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# CORPORATE OWNERSHIP & CONTROL

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## CONTENTS

# GOVERNANCE OF HEALTH CARE SYSTEMS IN AN AGEING WORLD – THE CASE OF AUSTRALIA

***Ewa Banasik****

**Abstract**

The main argument of this paper is that because the burden of diseases increases with age, a greater numbers of older individuals will increase the demand for health care, and whether this demand will be met very much depends on how health care systems are governed. This task is particularly complex in jurisdictions with multi-layer governing systems such as the Australian health care system. Governance, described in terms of stewardship of the well-being of the population and as a central component for building effective health care systems, is increasingly considered to be very important for a well performing health care system (World Health Organization, 2000, 2007). Governance is, however, the least studied function in a health care system (Alliance 2009). Furthermore, the limited governance frameworks and assessments that have been developed thus far fail to include the political context in which health care systems operate (Baez-Camargo and Jacobs, 2011). This paper intends to fill this knowledge gap by exploring the political dynamics of the Australian health care system's governance and its accountability. Furthering the discourse on governance is especially important in times when health care systems are confronted with the challenges of ageing populations.

**Keywords:** Corporate Governance, Australia, Health Care Systems

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## Introduction

Health care systems are defined by the World Health Organization (WHO) (2000, p.5) as being "all activities whose primary purpose is to promote, restore or maintain health". These established systems have been fundamental to improving health care for most of the global population during the 20th century, but 100 years ago, organised health care systems hardly existed. Until well into the 19th century hospitals were managed by charitable organisations and were primarily used to shelter the orphaned, crippled, destitute or insane. The average life expectancy at that time was 48 years (World Health Organization [WHO], 2000).

High mortality was typically associated with infectious diseases, but advances in the understanding of contagions and infection together with better hygiene and public sanitation in the 19th century, and immunisation and medical advances, such as antibiotics, in the 20th century, contributed to increases in life expectancy (WHO, 2011). In some countries, life expectancy has increased by approximately 30 years, and if this pace continues, most babies born after 2000, in the countries with long life expectancies, will live 100 years (Christensen et al., 2009). Increased life expectancy is one of the greatest achievements over the previous century; however, a consequence is the ageing of the world population in the 21st century (Prince et al., 2015).

Population ageing is occurring in practically every country in the world, and it is expected that the number of individuals over the age of 60 will reach two billion by 2050 (United Nations [UN], 2013). As the population ages, health care expenditures tend to grow rapidly because older individuals suffer from multiple chronic diseases and, therefore, require more health care to manage their complex health care needs (OECD, 2013; Australian Institute of Health and Welfare [AIHW], 2014). Approximately two-thirds of those individuals over the age of 65 are affected by multiple conditions (Prince et al., 2015; AIHW, 2014). Multimorbidity is strongly associated with impaired quality of life (Fortin et al., 2006), disability (Wolff et al., 2005) and mortality (Caughey et al., 2011). The cost of debilitating conditions such as dementia, stroke, chronic obstructive pulmonary disease and vision impairment to society is high (Prince et al., 2015). The global cost of dementia was estimated to be US $604 billion in 2010, and based on current estimates it is expected to increase to US $1 trillion by 2030 (Alzheimer's Disease International, 2014). The global burden of disease in older people is projected to increase even more, which is consistent with an ageing population being the most important driver of the chronic disease epidemic (Mathers and Loncar, 2006).

An ageing population has led to the realisation that new and more effective ways of organising care, such as the introduction of multidisciplinary stroke units or integrated screening programmes, are needed (McKee et al., 2009). Health care systems, however, that currently specialise in treating individual disorders are not prepared to deliver age-appropriate care, which requires integrating care for complex multimorbidities (Banerjee, 2015, Prince et al., 2015, WHO, 2012). General hospitals that are not equipped or structured to treat patients with multimorbidity, are increasingly occupied by older people who are admitted as an emergency (Kendrick and Conway, 2006). Complex conditions, such as dementia, are often diagnosed late and are managed by many specialists who simply combine treatments for the individual conditions, potentially resulting in adverse drug interactions and unnecessary expense (WHO, 2012; Guthrie et al., 2012, Boyd et al., 2005; Wolff et al., 2002).

Because health care systems need to transform from acute-based models to dealing with the complexity of non-communicable diseases (Kendrick and Conway, 2006), there is a greater demand for leadership in health care systems than ever before. Governance, described by the WHO in terms of stewardship of the well-being of the population and as a central component for building effective health care systems, is increasingly considered to be very important for a well-performing health care system (WHO, 2000, 2007).

However, with few exceptions, most notably from the work of the WHO, only a limited knowledge of health care system governance is available to inform policy and practice (Alliance, 2009). Furthermore, the limited governance frameworks and assessments, which have been developed thus far, fail to include the political context in which health care systems operate (Baez-Camargo and Jacobs, 2011). Nonetheless, governments in most developed countries and many middle-income countries have become central to social policy and health care (WHO, 2000).

This paper offers a contribution to the debate on the governance of health care systems by exploring the political dynamics of the Australian health care system governance. Furthering the discourse on governance is especially important in times when health care systems are confronted with the challenges of ageing populations.

## Australian health care system governance

The Australian health care system is considered to be one of the most efficient health care systems in the world. According to the OECD (2010), Australia, Iceland, Japan, Korea and Switzerland perform best in transforming spending into improved health outcomes. Life expectancy in Australia for a boy born in 2012 is 79.9 years, and for a girl, 84.3 years. Men who had survived to the age of 65 in 2012 could have expected to live, on average, an additional 19.1 years (to 84.1 years), and women an additional 22.0 years (to 87.0 years). This puts Australia in the top six OECD countries for life expectancy at birth for males, and the top seven for females (AIHW, 2014). However, the OECD (2010, p.8) also stated that assigning responsibility across Australian government levels in a more consistent manner would lead to less duplication and, consequently, would increase efficiency even further.

In Australia, two levels of government, the Commonwealth (federal) and six State and two Territory Governments (hereafter referred to as the State Governments), make decisions on health care policy and health care delivery. The Commonwealth Government is responsible for funding the Medical Benefit Schedule (MBS) (which includes the universal insurance coverage, Medicare) and the Pharmaceutical Benefit Scheme (PBS), as well as aged and community care. The State Governments hold comprehensive powers over the management of hospitals and other services such as ambulance services, community health care services and public health care programmes (health promotion and disease prevention programmes), public dental services, mental health programmes and health policy research and policy development. However, funding of these services is shared between the Commonwealth and State Governments (Griffith, 2006; Productivity Commission, 2011).

The shared responsibilities imply that no one level of government can be held accountable for the performance of the health care system as a whole. Each level of government formulates and funds policies in relation to its own responsibilities (Australian Government, 2009). This shared accountability created a complex health care system susceptive to cost shifting and under-provisioning (Warren, 2006). For example, the states may minimise outpatient services forcing patients to visit General Practitioners (GP) who are subsidised by the Commonwealth Government funded Medicare. Because Australians are able to attend the emergency room at the public hospitals (managed by the State Governments), the expansion of primary health care activities by the Commonwealth Government may not be a priority (for example, subsidising after hours GP services) (Hurley et al., 2009).

Older adults being discharged from state-managed hospitals without appropriate home care (managing home care is the responsibility of the Commonwealth) is one of the typical and all too common results of cost shifting. Delays in the provision of community care results in older Australians being in discomfort and put them at risk from the misuse of medication and accidents. Furthermore, recovery may be undermined by physical or psychological circumstances such as the loss of mobility or depression associated with the loss

of independence (Grimmer, 2004; Seniors Rights Victoria, 2009; Yates and Root, 2010).

Governance of the Australian health care system is further complicated by funding arrangements between the Commonwealth and State Governments. Australia has the highest concentration of taxing powers in its central government of any federation (Bennett and Webb, 2008), and this monopoly over revenue-raising capacity has resulted in the States' reliance on the Commonwealth for financial assistance to provide services such as access to public hospitals (Harris, 1982). This reliance on the Commonwealth for assistance has been the driver of the 'blame game' between two levels of government. Any failure to meet public expectations in relation to the State Governments' provision of health care services inevitably has led to claims and counter-claims about the adequacy of Commonwealth funding (National Health and Hospitals Reform Commission [NHHRC] 2009).

In addition, the funding provided by the Commonwealth to the states has often had conditions attached such as the involvement of the Commonwealth Government's departments in overseeing the implementation of programmes and the requirement that the State Governments will also contribute to the cost of the programmes (Ramamurthy, 2012). Unfortunately, this process has produced an overlap between the services provided by different programmes run by different governments, and has also been attributed to the 'blame game' as each government has blamed the other for shortcomings attributed to each other's programmes (Ramamurthy, 2012; NHHRC 2009).

In 2008, the then Labor Commonwealth Government acknowledged the need for major reforms to the Australian health care system. The rationales for the reforms were the previously discussed lack of accountability and transparency, duplication, overlap, cost shift, blame shift, ageing population and the explosion of chronic diseases (Rudd and Rixon, 2007).

## Background and method

This paper utilises content analysis to review the responses to a call for public consultations on the proposed health care reforms, particularly of the public feedback to the reform proposal of "strengthening health and health care" (NHHRC, 2009). To oversee the health care reform process, the National Health and Hospitals Reform Commission (the Commission) was established in February 2008. One of the areas identified by the Commission in need of reform was the governance of the health care system. The Commission stated, "governance – or who should 'run' the health care system – is without a doubt the single most controversial issue we have been asked to tackle" (NHHRC, 2009, p.19). The Commission acknowledged that "the fragmentation of services creates difficulties in navigating a complex system, and the public does not find it easy to know which government to hold accountable for their access to health care and the quality of care" (NHHRC, 2009, p.20).

The Commission proposed three options for the reform of the health care system for public deliberation. Details of each option are described in the table below.

