulate higher levels of TEA (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2000). An empirical contribution is seeing with the easier ATF positively moderates the MAS-TEA association. A theoretical contribution is seen with the reasoning behind moderations, where it has been theorised that entrepreneurs in high MAS countries will have both higher trust levels in their ventures, will be willing to accept lower profits and will have a wider choice of alternative financing options pushing TEA.

6.2.2) Inconsistent findings

Many of the tests (especially for the ATF hypotheses (H13-H18)) resulted in inconsistent findings. H9 predicts that effective PRs will positively moderate the positive association between MAS and TEA, which is rejected. The literature mentions competition and excellence are viewed highly in a MAS society and entrepreneurs are better able to make

use of free market arrangements to improve their economic situation by seizing initiatives (Graafland and de Jong, 2021). Therefore, effective PRs may help society by protecting entrepreneurs in such settings who may be comfortable with obtaining material gains at the expense of others (Park, Russell and Lee, 2007). It is these protections that may deter prospective entrepreneurs from engaging in nascent EA. Additionally, high MAS societies may make unwise choices on free markets increasing economic inefficiency and the transaction costs of conducting EA within a country. This coupled with effective PRs may result in a negative impact on TEA (Graafland and de Jong, 2021).

H13 predicts that easier ATF may positively moderate the negative association between PD and TEA. Model 2 appears to illustrate that at lower levels of PD, easier ATF improves overall TEA. Some citations explain that in higher PD countries, ATF may be governed by dominant groups and all nascent entrepreneurs may not be able to access financial resources equally (e.g., Malul and Shoham, 2008). Easier ATF may help reduce this power gap by giving prospective entrepreneurs access to funding allowing them to realise their ventures generating TEA. If prospective entrepreneurs have easier ATF, then the entrepreneurs can navigate around powerful central authorities.

H14 proposes that easier ATF will positively moderate the positive association between IND and TEA. This hypothesis is rejected since easier ATF appears to negatively moderate the association between IND and TEA as seen in Figure 15. Boubakri and Saffar (2016) discover when looking at ventures from 56 countries over the period 1989-2012 that the more difficult ATF is for entrepreneurs, the higher the impact the IND dimension may have on a venture's growth. ATF may condition the relation between IND and venture growth as entrepreneurs might be in higher need to overcome their financial constraints. Černe, Jaklič and Škerlavaj (2013) analyse data from the Community Innovation Survey (CIS) 2006 for innovation in 13 countries (alongside Hofstede (1980, 2001), GLOBE (2005) and Schwartz (2006) values for low and high IND) and find that countries lacking IND traits limit innovation and negatively associate with TEA. It may be the case that easier ATF hinders innovation where entrepreneurs can rely on external funding and that may inhibit TEA rates as entrepreneurs have the convenience of ATF facilities but will be less inclined to use the facilities due to their self-sufficiency preference which might adversely impact TEA.

H16 states that easier ATF will positively moderate the negative association between UA and TEA. At easier ATF, the moderation stays at a negative slope between UA and TEA just shifting downwards at easier ATF rates. This result is the only moderation that is not deemed statistically significant. This means that the null hypothesis cannot be rejected. Li and Zahra (2012) investigate the period 1996-2006 and examine 68 countries analysing the decisions of venture capitalists wanting to invest in new ventures. They discover that entrepreneurs are less responsive to the incentives offered by FIs in countries with higher UA levels. Also, in the context of high UA, financial return is not the primary goal of entrepreneurs (Di Pietro and Butticè, 2020). If high UA is present, changes may be perceived as being dangerous and the status quo may be preferred (Canestrino, Ćwiklicki, Magliocca and Pawełek, 2020). ATF in high UA settings may have a minimal association with TEA. Easier ATF may make it simpler for entrepreneurs to downplay the UA element as easier ATF mitigates the negative association between UA and TEA.

6.2.3) Novel findings

H11 appears to support the notion that effective PRs will positively moderate the positive association between LTO and TEA. Figure 15 depicts a positive moderation of PR positively influencing LTO and TEA thus supporting the thesis. The literature mentions inadequate PRs imply institutional constraints which may negatively associate with TEA by affecting an entrepreneur's ability to understand the current and future institutional environment they operate in. Wood *et al.* (2021) explain, after examining theories underpinning entrepreneurial action, that once resources may be used to establish a venture, they are difficult to recover, entrepreneurs therefore need to have a LTO to consider this. Lortie *et al.* (2019) affirm after looking at WVS across 29 nations and 262 regions that the protection of PRs might encourage businesses to make future-oriented investments as there is additional certainty that that they can protect and benefit from the returns of such investments. The effectiveness of PRs may help to reduce uncertainty in ventures by guaranteeing a set of long-term contractual obligations. Lin, Shi, Prescott and Yang (2019) stress after looking at 750 ventures in the pharmaceutical and semiconductor industry that low LTO emphasises immediate returns rather than upcoming returns and values efficiency and preparation for the current moment. During turbulent times with exogenous shocks, effective PRs may help entrepreneurs establish a more long-term perspective. The contribution arises on two fronts, one is on the

empirical side of PRs moderating the LTO-TEA association (examining this specifically). The other side is contributing to the existing literature that would seemingly suggest that a positive moderation would arise between the positive association of LTO and TEA.

Additionally, H12 predicts a positive moderation of effective PRs on the positive association between IVR and TEA. Figure 15 demonstrates that effective PRs moderate the coefficient of IVR to a positive one. Scholarly work suggests that high levels of IVR may give more freedom for individuals to satisfy their desires (Hofstede *et al.*, 2010). Effective PRs may allow these desires of entrepreneurs to be reached, as trust in the processes surrounding of establishing a nascent venture is cemented, this should enable innovation and potentially result in TEA arising from entrepreneurs wishing to satisfy their desire of owning their own venture and providing a good or service (Michael and Pearce II, 2009). The contribution comes from the specific moderation of PRs on IVR's association with TEA alongside the theoretical rationale explaining that effective PRs will allow the desires of entrepreneurs to be achieved.

Additionally, H17 says that easier ATF will positively moderate the positive association between LTO and TEA. However, Model 2 demonstrates a positive low LTO association with TEA as easier ATF may have a negative moderation rejecting the hypothesis. Risi (2020) comments after studying 14 respondents within the banking and insurance industry in Switzerland in 2013 that ATF is oriented to a lower LTO (Slawinski and Bansal, 2015) and might be associated with an inability to assess issues with a LTO perspective (Marginson and McAulay, 2008). As a result, the pursuit of immediate profit may be vital and overrides other priorities where ATF providers will finance less ventures due to the uncertain nature of TEA generally (or ventures in certain industries) (Bondy, Moon and Matten, 2012). Easier ATF means entrepreneurs will have the option to access funds to realise their ventures, but an opportunity cost may arise in the form of delayed profits and income from stable employment generating regular payments.

