BUSINESS REGULATIONS: IMPACTS ON ENTREPRENEURIAL ACTIVITY

- The Case of Malaysia –
Bsc thesis in 659 Economics

Pontus Liljeblad   Petter Norström

Stockholm School of Economics
Supervisor: Yoichi Sugita
Examiner: Örjan Sjöberg
Discussants: Pontus Anderson and Sebastian Flennerhag

Box 6501
113 83 STOCKHOLM

Email: 22002@student.hhs.se
22030@student.hhs.se

Abstract

This thesis investigates the institutional determinant in the form of business regulations, and its effect on productive entrepreneurial activities in Malaysia. A panel data model is used to analyze annual startup rates disaggregated on industry level. The findings suggest that increased quality of business regulations positively affects the number of startups, which here serve as a proxy for productive entrepreneurship. The main findings contradict findings from previous studies on the subject and implications for future research are proposed.

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List of Abbreviations

FI   – Fraser Institute

EFW   – Economic Freedom of the World Index

UNCTAD   – United Nations Conference on Trade and Development

SSM   – Companies Comission of Malaysia

SME Corp   – Small and Medium Enterprise Corporation Malaysia

OECD   – Organization for Economic Co-operation and Development

GEM   – Global Entrepreneurship Monitor

ASEAN   – Association of Southeast Asian Nations

NEP   – Malaysian New Economic Policy

BCIC   – Bumiputera Commercial and Industrial Community

GTP   – Government Transformation Programme

WBDB   – World Bank's Doing Business Report

DOSM   – Department of Statistics Malaysia

1 Introduction

The notion of entrepreneurship being the backbone of any economy has a long history in economic literature (eg. Schumpeter, Kirzner, Cantillon). Entrepreneurs are considered the drivers of economic growth and consequently; entrepreneurship should be nurtured and promoted. Not until recently has this axiom been criticized for being too simplistic: The entrepreneurs cannot be considered a homogenous group where every individual contributes to economic prosperity to the same degree. One can even imagine that some entrepreneurial activity may result in economic stagnation rather than growth (Baumol, 1990). Thus, identifying what determines the allocation of entrepreneurial efforts toward growth generating activities should have important policy making implications. All the while, mainstream economic research is preoccupied with the determinants of the level of total entrepreneurship. This thesis will instead aim to contribute to an understanding of how the institutional determinant in form of business regulations affects value-adding entrepreneurship (henceforth *productive* entrepreneurship as defined by William Baumol).

Since the introduction of the 7th Malaysia plan in 1996, the Malaysian economic policy has shifted from promoting a raw material based economy towards promoting innovation and entrepreneurship (Malaysia Government, 2006). With each new plan, Malaysia puts more emphasis into the importance of the entrepreneur. With new research available, economic policy has partly been focused on reducing the bureaucratic burden for companies, for example has the time of registering a business decreased from 37 days in 2007 to 3 as of today (World Bank, 2013). But what implications does this have on the type of entrepreneurial activity? Previous research provides ambiguous results regarding the effects from reducing the regulatory complexity faced by entrepreneurs. However, focus has been on developed countries or to produce general conclusions applicable to any country. By studying the newly industrialized economy of Malaysia, we strive to nuance these previous results.

Drawing on the conclusions of William Baumol, this study aims at examining the formal institution of business regulations' effects on the allocation towards productive entrepreneurship in the developing country of Malaysia. We use annual data from Fraser Institute's Economic Freedom of the World index (EFW) to measure Malaysia's business regulations and correlate it with yearly startup rates (as proxy for productive entrepreneurship). To increase the prospects of drawing valid inferences, we estimate a panel data model where the startup rates are segmented on 18 different industries with observations spanning the period 1995 till 2010.

2 Relevance of the study

The quality of a country's institutions is recognized to be an important determinant of its economic growth (Acemoglu, Johnson, & Robinson, 2005; Rodrik, Subramanian, & Trebbi, 2004). Institutions can be described as the 'rules of the game', and are informal (customs, norms and social networks) as well as formal (political and economic conditions; polity, judiciary and bureaucracy). Formal and informal institutions shape the incentive structure in a society, i.e. influence people's choice on how to allocate their talents, which is directly linked to the country's economic performance (North, 1991). This paper will concentrate on the relationship between formal institutions (i.e. business regulations) and productive entrepreneurship (i.e. entrepreneurial activity that benefits growth).

A country's institutional quality is commonly measured by its level of *economic freedom* (Gwartney, Lawson, & Norton, 2008). Many studies investigate the institutions of economic freedom's relationship to variables such as growth and income inequality (Berggren, 2003; Carter, 2007; Doucouliagos & Ulubasoglu, 2008). Recently, we have seen attempts to combine the role of institutions with entrepreneurship in a microeconomic perspective, mainly to explain the variation in countries' levels of total entrepreneurship. However, with the assumption that entrepreneurs are not a homogeneous group, the effects on economic growth from increasing the level of entrepreneurship remain unclear. All entrepreneurs cannot be considered potential drivers of economic growth (Vivarelli, 2004). Thus, knowledge regarding the level of entrepreneurship's relation to institutions provides limited policy making implications. On the contrary, studying how institutions affect the allocation towards **productive** entrepreneurship has a more clear-cut link to economic development (Baumol, 1990).

2.1 The shortage of empirical literature and ambiguous results

In the development of entrepreneurship research, Ucbasaran et al (2001) listed six major themes which are mainly discussed by scholars, namely; Entrepreneurship theory (1), Types of entrepreneurs (2), The entrepreneurial process (3), Organizational forms selected by entrepreneurs (4), External environments for entrepreneurship (5), and Outcomes (6). However, a still relatively uncharted area in empirical literature is the suggested connection between entrepreneurship and institutions of economic freedom. Particularly limited are the empirical studies exploring the linkage between the allocation of entrepreneurship and bureaucratic complexity. The studies investigating this relationship generally conclude that regulations have insignificant impact on the level of productive entrepreneurship (Amorós, 2009; Bowen & De Clercq, 2007; Stenholm, Acs, & Wuebker, 2013). Since these studies usually strive to produce generally applicable findings, large-scale cross-country methods are typically used. Consequently, diverse effects depending on the level of economic development in the countries involved are somewhat neglected. This thesis is founded on the premise that the **cost** of regulatory complexities ought to be seen in relative terms; an equal cost in absolute terms produces a higher burden for an entrepreneur with low disposable income than one with high. Thus the effects of business regulation should depend on the GDP per capita level in the country. The chance of detecting a possible effect of business regulations should thus be higher in a country with lower GDP per capita than previously studied countries.