**Table 1.** Strengthening health and health care – the reform proposal

| | |
|---|---|
| ***Option A:*** *Continued shared responsibility between governments, with clearer accountability and more direct Commonwealth involvement.* | Under this option, the Commonwealth would take the total responsibility for all funding, policy and regulation of primary health care. The Commonwealth would continue funding the state and territory managed hospitals based on 40 per cent payment of the efficient costs of the delivery of inpatient and emergency department treatments; and 100 per cent payment of the efficient costs of the delivery of hospital outpatient treatments. |
| ***Option B:*** *Commonwealth to be solely responsible for all aspects of health care, delivered through regional health authorities.* | This option would transfer all responsibility for public funding, policy and regulation for health care to the Commonwealth. The Commonwealth would establish and fund regional health authorities to take responsibility for former state health services, such as public hospitals and community health services. |
| ***Option C:*** *Commonwealth to be solely responsible for all aspects of health and health care, establishing compulsory social insurance to fund local delivery.* | This option would transfer all responsibility for public funding, policy and regulation for health care to the Commonwealth, with the Commonwealth establishing a tax-funded community insurance scheme under which people would choose from multiple, competing health care plans. The plans would be required to cover a mandatory set of services, including hospital, medical, pharmaceutical, allied health and aged care. Health care plans would be free to establish their own arrangements with providers, including entering into preferred provider arrangements. Co-payments for mandatory coverage could be limited by regulation. |

*Source:* NHHRC, 2009

In total, 221 submissions were recorded. The submissions that referred to reform of the health care system and primary health were included in the analysis. This paper identified 50 submissions that included comments on the reform of the health care system's governance. Following are the results of the analysis.

## Results

The majority of submissions agreed with the Commission's view that the Australian health care system is fragmented, resulting in confusion, cost and blame shift, funding gaps and policy duplication. However, the opinions were divided as to the directions of the necessary reforms.

**Option A** with the continued shared responsibility between the Commonwealth and State Governments, but with clearer accountability and more involvement of the Commonwealth, was the preferred choice in 14 submissions. It was recognised that significant structural change within the Australian health care system is unlikely and, therefore, Option A had the greatest likelihood of political acceptance (e.g., Australian Health Insurance Association, 2009). This proposal was considered to be much more realistic as it streamlined accountability under the umbrella of a national health care strategy, but allowed the State Governments to retain local level control (e.g., Australian and New Zealand College of Anaesthetists, 2009).

**Option B** was supported in 16 submissions. It was considered that a single funding authority for the health care sector – the Commonwealth – would produce the most equitable, coordinated and locally responsive system, which would remove the artificial boundaries in a patient's care between the Commonwealth and State authorities. In a country such as Australia with only 21 million people, a single funder with regional purchasing authorities would result in greater efficiency and accountability and increased local responsiveness through the regional bodies This would solve the problem of the 'blame game' and reduce the cost shifting between levels of government (e.g., Aboriginal Medical Service Alliance Northern Territory, 2009; Australian Nursing Federation, 2009; Wakerman and Humphreys, 2009; Royal Australasian College of Surgeons, 2009).

**Option C** was a preferred choice in five submissions. In these submissions, option A and B were essentially considered to be variants and a continuation of the present bureaucratically governed health care system. Conversely, option C would provide significant incentives for healthcare providers to improve their service delivery via competition and an innovative approach. Under this option, the government and bureaucratic initiative would be substituted with the dynamics of the consumer's choice of competing health care plans, whose providers must act as prudent purchasers of health care on behalf of their members with the purpose of improving integration, efficiency, quality and safety of care (e.g., Francis, 2009; Stoelwinder, 2009).

Six submissions advocated a pathway between option A to B and then to C. The rationale was that Options B and C require significant structural shifts in roles and capacity. Option B expands the roles and capacity of the Commonwealth in areas where they have no experience and expertise. Adopting Option A as a transition to Option B would put emphasis on strengthening primary health care, without the necessity of the competing demands of planning and funding acute care. However, the delivery of health care services through regional health care authorities as proposed under Option B has the potential to replace one bureaucracy with another. Option C overcomes this problem and provides the ability to create an efficient purchasing system that would link both public and private financing, while expanding consumer choice and retaining universal coverage. Immediately adopting Option C, however, would be risky because, to date, the health care insurance sector has been ineffective in a purchasing role. Therefore, Options A and B should be considered as a pathway towards the more significant reform as proposed under Option C (e.g., Australian General Practice Network, 2009; The National Coalition of Public Pathology, 2009; Australian Unity, 2009).

An additional nine submissions did not agree with any of the options and instead proposed their own reform directions. Some advocated that the Commonwealth and State Governments should establish a single entity (Commission) or a central health fund body , to collect all public health funds, and then distribute funding to regions based on their population, adjusted for need (e.g., Doctors Reform Society, 2009). Others suggested that the State Governments should assume full authority for health care services with the Commonwealth limiting its responsibilities to the provision of funding (e.g., Menzies Centre for Health Policies, 2009; ACOSS, 2009).

## Accountability for what, of whom, to whom?

The overwhelming response to the Commission's call for submissions on strengthening public health and health care shows that the public is aware of the complexity of the Australian system and wants to improve it. Though not one option gained overwhelming support, it was apparent that the lack of accountability within the current governance structure of the Australian health care system is a major concern.

In June 2009, the Commission released its final report, "A healthier future for all Australians," which recommended that the Commonwealth Government assume full responsibility for the policy and public funding of primary health care services. It also

recommended that the Commonwealth Government meet 100 per cent of the costs of public hospitals' outpatient services and 40 per cent of the cost of care for every episode of acute and sub-acute care for patients admitted to a hospital or public healthcare facility, and for every attendance at a public hospital emergency department (NHHRC, 2009).

In 2011, the National Hospital Reform Agreement (NHRA) was signed by the Commonwealth and State Governments. This agreement was significantly altered from the original proposal. Originally, the Commonwealth proposed to meet hospital funding as per the Commission's recommendations above. In exchange, the State Governments were to agree that the management of hospitals would be overseen by new local entities and new national bodies to be established under the Commonwealth legislation. However, this proposal was rejected by the State Governments because of funding arrangements. Subsequently, a new arrangement was put in place. In the altered agreement, the level of payments were to be linked directly to the number and type of patients treated. The Commonwealth also committed additional funding to fill the gap between the increase in health care costs and current funding arrangements. The management of hospitals would also continue to be the States' responsibility with no interference from the Commonwealth (Anderson 2012).

After four years of deliberations and negotiations, the outcome of the reforms has been that the Australian health care system will have the same structure as before: the States retain control over the hospitals and community care and the Commonwealth over medical and pharmaceutical benefit schemes and aged care.

## Conclusion

As noted previously, health care systems have been fundamental to improving the health of the world population; however, new challenges exist such as the high prevalence of non-communicable diseases, ageing populations and the rising expenditure on health care tests and health care systems worldwide, including Australia. Despite these challenges, expectations for the effective, efficient and equitable delivery of health care services are growing (WHO, 2007). Strengthening health care systems and their governance is crucial in meeting these expectations; and unless significant reforms are implemented, the ageing-related expenditures, particularly in the area of health care, have the potential to undermine the fiscal sustainability of a country.

In Australia, the conflict in responsibilities between the Commonwealth and State Governments makes this process even more complex, as is apparent in the latest attempt to reform the Australian health care system. Irrespectively, the rapid ageing of the Australian population will hasten the urgency with which society must confront the need for establishing systems capable of meeting the needs of an ever-increasing number of older Australians. Any proposed changes would have to acknowledge the relative success of the Australian health care model in achieving the outcomes that led to the Australian health care system being considered one of the most efficient health care systems in the world (OECD, 2010).

To achieve the best outcome in the context of the Australian complex, a multi-layer health care governance structure, a greater degree of co-operation between the Commonwealth and State Governments would also have to be achieved. However, any changes and improvements would be qualitative rather than quantitative, as the existing channels of revenue distribution and allocation would have to be maintained.

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# ARE LISTED FIRMS BETTER GOVERNED? EMPIRICAL EVIDENCE ON BOARD STRUCTURE AND FINANCIAL PERFORMANCE

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**Abstract**

We examine the relationship among board characteristics (network centrality, leadership structure, outsider participation, portion of male directors, director age, and presence of financial experts) and firm-level financial performance (cash holdings, leverage, ROA, risk, and risk-adjusted return). Our data encompass firms from eight countries during 2003-2012. Unlisted firms are smaller and have less leverage. Despite the fact that unlisted firms have *prima facie* better average governance (they are less likely to have an executive chair (or CEO as chair of the board) and a higher average portion of outside directors), they exhibit worse risk-adjusted returns. Higher levels of director connectedness (centrality) are generally associated with more observable entrenchment (more cash, less leverage), whereas other board characteristics do not show clear relationships with entrenchment. Our findings are consistent with the view that firmly established CEOs are willing and able to pack the board with qualified and connected members, who nevertheless do not act to constrain CEO entrenchment. This is true for both listed and unlisted firms.

**Keyword:** Directors, Network Centrality, Liquidity, Capital Structure, Firm Performance

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## 1. Introduction

In this paper, we critically examine the long-held view that managers of firms with dispersed ownership (vis-à-vis privately held firms) are less effective at monitoring and controlling CEO entrenchment.[1] Our central research question is whether listing status (broad market, narrow market, unlisted) affects the relationship between board characteristics and firm performance. In general, listing status is associated with the degree of ownership dispersion, such that firms listed on large public stock exchanges, even though they may have blockholders, often face larger agency costs vis-à-vis privately held firms that have little ownership dispersion. In this view, the governance structure of privately held firms[2] would be expected to have a lower impact on performance than in publicly traded companies (Ferreira, et al 2013).

We measure board structure along several dimensions: network centrality of the directors, executive role of the board's char (including dual CEO/chair status), portion of outside directors, age, and portion male. Our measures of firm performance are somewhat limited compared to typical studies of publicly traded companies because by definition unlisted firms have less transparent share prices; we focus on cash/total assets, capital structure (long-term debt/total assets), risk (standard deviation of ROA) and risk-adjusted return (measured as the coefficient of variation, or ROA standard deviation. Our data encompass firms from eight countries (Belgium, Finland, France, Germany, Italy, the Netherlands, Spain, and the United Kingdom) during 2003-2012.

We find that unlisted firms are smaller and have less leverage. Despite the fact that unlisted firms have *prima facie* better average governance (they are less likely to have an executive chair (or CEO as chair of the board) and a higher average portion of outside directors), they exhibit worse risk-adjusted returns. Higher levels of director connectedness (centrality) are generally associated with more observable entrenchment (more cash, less leverage), whereas

[1] Indeed, incentive realignment has been found to be a major motivation for UK firms that convert from public to private status (Wright, Timmons, and Renneboog, 2006).