Finally, H18 predicts that easier ATF will positively moderate the positive association between IVR and TEA, but the output from Model 2 (Figure 15) appears to reject this hypothesis since easier ATF negatively moderates the positive association between IVR and TEA. Dority, Tenkorang and Ujah (2019) understand that in high IVR countries,

individuals expect the aspect of personal life control to be important for their investment decisions. People in high IVR cultures believe that life outcomes are due to their own actions and thus may save more money for future TEA (Cobb-Clark *et al.*, 2016). Entrepreneurs in a high IVR culture are more likely to capitalise on risky assets via their own funds (Salamanca, de Grip, Fouarge, and Montizaan, 2020). It is due to this element of control that even with easier ATF, this will go against the values of high IVR individuals who will want to believe that their own efforts allowed their ventures to succeed as opposed to assistance from another source.

In summary, two models examined 18 hypotheses for this thesis. Model 1 looks at direct associations of national culture and TEA whilst Model 2 addresses FIs' moderating associations with national culture and TEA. For Model 1, half of the hypotheses are supported (IND, UA and IVR) whilst Model 2 has five out of the six hypotheses accepted for the PRs moderation hypotheses. Only H9 (PRs moderation between MAS and TEA) is rejected. However, looking at H13-H18 (ATF moderation hypotheses) the opposite is true where only H15 (ATF moderation between MAS and TEA) appears to be accepted. The other five hypotheses appear to be rejected. Interestingly, the LTO dimension had only one of three hypotheses with the appropriate sign (H11 which looks at PR's moderation between LTO's association with TEA). However, the IVR dimension had two out of three hypotheses accepted, with H18 (examining the ATF interaction) rejected. The specific contributions come from both the fact that specific FIs (PRs and ATF) are examined within the same model regarding informal institutions. In those instances, their empirical and theoretical contributions are noted in this section in the previous paragraphs.

To understand so many of the ATF interaction hypotheses being unsupported, Boudreaux and Nikolaev (2019) explain this when noticing the influence of economic institutions and its relationship between different types of capital (human, social, and financial) and OME over 10 years (2002-2012) in 47 countries. They conclude that high-quality institutional environments may have less impact as a moderator on TEA. At lower-quality institutions, financial institutions may have much more explanatory power. Possessing further financial resources increases the amount of OME when there is a lower-quality institutional environment present. On the other hand, enhancements in the quality of the institutional environment might lead to smaller associations of financial capital with OME

until there is no difference in the rates of OME between entrepreneurs who have access and do not have those resources (Boudreaux and Nikolaev, 2019). This citation demonstrates that ATF in higher quality institutional environments (which this thesis is focused on, in OECD nations) will have a weaker positive association than may have been anticipated on TEA since there is a higher abundance of financial (and other) resources.

Additionally, Andrieu, Staglianò and Van Der Zwan (2018) discover when studying 11 European countries, 2009-2014, in SMEs applying for finance (or credit) (16,687 ventures in the case of bank loans and 11,562 observations in case of trade credit with suppliers) that ATF may be determined by the industry the SME is in. Prior studies have found that ventures within the manufacturing sectors typically have a larger proportion of tangible assets (e.g., higher liquidation value) and therefore are able to obtain better ATF. Only few articles explore the association between the industry itself and financing. For example, La Rocca, La Rocca and Cariola (2010) conclude that firms in the manufacturing sector utilize more external financing and obtain long-term ATF due to lower information asymmetries than other industries. Unfortunately, the TEA measure used in this thesis does not contain industry information for entrepreneurs in OECD countries, but manufacturing SMEs are under-represented generally (World Bank, 2022). This shows that whilst the OECD may have a high ATF rate (mean value 70.7%, see Appendix), entrepreneurs may have different access rates depending on their industry. Indeed, as Section 2.9.3 (P.72) discusses, with the various alternative sources of ATF (e.g., GVCs, crowdfunding and hedge funds) entrepreneurs may always be able to access alternative sources of financial support, rather than traditional financial institutions.

Implementing moderating associations in this thesis allows the author to better understand the mechanisms of various institutions and the environment they operate in. Examining interactions (moderations) is a more realistic way of examining a phenomenon since neither informal nor FIs operate in isolation but rather in a co-evolutionary manner. Mohsen, Saeed, Raza, Omar and Muffatto (2021) argue that whilst some researchers believe that FIs have limited (or no) influence on new venture entry and development (e.g., Capelleras, Mole, Greene and Storey, 2007); a favourable formal institutional environment may increase the possibility that individuals will embark on EA (Urbano and Alvarez, 2014). The dynamism of new enterprises may reduce while nascent

entrepreneurs comprehend more about the FIs they will have to deal with (Estrin, Korosteleva and Mickiewicz, 2013).

Adding the newer Hofstede dimensions of LTO and IVR allows a richer understanding of national culture, but these recent additions mean that both LTO and IVR have scant literature (see Section 2.8.5 on P.65 and 2.8.6 on P.68 for discussions of both dimensions). Whilst the LTO dimension may have generated ambiguous results, the fact that the thesis examines LTO within a moderating context is something prior research has been lacking. Lin *et al*. (2019) emphasise that when examining LTO, industries differ in the average gestation period for investments (Fine, 1998), i.e., the rate at which an industry evolves based on the products, processes, and nature of the business itself. Lin *et al.* (2019) use the example of the pharmaceutical industry which has a short gestation period characterised by significant long term investment in R&D and long investment cycles (Pisano, 1994). Fine (1998) records that the product-technology gestation period is usually 7-15 years in pharmaceuticals compared to just 1-2 years for the semiconductor industry. The association between a LTO and decision-making speed is less prevalent in industries characterised by long gestation periods rather than by short ones as LTO exposes the threats of *'speed traps'* (Perlow, Okhuysen and Repenning, 2002). The urgent attention needed for making rapid decisions needs to reflect the entrepreneur's decision-making context (Perlow *et al*., 2002). The gestation period theory may be a plausible explanation of the ambiguous LTO results since the industries in the GEM data are not known. The gestation period explanation is one of the contributions to understanding the LTO and the ATF interaction hypothesis giving a plausible theoretical explanation into this specific interaction result.