2.2 Why Malaysia?

As mentioned above, most of the studies within this field of research have ambitions to draw general conclusions and primarily investigate OECD countries. This spurs a demand for more studies on entrepreneurship in developing countries. It can even be reasoned that

investigating the drivers of economic growth and how these can be stimulated have even more vital policy implications in these countries. Reducing direct regulatory costs (or indirectly increasing economic growth) in countries with low disposable income per capita can yield a more substantial impact on the lives of its inhabitants than in an OECD country.

Malaysia is a rapidly rising but still developing country with a dynamic and volatile business environment. Entrepreneurship has grown to be the most important part of the Malaysian economy, for example SMEs account for 93.8 per cent of companies in the manufacturing sector (SMIDEC, 2002). This has made entrepreneurship central to the political agenda in Malaysia and policy implications are many.

Furthermore, Malaysia's strong state presence provides great potential of finding obstructing bureaucracy and opportunities for high impact policy-changes. Due to the various economic stimulus packages launched by the Malaysian state there is also the opportunity to find clear variations in the bureaucracy variable, providing the possibility of interpreting their impact.

3   Previous Research

This section will first provide an overview of economists' contributions to our understanding of the entrepreneur. It continues with the role of institutions and Baumol's thoughts on its effects on *allocation* and *supply* of entrepreneurship. Finally, two hypotheses are presented.

3.1   Theoretical framework

The first theorization of the entrepreneur appears in the writing of Richard Cantillon, an economist active in the second half of the 18th century. Cantillon divided the participants of the economy into three groups: Landowners, Wage-workers, and Entrepreneurs. The first two classes gained income from relatively certain sources; rents from land and monthly salary respectively. The entrepreneur on the other hand, was hampered with the risk of uncertain income. Accordingly, Cantillon defined the entrepreneur as someone who had to take judgmental decisions under uncertainty, and within this uncertainty lays the adjustment and pursuit of change (Cantillon 1979).

Frank Knight developed Cantillon's theory further in 1921 with his book "*Risk, Uncertainty and Profit*", mainly by distinguishing uncertainty from risk. Uncertainty can be characterized by a probability function without a valid basis of calculation. Every uncertain event is unique, which (unlike risk) makes it difficult to calculate. Knight saw the entrepreneur as a risk-taker who deals with uncertainty. In order to mitigate the apparent uncertainty, he argues that the entrepreneur possesses certain traits such as; self-confidence, good judgment, and leadership skills (Van Praag, 1999). But since taking risk denotes earning return from bearing the risk of losing, it implies that the entrepreneur is in possession of resources. This assumption contradicts Cantillon's separation between entrepreneurs and capitalists.

Jospeh Schumpeter criticized Knight on this point, asserting that the risk-bearing aspect is not essential to the concept of entrepreneurship. He instead argues that the entrepreneur's role is to carry out new combinations of production, bearing risk or not. The entrepreneur gives rise to new combinations through innovation:

"Whatever the type, everyone is an entrepreneur only when he actually carries out new combinations and loses that character as soon as he has built up his business, when he settles down to running it as other people run their business." (Schumpeter, 1934)

Thus, as soon as an individual starts an innovative venture she is an entrepreneur and when she ceases innovating she stops being an entrepreneur. With this in mind, Schumpeter went on to define five groups of entrepreneurial activities; *Introducing a new product, or a new quality of an existing good (1), The introduction of another production method (2), Opening a new market (3), Finding new sources of input goods (4), Changing the organization of an industry (e.g. creating a monopolistic market) (5).* (Schumpeter 1934) The works of Schumpeter has been highly influential, and forms the base for Baumol's theory which will be reviewed below.

3.1.1   The allocation of entrepreneurship and the role of institutions

William J. Baumol builds on Schumpeter's theory, presenting a framework to further deepen the economic analysis of entrepreneurship. He argues that the *supply* of entrepreneurs in any given economy is relatively constant but that institutional prerequisites determines what type of activities they will engage in:

"While the total supply of entrepreneurs varies among societies, the productive contribution of the society's entrepreneurial activities varies much more because of their allocation between productive activities such as innovation and largely unproductive activities such as rent seeking or organized crime." (Baumol 1990)

Accordingly, entrepreneurs can either engage in assembling new combinations of production that creates a positive net for society in terms of added value (denoted as *productive* entrepreneurship), or they participate in rent-seeking activities with low gains for the economy as a whole (*unproductive* entrepreneurship). Lastly, entrepreneurs may even be of *destructive* nature yielding a negative net to the society (organized crime etc.). The allocation between these activities is decided by the institutions and incentive structures present (Baumol, 1990).

The role of institutions and their impact on economic growth is comprehensively covered by Douglas North in his work "*Institutions*". According to North, entrepreneurs are the main agents of change and thus drivers of economic growth. Firms set up by entrepreneurs have to adapt their activities and strategies to fit the opportunities and limitations given by the formal and informal institutional framework. Ideally, formal rules are designed to reduce transaction costs, but they are also likely to affect individuals or groups differently. Formal rules and institutions, as they are created by individuals' private interests, do not necessarily operate in the interest of social wellbeing (North & Wallis, 1994)

Baumol shares this premise with North as he argues that institutions determine the relative pay-offs for each activity that an individual may engage in. Where institutions are strong and provide secure property rights, contract enforcement, and an independent legal system, creative and talented people are more likely to start ventures were value can be realized for society. Such entrepreneurship generally entails engaging in one or more of the five activities discussed by Schumpeter, and could for example include product innovation or improved production efficiency. When institutions are poor the same set of individuals are more inclined to instead try to transfer existing wealth through unproductive entrepreneurship (Baumol 1990).