[2] Although publicly traded firms face conflicts between dispersed owners and managers, privately held firms face conflicts between controlling and minority shareholders, which can lead to tunneling. This is not a key aspect of the present study, however, because presumably shareholders who control a CEO could also control a board. This means the presence of outside board members, split CEO/chair leadership structure, etc. should not be relevant for (by definition) "controlling" shareholders.

other board characteristics do not show clear relationships with entrenchment. Our findings are consistent with the view that firmly established CEOs are willing and able to pack the board with qualified and connected members, who nevertheless do not act to constrain CEO entrenchment. This is true for both listed and unlisted firms.

The paper proceeds as follows. Section 2 provides an abridged overview of the vast literature on the relationship between firm performance board characteristics, and clearly enumerates the central hypothesis of our study. Section 3 presents information on the two data sets we employ (BoardEx for information on board characteristics; Orbis for information on firm performance). The models and procedures used to construct variables are covered next. Section 4 presents results, with section 5 devoted to robustness tests. The conclusion is presented in section 6.

## 2. Literature and Hypotheses

### *2.1 Literature*

There is an extensive literature on the corporate governance of publicly traded firms, but information on corporate governance of privately held companies is much less substantial. Classical finance theory argues that entrenched managers can extract value from dispersed shareholders of publicly traded firms, and more recent analysis of this argument (Bebchuck, et al 2002) is known as the "managerial power" approach. In terms of the present study, because of coordination problems among dispersed shareholders, CEOs of publicly traded firms are more likely to be unconstrained by owners vis-à-vis privately held firms. So, listing status[3] (as a proxy for shareholder dispersion) should affect how board characteristics affect financial performance. Of course, even publicly traded firms can be dominated by blockholders (and by the role of the press, as in Kuhnen and Niessen 2012), but that can lead to problems whereby dominant shareholders divert earnings from minority shareholders. Because the latter is more likely in privately held firms, the research to date is ambiguous in terms of how (or whether) ownership structure is related to performance. For this reason, our study addresses a significant gap in understanding of the relationship between performance and governance of privately held vis-à-vis publicly traded firms. Specifically, we address the issue of how board characteristics (network centrality, age, gender, chair executive role or even CEO) relate to performance.

Several recent papers (e.g., Brown, et al 2010; Liu 2010; Renneboog and Zhao 2011; Fracassi and Tate 2012; Faleye 2012) have examined the importance of network centrality of either boards of directors or CEOs, but they tend to focus on publicly traded companies. Alonso and Aperto (2011) find that more outsiders on the board increase the chance that CEO pay is linked to equity value; Han and Yang (2013) present a model that examines the implications of social network communication on welfare, cost of capital, liquidity, and trading volume. In general, network centrality seems to confer advantages on those who possess higher levels of it, although for board of directors, the evidence is somewhat ambiguous. On the one hand, there seems to be evidence that interlocking board membership allows the proliferation of bad habits such as option backdating (Bizjak, et al 2007). Directors that serve on multiple boards seem to be less able to monitor and effectively curtail CEO entrenchment (Fich and Shivdasani 2006). In terms of specific competence of board members, Minton et al 2011 find that, for commercial banks in the United States, financial expertise of board members has a negative impact on performance. On the other hand, Larcker, et al (2012), find that firms with well-connected directors earn superior risk-adjusted returns vis-à-vis other firms. Horton, et al (2009) find that network centrality of board members improves performance of their firm. The fact that "friendly" boards have both costs and benefits is explored by Schmidt (2008).

One advantage of comparing listed to unlisted firms is that we can obtain unique insight on a complex feature of the interaction of boards with performance—complementarity among how different mechanisms may have varying impacts in different national contexts (Goergen 2007). A study by de Jong, et al (2002) finds that governance mechanisms are different in different countries, so that where the market for corporate control (take-overs) is robust, board characteristics are not as important in mitigating entrenchment (a related study was undertaken by Dimopoulos and Wagner 2010). Because we have information on companies located in eight European countries, we can present some insight on whether any of the public/private distinctions in board effects on performance are relevant in different institutional contexts (Martynova and Renneboog 2011). The difference between private and public firm investment indicates that there may be substantial differences in governance between the two types of companies (Gilje and Taillard 2013). Because of a high level of cross-sectional variation in Germany and the UK (Goergen 1997), it makes sense to include these two countries in our study; we also include a number of other countries which had a good overlap between the

[3] The importance of cross listing in allowing a firm to "choose" its corporate governance regime is explored by Goergen and Renneboog, 2008.

Orbis and BoardEx information we used to construct our data.

A number of recent papers have considered how board strength interacts with performance. Strong CEOs can pack the board with lightweight members ("cheerleaders") that will not monitor management effectively (Fracassi and Tate 2012; Cohen, et al 2012; Nguyen,2012). On the other hand, a high level of entrenchment-induced job security might mean that the CEO feels confident enough to allow strong boards to be assembled (Cornelli, et al 2010). Board size had an impact on performance during the Great Depression (Graham, et al 2011). Board competence has also been addressed via network centrality, level of experience (Kang 2013), and industry experience (Faleye, et al 2013); the positive and negative aspects of advising vs. monitoring by boards is discussed in Schmidt (2008); the possibility that strong boards could lead to worse corporate performance is explored by Bach and Metzger (2013).

The role of gender in decision-making and boardroom dynamics has been the subject of several recent papers as well. Recent experimental evidence (Hoogendoorn, et al 2013) shows that the gender composition of business teams affects performance. Specifically, Ferreira (2009) surveys research related to gender diversity on boards of directors. Adams and Funk (2011) find evidence that female board members have more tolerance for risk, which could affect firm-level risk-taking. The recent change in Norweigian law mandating that 40% of board members be female allowed examination of the effects of such laws (Ahern and Dittmar 2012; Matsa and Miller 2010). In this unusual situation, the newly hired directors were on average younger and had less experience. But even in more normal circumstances, it makes sense to control for age and specific expertise (e.g., previous service as a financial director or CFO) as well when examining gender of board directors.

### *2.2 Hypotheses*

Our central research question is whether listing status (large index, other index, unlisted) in different countries affects the relationship between board characteristics (network centrality, portion of outside directors, average age, portion male, and presence of financial experts) and firm performance (measured by cash/assets, leverage, standard deviation of ROA, and coefficient of ROA variation). If managerial incentive alignment for unlisted firms is of higher quality due to more ownership concentration, we might find that the composition and characteristics of the board of directors should have *no relationship* (or, a lesser relationship vis-à-vis publicly listed firms) to performance. But what types of relationships should we expect in listed companies?

There are some ambiguities regarding how entrenchment could affect board characteristics. Entrenchment should be associated with a number of observable financial outcomes, however. For example, CEOs with little board oversight could be tempted to build up more cash reserves vis-à-vis rivals that exhibit more effective corporate governance (Schauten, et al 2008). Similarly, due to the fact that debt functions as a disciplining[4] device, we might expect leverage to be lower in entrenched firms.

Presumably, risk (here, measured as the standard deviation of ROA) should be lower for entrenched firms for the same reasons, although this may not be as straightforward as for leverage due to some complexities concerning unlisted vis-à-vis listed firms. Because publicly traded firm ownership can be easily diversified, shareholders might be more willing to see risk-taking in such settings. But because privately held firms tend to concentrate ownership, we might expect to see lower risk tolerance on the part of such investors (they might be less diversified, especially if the firm is family-owned). Finally, we might expect that one measure of returns adjusted for risk, the coefficient of variation (defined as the standard deviation of ROA over the mean value of ROA) should be lower (meaning, a better investment) for privately held firms for the simple reason that there may be some discount on prices for illiquid shares of unlisted companies, reflected in a higher average return for unit of risk.

## 3. Data and Models

### *3.1 Data and Descriptive Statistics*

Our paper operationalizes three separate issues: board characteristics, firm performance, and listing status. Board characteristics are primarily measured by (1) whether the chair has a day-to-day role in managing the company (i.e., either as an executive chair or as CEO), (2) the portion of outside (non-executive) members on the board, (3) network centrality defined as the average level of connectedness of the board, (4) the portion of male directors, (5) director age, and (6) whether any director has experience as a financial director or CFO. Centrality is operationalized by taking the mean level of the BoardEx variable "Number of Connections" for each firm-year (Liu, 2010, provides information on how this variable is constructed: "BoardEx consolidates information concerning the board of directors and senior

[4] For an examination of disciplining devices in Europe, see Koke, Dherment-Ferere, and Renneboog, 2001.

management of publicly quoted and large private companies from various public-domain sources. For each individual covered, BoardEx provides his employment history, educational background, and other activities such as club membership. Personal biographical information in BoardEx dates back to as early as 1926."). For the final variable, we have data on the number of directors who have experience either as a CFO or as a financial director—we convert this to a dummy variable taking the value of "1" for any firm-year observations that included any board members with such financial expertise. The data on board characteristics comes from BoardEx, a database that has information by year on each director for a large number of firms around the world.

Because we are using both publicly traded and privately held firms, the performance measures we use are accounting (as opposed to market-based) variables, including: cash as a portion of total assets, leverage (non-current liabilities over total assets), ROA (net income over total assets), risk (standard deviation of ROA), and a risk-return measure, coefficient of variation (standard deviation of ROA over mean ROA). As controls, we use firm age (natural log of 2012 minus founding date) and size (natural log of total assets). The accounting data comes from Orbis (one of the Bureau van Dyke reporting service databases, related to Osiris and Amadeus).

To construct the data set, we hand-matched firms using company name initially and then checking industry to ensure the quality of the matches. There are many firms included in Orbis that were not included in BoardEx, and there were some companies listed in BoardEx that we were unable to find in the Orbis database. For example, the BoardEx data set presented information on 274 French firms, whereas Orbis provided accounting data on 16,371 French companies. We were able to match Orbis data with 274 French firms included in BoardEx. Each such firm had a number of annual instances of accounting information, so following data cleaning, we had a total of 2,030 observations with data for both both board structure and accounting performance from French companies. For more details on the exact process used to match the firms, see the appendix, which also contains data on the Windsorization process.