Furthermore, looking at the IVR results has further enriched the literature with two of the three hypotheses appearing to be correct. There is support for showing a positive association of IVR and TEA alongside IVR (with PRs-moderation), so the moderation aspect is again something that has enriched the literature as there is a lack of research examining this. For H18, which looks at the ATF moderation, the hypothesis is rejected, an explanation is suggested that entrepreneurs in a high IVR culture are more likely to invest in risky assets via their savings (Salamanca, de Grip, Fouarge, and Montizaan, 2020). Easier ATF will go against the values of high IVR individuals who will want to believe that

their own efforts allowed their ventures to succeed as opposed to assistance from another source and will therefore not influence or lower overall TEA rates as entrepreneurs will not want to use the ATF facilities. The claimed contributions of the moderations and a detailed explanation for both FIs has been given earlier in this section of the thesis.

Overall, the models utilised in the thesis looking at both the association between national informal institutions and TEA alongside the moderations of the specific FIs have resulted in a more holistic study to examine institutions that influence TEA. However, a lack of studies looking at similar moderations and/or the specific institutions selected in the thesis makes comparisons difficult. Other studies have varied country samples and time frames, as well as different institutions considered, making it harder to compare with this thesis. Limitations of the study will be covered in the next chapter.

With the hypotheses tested, the next chapter will claim theoretical and practical contributions and acknowledge the limitations of the research, pointing to possible future directions whilst addressing the research question.

Chapter 7: Conclusions

Having examined the results and presented a discussion of the findings, the final Chapter of this thesis will re-examine and answer the research question. Subsequently, the Chapter will claim academic and practitioner contributions, identify the limitations of the research and, finally, suggest future directions that the research can take. The structure will follow the sequence of the thesis, e.g., claimed theoretical (and empirical) contributions related to specific national culture dimensions will be covered first, followed by contributions in terms of main associations first then moderations and other areas of contribution.

7.1) Answering the Research Question

The thesis posed the research question, *how do informal institutions moderated by two FIs (PR and ATF) influence levels of TEA at a country level?* The question was posed in Section 2.12 after the literature review and the identification of gaps.

Looking at the previous Chapter, informal institutions moderated by the specific FIs overall generate inconsistent results. As a highlight, five of the six PR-moderated hypotheses generate a significant positive moderation on the association between informal institutions and TEA. Informal institutions represent the attitudes of potential entrepreneurs. The hypotheses here appear to suggest that such attitudes only lead to new ventures when supported by effective PRs. Indeed, these hypotheses appear to correspond with Bylund and Mcaffrey's (2017) theory (see Section 2.11 on P.83), where informal institutions are considered the foundation (push factors) and FIs the support (pull factors) of TEA. This suggests that the quality of PRs institutions might influence new venture formation and development. Effective PRs may increase the chances that individuals may undertake EA (Urbano and Alvarez, 2014). Once nascent entrepreneurs learn about how to navigate the PRs they engage with, rates of TEA may increase as a level of certainty is generated via the guaranteed protection of property from the government (Estrin *et al*., 2013). Without effective PRs, an entrepreneur's preferred potential position becomes risky (Baumol, 1990) as a lack of such PRs reduces protection for acquired assets and therefore incentives to explore possible opportunities, this may result in lower rates of OME and therefore TEA (Foss and Foss, 2008). A negative PRs

moderation is noted for the MAS dimension and its association with TEA. This may arise because active competition is consistent with high MAS, and entrepreneurs are better able to improve their economic situation by seizing opportunities thus not needing the guaranteed support from PRs (Graafland and de Jong, 2021). Yet, effective PRs may protect producers from entrepreneurs who may be comfortable with obtaining material gains at the expense of other entrepreneurs (Park, Russell and Lee, 2007). It is these protections of third parties that may discourage prospective entrepreneurs from participating in nascent EA as their PRs may be exploited by established entrepreneurs with no repercussions from the FI authorities generally.

However, only one of the six ATF-moderated hypotheses is positive and significant (MAS dimension), and ATF has a significant negative moderation on the other informal institutions and TEA. ATF may have a negative moderation on informal institutions' associations with TEA, as at lower-quality institutional settings, human and financial institutions may have a larger explanatory power in influencing TEA (Boudreaux and Nikolaev, 2019). Thus, possessing easier ATF resources is positively associated with OME when there is a lower-quality institutional environment present (like the OECD nations). This may then have a weaker association as a moderator of the association between informal institutions and TEA (Boudreaux and Nikolaev, 2019).
However, as pointed out in Section 2.9.3 (P.72), the emergence of modern sources of finance may have allowed talented entrepreneurs to obtain funds from alternative sources and not just traditional financial institutions. Additionally, the composition of industries and their association with ATF is another plausible explanation to understanding the negative moderation. Andrieu *et al*. (2018) mention that ATF may be determined by the industry the entrepreneur is situated in as ventures in the manufacturing industry generally obtain better ATF rates due to their proportion of tangible assets having a higher liquidation value. Since the industry composition is not known for TEA, the fact that some of the OECD nations (e.g., U.S., UK) have a significant service sector in their economies would mean it would be harder (by default) to assess the value of the venture. This means ATF might have a negative moderation on TEA since a sizable amount of entrepreneurs may not be able to obtain ATF due to a lack of tangible assets.

Interestingly, the MAS dimension was the only cultural dimension where effective PRs had a negative moderation on the TEA association. Looking at the direct association between MAS and TEA, entrepreneurs may be associated with high MAS (Abbasi *et al.*, 2021). Therefore, in high MAS countries, a greater tolerance towards the issues of entrepreneurship may be realised, suggesting that entrepreneurs may be more likely to engage and persist with TEA even when the situation may be unwise for them to proceed (Tian *et al.*, 2018). Having easier ATF might therefore allow nascent entrepreneurs to realise their potential, stimulating TEA. Entrepreneurs in high MAS cultures might have greater trust in their ventures and may therefore allocate additional resources to achieve success, independence, and recognition at the expense of lower profits compared to entrepreneurs in low MAS cultures further stimulating TEA (Shao *et al.*, 2010).

7.2) Thesis contributions

For this cross-country international study based on NIT, several theoretical (alongside empirical) and policy (practical) contributions are claimed, e.g., theoretical contributions:

i) *IND's association with TEA:* Whilst numerous studies have examined IND and its direct association with TEA, fewer studies have examined the moderating aspect of specific FIs (PRs and ATF) on IND's association with TEA. The thesis demonstrates that IND has a positive association with TEA and is empirically supported by other studies (e.g., Bennett and Nikolaev, 2020). They mention that entrepreneurs often take substantial risks for which they anticipate being compensated individually if they are successful. High IND appears to be associated with innovation where individuals are driven for recognition or personal achievement (and TEA by proxy). Individual rewards and achievement recognition are more culturally acceptable in high IND countries which stimulates individuals to engage in TEA (Shane, 1992).