3.2 Previous research: The entrepreneur and economic institutions

While there is a substantial body of empirical research regarding the institution's role for economic growth (see Acemoglu et al., 2005), the link between institutions and entrepreneurship has not received much attention until recent years. This section will present some of these empirical studies.

3.2.1 Institutions and the level of entrepreneurship

The 1998 OECD report; *"Fostering Entrepreneurship"* were among the earliest to acknowledge institutional factors such as government regulations and their effects on entrepreneurship. To elaborate this line of thought further, Björnskov & Foss studied economic institutions (such as property rights, judicial quality, availability of funding etc.) and their connection to the level of entrepreneurship as measured by GEM. Björnskov & Foss's empirical work indicate that overall financial environment and the size of government are strong determinants of the level of entrepreneurship, while regulations, the freedom to trade, and legal quality are insignificant factors (Bjornskov & Foss, 2008).

However, using a cross-country study, Björnskov & Foss essentially disregard the heterogeneity among countries, also they make no efforts to differentiate between productive and unproductive entrepreneurship. In order to control for country-specific differences, Nyström investigates the relationship between institutions and entrepreneurship in a panel data setting, using annual EFW data. In addition, she uses self-employment to measure entrepreneurship (which is often used as a proxy for productive entrepreneurship). Her conclusion is that all five institutional parameters in the EFW index; smaller size of government, better property rights, less business regulation, increased freedom to trade, and access to sound money, have positive effects on the level of self-employment (Nyström, 2008).

3.2.2 Measures of productive entrepreneurship

Nyström's choice to use self-employment as a proxy for entrepreneurship is partially founded on its closeness to Baumol's definition of productive entrepreneurship (Nyström, 2008). However, finding a proxy close to Baumol's definition has proven to be difficult. Given the definition that productive entrepreneurial activity is value-adding; a positive correlation between self-employment and economic growth would be expected. Nevertheless, Héctor Salgado-Banda does not find evidence of such a positive effect. Instead, he concludes that self-employment and GDP per capita seem to be negatively correlated (Salgado-Banda, 2007). If self-employment is to work as a proxy for productive entrepreneurship this is certainly an ambiguous result. The relationship described by Salagado-Banda essentially demonstrates closer resemblance to the correlation between the **level** of entrepreneurship and GDP per capita, which has been theorized to be negative. This negative relationship was explored by Carree et al. who hypothesized that the character of the correlation more closely resembled that of a downward sloped U-shape. They found evidence for this U-shape using data for 23 OECD countries. But contemporary studies, using more robust data sets and methods suggest that a negative relationship is more accurate (Carree et al., 2007).

Since self-employment seems to mimic the characteristics of the level of entrepreneurship rather than the productive portion of entrepreneurs, Salgado-Banda propose using the number of registered patents per capita as a proxy as it is has a strong positive correlation with economic growth. Studies using patent data have been conducted by for example Russel Sobel who found that sound economic institutions affect the number of patents per capita positively. Russel Sobel further propose number of established firms, and venture

capital investment per capita as proxies for productive entrepreneurship and concludes that these were also positively affected by improved economic institutions (Sobel, 2008).

3.2.3   Exploring the effects of business regulations

Both Björnskov & Foss and Nyström studied the effects from multiple economic institutions on entrepreneurial activity. But as previously explained, this thesis will concentrate on a particular type of institutions, namely *business regulations*. As in many other studies (a few described below) the term business regulations here refers to the time and cost to start a business, dealing with administrative requirements, acquire necessary licenses and permits as well as the ease to close down your business. Nascent, especially small, businesses are sensitive to administrative costs originating from such business regulations. The cost involved with abiding to the regulations (both in terms of invested time, energy and money) distracts the entrepreneur from their basic entrepreneurial activities and thus affects their propensity towards formally registering their business (Verheul, Wennekers, Audretsch, & Thurik, 2002). Furthermore, Baumol argues that regulatory complexities may reduce entrepreneurial engagement in productive activities, since overregulation gives the entrepreneur incentives to use the regulatory environment for their own benefit.

Björnskov & Foss's finds no significant correlation between regulations and entrepreneurship in the study mentioned above. As previously stated, Björnskov & Foss use EFW data as a measure of business regulations and the aggregated GEM index as a measure of entrepreneurship where the GEM index is measuring the overall entrepreneurial activity, not distinguishing between formal and informal entrepreneurship. In the light of Baumol's theory, Björnskov & Foss's results should thus be interpreted as regulations not affecting the total **supply** of entrepreneurship. Similarly, studies more explicitly concerned with the **allocation** of entrepreneurship and effects of business regulations generally concludes that business regulations is an insignificant determinant even for productive entrepreneurship (e.g. Amorós, 2009; Bowen & De Clercq, 2007; Stenholm et al., 2013).

Using the GEM index disaggregated on entrepreneurial motives, Amorós found that political stability as well as control of corruption had a positive effect on the level of entrepreneurs driven by recognition of business opportunities (the proxy used for productive entrepreneurship). The regulatory quality was however found to be an unimportant determinant. Using the GEM index has its drawbacks, which are discussed in the method section, but Amorós' results are validated by Stenholm who is using more robust measures (World Bank survey data), why we cannot disregard his results completely.

Like Amorós, Bowen and Stenholm both use large cross-country data striving to produce general results but simultaneously ignoring the heterogeneity in economic development between the countries. The regulation effect is assumed to be equal for all countries and not depending on the level of economic development. As stated in our purpose; we argue that the cost of regulatory complexities ought to be seen in relative terms; an equal cost in absolute terms produces a higher burden for an entrepreneur with low disposable income than one with high. Thus the effects of business regulation should depend on the GDP per capita level in the country. Given this, and the problems of using GEM data as in Amorós' work, we expect different results when studying a single, less developed country.