Combining all eight countries, we constructed 11,090 firm-year observations from BoardEx firms that were located in Orbis. Our combined dataset begins in 2003 (631 observations), and ends in 2012 (1,078 observations). The year with the most observations was 2008 (with 1,112 observations). Because we use ratios for our financial variables (the only exception being log of total assets as our coarse measure of size) and due to the overall monetary stability of the currencies we use during this time period (e.g., no hyperinflationary periods), inflation was not a major concern.

Table 1 lists the variables and their descriptive statistics. Note that most of the accounting variables (along with the BoardEx variables for average director age and netrwork centrality) were windsorized at the 5% value to eliminate outliers (for non-Windsorized extreme values, see the appendix). Panel A contains information on number of observations, mean, standard deviation, and minimum and maximum values for each variable in the paper.

Are listed firms substantially different from unlisted firms in our data? Panel B provides some analysis of this issue. The chart lists mean values for both listed and unlisted firms, as well as results of two-tailed t-tests and nonparametric median tests. We see that several variables have quite different average values. Unsurprisingly, unlisted firms are significantly smaller, exhibit less leverage, and are riskier (higher ROA volatility). Other significant differences might not be as obvious: unlisted firms have a *higher* degree of network centrality, and are much *less* likely to be led by an executive chair or CEO. Despite corporate governance guidelines that might put more pressure on publicly traded firms to incorporate outside directors, our data show that it is *privately* held firms that are more likely to have a higher portion of outside directors. In addition, unlisted firms tend to have more female board members (*p*-value 6.31%). Director age and CFO/FD experience is roughly equivalend between the two groups.

Panel C contains information on the listing status of the firms in our study, broken down by country. For the majority of firm-year observations that overlapped in both Orbis and BoardEx, we were able to ascertain whether they were privately held or listed, and if so, in which equity market index they were included. Firms belong to a "big" index if they are listed on the FTSE 100, CAC 40, DAX, or Eurotop 100. We have 1,665 observations in this category. Other firms in our dataset are included in MDAX, AIM, SBF, TecDAX, etc., accounting for another 6,886 observations. We have 4,196 observations from firms with no stock market listing (per BoardEx). Panel D provides information on observations by year and listing status. The dataset begins in 2003, but the year with the most observations is 2008.

Panel E indicated the numbers of observations by industry group by country. We had the most observations for the UK (4,159), but the number of observations from other countries more or less mirrors the size of their economy. The largest industry category is "other services", with "machinery, equipment" in second place. Panel F indicates the

number of observations for each year by industry group.

**Table 1.** Descriptive Statistics

**Panel A: Overall Data Set**

| | Variable | Definition | Obs. | Mean | StDev | Min | Max |
|---|---|---|---|---|---|---|---|
| Orbis | Cash* | Cash or cash equivalents/ total assets | 8,151 | 0.123 | 0.114 | 0.005 | 0.421 |
| | Leverage* | Long-term debt (non-current liabilities)/ total assets | 8,151 | 0.243 | 0.176 | 0.003 | 0.601 |
| | ROA* | Net income/ total assets | 8,151 | 0.034 | 0.079 | -0.173 | 0.178 |
| | Risk* | Standard deviation of ROA | 11,082 | 0.066 | 0.069 | 0.007 | 0.268 |
| | Firm Age* | Natural log of (2012 – founding year) / 100 ** | 10,953 | 0.527 | 0.428 | 0.060 | 1.480 |
| | Size* | Natural log of total assets | 8,151 | 13.209 | 2.205 | 9.402 | 17.148 |
| | Coefficient of Variation* | Standard deviation of ROA / mean ROA | 11,072 | 0.467 | 2.197 | -4.691 | 6.032 |
| | Vector of industry dummies | Take value of "1" for each "BVD major sector"(see Panel E) | 9,284 | -- | -- | -- | -- |
| BoardEx | Centrality* | Mean of "Director Network Size" / 100 ** | 11,082 | 2.108 | 1.535 | 0.250 | 5.640 |
| | Chair | Indicator taking value of "1" if board chair was exuctive of firm (or CEO) | 11,082 | 0.494 | 0.500 | 0 | 1 |
| | Portion Outside | Portion of directors who were outsiders (NED) | 11,082 | 0.335 | 0.236 | 0 | 1 |
| | Portion Male | Portion of directors were were male | 11,082 | 0.921 | 0.132 | 0 | 1 |
| | Director Age* | Mean age of the directors | 11,090 | 55.490 | 4.285 | 47.000 | 62.667 |
| | CFOFD | Number of directors with CFO or FD (Financial Director) experience | 11,090 | 0.292 | 0.455 | 0 | 1 |
| | Big Index | Indicator taking value of "1" for firms listed on "big" indices/exchanges | 11,082 | 0.150 | 0.357 | 0 | 1 |
| | Listed | Indicator taking value of "1" for listed firms but not on big indices | 11,082 | 0.471 | 0.499 | 0 | 1 |

*All Orbis variables (except industry dummies), as well as the BoardEx variables centrality and Director Age (of mean board member), were Windsorized, replacing extremes below the 5% and above the 95% values as the 5% and 95% level, respectively. See appendix for details of these values. **Divided by 100 for ease of presenting coefficients in results tables.

**Panel B: Listed/Unlisted Comparison**

| Variable | Unlisted | | Listed | | *p*-value of 2-tailed *t*-test | *p*-value of median test |
|---|---|---|---|---|---|---|
| | Mean | Obs. | Mean | Obs. | | |
| Cash | 0.125 | 3,088 | 0.121 | 5,063 | 0.204 | 0.322 |
| Leverage | 0.238 | 3,088 | 0.246 | 5,063 | 0.037** | 0.107† |
| ROA | 0.034 | 3,088 | 0.034 | 5,063 | 0.898 | 0.241 |
| Risk | 0.069 | 4,196 | 0.064 | 6,886 | 0.001*** | 0.000*** |
| Firm Age | 0.526 | 4,149 | 0.527 | 6,804 | 0.926 | 0.134† |
| Size | 13.106 | 3,088 | 13.272 | 5,063 | 0.001*** | 0.212 |
| Coef. of Var. | 0.469 | 4,190 | 0.466 | 6,882 | 0.953 | 0.000*** |
| Centrality | 2.169 | 4,196 | 2.070 | 6,886 | 0.001*** | 0.012** |
| Exec. Chair | 0.449 | 4,196 | 0.521 | 6,886 | 0.000*** | 0.000*** |
| Portion Outside | 0.369 | 4,196 | 0.314 | 6,886 | 0.000*** | 0.000*** |
| Portion Male | 0.918 | 4,196 | 0.923 | 6,886 | 0.0631* | N/A (median = 1) |
| Director Age | 55.448 | 4,196 | 55.507 | 6,886 | 0.480 | 0.414 |
| CFOFD | 0.293 | 4,196 | 0.291 | 6,886 | 0.833 | 0.850 |

Note: "listed" sample includes all firms included on both major indices or any index at all (unlike in Panel C or in Table 3 where those are broken down as separate categories). Median test is continuity corrected. Statistical significance indicated by *** 1%, ** 5%, * 10%, † 15%.

**Panel C: Observations by Country**

| Country | Observations by Listing Status** | | | Total Obs. |
|---|---|---|---|---|
| | Unlisted | Index | Of which, Big Index | |
| Belgium | 374 | 144 | 144 | 518 |
| Finland | 182 | 89 | 59 | 271 |
| France | 718 | 1,312 | 326 | 2,030 |
| Germany | 380 | 1,248 | 312 | 1,628 |
| Italy | 229 | 392 | 17 | 621 |
| Netherlands | 233 | 324 | 64 | 557 |
| Spain | 189 | 332 | 65 | 521 |
| UK | 1,891 | 3,045 | 678 | 4,936 |
| Total | 4,196 | 6,886 | 1,665 | 11,082 |

**"Big" indices include FTSE 100, CAC 40, DAX, and Eurotop 100; other indices include MDAX, AIM, SBF, TecDAX (each of these categories based on the BoardEx variable "Index").

**Panel D: Observations by Year and Listing Status**

| Year | Unlisted | Listed | Of which, Big Index | Total |
|---|---|---|---|---|
| 2003 | 251 | 380 | 53 | **631** |
| 2004 | 276 | 444 | 62 | **720** |
| 2005 | 330 | 554 | 80 | **884** |
| 2006 | 362 | 604 | 87 | **966** |
| 2007 | 395 | 657 | 98 | **1,052** |
| 2008 | 423 | 689 | 117 | **1,112** |
| 2009 | 405 | 682 | 129 | **1,087** |
| 2010 | 435 | 673 | 146 | **1,108** |
| 2011 | 253 | 393 | 153 | **646** |
| 2012 | 413 | 665 | 159 | **1,078** |
| **Total** | **3,543** | **5,741** | **1,084** | **11,082** |

**Panel E: Observations by Country and Industry**

| Industry | Belgium | Finland | France | Germany | Italy | Netherlands | Spain | UK | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Banks** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | **7** |
| **Chemicals, rubber** | 65 | 32 | 178 | 202 | 73 | 35 | 60 | 299 | **944** |
| **Construction** | 19 | 8 | 58 | 18 | 35 | 25 | 49 | 138 | **350** |
| **Education, Health** | 11 | 0 | 34 | 9 | 0 | 5 | 0 | 106 | **165** |
| **Food, beverages** | 27 | 2 | 91 | 10 | 18 | 44 | 38 | 181 | **411** |
| **Gas, Water, Electricity** | 7 | 9 | 51 | 79 | 65 | 0 | 67 | 72 | **350** |
| **Hotels & restaurants** | 0 | 0 | 40 | 0 | 9 | 0 | 18 | 130 | **197** |
| **Machinery, equipment** | 90 | 73 | 304 | 408 | 132 | 107 | 29 | 664 | **1,807** |
| **Metals & metal products** | 21 | 28 | 40 | 53 | 5 | 17 | 26 | 295 | **485** |
| **Other services** | 80 | 4 | 474 | 216 | 51 | 98 | 97 | 872 | **1,892** |
| **Post & telecomm.** | 34 | 10 | 51 | 45 | 26 | 25 | 9 | 121 | **321** |
| **Primary sector** | 0 | 0 | 79 | 5 | 9 | 20 | 6 | 196 | **315** |
| **Publishing, printing** | 19 | 18 | 26 | 70 | 36 | 52 | 9 | 305 | **535** |
| **Textiles, clothes** | 10 | 0 | 81 | 30 | 28 | 4 | 6 | 147 | **306** |
| **Transport** | 19 | 10 | 45 | 41 | 24 | 7 | 10 | 171 | **327** |
| **Wholesale & retail trade** | 21 | 11 | 147 | 114 | 6 | 29 | 9 | 420 | **757** |
| **Wood, cork, paper** | 9 | 41 | 16 | 8 | 0 | 0 | 6 | 35 | **115** |
| **Total** | **432** | **246** | **1,715** | **1,308** | **517** | **468** | **439** | **4,159** | **9,284** |