Contributions of this thesis can be claimed theoretically and empirically in relation to the moderation by FIs of the associations between IND on TEA. Effective PRs positively moderate the positive association between IND and TEA, changing the IND coefficient from a negative to a positive one with more effective PRs. Entrepreneurship might increase when a system of effective PRs and long-run policies emphasise competitive market that provides individuals with the choice of how to utilise their resources as well as their own personal aims (Hayek, 1948). High IND cultures may rely on economic institutions via these PRs to uphold contracts, curtail transaction expenses and ultimately deliver incentives for TEA to occur (Li and Zahra, 2012). However, easier ATF negatively moderates the positive association between IND and TEA. This appears to suggest that the more difficult ATF is for entrepreneurs, the lower the positive association between IND and rates of TEA (Boubakri and Saffar, 2016). ATF may negatively moderate the positive direct relation between IND and venture growth. Entrepreneurs in low IND settings may exhibit lower TEA, and having easier ATF therefore moderates this negative association (Černe *et al*., 2013). It may be the case that easier ATF may hinder innovation: entrepreneurs may be able to rely on external funding to carry on as before, rather than innovating and raising TEA.

ii) *UA's association with TEA:* The relation between UA and entrepreneurship has been examined in a wide variety of studies (e.g., Stephan and Pathak, 2016; Bräandstatter, 2011; Hofstede *et al*., 2004). The literature mentions that countries with a high UA culture are reported to have individuals who are less comfortable in unknown situations compared to known ones (Damaraju *et al.*, 2021). In such settings, the feeling that change may be considered dangerous is prominent (Hofstede, 1991) hence lower TEA levels may be present within high UA countries. The thesis confirms this result consistent with the literature (higher UA is associated with lower TEA) and claims to make theoretical and empirical contributions in relation to the moderations of FIs (PRs and ATF interactions).

Examining the specific FIs ATF and PRs reduce uncertainties, and this is demonstrated in Chapter 5 (Section 5.5 on P.163) where increases in effective PRs positively moderate the negative association between UA and TEA. This moderation changes the coefficient from a negative to a positive one, as initially, entrepreneurs in high UA countries may be uncertain about whether the nation's PRs will protect their venture (Alvarez and Barney, 2020). Strong PRs offer asset protection, reducing uncertainty. When looking at the negative moderation of ATF on UA's negative association with TEA, Li and Zahra (2012) conclude that entrepreneurs are less responsive to the incentives offered by FIs in countries with higher UA levels, so easy ATF may not have as much of a moderating influence on TEA in such settings. Future financial returns may not be the primary objective of entrepreneurs in high UA contexts as financial stability may be preferred (Di Pietro and Butticè, 2020). If high UA is present, changes may be perceived as being threatening and the status quo may be preferred (Canestrino *et al*., 2020) meaning entrepreneurs in high UA countries may not be as likely to seek resources from FIs. Indeed, Bennett and Nikolaev (2019) investigate how economic institutions (including ATF), moderate the relationship between capital and OME. Their study appears to confirm that, as the institutional environment improves, financial capital becomes a weaker determinant of entry into entrepreneurship. They comment that high-quality institutional environments tend to promote entrepreneurial flexibility, facilitating market innovation (Young, Welter and Conger, 2017). It may be the case that entrepreneurs in high UA settings will shift their ideas towards more cost-efficient ideas rather than seek external financial support. Indeed, these findings have added to the knowledge and

enhanced the explanations surrounding UA's main association with TEA and FIs' moderation on UA's negative association with TEA. They reveal a lack of support for the hypotheses involving easier ATF positively moderating the negative association of UA and TEA.

iii) *LTO's association with TEA:* There are few extant main effect studies of the association between LTO and entrepreneurship, and with even fewer studies examining moderating effects (e.g., Lumpkin *et al*., 2010; Lin *et al*., 2019; Barretto *et al*., 2022). This thesis therefore is designed to fill theoretical and empirical gaps for both the main and moderating association for the two FIs, and the negative coefficient on LTO's direct association with TEA is a claimed contribution. High LTO in this thesis is discovered to be an impediment to TEA.

Meanwhile, despite only one of the three hypotheses being supported (the PRs moderation hypothesis), this is still claimed to be an empirical contribution. The positive PRs moderation alludes to the fact that LTO makes entrepreneurs value long-term, growth-oriented objectives (Tiessen, 1997) as entrepreneurs saving and investing their income may be negatively associated with TEA in high LTO nations, as prior commitments might be obstacles to change. However, once new arrangements are socially accepted, the rate of such changes may be rapid (Lee *et al*., 2013). Entrepreneurs in such settings may be more confident that their ventures will be sufficiently protected legally and thus contribute to higher rates of TEA.

Next, the ambiguous ATF results may mean that financial institutions will not be able to evaluate the attainment of potential nascent TEA and thus not able to target successful TEA, as decision makers will be oriented towards a more short-term perspective of demanding loans given to the entrepreneur back in a shorter timeframe. Porter (1992) similarly argues in countries like the U.S. where ATF is provided by external share capital providers (e.g., pension funds), as opposed to countries like Germany or Japan that have loan finance provided by banks, such capital providers might react and can move their funds more quickly than lenders not caring about the long-term prospects of ventures. Indeed, finance providers may have short-term myopia where decision makers are forced to think in a short-term manner to protect their own jobs and avoid a takeover. These

citations reinforce the idea that the literature supports the possibility that ATF may negatively moderate the negative association between LTO and TEA where prospective entrepreneurs cannot facilitate plans for long-term objectives given FIs will deny them ATF to establish their ventures which can take approximately 46 months to be realised (Hechavarrıa *et al*., 2016).