4 Hypothesis

To empirically investigate the impact of business regulations on the allocation towards productive entrepreneurship, we derive the following hypothesis:

4.1 Hypothesis I

As complex bureaucratic requirements obstruct potential entrepreneurs from formally registering their businesses and at the same time gives entrepreneurs incentives to use the regulatory framework for their own benefit we hypothesize the following:

> *An increase in the bureaucratic quality will yield a higher level of productive entrepreneurs. That is; startups will be positively correlated with increased quality of business regulations.*

5 The case of Malaysia

The ASEAN country Malaysia has two primary land masses; Peninsular Malaysia which is the southernmost tip of the Eurasian continent, and East Malaysia which is the northern part of Borneo. These land masses support an ethnically diverse population of 28.3 million (Malay/Bumiputera 67.4%, Chinese 24.6%, Indians 7.3%, and Others 0.7%) (Department of Statistics Malaysia, 2010). In 2013, although current policies demand greater involvement for ethnic Malays, there are still significant inequalities between ethnic groups in the Malaysian economy. The Chinese only comprise about 24 % of Malaysia's total inhabitants, but accounts for 70 % of the country's market capitalization (Chau, 2010)

The country is a federation and constitutional monarchy nominally headed by paramount ruler (commonly referred to as the King) and a bicameral Parliament headed by a Prime minister and consisting of a nonelected upper house and an elected lower house. Its system of government is similar to that of the British, although adapted to a Federation of 13 states and 3 Federal Territories. Most of Peninsular Malaysian states have hereditary rulers (commonly referred to as sultans) and powers of state governments are limited by federal constitution. The State Government's jurisdictions include; the land and its administration, agriculture, forestry and mining. The Federal Government's jurisdiction concentrates on; over external (foreign) affairs, defense, internal security, shipping, navigation, fisheries, ports and harbours. Malaysia's legal system is mixed legal system of English common law, Islamic law, and customary law; judicial review of legislative acts in the Supreme Court at request of supreme head of the federation (Central Intelligence Agency, 2013).

5.1 Industrial development of Malaysia

The country has enjoyed one of the finest modern economic records in Asia, with an average annual GDP growth of 6.5 % annually from 1957 to 2005 (United States State Department, 2010). The country was quicker than its neighbors to recover from the Asian financial crisis in 1997, its GDP per capita has since improved to $14 800 which is higher than the pre-crisis level (Mankiw, 2011). As of 2012, Malaysias GDP was $492.4 billion, making it the third largest economy in ASEAN (Central Intelligence Agency, 2013). Previous Prime Minister of Malaysia, Mahathir bin Mohamad created *Vision 2020* in 1991 where the goal was to make Malaysia a self-sufficient industrialized nation before 2020 (Mahathir, 2008).

Although manufacturing still has extensive influence on the Malaysia's economy, Services in Malaysia have been growing in importance for the economy in the past few years (Bank Negara Malaysia, 2012). In 2010, Services was responsible for 49.3 percent of the GDP. The concerted development of the service industry is part of the national development strategy to venture into new growth areas and broaden the economic base for exports. It is also expected to provide the basis for sustained growth in the economy in order to achieve the vision of becoming a developed nation by 2020. The third largest source of income from foreign exchange in Malaysia is tourism, which the government has promoted in order to be less dependent on trade (Foo Yuk, 2010). Malaysia's economic structure has transformed to emphasize growth in knowledge-based service industries. (World Health Organization, 2010)

As of 2012, 11.1 % of the labor force was involved in agriculture, 36 % in industries and 53.5 % in services. Malaysia industrial sector accounts for 48.1 percent of total GDP or 63.4 billion US dollars. The industrial output is ranked 32nd in the world according to World Bank, 2012 GDP table. The key drivers on the supply side of the economy remain the Services, Manufacturing and Construction sectors. Although Malaysia is no longer the world's largest producer of tin (American University, 2010), rubber, it remains one of the largest producers of palm oil (Clover, 2010). Exports still concentrate on natural and agricultural resources, where the most important resource is petroleum (United States State Department, 2012).

5.1.1 Geographic distribution of industries

Peninsular Malaysia accounts for the majority (roughly 80%) of Malaysia's population and economy. The majority of manufacturing companies are located there, predominantly in the central region (Selangor, federal territories of Kuala Lumpur and Putrajaya) where the major industrial regions are located. Service- and Knowledge-based sectors can also principally be found in Peninsular Malaysia. The industries of the raw material- and industry sectors have been listed according to area by the CIA. They are arranged in a rank ordering, starting with the industry that has the largest value by annual output in the perimeter.

Diagram 1: Industrial distribution of Malaysia

Peninsula (Mainland):	rubber processing, palm oil processing, petroleum and natural gas production, light manufacturing, pharmaceuticals, medical technology, electronics and semi-conductors, timber processing
Sabah (Borneo):	logging, petroleum and natural gas production
Sarawak (Borneo):	agriculture processing, petroleum and natural gas production, logging

Raw material industries (i.e. agriculture and mining) are mostly located on the countryside and on Borneo (Central Intelligence Agency, 2013). This will have implications later when assessing which economic sectors to include in our econometric model.

5.2   Governmental stimulus packages

The state has historically played a considerable role in guiding economic activity in Malaysia through its macroeconomic plans. Industrialization started to flourish in the second half of the 60s with the establishment of the *Investment Incentives Act* (IIA) and the foundation of the *Malaysian Industrial Development Authority* (MIDA). At this time, industries that were; labour intensive, exporting or utilizing domestic raw materials, were offered special incentives by the IIA. Through extensive economic stimulus packages and reforms, the state of Malaysia continued to play a substantial role in the country's rapid economic growth.