**Panel F: Observations by Industry and Year**

| Industry | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Banks | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | **7** |
| Chemicals, rubber | 65 | 71 | 86 | 95 | 109 | 114 | 113 | 119 | 58 | 114 | **944** |
| Construction | 27 | 31 | 35 | 37 | 41 | 41 | 40 | 41 | 19 | 38 | **350** |
| Education, Health | 7 | 11 | 12 | 19 | 22 | 24 | 23 | 19 | 10 | 18 | **165** |
| Food, beverages, tobacco | 30 | 34 | 38 | 42 | 44 | 49 | 48 | 50 | 29 | 47 | **411** |
| Gas, Water, Electricity | 23 | 24 | 37 | 37 | 40 | 43 | 44 | 43 | 18 | 41 | **350** |
| Hotels & restaurants | 16 | 14 | 19 | 22 | 22 | 23 | 23 | 22 | 16 | 20 | **197** |
| Machinery, equipment | 125 | 139 | 172 | 190 | 205 | 215 | 213 | 216 | 127 | 205 | **1,807** |
| Metals & metal products | 24 | 33 | 47 | 52 | 54 | 59 | 56 | 60 | 39 | 61 | **485** |
| Other services | 127 | 148 | 184 | 197 | 218 | 230 | 219 | 225 | 126 | 218 | **1,892** |
| Post & telecomm. | 24 | 26 | 28 | 31 | 37 | 39 | 37 | 36 | 27 | 36 | **321** |
| Primary sector | 22 | 26 | 28 | 32 | 35 | 39 | 38 | 39 | 18 | 38 | **315** |
| Publishing, printing | 41 | 47 | 56 | 58 | 58 | 60 | 59 | 58 | 40 | 58 | **535** |
| Textiles, clothes | 21 | 27 | 33 | 33 | 33 | 33 | 34 | 32 | 26 | 34 | **306** |
| Transport | 25 | 26 | 30 | 33 | 37 | 38 | 38 | 37 | 26 | 37 | **327** |
| Wholesale & retail trade | 47 | 55 | 68 | 76 | 85 | 90 | 87 | 95 | 58 | 96 | **757** |
| Wood, cork, paper | 7 | 8 | 10 | 11 | 12 | 14 | 14 | 15 | 8 | 16 | **115** |
| **Total** | **631** | **720** | **884** | **966** | **1,052** | **1,112** | **1,087** | **1,108** | **646** | **1,078** | **9,284** |

### 3.2 Variables and Models

Our initial dependent variables are performance measured as cash/assets, capital structure, ROA, and risk (standard deviation of ROA). In a set of extended models, we also examine the coefficient of variation (standard deviation of ROA divided by mean ROA).

The basic model is as follows:

$$P_{i,t} = \alpha + \beta 1 SIZE_{i,t} + \beta 2 AGE_{i,t} + \beta 3 BOARD_{i,t} + \beta 4 CONTROLS_{i,t} + \varepsilon_{i,t} \quad (1)$$

where P is a measure of firm performance (initially, we examine separately cash/assets, capital structure measured as long-term debt over total assets, risk measured as standard deviation of ROA—in subsequent specifications, we examine coefficient of variation as the dependent variable). SIZE is measured as the natural log of total assets, AGE is measured in the natural log of years since the firm was founded. BOARD refers to board member characteristics (network centrality, portion of outside or non-executive directors, age, portion male, presence of a financial expert). Finally, CONTROLS refers to several control variables used in some (but not all) specifications, including some of the performance measures (cash, leverage, and ROA). For most specifications, we use GLS (random effects) with the time dimension t as years and indexed i for firm. Generally, we use industry dummies (omitted category is "other services") and country dummies (omitted category is UK). In specifications using risk (e.g., in Table 2, specifications E, F, and G) or coefficient of variation as the dependent variable, we use OLS with error terms clustered at the firm level (GLS is not appropriate because risk does not vary for an individual firm). In robustness tests (below), we are forced to omit the vectors of dummy variables because we use firm-level fixed effects.

## 4. Results

### 4.1 Baseline Model

Table 2 provides the first set of results, the baseline models A-G we will employ subsequently. The specifications include the full sample. Overall, the Wald $Chi^2$ figures are large and highly significant, which is not surprising given the sample size. There are 8,054 observations per specification, with 1,180 firms represented, for an average of about eight firm-year observations per company. The $R^2$ values are typical of studies that employ a large amount of firm-level data from privately held companies (Cole 2013; Hall 2012).

One of the clearest findings from the initial tests is the fact that network centrality is closely related to cash holdings and level of risk. Firms with more connected boards have more cash, lower ROA, but are riskier (higher standard deviation of ROA). Director age is significant in many specifications-older directors are associated with lower levels of cash holdings and less risk. This could indicate that older directors (presumably with more experience) are more able to constrain entrenched CEOs. Later, we will consider the role of directors in firms with executive chairs (including dual CEOs) vis-à-vis non-executive chairs. Surprisingly, the coefficient for the CEO variable is positive and significant in the risk regressions, counter to expectations that an entrenched CEO or executive chair would reduce the riskiness of the firm's decisions.

In terms of accounting relationships, firm size is (unsurprisingly) correlated with leverage-it is well-documented that larger firms tend to hold more debt as a portion of assets. Cash holdings are lower at larger firms, perhaps due to lesser need for precautionary balances (Schauten, et al 2008; Hall, et al 2013). Smaller firms tend to be riskier, which reflects the fact that they are likely to have less diversified streams of income; generally, larger firms with multiple divisions and product lines are likely to exhibit less cash flow volatility.

**Table 2.** Baseline Regressions

This table reports regression results with dependent variables as indicated. Cash is cash/total assets, leverage is long-term debt/total assets, ROA is net income/total assets, size is natural log of total assets (all four of which are windsorized), firm age is 2012-founding year, centrality is mean network size, dual role is a dummy taking the value of "1" when the CEO is also the Chair, Outsiders is portion of outside (NED), male is portion male, age is mean age of the members of the board, CFO/FD is a dummy variable taking the value of "1" if any members of the board had experience as a CEO or financial director. Sector and country dummies are variables taking the value of "1" for BVD sector (with "other services" as the omitted category) or country (Finland, France, Germany, with UK as reference category), respectively. Specifications A-D use random effects generalized least squares (firm and year); specifications E-G use OLS with standard errors clustered at the firm level. Z-statistics in parentheses for A-E; T-statistics for F-H.

| Dependent variable: | Cash | | Leverage | | ROA | Risk | | |
|---|---|---|---|---|---|---|---|---|
| Specification: | A | B | C | D | E | F | G | H |
| Cash | -- | -- | -- | -0.171*** (-12.25) | 0.073*** (7.89) | -- | 0.055*** (3.71) | 0.063*** (4.58) |
| Leverage | -- | -0.111*** (-12.68) | -- | -- | -0.103*** (-14.31) | -- | 0.010 (0.87) | -0.010 (-0.95) |
| ROA | -- | 0.112*** (8.57) | -- | -0.238*** (-14.67) | -- | -- | -- | -0.233*** (-12.83) |
| FirmAge | 0.008 (1.17) | 0.006 (1.05) | -0.009 (-1.08) | -0.008 (-0.93) | 0.001 (0.20) | 0.000 (-0.01) | -0.001 (-0.12) | 0.000 (-0.03) |
| Size | -0.023*** (-16.89) | -0.019*** (-13.98) | 0.040*** (22.42) | 0.038*** (21.95) | 0.014*** (13.96) | -0.015*** (-11.58) | -0.014*** (-10.14) | -0.011*** (-8.73) |
| Centrality | 0.003*** (2.72) | 0.004*** (3.23) | 0.000 (-0.12) | -0.001 (-0.37) | -0.004*** (-4.38) | 0.009*** (6.19) | 0.008*** (5.86) | 0.007*** (5.24) |
| Exec. Chair / Dual CEO | -0.002 (-0.51) | -0.001 (-0.35) | 0.002 (0.52) | 0.001 (0.30) | -0.002 (-0.77) | 0.006* (1.72) | 0.007* (1.75) | 0.006* (1.82) |
| Outsiders | 0.011 (1.52) | 0.012† (1.48) | -0.005 (-0.45) | -0.005 (-0.48) | -0.007 (-1.03) | 0.011 (1.02) | 0.010 (0.91) | 0.009 (0.97) |
| Male | -0.005 (-0.52) | -0.008 (-0.89) | -0.013 (-1.13) | -0.008 (-0.74) | 0.014* (1.81) | 0.009 (0.86) | 0.009 (0.86) | 0.004 (0.45) |
| Director Age | -0.001*** (-3.66) | -0.001*** (-3.7) | 0.000 (-0.66) | -0.001 (-1.37) | 0.000 (-0.92) | -0.001*** (-2.96) | -0.001*** (-2.78) | -0.001*** (-3.0) |
| CFO/FD | 0.001 (0.43) | 0.001 (0.26) | -0.005 (-1.34) | -0.005 (-1.41) | 0.000 (-0.10) | -0.009** (-2.16) | -0.009** (-2.16) | -0.007* (-1.81) |
| Intercept | 0.457*** (18.12) | 0.432*** (17.56) | -0.235*** (-7,17) | -0.174*** (-5.41) | -0.116*** (-5.94) | 0.309*** (11.01) | 0.290*** (10.03) | 0.272*** (10.27) |
| | | | | | | | | |
| Observations | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 |
| Firms | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 |
| Wald $chi^2$/F-stat | 421.41*** (0.000) | 730.04*** (0.000) | 873.20*** (0.000) | 1,396.70*** (0.000) | 436.21*** (0.000) | 12.99*** (0.000) | 12.70*** (0.000) | 18.58*** (0.000) |
| $R^2$ (Between) | 14.03% | 20.70% | 37.67% | 43.73% | 8.02% | 26.98% | 27.61% | 33.89% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

### *4.2 Listing Status*

Table 3 presents results of our hypothesis that listing status affects the relationship between board characteristics and financial outcomes. Panel A presents results from re-running the regressions from Table 2, but with the addition of two dummy variables to reflect listing status ("big" if the firm is included in a large[5] index, and "listed" if the firms is listed but not included on large indices). As noted above, we would expect firms included in the more prestigious indices to receive more press attention, and potentially, suffer

[5] The "big" indices are FTSE 100, CAC 40, DAX, or Eurotop 100.

more scrutiny concerning their corporate governance. Most of the relationships from Table 2 hold in the new specifications. Firms listed on the bigger indices hold less cash, have less leverage vis-à-vis privately held companies. Firms included in the other indices are more similar to unlisted companies, and few significant differences exist, although ROA was on average lower for listed companies compared to unlisted ones.