Such ambiguous results raise the question of whether LTO is worth examining at all in relation to TEA, especially if LTO may encourage long term investments but discourage short-term ones. Chapter 2 (Section 2.8.5 on P.65) confirms that LTO is a dimension which may produce more pragmatic attitudes and positive impacts on entrepreneurial cognition (and TEA) (Hechavarria *et al*., 2016). Individuals from high LTO societies may be more prepared to wait for entrepreneurial rewards, and decision makers with an LTO outlook may be conscious that the costs of plenty of their choices may be understood only after a time delay (Le Breton-Miller and Miller, 2006). Indeed, Wood *et al.* (2021: P.149) explain that *''…entrepreneurs attend thoughtfully to key aspects of pursuing new introductions… It [a new venture] involves a commitment of time, talent, money, and other resources that, once expelled, are difficult to recoup (Bhawe, Rawhouser and Pollack, 2016)''*. These citations suggest that LTO was a dimension worth examining in this thesis, to understand its association with TEA, even if the results generated were ambiguous for this dimension.

An explanation of why the (direct and moderated) results examining LTO's association with TEA were mixed may be attributed to different gestation periods of projects within and between industries (Fine, 1998), i.e., the rate at which an industry evolves based on the processes and nature of the business itself. Different gestation periods may be a plausible explanation of the ambiguous LTO results since the industries or the timescale of the projects (long-term or short-term) in the GEM data is not known. This makes unambiguous hypotheses relating LTO's association with TEA difficult to generate and possibly leads to mixed results. It may therefore be sensible to ignore the LTO dimension altogether in future studies. These findings have added to the knowledge and enhanced the explanations surrounding LTO's main association with TEA and the two specific FIs' moderations on LTO's negative association with TEA.

iv) *IVR's association with TEA:* Given that this is the most recently developed informal institution dimension, this thesis attempts to fill a literature gap by looking at this dimension as a main association with TEA (both empirically and theoretically). The findings here are encouraging: IVR is found to have a positive, significant, main association with TEA. Looking at the literature, Hofstede (2011) argues that individuals living in high IVR countries are on average optimistic and encourage critical decision-making which might stimulate innovation due to novel ideas pursued by entrepreneurs. This therefore may impact TEA positively (Boubakri *et al.*, 2021). Choi (2020) comments (after looking at ventures in 40 countries) that high IVR may have a positive impact on innovation because it is essential for creativity and risky investments which are in turn necessary for EA. Additionally, as mentioned earlier by Nikolaev and Boudreaux (2019), the specific FIs (PRs and ATF) may have a diminishing influence as a moderator in countries with higher quality formal institutional environments. Therefore, improvements in the quality of the FI environment might involve diminishing returns for TEA until there is no difference in the rates of TEA between entrepreneurs who have and do not have equal access to PRs and ATF.

OECD nations are understood to have a high quality of FIs (mean scores of 77.1 and 70.4 for PR and ATF respectively in this study, see Appendix). Entrepreneurs in such high IVR settings may therefore proceed along less-established career paths, ignoring the social pressures not to engage in TEA (Hicks *et al*., 2015). Individuals from cultures characterised by high IVR are expected to exhibit weaker fears of failure (Hicks, *et al*., 2015), such a cultural setting coupled with a high-quality institutional environment may help facilitate TEA, perhaps due to a higher perception of confidence present in high IVR cultures incentivising entrepreneurs to fulfil their aims of owning a venture (Hofstede, 2011). Such citations demonstrate theorising consistent with the results of this thesis.

Since no studies (to the author's knowledge) have examined the moderating associations of institutions on IVR's association with TEA, an empirical contribution is claimed where two of the three hypotheses are supported, an empirical contribution is overall generated where two of the three hypotheses are supported. A significant positive moderation of PRs is seen for IVR's association with TEA, the coefficient changing from negative to positive with an increase in effective PRs. An extant literature addressing the PR-

moderation on IVR is lacking, but Michael and Pearce II (2009) confirm that effective PRs may allow the desires of entrepreneurs to be realised by guaranteeing a level of protection of their ideas, providing some confidence in the process of establishing a nascent venture facilitating innovation and potentially resulting in TEA. Boubakri *et al.* (2021) emphasise that IVR traits might promote innovation and therefore be associated with TEA positively. However, in contrast with these discussions around the direct association between IVR and TEA, in this thesis there is a significant negative moderating association of ATF on the positive association between IVR and TEA. This demonstrates that entrepreneurs with high IVR may be more likely to be impulsive and use their own financial means avoiding alternative options. Indeed, entrepreneurs in such settings may invest in risky assets refraining from utilising ATF from financial institutions as they believe that the outcomes are due to their own actions and thus save external financial resources for future TEA (Cobb-Clark *et al*., 2016). A contribution is claimed for the empirical positive association arising from IVR and TEA. The literature is lacking on this front, so this contributes to the knowledge domain. Additionally, the positive moderating association of PRs and the negative moderating association of ATF both contribute to the literature with the empirical associations along with the theoretical explanations for these associations explained earlier in this paragraph.

v) *Informal institutions and FIs' moderating associations with TEA:* Having looked at the various contributions of specific national cultural dimensions, Section 2.12 on P.86 identifies a research gap in institutional and entrepreneurship theory. Research examining how specific FIs moderate and influence TEA through a variety of mechanisms is required (Sun *et al*., 2020). Bruton *et al*. (2010) emphasise that an almost special focus is placed on culture (informal institutions) as the main independent variable in institutional theory studies and their impact on entrepreneurship. Bruton *et al*. (2010) conclude that examining specific FIs will clarify the implications of and their mechanisms for potentially positively moderating TEA. This thesis attempts to explain these implications by examining PRs and ATF, contributing to the literature both theoretically and empirically, and their moderating associations on TEA. It demonstrates that PRs have a generally positive moderating association, whilst ATF surprisingly generates an overall negative, moderating association on informal institutions' associations with TEA. This

points to the idea that effective PRs overall positively moderate national culture's associations with TEA, and OECD nations may encourage more effective PRs to further exploit the potential of TEA. On the other hand, financial institutions may need to tailor specific financial packages (or assistance) for specific industries which will have different gestation periods and tangible assets (see Section 6.2.3).

There may also be implications of this study for policymakers at a practical level:

vi) *PRs protection:* Junaid, He and Afzal (2022) find that weak market institutions exert a strong negative moderation on all phases of the entrepreneurial process influencing TEA. Research (European Patent Office, 2021) indicates that firms protected by PRs enjoy greater economic performance, with revenue (per employee) up to 55% greater than unprotected firms. This demonstrates that PRs protection seems to exert a positive moderating association on informal institutions association with TEA. This may encourage nascent entrepreneurs to participate, advancing TEA. This is additionally supported theoretically, as Section 2.9.2 (P.71) explains that PRs modify entrepreneurial expectations (Pacheo *et al*., 2010) and that such expectations may be seen as necessary within markets for TEA (Barzel, 1997; Bromley, 1989). PRs address the direct motivations that motivate individuals to create new arrangements with resources (Alston *et al*., 1999) alongside the governance mechanisms that might be used for venture foundation (Casari, 2007). Angulo-Guerrero *et al*. (2017) understand that a FI environment providing a high-quality legal system and protection of PRs which tends to facilitate innovations and risk taking positively associating with OME and TEA consequently (Bjørnskov and Foss, 2013). These citations appear to be consistent with the moderations that this thesis reports, where five out of six hypotheses are supported where PRs are moderators.