Most notable was the *New Economy Policy* (NEP) of 1971 which was an economic restructuring plan aiming to reduce the socioeconomic disparity between Malay majority and the Chinese minority (most premature industries were controlled the Chinese part of the population). The articulated strategy was to stimulate growth in key industries with governmental investments. The strengthened economic prosperity would help to increase both ethnic groups' share of the economy and consequently benefit the two groups mutually (New Economic Policy report, 1971). Following the NEP, state intervention occurs frequently throughout all levels of the Malay economy, including; considerable involvement in the national petroleum and natural gas production, sizeable subsidies on fuel and other commodities, and finance sector regulations (e.g. limiting foreign investment) (Central Intelligence Agency, 2013).

5.2.1   The Government and Entrepreneurship

The Malaysian government has been encouraging entrepreneurship especially among the Malays since the 1970s. As explained above, the government has given due emphasis on increasing Malay ownership and participation in the corporate sector and high-income occupation as outlined in NEP of 1971. This objective is further outlined and emphasized in the New Development Policy in 1991 through the establishment of Bumiputera Commercial and Industrial Community (BCIC), which is responsible in nurturing and developing Malay and other Bumiputera groups as entrepreneurs and professionals, thus creating a middle-class group among the Malays. The BCIC has been the main channel through which the strengthening of entrepreneurship among the Malays in Malaysia has been fortified (Economic Planning Unit, 2001).

The development of entrepreneurship as both concept and activity has been growing in importance in Malaysia, says Minister of International Trade and Industry, Datuk Seri Mustapa Mohamed. He says the perceived importance of entrepreneurship to the growth of the country's economy was evidenced by the sheer amount and variety of supporting mechanisms and policies that existed for entrepreneurs, including funding, physical infrastructure and business advisory services. *"The government will pay greater attention to improving entrepreneurial capabilities, reducing fear of failure thereby enhancing entrepreneurial intentions,"* he said at the launch of the book; Entrepreneurship in Malaysia (Global Entrepreneurship Monitor Report, 2009).

5.2.2   The Government and Business Regulations

While the Chinese minority has been influential in the industry (as stated above), the Malaysian government has favored the largest ethnic group; the Malays, when it comes to public employment yielding a 77% proportion of Malays in civil service in 2005 (Ethnic dominance in the Malaysian civil service). This has led to dampened bureaucratic responsiveness to under-represented ethnic groups and diminished government legitimacy among them according to Hong Hai Lim (2007). Substantial public employment, not only to the bureaucratic functions, has also been done to mitigate conjectural unemployment, why Malaysia has had a relatively

large portion of civil servants. The bureaucracy of Malaysia has thus for a long time been recognized as both large and inefficient (Lim, 2007).

The Ease of Doing Business Report 2011 confirms this, ranking Malaysia 111th (of 172 economies) when it comes to business regulations. Recognizing the need for reformation of the bureaucracy, the Malaysian government has taking steps to facilitate for registering a firm. Notable reforms have been the setup of SSM, the Malaysia's company commission which since 2002 handles all business registrations. This function was before split between: Registrar of companies, and Registry of business. The Companies act of 2009 provided the opportunity to register firms online and reduced the time required to register a firm among other amendments (Lim, 2007).

6 Method

The econometric models applied are presented and discussed below.

6.1   Econometric model

Our analysis is based on panel data techniques, which has the advantage of making more accurate inference of model parameters due to higher degrees of freedom (Hsiao, 2003). The combination of cross-sectional observations N and time series observations T leads to $N \; x \; T$ observations. Using a panel data model also allows us to control for individual heterogeneity such as industry specific characteristics which otherwise would cause omitted variable bias.

While panel data estimation provides high degrees of freedom as well as the opportunity to control for heterogeneity, there is a threat to the validity of the results originating from possible time trends. It is possible that the X and Y variables have converging (or diverging) time trends that do not reflect a causal relationship which leads to biased estimates. Correction for time trends will be discussed in connection with the hypothesis.

Hypothesis I:

Increased bureaucratic quality will result in a higher level of productive entrepreneurial activity.

In order to test our hypothesis, our panel data will be analyzed using a first differenced model estimated with OLS (Ordinary least squares). Our specifications are discussed below:

Within our data set there are potential unobserved differences among the industries, arising from different industry norms and praxis, which in turn are linked to the dependent and independent variables. Not controlling for these differences will most likely distort the outcome of our analysis in form of biased estimates. In order to avoid omitted variable bias the time invariant part of these differences can be eliminated using industry dummies or by first differencing the data. Furthermore, it is reasonable to assume non-stationarity in one or both of the variables, why we risk spurious relationships due to time trends. Granger and Newbold recommends either including a lagged version of the dependent variable or using first-differences to alleviate this problem (Granger & Newbold, 1974). As first-differenced data reduces the risk of bias due to trends as well as heterogeneity, this method will be applied in our model.

Although differencing eliminates bias due to time invariant omitted variables, there is still the risk that there are time-varying factors that correlate with changes in X and Y. In order to produce consistent estimates of our parameters, such factors must be controlled for. Economic growth as measured by GDP per capita, and the education level of the population is commonly used in empirical applications, since they are expected to be correlated with economic development. Hence, we include real industry GDP per capita and secondary education as control variables.

Furthermore, estimating a panel data model we face the threat of potential autocorrelation and heteroskedasticity. Woolridge proposes a test for serial correlation/autocorrelation in panel data models. By using the residuals from the first-differenced model and regressing them against their lagged counterpart; potential serial correlation is detected and can be tested for significance using an F-test (Wooldridge, 2002). First conducting the test on a non-differenced model we see that there is a potential first order autocorrelation. Computing the same test on our first-differenced model we conclude that the differencing process has eliminated the autocorrelation. Finally, we test for heteroskedasticity by computing the maximum likelihood parameters from iterated FGLS estimates. In this way, we can test whether heteroskedasticity exists in our model using a LR test. The null hypothesis; that there is no heteroskedasticity, is rejected with a chi-2 value converging towards zero. In conclusion; we estimate a panel data model with first differenced data, assuming no autocorrelation with controls for heteroskedasticity within panels.