**Table 3.** Listing Status Results

This table reports regression results with dependent variable as indicated. Unreported variables are included as in Table 2, for specifications A-H. Cash is cash/total assets, leverage is long-term debt/total assets, ROA is net income/total assets, size is natural log of total assets (all four of which are windsorized), firm age is 2012-founding year, centrality is mean network size, dual role is a dummy taking the value of "1" when the CEO is also the chair or if the chair has executive role. Outsiders is portion of outside (NED) directors, male is portion male, age is mean age of the members of the board, CFO/FD is a dummy variable taking the value of "1" if any members of the board had experience as a CEO or financial director. Sector and country dummies are variables taking the value of "1" for BVD sector (with "other services" as the omitted category) or country (with UK as reference category), respectively. Specifications follow Table 2 (GLS with random effects for A-E; OLS with firm-clustered error terms for F-H). Z-statistics in parentheses for A-E; T-statistics for F-H.

**Panel A: Full Sample**

| Dependent variable: | Cash | | Leverage | | ROA | Risk | | |
|---|---|---|---|---|---|---|---|---|
| Specification: | A | B | C | D | E | F | G | H |
| Cash | -- | -- | -- | -0.172*** (-12.31) | 0.073*** (7.91) | -- | 0.054*** (3.69) | 0.063*** (4.57) |
| Leverage | -- | -0.111*** (-12.74) | -- | -- | -0.103*** (-14.27) | -- | 0.009 (0.85) | -0.010 (-0.96) |
| ROA | -- | 0.112*** (8.59) | -- | -0.238*** (-14.65) | -- | -- | -- | -0.233*** (-12.81) |
| FirmAge | 0.008 (1.16) | 0.006 (1.03) | -0.010 (-1.08) | -0.008 (-0.93) | 0.001 (0.18) | 0.000 (-0.02) | -0.001 (-0.14) | 0.000 (-0.05) |
| Size | -0.023*** (-16.89) | -0.019*** (-13.97) | 0.040*** (22.42) | 0.038*** (21.94) | 0.014*** (13.96) | -0.015*** (-11.55) | -0.014 (-10.11) | -0.011*** (-8.71) |
| Big Index | -0.013*** (-2.83) | -0.014*** (-3.10) | -0.009† (-1.56) | -0.011** (-1.98) | 0.002 (0.65) | -0.005 (-1.08) | -0.005 (-0.98) | -0.003 (-0.70) |
| Listed | -0.001 (-0.36) | 0.000 (-0.17) | 0.000 (0.12) | -0.001 (-0.22) | -0.004** (-1.97) | -0.002 (-0.72) | -0.002 (-0.70) | -0.003 (-0.98) |
| Centrality | 0.003*** (2.70) | 0.004*** (3.21) | 0.000 (-0.13) | -0.001 (-0.37) | -0.004*** (-4.38) | 0.009*** (6.13) | 0.008*** (5.80) | 0.007*** (5.20) |
| Exec. Chair / Dual CEO | -0.001 (-0.48) | -0.001 (-0.33) | 0.002 (0.52) | 0.001 (0.31) | -0.002 (-0.74) | 0.006* (1.73) | 0.007* (1.76) | 0.006* (1.83) |
| Outsiders | 0.012 (1.37) | 0.013† (1.49) | -0.005 (-0.44) | -0.005 (-0.47) | -0.007 (-1.10) | 0.011 (1.00) | 0.009 (0.90) | 0.009 (0.93) |
| Male | -0.004 (-0.50) | -0.008 (-0.86) | -0.013 (-1.11) | -0.008 (-0.72) | 0.013* (1.73) | 0.009 (0.85) | 0.009 (0.85) | 0.004 (0.45) |
| Director Age | -0.001*** (-3.64) | -0.001*** (-3.66) | 0.000 (-0.64) | -0.001 (-1.35) | 0.000 (-0.93) | -0.001*** (-2.94) | -0.001*** (-2.76) | -0.001*** (-2.99) |
| CFO/FD | 0.001 (0.48) | 0.001 (0.34) | -0.005 (-1.30) | -0.005 (-1.35) | 0.000 (-0.04) | -0.009*** (-2.12) | -0.009** (-2.12) | -0.007* (-1.76) |
| Observations | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 | 8,054 |
| Firms | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 | 1,180 |
| $R^2$ (Between) | 13.95% | 20.65% | 37.75% | 43.81% | 8.31% | 27.04% | 27.66% | 33.93% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

**Panel B:Firms Listed on Major Indices**

| | Dependent variable | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Cash | | Leverage | | ROA | Risk | | |
| Specification: | A | B | C | D | E | F | G | H |
| Centrality | 0.010*** | 0.011*** | -0.003 | -0.003 | -0.007*** | 0.010*** | 0.010*** | 0.008** |
| | (3.21) | (3.42) | (-0.73) | (-0.73) | (-2.63) | (2.66) | (2.73) | (2.36) |
| Exec. Chair / Dual CEO | 0.002 | 0.003 | 0.004 | 0.001 | -0.008 | 0.024*** | 0.024*** | 0.021*** |
| | (0.26) | (0.43) | (0.37) | (0.14) | (-1.35) | (2.86) | (2.90) | (2.78) |
| Outsiders | 0.022 | 0.013 | -0.048* | -0.036 | 0.019 | -0.023 | -0.020 | -0.016 |
| | (1.08) | (0.67) | (-1.78) | (-1.38) | (1.24) | (-1.16) | (-1.06) | (-0.88) |
| Male | -0.040* | -0.043** | -0.002 | -0.002 | 0.010 | -0.002 | -0.005 | -0.014 |
| | (-1.83) | (-2.01) | (-0.08) | (-0.07) | (0.54) | (-0.06) | (-0.21) | (-0.62) |
| Director Age | -0.002* | -0.002** | -0.003*** | -0.003*** | -0.001 | -0.001 | -0.001 | -0.001 |
| | (-1.88) | (-2.02) | (-2.59) | (-3.15) | (-1.04) | (-0.70) | (-0.73) | (-0.59) |
| CFO/FD | -0.012* | -0.011† | -0.005 | -0.009 | -0.005 | -0.003 | -0.003 | -0.003 |
| | (-1.69) | (-1.61) | (-0.51) | (-1.01) | (-0.87) | (-0.42) | (-0.41) | (-0.39) |
| Observations | 1,221 | 1,221 | 1,221 | 1,221 | 1,221 | 1,221 | 1,221 | 1,221 |
| Firms | 237 | 237 | 237 | 237 | 237 | 237 | 237 | 237 |
| $R^2$ (Between) | 27.81% | 32.06% | 46.40% | 51.53% | 17.67% | 34.74% | 35.35% | 40.15% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

**Panel C: Firms Listed on Other Indices**

| | Dependent variable | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Cash | | Leverage | | ROA | Risk | | |
| Specification: | A | B | C | D | E | F | G | H |
| | | | | | | | | |
| Centrality | 0.004** | 0.005** | 0.000 | -0.001 | -0.005*** | 0.009*** | 0.008*** | 0.007*** |
| | (2.20) | (2.53) | (-0.20) | (-0.39) | (-3.39) | (4.98) | (4.60) | (4.01) |
| Exec. Chair / Dual CEO | -0.003 | -0.004 | -0.008 | -0.009† | -0.001 | 0.005 | 0.005 | 0.005 |
| | (-0.75) | (-0.89) | (-1.41) | (-1.53) | (-0.17) | (0.99) | (0.96) | (1.04) |
| Outsiders | -0.011 | -0.004 | 0.040** | 0.033** | -0.012 | 0.005 | 0.004 | 0.004 |
| | (-0.86) | (-0.35) | (2.40) | (2.01) | (-1.16) | (0.34) | (0.30) | (0.29) |
| Male | -0.003 | -0.003 | -0.005 | -0.003 | 0.003 | 0.006 | 0.005 | 0.003 |
| | (-0.22) | (-0.25) | (-0.30) | (-0.20) | (0.29) | (0.42) | (0.34) | (0.19) |
| Director Age | -0.001* | -0.001** | 0.000 | 0.000 | 0.001*** | -0.002*** | -0.002*** | -0.001*** |
| | (-1.88) | (-2.19) | (-0.35) | (-0.19) | (2.62) | (-3.14) | (-2.95) | (-2.79) |
| CFO/FD | 0.006 | 0.005 | -0.007 | -0.005 | 0.007* | -0.013** | -0.013** | -0.009* |
| | (1.32) | (1.08) | (-1.12) | (-0.78) | (1.75) | (-2.29) | (-2.34) | (-1.72) |
| | | | | | | | | |
| Observations | 3,784 | 3,784 | 3,784 | 3,784 | 3,784 | 3,784 | 3,784 | 3,784 |
| Firms | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 743 |
| $R^2$ (Between) | 12.91% | 18.95% | 36.99% | 41.91% | 8.42% | 30.71% | 31.81% | 37.28% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

In Panels B-D, we perform analysis on sub-samples split by listing status (big indices, other listed, unlisted). Network centrality is positively related to cash holdings for all three groups of firms; centrality also is related to more risk-taking among all three categories. As before, these findings are consistent with the idea that better connected boards are constraining CEO entrenchment by encouraging less cash and more risk.