7.3) Research limitations

Despite these claimed contributions, however, the thesis has several limitations:

i) *Types of entrepreneurship examined:* This thesis has examined only the OME component of TEA, due to the country sample of rich OECD nations examined in this thesis. Many studies look at both OME and NME components separately as it is acknowledged that NME (see Section 2.2.1 on P.32) also has high levels occurring within OECD nations (e.g., Germany has a ratio of 2:1 ratio for OME to NME for all its TEA).

A criticism of TEA can also be seen in its composition: TEA examines the percentage of 18–64 year olds engaged in TEA that has taken place for at least 42 months (Reynolds *et al*., 2002). This age range is wide for this measure, and the thesis has already implemented age as a control variable in Section 4.7.6 (P.139). Therefore, a criticism of the TEA measure are the facts that older people are more likely to be self-employed (Blanchflower *et al*., 2001) and middle-aged people have the highest proportion of TEA (Storey, 1994). A limitation is the TEA age-range itself where the age gap encompassed in this variable is too wide, this is because older people are more likely to be entrepreneurs yet younger people aspire to being an entrepreneur. Research generally appears to indicate that middle-aged people have the highest proportion of business ownership (Storey, 1994), and therefore, an ageing population in most developed countries may imply a threat to the future development of EA (Wennekers *et al*., 2007).

ii) *Updated Hofstede's values:* Section 4.7.2 explains that there is stability in national cultural dimensions, but this stability has apparently decreased over time. Chun, Zhang, Cohen, Florea and Genc (2021) explain that there is a plethora of literature indicating value shifts in a society's culture (e.g., Inglehart and Baker, 2000; Inglehart, 1997). Globalisation may bring changes in certain Hofstede dimensions (e.g., possibly higher IND and lower PD). Further research of cultural adjustments over time is evidenced by Taras *et al*. (2012) who examined 451 published empirical studies with data from 49 countries and regions. Concentrating on the use of meta-analysis in cultural studies research and the perseverance of Hofstede's dimensional characteristics, the authors find strong suggestions of diminishing correlations of recent values with Hofstede's original results over time. Such changes are not seen as identical across countries (Taras *et al*., 2012).

Implementing updated Hofstede's values would allow for a more precise insight of the function of national culture and TEA.

iii) *FIs* : Whilst this thesis looks at the FIs of PRs and ATF, other studies have used a variety of FIs. For example, Fuentelsaz *et al.* (2019) assess the influence of FIs (moderated by informal institutions) and OME looking at 84 countries (2002-2015), including voice, accountability and political stability amongst other formal institutions. Nikolaev *et al*. (2018) examine OME and NME in 73 countries (2001-2015) using 44 variables on institutions including corruption, fiscal freedom, religion and legal system origin. Angluo-Guerrero *et al*. (2017) analyse the associations of OME and NME with EF in OECD countries (2001-2012) examining institutions like credit access, labour, market capitalisation and international trade. Using additional variables may allow for a more comprehensive understanding of how TEA is influenced by different forms of FIs. In fact, examining ATF as moderator in this thesis led to only one of the six hypotheses being supported (five hypotheses being significant). Since OECD nations generally have a high-quality institutional environment, weak associations of financial capital moderation on OME may be seen (Boudreaux and Nikolaev, 2019). Therefore, exclusion of ATF from future studies may be reasonable.

iv) *Country sample:* This thesis examines 32 OECD countries, yet other papers examine a wider range of countries. Several other studies examine a much wider country coverage, e.g. Junaid *et al*. (2022) analyse 74 from Africa, Asia, Europe and South America (S.America). Fuentelsaz *et al.* (2021) note 74 countries from Africa, Asia, Europe, S.America, North America. Additionally, Nikolaev *et al*. (2018) study 73 countries comprising countries in Asia, Europe, S.America, Africa and Oceania. Having a wider country coverage may facilitate a more generalized understanding of the influences of institutions (formal and informal) on TEA globally as opposed to OECD countries only.

v) *Regional differences/disparities:* This issue was referred to in Section 4.4 (P.112) as the reason for omitting certain L.A. countries. By conducting cross-country TEA studies, the mechanics of how various institutions and their associations with TEA are better understood, regional differences within each country however are not examined in such settings. Stenholm *et al.* (2013) indicate that extensive research has recognised vital

differences in the rate and type of TEA within nations at a regional level, with discrepancies between regions connected to knowledge spillovers and the amount and quality of entrepreneurs therefore impacting regional TEA performance (Audretsch, Bönte and Keilbach, 2008). Stenholm *et al*. (2013: P.190) mention that this *"…will help to illuminate how different institutional arrangements influence both the rate and type of entrepreneurial activity in a region. Future work could explore the role of institutional "micro-climates" that help to promote and foster…growth within a country, helping to explain within-country variance*". This citation points to the fact that understanding regional TEA (which makes up national TEA) allows for a greater awareness of the mechanics and interactions of institutions with TEA. It may be beneficial for researchers to examine regional disparities within a particular country and the differences in TEA rates within the country as opposed to cross-country studies.

vi) *Macro-level analysis:* Through limited empirical research work, shortcomings are seen in conceptual, theoretical models examining institutional theory and entrepreneurship (Sun *et al.*, 2020). Micro-foundations remain unobserved in research generally (Bruton *et al*., 2010). The absence of sufficient data across enough countries (or regions) that can be used to test theories is seen across the literature. Whilst studies utilise a macro (country) level analysis in examining institutions and entrepreneurship (e.g., Abdesselam *et al*., 2018; Angulo-Guerrero *et al*., 2017; Wennekers *et al*., 2007) and are covered in this thesis in Sections 4.3 (P.110) and 4.4 (P.112), the distinction between the different levels of analysis available are rarely examined. Bradley and Klein (2016) comment that the empirical economics literature on country-level variables takes a narrow view of entrepreneurship. They consider that the literature fails to understand the causal relationship between entrepreneurship and other variables and takes a '*black-box*' approach. This thesis explains the different levels of analysis in Section 4.5 (P.116), expanding on why a national (macro) level of analysis is undertaken, and the limitations of this are also examined when evaluating Hofstede's dimensions of national culture looking at issues with the index on an aggregate (national) level.