6.2   Dependent variable: Level of productive entrepreneurship

The level of productive entrepreneurship is an unobserved variable which necessitates the use of a proxy. Previous research has used GEM data on allocation of high growth entrepreneurial activities (Bowen & De Clercq, 2007), venture capital per capita, and patents per capita (Sobel, 2008) as proxies for productive entrepreneurship. The use of GEM survey data poses a substantial problem as the risk for measurement errors is high; respondents are likely biased towards defining their businesses as having high growth potential. While patents per capita or venture capital per capita might suffice as good proxies, we want to propose and validate the use of startups as a proxy.

In our regression model, the variable; *Startups* is a discrete variable measured as all formally registered companies in Malaysia. The effects of the independent variables on the dependent variable are interpreted as the increase in new startups per year, ceteris paribus, for a one unit change in the independent variable.

6.3   Independent variable: Regulations

In order to assess the allocation of entrepreneurship in relation to *regulations*, we also need an operational definition of the latter concept. To achieve this we correspondingly use the business regulation component of the Fraser Institute's Economic Freedom of the World Index. As the measure covers an extensive period of time, the index is more used than any other on economic freedom (Dawson, 2007). The variable purports to measure the difficulty of starting a business, i.e. it quantifies the length and number of procedures that are mandatory for all businesses. Procedures that are industry specific are not included. A high index value indicates high quality business regulations while a low value indicates that the regulatory environment is burdensome for the entrepreneur.

7   Data

The dependent variable consists of panel data on industry specific startup rates for Malaysia, sourced from the SSM (the Companies Commission of Malaysia). For the independent variable, we use Fraser Institute's Economic Freedom of the World Index, where we apply a modified version of the index-component Business Regulations (i.e. 4 of its 6 sub-components). The independent variable is not industry specific; instead it only comprises of those regulatory restraints that are compulsory for all businesses. Moreover, the independent variable assumes that the firm is operating in the country's largest city, which forces us to consider the industries included in our econometric model.

## 7.1   Dependent variable: Startup rate

The data on annual startups in Malaysia is gathered from the Malaysian Companies Commission's (SSM) records of business registrations. The data-set consists of observations from 1995 till 2010 with specific startup data for 21 industry sectors. SSM's database includes registration data for all types of business formations, including limited and unlimited companies as well as foreign companies, and is therefore a comprehensive record of business registrations in Malaysia. With all registrations accounted for we have data on 593 452 business formations.

As the distribution of the mining- and agriculture industries is linked to non-city areas, these industries are not to be included in the econometric model of this study. The variables of regulation used assume the firm or individual exposed to the bureaucracy operates in the largest city etc. this makes some industries non applicable in the mode. The construction of the Fraser index is elaborated on below. We also remove the "dormant" sector from the dataset as this falls outside the definition of productive entrepreneurs of the Baumol framework. Excluding observations for these industries leaves us with data for 18 industries and 574 269 individual startups.

Another consideration is whether or not to include international businesses (i.e. non-domestic startups) in the model. The regulation variable assumes that the type-firm is domestically owned, thus all foreign startups should ideally be eliminated from the data set. Regrettably this is not possible in the scope of this project as the dataset detained from SSM does not differentiate between domestic and foreign startups. However, of 45 000 startups in Malaysia 2010 only 45 were foreign (Companies Commission of Malaysia, 2011), therefore the consequences of not eliminating the foreign startups should be minimal. For other studies the disadvantages could be larger as foreign firms tend to be large and have abundant amounts of personnel, thus effects on unemployment can be substantial.

Below, the aggregated data on number of startups is depicted in *graph 1*

Graph 1: Total number of startups Malaysia – 1993 to 2010
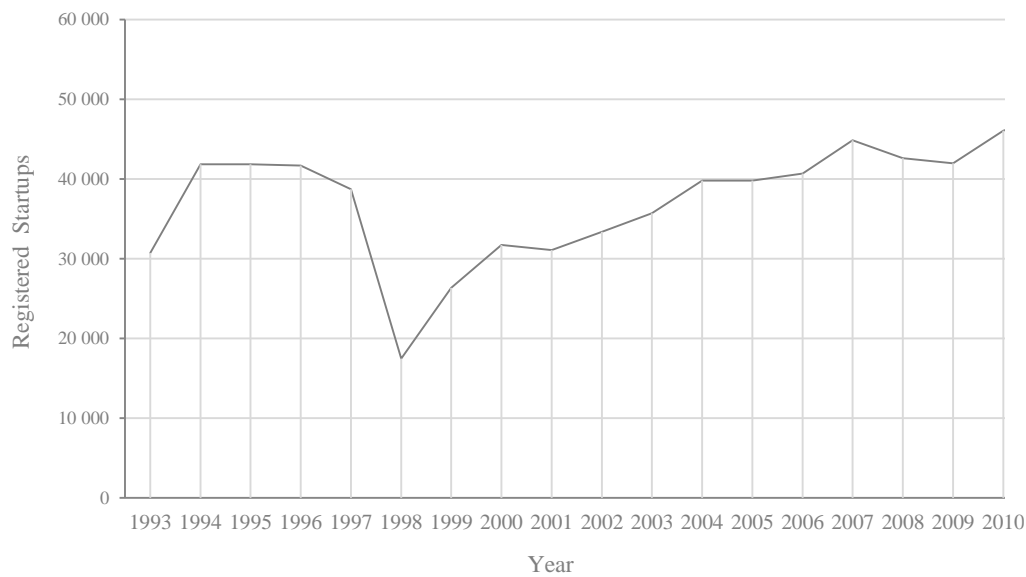
7.2 Independent variable: Business regulations

As a measure of the formal institution; business regulations, we use the *Fraser Institute*'s annual *Economic Freedom Index* (EFW), which has been applied frequently in peer-reviewed studies. Out of the five different categories (each with several components and sub-components) comprising the index, our intention is to apply the sub-component *Business Regulation* in the category *Regulation*.

As the index is not divided per industry, but rather depict the overall regulatory complexity in a country, the aggregated index cannot be used in our econometric model. However, four of its six sub-components only measures obstructions compulsory for all industries. For example, procedures to comply with environmental regulations are included only when they apply to all businesses. For comparability, these sub-components focus on a standardized firm which is domestically owned and operates in the largest city of the economy. Accordingly, the regulatory obstructions met by this standardized firm are measured (World Bank, 2013). Further elaboration of the sub-components is described below.