The role of outside board members seems to change between unlisted firms and those included on smaller indices. Panels C and D indicate that a higher portion of outside board members (NEDs) is *positively* related to leverage for firms listed but included on smaller indices, yet for unlisted firms, more NEDs are associated with *less* leverage. This could indicate that when a firm is publicly traded, but under less public scrutiny than firms listed on a prestigious index, NEDs are effective in constaining entrenchment.

The negative relationship between director age and leverage noted above seems to be driven mainly by bigger firms (listed in large indices); conversely, older directors seem to mitigate risk-taking by

companies listed on smaller indices (but not unlisted firms). The leadership variable (executive chair or CEO as chair) is significantly related to risk for large firms, but not for unlisted firms or firms listed on smaller indices.

How do these findings relate to expectations of entrenchment? Entrenchment is generally associated with high levels of cash, low leverage, and low risk. For all three listing categories (big, listed, unlisted), greater network centrality limits neither cash holdings nor leverage, and is positively associated with risk-taking. Older directors seem to have a negative impact on cash holdings (for all three groups) and do not encourage leverage (all three groups), but do not encourage risk either. Despite the fact that female directors have been found in the past to be less risk averse, where we have any significant relationship (unlisted firms), it appears that more male directors are associated with *less* volatile profitability. CFO/FD experience on the board is associated with less risk, but only for firms listed on smaller exchanges.

In Panel E, we consider more closely the relationship between non-executive director participation on the board and the firm's leverage. Generally, entrenched managers would be expected to encourage lower leverage, *ceteris paribus*. We split the sample into two groups, based on whether leverage (non-current liabilities as a portion of total assets) is either below the median or above the median.[6] In the first set of specifications, we use the full sample, and see that, irrespective of whether we use an extra control (risk-adjusted return), the impact of outside directors differs between the low-leverage and high-leverage sub-samples. For firms with debt-heavy capital structure, outside directors tend to actually decrease leverage. For firms with little debt, there is no significant relationship between leverage and the portion of outside directors on the board. This evidence does not support the traditional argument that outside directors limit entrenchment by, for example, encouraging more leverage.

Because the findings concerning the relationship between outside directors and leverage were different among Panels B, C, and D, we perform an additional set of regressions, again with the sample split between the high-leverage (above the median) and low-leverage (below the median) observations. Results of these models are presented in the four rightmost columns of Panel E. Because large firms[7] tend to have more leverage, it is expected that the number of low-leverage observations would be fewer than for high-leverage observations, and this is the case as revealed at the bottom of the table (82 vs. 694 observations, respectively). The effect of size on leverage is different among the two sub-samples, with the larger sample showing a positive effect of size on leverage, whereas in the smaller group (which is the top 10% largest firms), size is associated with smaller amounts of leverage. This is indicative of a U-shaped relationship between size and leverage. There are two other notable difference between the two sub-samples: more male directors are associated with higher debt levels for very large firms (but not for the bottom 90%), and CFO/FD experience on the board is associated with more leverage for the bottom 90%, but not for the top 10% biggest firms. So, for most of the sample, it seems that more male directors as well as CFO/FD experience on the board is consistent with limitations on managerial entrenchment.

### *4.3 Dual vs. Split CEO/Chair Structure*

Many corporate governance reform recommendations involve splitting executive responsibilities (most clearly, in the case of the CEO) from the board of directors, and this bears further consideration in our paper. Ideally, we would consider how the dual nature of certain firms affects their risk-weighted (market) returns in a traditional setting. But because our study encompasses privately held firms, we are unable to consider risk-weighted returns as operationalized in traditional asset pricing models (CAPM, arbitrage pricing theory, or three factor models that include book to market value).

Nevertheless, we can utilize stand-alone risk rather than beta (or other factors) as our proxy for risk, and therefore now turn to a dependent variable we term the coefficient of variation in ROA (defined as the standard deviation of ROA divided by the mean value of ROA for that firm). In Table 4, we present results of just such an exercise. Because the coefficient of variation describes the level of risk associated with a given return, independent variables with a negative coefficient are associated with "better" or more desirable performance from the perspective of a risk-averse investor; conversely, positive coefficients represent independent variables for which higher values reduce investor utility (i.e., lead to lower returns per unit of risk, or more risk per unit of return).

[6] The median was 22.58%; we end up with 4,075 observations above and 4,076 observations below—of which, 4,028 and 4,026 were usable in terms of having complete data, and are reported in the table.

[7] In Panel B of Table 3 the sample is firms listed on blue chip indices, whereas in Panel E we group all large firms together (irrespective of listing status). This is because the number of observations (1,221) for the firms in Panel B is insufficient to allow for splitting the sample between high and low leverage.

**Table 4.** Listing Status Results, Continued

**Panel D: Privately Held Firms**

| | Dependent variable | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Cash | | Leverage | | ROA | Risk | | |
| Specification: | A | B | C | D | E | F | G | H |
| Centrality | 0.004* | 0.004** | 0.000 | 0.000 | -0.004** | 0.008*** | 0.008*** | 0.007*** |
| | (1.67) | (2.02) | (-0.01) | (-0.12) | (-2.24) | (3.68) | (3.48) | (3.36) |
| Exec. Chair / Dual CEO | 0.001 | 0.002 | 0.008 | 0.009† | 0.002 | 0.003 | 0.002 | 0.004 |
| | (0.29) | (0.51) | (1.30) | (1.45) | (0.50) | (0.50) | (0.42) | (0.66) |
| Outsiders | 0.045*** | 0.038*** | -0.050*** | -0.041** | -0.016† | 0.039** | 0.038** | 0.033** |
| | (3.27) | (2.88) | (-2.88) | (-2.49) | (-1.49) | (2.40) | (2.30) | (2.21) |
| Male | 0.005 | -0.002 | -0.015 | -0.005 | 0.023* | 0.029* | 0.031** | 0.025* |
| | (0.31) | (-0.12) | (-0.79) | (-0.25) | (1.79) | (1.91) | (2.02) | (1.76) |
| Director Age | -0.001** | -0.001* | 0.000 | -0.001 | -0.001*** | -0.001 | -0.001 | -0.001* |
| | (-2.02) | (-1.83) | (-0.47) | (-1.24) | (-2.75) | (-1.32) | (-1.24) | (-1.79) |
| CFO/FD | 0.002 | 0.002 | -0.006 | -0.006 | -0.005 | -0.006 | -0.007 | -0.008 |
| | (0.48) | (0.50) | (-0.98) | (-1.05) | (-1.31) | (-1.03) | (-1.16) | (-1.36) |
| Observations | 3,049 | 3,049 | 3,049 | 3,049 | 3,049 | 3,049 | 3,049 | 3,049 |
| Firms | 686 | 686 | 686 | 686 | 686 | 686 | 686 | 686 |
| $R^2$ (Between) | 15.39% | 23.56% | 36.13% | 43.66% | 10.31% | 26.41% | 27.35% | 33.68% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

**Panel E: Debt Levels and Effect of Outside Directors on Performance**

Dependent variable is leverage (non-current liabilities over total assets). Cash is cash/total assets, leverage is long-term debt/total assets, ROA is net income/total assets, size is natural log of total assets (all four of which are windsorized), firm age is 2012-founding year, centrality is mean network size, dual role is a dummy taking the value of "1" when the CEO is also the Chair, Outsiders is portion of outside (NED), male is portion male, age is mean age of the members of the board, CFO/FD is a dummy variable taking the value of "1" if any members of the board had experience as a CEO or financial director. Sector and country dummies are variables taking the value of "1" for BVD sector (with "other services" as the omitted category) or country (with UK as reference category), respectively. All specifications use generalized least squares (firm and year); Z-statistics in parentheses.

| | Full Sample | | | | Biggest Firms Only (Top 10% of assets) | | | |
|---|---|---|---|---|---|---|---|---|
| **Debt level is:** | **Below median** | **Above median** | **Below median** | **Above median** | **Below median** | **Above median** | **Below median** | **Above median** |
| Cash | -0.111*** | -0.035† | -0.111*** | -0.035† | -0.099 | -0.067 | -0.134† | -0.065 |
| | (-13.24) | (-1.52) | (-13.24) | (-1.52) | (-1.07) | (-1.00) | (-1.49) | (-0.98) |
| Coefficient of Variation | -- | -- | -0.001 | 0.000 | -- | -- | 0.018** | -0.006 |
| | | | (-1.17) | (-0.29) | | | (2.45) | (-0.88) |
| Firm Age | -0.003 | -0.011 | -0.003 | -0.011 | -0.019 | -0.002 | -0.026 | -0.001 |
| | (-0.59) | (-1.33) | (-0.64) | (-1.32) | (-0.77) | (-0.09) | (-1.08) | (-0.03) |
| Size | 0.015*** | 0.010*** | 0.015*** | 0.010*** | -0.057* | 0.049*** | -0.067** | 0.050*** |
| | (13.84) | (4.93) | (13.89) | (4.91) | (-1.83) | (2.92) | (-2.20) | (2.96) |
| Centrality | -0.003*** | 0.003† | -0.003*** | 0.003† | 0.012† | -0.001 | 0.008 | -0.001 |
| | (-2.83) | (1.49) | (-2.83) | (1.48) | (1.62) | (-0.27) | (1.14) | (-0.24) |
| Exec. Chair / Dual CEO | 0.003 | 0.005 | 0.003 | 0.005 | -0.002 | 0.012 | 0.001 | 0.012 |
| | (1.19) | (1.11) | (1.20) | (1.12) | (-0.14) | (1.24) | (0.03) | (1.28) |
| Outsiders | 0.004 | -0.025* | 0.004 | -0.025* | -0.068 | -0.037 | -0.015 | -0.038 |
| | (0.60) | (-1.94) | (0.58) | (-1.95) | (-0.95) | (-1.08) | (-0.21) | (-1.10) |
| Male | -0.001 | -0.024* | -0.001 | -0.024* | 0.000 | 0.105*** | -0.119 | 0.105*** |
| | (-0.15) | (-1.67) | (-0.15) | (-1.67) | (0.00) | (3.18) | (-1.06) | (3.20) |
| Director Age | 0.000 | -0.001 | 0.000 | -0.001 | 0.000 | 0.000 | 0.005 | 0.001 |
| | (-0.51) | (-1.12) | (-0.48) | (-1.10) | (0.05) | (0.32) | (1.10) | (0.34) |
| CFO/FD | 0.003 | -0.011** | 0.003 | -0.011** | 0.055*** | -0.006 | 0.039** | -0.007 |
| | (1.07) | (-2.49) | (1.08) | (-2.49) | (2.89) | (-0.69) | (2.03) | (-0.74) |
| Observations | 4,028 | 4,026 | 4,028 | 4,026 | 82 | 694 | 82 | 694 |
| Firms | 834 | 803 | 834 | 803 | 24 | 113 | 24 | 113 |
| Between $R^2$ | 34.77% | 14.36% | 34.85% | 14.38% | 70.15% | 38.02% | 75.06% | 38.60% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

The first panel of Table 4 contains very cursory information on a specification we ran that replicates the independent variables included in model G of Table 2, but uses as the dependent variable coefficient of variation. Again, there is no significant relationship from executive participation on the board of directors (although size, network centrality, and director age have positive, negative, and positive relationships, respectively with risk-adjusted return).