7.4) Future directions for research:

Reflecting these limitations, there are many future research areas that could be further explored.

i) *Exclusion of LTO:* As pointed out in Section 7.2 (P.199), a claimed contribution is addressing the theoretical gap by studying LTO's (main and moderated) association with TEA where only one of three hypotheses appeared to be supported. This thesis questions the validity of examining LTO in future studies of a similar nature. As discussed in Section 7.2 (point iii) (P.201), theoretical ambiguity exists in relation to LTO's association with TEA. Lumpkin *et al.* (2010) comment that TEA in rapidly evolving situations require decision makers to change long-term priorities which may impact TEA. Barretto *et al*. (2022) conclude that LTO has an initial significant effect on implementing TEA but the mindset of perseverance in high LTO contexts may be detrimental to TEA. A major issue with the LTO dimension, asides from the gestation periods differing by industry, is also the fact that there will be various projects with different time horizons within a specific industry. For example, two different projects may occur in the mobile phone industry with two different ventures. One project may be a particular component being upgraded on phones (e.g., software upgrade) versus having a new phone model created altogether. Greater LTO will favour the latter (long-term project) but not the former (short-term project), hence, it may be difficult to theorize the overall association between LTO and TEA, since both ventures will count as TEA, and to explain the empirical results since the time horizons of projects contributing to TEA will be unknown. Potential exclusion of the LTO dimension may therefore be sensible for future studies.

ii) *Alternative national culture indices:* A point emphasised in the literature when examining national culture indices is the fact that Hofstede's indices are assumed to be stable (covered in Section 7.3 on P.208) and are not responsive to changes globally or within society. Amongst other issues with Hofstede's index, researchers have therefore suggested utilising alternative indices as mentioned in Section 4.7.2 (P.127) (e.g., GLOBE and Schwartz). Indeed, Taras *et al*. (2012) explain that an alternative to Hofstede's index may be a meta-analysis (combining multiple indices) of the various dimensions in different indices, as this may be better suited for handling the sampling uses across time periods and specific populations of interest as post-Hofstede research advanced the

understanding of culture yet was subject to the same limitations that Hofstede has (i.e. the lack of data generalisability across population and time). Examining the same population (countries) at different times may offer better insights into the implications of national cultural dimensions via a longitudinal perspective. This is mentioned by Beugelsdijk *et al*. (2017) who comment that whilst alternative indices aim to go '*beyond Hofstede'* (Nakata, 2009), most existing literature in this field is specific in nature. Likewise, '*thick descriptions*' of cultures remain country-specific, despite using Hofstede's index, and present authenticity problems, e.g., *''…locally valid instruments would prohibit researchers from making direct comparisons between countries*'' (Kirkman *et al*., 2006: P.313). This illustrates the traditional conflict in cross-cultural research between the universality and specificity of the research itself which could benefit from alternative approaches (or indices).

iii) *Focus on NME and emerging markets:* This thesis focuses on OECD nations and TEA where focus is on OME. Emerging countries, e.g., '*BRIC*' nations (Brazil, Russia, India and China), are of interest due to their potential in terms of economic significance, being some of the world's largest economies (e.g., China being the second largest economy by GDP) (World Bank, 2022). Buccieri, Javalgi and Jancenelle (2021) examine dynamic capabilities in SMEs from emerging countries and mention that they account for more than 50% of employment and contribute approximately 50% of GDP in emerging markets (Alibhai, Bell and Connor, 2017). In these nations, despite a growing amount of OME, NME will still be a significant proportion of TEA. Puente *et al.* (2019) state that NM entrepreneurs may have low growth aspirations when establishing a venture, due to aspirations to be employees rather than having the goal of establishing a venture that will be profitable. Therefore, NME can be seen to be an issue for policymakers in emerging markets. Since they are a relevant group in developing countries (Rosa, Kodithuwakku, and Balunywa, 2006), further studies of NME will allow a better understanding of TEA in emerging markets. As such, when considering entrepreneurship in the emerging (less developed) countries, as mentioned in Section 4.4 (P.112), the findings can only be applied to a certain portion of the entrepreneurs globally and thus excludes an examination of a significant number of entrepreneurs in important countries, as the study has analysed EA within a '*nested*' context. The thesis speaks about this as a limitation in

the previous section (Section 7.3 on P.208) placing less importance on NME generally by default.

iv) *Level of analysis:* The previous Chapter (see Section 6.2.3) addressed ambiguous LTO results; the gestation period (referring to the '*clock speed*' theory) was discussed and how this will vary by industry. It was further suggested that since TEA was an aggregate national level measure for all industries. An issue with such cross-country studies examining TEA, therefore, is that policy makers and academics are given a general picture, but specific policies and a better understanding of specific industries are missing. Having a specific industry focus (within a country or a group of countries) could allow more informed decision making, but this would require entrepreneurship activity data by industry. For example, Choi, Ha and Kim (2021) note S. Korean SME patent and utility model data from 77 ventures (with a combined 912 venture years in total) from 2000 to 2017 in the S. Korean electronic parts industry when examining innovation associations. Additionally, Stuetzer, Obschonka, Audretsch, Wyrwich, Rentfrow, Coombes, Taylor and Satchell (2016) attempt to understand the associations of entrepreneurship, industry and national culture. They look at the regional presence of industries in the U.K. from 1891 and industry characteristics from 1907 in 10-year intervals for certain manufacturing industries (textile, metal, coal mining, bricks and pottery). The data is collected from the Inter Departmental Business Register (IDBR) and census data available from 1891. Such citations demonstrate that an industry focus may be beneficial for understanding specific industries and their associations with national cultural dimensions rather than cross-country studies.

v) *Feasible generalised least squares (FGLS) regression model:* Section 5.5.2 explains the features of an OLS model and its limitations. The FGLS coefficients of a linear regression are a generalisation of the OLS model. FGLS is essentially used to deal with situations in which the OLS coefficients are not '*BLUE*' (best linear unbiased estimators) (Kariya and Karuta, 2004). Fuentelsaz *et al*. (2021) examine entrepreneurial exit from an institutional perspective and contemplate high-growth ambition plans amongst panel data for 74 countries from 2007-2017. In the study, they recommend using a FGLS model, thus a model corrects for issues of heteroscedasticity and autocorrelation which can be common for panel data (Anokhin and Schulze, 2009; Audretsch and Thurik, 2001). Choi *et al*. (2021)

also use a FGLS model when noting S. Korean SME patent and utility model data from 77 ventures (covering 912 venture years) from 2000 to 2017 in the S. Korean electronic parts industry and innovation associations. Choi *et al*. (2021: P.15) observe that *"…OLS estimation might yield biased estimates due to unobservable heterogeneity in firm characteristics. We therefore adopted panel-data linear models using FGLS, which is known to provide more reliable estimates in the presence of heteroskedasticity and autocorrelation".* Both the articles examined here illustrate that FGLS is a contemporary model being explored in the entrepreneurship literature. Using such a model may generate some useful insights, correcting for OLS issues.