Annual data for Malaysia is available for the years 2000 to 2010. As data prior to 2000 was collected every fifth year, this leaves us with index data for 11 years. Combining our index observations with the startup data gives us 198 observations (11 x 18).

7.2.1 Economic Freedom of the World Index

The Fraser Institute is a Canadian think tank which has been described as politically conservative and right-libertarian. Its stated purpose is: *"to measure, study, and communicate the impact of competitive markets and government intervention on the welfare of individuals."* The institute produces an annual index called the Economic Freedom of the World, which measures the degree to which the policies and institutions of countries are supportive of economic freedom. 42 discrete variables are used to construct a summary index and to measure the degree of economic freedom in five broad categories:

1. Size of Government (Fiscal freedom, government spending)
2. Legal System and Security of Property Rights (Judicial independence and enforcement of law)

3. Sound Money (Access to venture capital)
4. Freedom to Trade Internationally
5. Regulation (Ease of starting a business, bureaucracy)

Within each of the five categories, there are 24 components. In addition most of the components are too made up of numerous sub-components. Each sub-component is placed on a scale from 0 to 10 that reflects the distribution of the underlying data. These ratings are then averaged to determine each component. The component ratings within each category are then averaged to derive ratings for each of the five categories. Finally, these are averaged as well to derive the summary rating for each country.

Evidently, what the index ultimately shows depend quite substantially on how Fraser decides to weight its different components; what are the more important factors of "economic freedom"? In this study, we will not be using the amassed index, but the disaggregated component "5C" in the category "Regulation" listed above. The goal is to have a measure of the bureaucratic regulations apparent in Malaysia that may work to impede entrepreneurship.

7.2.2   Category 5 - "Regulation" derived

The fifth category of the index focuses on regulatory restraints that limit the freedom of exchange in credit, labor, and product markets. Essentially, it purposes to measure how easy or difficult it is to start and operate a business. The more regulations imposed on business, the harder it is to establish one. When regulations restrict entry into markets and interfere with the freedom to engage in voluntary exchange, they reduce economic freedom. This category consists of three components; Credit market regulations (A), Labour market regulations (B), and Business regulations (C). As mentioned previously we will use 5C as this complies with the operational variable; business regulation. Its structure is depicted below.

Diagram 2: Structure of EFW index category 5

5. Regulation
A. Credit market regulations
B. Labor market regulations
C. Business regulations
      (i)   Administrative requirements
      (ii)   Bureaucracy costs
      (iii) Starting a business
      (iv) Extra payments/bribes/favoritism
   (v)   Licensing restrictions
      (vi) Cost of tax compliance

In extension, the sub-components of 5C are designed to identify the extent to which regulations and bureaucratic procedures restrain entry and reduce competition. In order to score high in this portion of the index, countries must allow markets to determine prices and refrain from regulatory activities that retard entry into business and increase the cost of producing products. Countries must also refrain from "playing favorites", i.e. from using their authority to extract financial bribes or reward some businesses at the expense of others. The factor also examines the degree of corruption in government and whether regulations are applied uniformly to all businesses. Another consideration is whether the country has state planning agencies that set production limits and quotas.

Three of the sub-components; (i), (ii) and (iv) have been derived from the World Economic Forum's *Global Competitiveness Report* (GCR). The report applies a survey-like methodology (World Economic Forum's Executive Opinion Survey) for these variables, where each of the mentioned components attain a score from 1 and 7, where "7" denotes the best score (i.e. highest level of economic freedom and least burdensome regulations). Sub-components (i) and (iv) will be removed from our model as their scores are industry-dependent averages and not applicable to the standardized firm of our model. However, component (ii) measures the standard of product/service- and energy regulations on country level and excludes industry specific processes such as environmental regulations, thus we can keep this variable in our model.

The other three of 5C's sub-components (iii), (v) and (vi) originate from the World Bank's *Doing Business* (DB) report. The derivation of these differs substantially from the ones with GCR-origin. They come from the World Bank's data on the amount of time necessary to comply with regulations (e.g. when starting a limited liability company) and monetary costs of the fees paid to regulatory authorities (measured as a share of per-capita income) associated with a given regulatory processes in the largest business city of an economy. The components are given zero-to-10 rating as compared to the global average, where lower rating signifies more costly/longer processes.

The aggregated variable Business Regulation combines its sub-components without weighting (implying that Fraser Institute regards the components derived from GCR less essential than the more quantitative measures of the DB report). Since the aggregated variable is non-weighted we can remove two of its sub-components without dire implications. The fluctuation of this aggregation (from 1995 through 2010) is shown below:

Graph 2: Business Regulation index score for Malaysia – 1995 to 2010
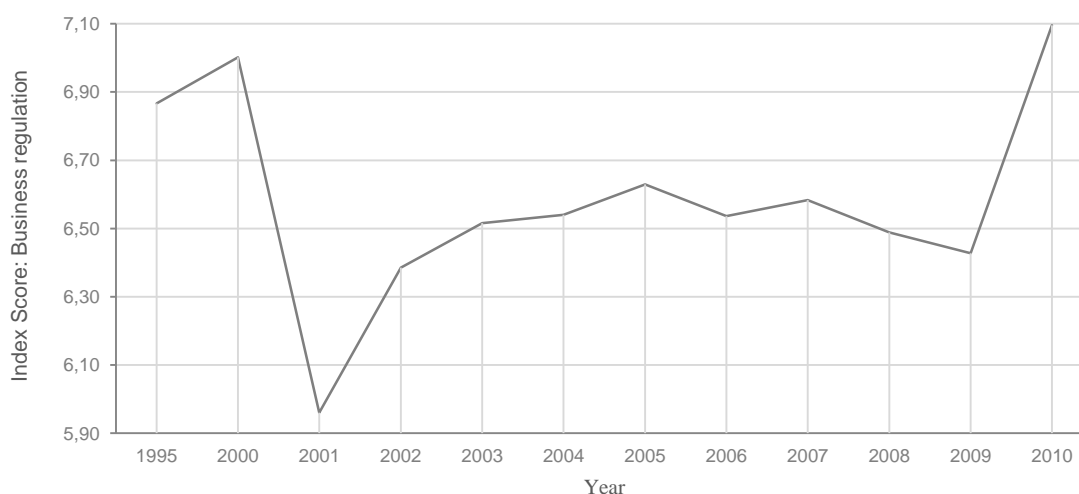
7.3   Control variables