Entrepreneurs face vast uncertainty when establishing ventures, so unprecedented support from FIs was witnessed globally (e.g., furlough employment protection schemes and quantitative easing via lowering interest rates) during the first Covid lockdown. This prompted the author to wonder about the connections between FIs and how people within a country would interact with this FI support regarding entrepreneurship generally. From this and with support from academic staff within the University, the topic of NIT and TEA emerged. The national focus of this thesis was necessitated by the Covid crisis, i.e., it was written, conducted and written up during the first two years of the Covid-19 pandemic, despite all the uncertainties surrounding lockdown and anticipation of life returning back to normal. This meant that the author had to assess feasibility issues and adopting a NIT study examining secondary data at a macro level was the most appropriate route, given its prominence in the literature. This allowed the author to finish writing-up on time despite the global uncertainties from 2020 onwards.

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Appendix

Variable	**Source**	**N**	**Mean**	**Standard Deviation (SD)**	**Min**	**Max**
1) Dependent Variable:						
TEA	GEM (2021)	32	19	17	3.7	71.8
2) Independent Variables:						
PD	Hofstede's Index (2021)	32	46.6	18.1	11	100
IND	Hofstede's Index (2021)	32	62.9	18.4	18	91
MAS	Hofstede's Index (2021)	32	47.3	27	5	100
UA	Hofstede's Index (2021)	32	66.3	21.3	23	100
LTO	Hofstede's Index (2021)	32	55.7	21.4	21	100

IVR	Hofstede's Index (2021)	32	48.5	18.6	13	78
3) <u>Moderating Variables:</u>						
PR	IEF (2021)	32	77.1	13.3	48.6	90.4
ATF	IEF (2021)	32	70.4	10.6	50	90
4) <u>Control Variables:</u>						
GDP per capita	OECD database (2021)	32	42,712	15720	24,483	104,189
Age composition	World Bank (2021)	32	34.9	2	31.4	39.2

(25-49 years old)						
Female Labour Participation Rates	OECD Labour Statistics (2021)	32	25	20.7	4.5	77.4
Gross Enrolment Rates	World Bank (2021)	32	89.8	12	60.9	113.3
Population Density	UN World Population Prospects Index (2021)	32	140.6	136.5	3.1	520.7

Table 7: Descriptive statistics summary. *Source: Author*.

Table 7 demonstrates the descriptive statistics for all 14 variables (up to 1 decimal point (dp)) being examined in the thesis. In total, 448 observations (data points) arise in the dataset used for the thesis. The mean value refers to the centre of a distribution of data points, this can also be understood as the

‘*typical*’ data value (Field *et al*., 2012). The standard deviation (SD) refers to the average spread (volatility) of a set of data points measured in the same units of measurement as the original data (Field *et al.*, 2012). The minimum ‘*min*’ is the lowest value observed for a variable in the dataset and the ‘*max*’ is the highest observed value for a variable in a dataset (Field *et al.*, 2012).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1) TEA	1													
2) PD	0.06*	1												
3) IND	0.05*	-0.44*	1											
4) MAS	-0.10	0.26	0.08	1										
5) UA	0.28	0.43*	-0.44*	0.22	1									
6) LTO	-0.30*	0.26	-0.23	0.18	0.30*	1								
7) IVR	0.24	-0.32*	0.40*	-0.08	-0.38*	-0.42	1							
8) PRs	0.06	-0.41	0.45*	-0.17	-0.41*	-0.13*	0.39*	1						
9) ATF	0.11	-0.39	0.31*	-0.01	-0.47*	-0.02*	0.37*	0.39*	1					
10) GDP p/c	-0.08*	0.47*	0.31*	-0.09	-0.49*	-0.20	0.34*	0.58*	0.32	1				
11) Age composition (25-49 years old)	0.13	0.38*	0.43*	0.30*	0.26	0.13	0.32*	0.40	-0.05	0.32	1			
12) Female Labour Participation Rates	0.10	-0.43*	0.45	-0.27	-0.46*	-0.43*	0.41	0.51*	0.42*	0.33*	0.11*	1		
13) Gross Enrolment Rates	-0.04	-0.19	-0.02	-0.48*	-0.07	-0.36*	0.22	0.09	0.02	-0.12	-0.25	0.26	1	
14) Population Density	0.22	0.17	-0.16	0.20	0.26	0.52*	-0.03	0.08	0.03	0.07	0.09	-0.09	-0.17	1

*= 95% confidence interval or higher N=32

Table 8: Correlation matrix (Pearson test). *Source: Author*.

A researcher will be interested in the crude association arising between variables. This is done to obtain the covariance between the set variables of interest (Field *et al*., 2012). The correlation coefficient values ('*r*') lie between -1 and 1. A coefficient of 1 indicates a perfect positive association (relationship) present between both variables whilst a coefficient of -1 indicates a perfect negative association. Lastly, a coefficient of 0 appears to indicate no relation whatsoever (Field *et al*., 2012). The correlation coefficient is used to measure the size of an effect. Field *et al.* (2012) comment that the following ranges of values indicate different strengths between the variables:

Correlation value ('r')	**Interpretation**
± 0.01-0.29	Small effect
±0.3-0.49	Medium effect
±0.5-1.0	Large effect

The values above illustrate the various '*r*' values and how to interpret them. A Pearson correlation coefficient was calculated for all the variables in the dataset. For a Pearson correlation, the requirement is that the data be an interval (a data point measured along a scale where each point is equidistant (interval) from one another), this condition is fulfilled where data points were taken annually for 10 years and imputed. To establish the significance of the correlation coefficients, the sampling distribution must be normally distributed or with a large enough sample size (observations) present (Field *et a*l., 2012). If the significance values are not statistically significant, then we cannot say whether the observed coefficient is different from zero (i.e., no relationship present).