We include the following control variables in our econometric models:

1. Real industry GDP per capita
   Real industry output is obtained from Malaysia's department of statistics. The data show each industry's output in Ringit (Malaysia's currency) indexed to year 2000's price levels. The industry ouput is divided by the population for respective year yielding a GDP per capita disaggregated over the industries.

2. Secondary education

The percent of the population attended secondary education (eg. High school or the equivalent to "Gymnasium" in Sweden) is obtained from the World Bank.

8 Results

In the following section, the results from the regression analysis will be presented and discussed in connection with respective hypothesis.

8.1 Hypotesis I: Regulations and productive entrepreneurship

Table 1 shows the estimation results for the effects of regulations on the number of startups. The first column reports the estimates for the full model including control variables and the second column is without controls. Both models are robust for heteroskedasticity.

Table 1: Effects of Regulatory complexity on Startups

	Model I	Model II
Business regulation (FD)	87.506*	96.614*
	(42.55)	(44.50)
Education (FD)	6.825	
	(7.77)	
GDP/capita (FD)	0.073	
	(0.15)	
Constant	50.631***	53.930***
	(11.49)	(9.85)
Observations	172	172
R^2	0.065	0.063

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

The results in column 1 indicate a significant positive correlation between improved business regulations and the number of new startups which give support to *Hypothesis I*. Not including the control variables yields an upward bias as seen in column 2.

In our framework; a one unit increase in the aggregated business regulation index yields ca. 88 new productive entrepreneurial ventures. More feasibly; a standard deviation change in the business regulation index yields 22 (0.25 x 87.5) new startups for one year. While the effect is statistically significant, the economic implications are not obvious.

9   Discussion

This thesis aimed at investigating the effects of business regulations on the allocation towards productive entrepreneurship as defined by William Baumol. Our econometric results indicate that improving the quality of business regulations positively affects the level of productive entrepreneurship in Malaysia.

By estimating a first differenced panel data model we ensured that time-invariant industry-specific effects as well as spurious correlation in form of shared time trends are controlled for. This has given us a more robust econometric model than usually employed within this field of research. The model is nevertheless not free from drawbacks and limitations are discussed below.

As mentioned in the data section, our variable for business regulations measures regulatory complexities faced by a standardized firm. Hence, certain businesses not applicable have been excluded (Mining, Agriculture, and Dormant) from our data set. Although this improved our opportunity to draw causal inferences, our research might still suffer from biases. For example; regulations of startups vary across regions within a country, across industries, and across firm sizes. State-specific forms of business regulations that affect certain industries to a higher degree are not captured by our model. The industries are asymmetrically distributed over the states of Malaysia and bureaucracy may have different impact in different states. Such differences are not fully accounted for in this research and may therefor induce bias in our estimates.

The proxies used to test business regulations' negative effect on productive entrepreneurship has been considered to capture the underlying dynamics in previous research. Nevertheless, both variables are truly unobserved and the use of proxies has limitations.

The proxy for bureaucratic quality measured by the EFW index designates a standardized firm. It is likely that this data underestimates the complexity of the regulations. Startup-procedures in outlying areas are often slower than in the largest business city of the economy. Likewise, industry-specific requirements and foreign ownership add procedures and verification-processes. (World Bank, 2012) Moreover, while the standardization-assumption allows us to use the EFW-data, even though it's not divided per industry, it also forces us to exclude some industries from our model.

However, the inconsistency of this assumption among Business Regulations' sub-components is unfortunate. Since only 4 out of 6 sub-components are useful in our model (the dependent variable is industry specific), it is debatable how well the independent variable ultimately can be compared to other studies using the EFW Index. Nonetheless, the altered variable is still more than able to show some of the regulatory obstructions that are met by the most common types of firms (i.e. the standardized firm), and thus the suggested correlation with productive entrepreneurship is far from irrelevant.

The use of startups as proxy for productive entrepreneurship proves some further theoretical complications. The measure captures firms whose earnings will benefit the society in form of taxes, but one cannot exclude the possibility of unproductive entrepreneurship being present among these.

We have provided evidence for business regulation having an effect on the level of productive entrepreneurship and that our proposed proxy is valid. The economic implications of these results are however ambiguous: A standard deviation's increase in the business regulation index, that is; a feasible improvement in bureaucratic quality, only yields 22 new productive ventures. While our results provide limited policy making implications, these are, to

our knowledge, unique. Researchers explicitly investigating productive entrepreneurship and its institutional determinants conclude that regulations have insignificant effects on the allocation of entrepreneurship. Our findings imply that this conclusion is not applicable to the country of Malaysia. We have hypothesized that this effect may origin from different effects of regulations depending on the level of economic development, but not elaborated on this further as our research is limited to one single country. We still believe that the level of economic development is an important factor in explaining our results differing from previous research. In order to fully confirm this hypothesis, a wider selection of developed countries has to be studied. A comparative study of countries in different stages of economic development could also be a successful approach. Conducting such a study could further investigate at what stage of economic development increased bureaucratic quality leads to important economic implications.

10 Conclusion

We found that regulatory complexity is a determinant of the level of productive entrepreneurs in Malaysia. By estimating a panel data model with first-differenced variables, we found that startups (as a proxy for productive entrepreneurship) are positively affected by increasing the quality of business regulations. While not providing any substantial economic implications in Malaysia, our results differ from previous research within this field and further research implications are proposed. We discuss how our results could be biased because of the proxies used.

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