We investigate this finding further in Panel B, where we replicate that specification but divide the sample into the three listing categories as well as the dual or split CEO role. There are some notable differences. First, we see that firms listed on big indices with a non-executive chair (NEC), more cash is associated with a higher coefficient of variation - this is consistent with entrenchment. More size is associated with a higher coefficient of variation in almost every specification. In addition, older directors are associated with worse performance in almost every specification, and in five models, significantly so.

The role of outside board members is interesting. For firms listed on large indices with non-executive chairs, more outsiders are associated with worse performance (higher coefficient of variation), but for firms with executive chairs (including dual CEO/chair) which are listed on other indices, NED prevalence has a positive relationship with risk-adjusted returns (indicated by the negative coefficient). The full sample results are clearer in interpretation, in that for firms with an executive chair, more NEDs are associated with better risk-adjusted returns.

### *4.4 Country-Level Variation*

We now turn to country-level results, based on the findings of Goergen (2007) and de Jong, et al (2002) that the mechanisms of corporate governance work differently in different countries. In addition, we are able to address the thesis that various mechanisms of incentive alignment are complementary, such that where the market for corporate control is robust (Martynova and Renneboog 2011), there is less need for boards to exhibit anti-entrenchment characteristics.

Given the common viewpoint that corporate governance and market conditions in the UK are substantially different from continental Europe, and that we conveniently have about half of our observations from each, we split the sample into UK observations and on-UK observations. We consider several dependent variables, indicated at the top of each column in Table 5.

There are some differences. Outside the UK, older firms tend to hold more cash (more consistent with entrenchment), whereas in the UK, younger directors tend to be associated with less cash. Director network centrality has no relationship with cash in continental Europe, but is associated with more cash for the UK. Male directors are associated with lower leverage in the UK, but not on the mainland. Younger directors are associated with less leverage outside the UK, but not inside it. The findings for ROA are remarkably similar for both institutional settings (with almost identical signs, significance levels and even coefficient magnitudes for cash, leverage, size, and centrality), but more male directors and older directors are associated with higher ROA outside the UK (and not within it). Finally, although the findings for coefficient of variation are fairly similar in the two different zones, older directors are associated with worse performance (positive coefficient) in the UK, but not on the mainland.

It is difficult to discern a common pattern from the country results. One consistent theme, in fact, is that the relationships are fairly similar among accounting and governance variables in the two areas. Areas of difference are either not very substantial, or when they occur, are not highly persuasive in terms of indicating meaningful differences in governance between the UK and non-UK setting.

## 5. Robustness

To determine whether our results are robust, we revisit the models presented in Tables 2 – 5, but instead of using firm and country level dummy variables, we opt for specifications including firm-level fixed effects. For ease of presentation, we do not reproduce the results in this paper. We find few substantial differences between the findings presented here and those of the fixed effects models.[8]

[8] Results are available upon request from the authors.

**Table 5.** Leadership Regressions

**Panel A: Dual Role and Coefficient of Variation**

Here, we replicate model G from Table 2, but use as the dependent variable the coefficient of variation (standard deviation of ROA divided by mean ROA across sample period). T-statistics in parentheses:

Coefficient for ExecChair / Dual CEO: 0.123 (0.92)
Other significant variables:
Size: 0.191*** (4.14) Centrality: -0.078† (-1.60) DirectorAge: 0.034* (2.17)

**Panel B: Split Sample**

This table reports regression results with dependent variable coefficient of variation (standard deviation of ROA divided by mean ROA). Sample is split based on whether chair has executive authority (including CEO) or not. Cash is cash/total assets, leverage is long-term debt/total assets, ROA is net income/total assets, size is natural log of total assets (all four of which are windsorized), firm age is 2012-founding year, centrality is mean network size, dual role is a dummy taking the value of "1" when the CEO is also the Chair, Outsiders is portion of outside (NED), male is portion male, age is mean age of the members of the board, CFO/FD is a dummy variable taking the value of "1" if any members of the board had experience as a CEO or financial director. Sector and country dummies are variables taking the value of "1" for BVD sector (with "other services" as the omitted category) or country (with UK as reference category), respectively. All specifications use OLS with standard errors clustered by firm.

| Executive / Non-Executive Chair→ | Big Index | | Other Index | | Unlisted | | Full Sample | |
|---|---|---|---|---|---|---|---|---|
| | ExChr | NEC | ExChr | NEC | ExChr | NEC | ExChr | NEC |
| Cash | -0.424<br>(-0.21) | 2.176*<br>(1.77) | -0.769<br>(-0.70) | -0.887<br>(-0.90) | -0.438<br>(-0.40) | -0.598<br>(-0.59) | -0.641<br>(-0.8) | -0.063<br>(-0.09) |
| Leverage | -0.495<br>(-0.60) | 0.669<br>(0.71) | 0.231<br>(0.34) | -0.426<br>(-0.64) | 1.885***<br>(2.59) | -1.398†<br>(-1.51) | 0.789†<br>(1.56) | -0.556<br>(-1.06) |
| FirmAge | -0.303<br>(-0.83) | -0.785*<br>(-1.82) | 0.187<br>(0.77) | -0.240<br>(-0.77) | -0.037<br>(-0.14) | -0.076<br>(-0.23) | 0.072<br>(0.38) | -0.240<br>(-1.06) |
| Size | 0.454***<br>(4.46) | 0.251<br>(1.30) | 0.253***<br>(3.04) | 0.160*<br>(1.95) | 0.081<br>(0.83) | 0.238***<br>(2.45) | 0.203***<br>(3.26) | 0.182***<br>(2.87) |
| Centrality | -0.221**<br>(-2.01) | -0.171<br>(-1.06) | -0.085<br>(-0.95) | -0.013<br>(-0.14) | -0.161<br>(-1.38) | 0.000<br>(0.01) | -0.141**<br>(-2.01) | -0.032<br>(-0.50) |
| Outsiders | 0.543<br>(0.85) | 1.724***<br>(2.36) | -1.553**<br>(-2.21) | -0.224<br>(-0.31) | -0.420<br>(-0.71) | -0.370<br>(-0.51) | -0.827*<br>(-1.77) | 0.139<br>(0.27) |
| Male | 1.426<br>(1.24) | -0.979<br>(-0.98) | 0.838<br>(1.11) | 0.084<br>(0.13) | -0.094<br>(-0.14) | -0.437<br>(-0.57) | 0.532<br>(1.06) | -0.221<br>(-0.45) |
| Age | 0.084**<br>(2.49) | 0.075*<br>(1.67) | 0.024<br>(0.90) | 0.073**<br>(2.31) | 0.026<br>(0.91) | -0.006<br>(-0.19) | 0.034*<br>(1.75) | 0.035†<br>(1.55) |
| CFO/FD | -0.256<br>(-0.76 | -0.132<br>(-0.46) | 0.217<br>(0.80) | 0.011<br>(0.04) | -0.136<br>(-0.54) | 0.099<br>(0.36) | 0.028<br>(0.15) | -0.004<br>(-0.02) |
| Observations | 573 | 648 | 1,915 | 1,869 | 1,308 | 1,741 | 3,796 | 4,258 |
| Firms | 126 | 144 | 434 | 440 | 343 | 444 | 688 | 756 |
| $R^2$ | 37.64% | 25.79% | 9,94% | 10.12% | 11.70% | 8.42% | 6.71% | 6.30% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

**Table 6.** Country Results

This table reports regression results with dependent variables indicated. Cash is cash/total assets, leverage is long-term debt/total assets, ROA is net income/total assets, size is natural log of total assets (all four of which are windsorized), firm age is 2012-founding year, centrality is mean network size, dual role is a dummy taking the value of "1" when the CEO is also the Chair, Outsiders is portion of outside (NED), male is portion male, age is mean age of the members of the board, CFO/FD is a dummy variable taking the value of "1" if any members of the board had experience as a CEO or financial director. Sector dummies are variables taking the value of "1" for BVD sector (with "other services" as the omitted category). All specifications except coefficient of variation use generalized least squares (firm and year); Z-statistics in parentheses. For specifications with coefficient of variation as the dependent variable, OLS with errors clustered at firm level is used.

| | Non-UK | | | | UK | | | |
|---|---|---|---|---|---|---|---|---|
| Dependent variable → | Cash | Leverage | ROA | Coeff. Variation | Cash | Leverage | ROA | Coeff. Variation |
| Cash | -- | -0.203*** (-9.53) | 0.088*** (7.09) | -0.435 (-0.53) | -- | -0.191*** (-9.98) | 0.067*** (4.86) | -0.121 (-0.16) |
| Leverage | -- | -- | -0.101*** (-11.62) | 0.236 (0.47) | -- | -- | -0.107*** (-9.14) | -0.070 (-0.12) |
| FirmAge | 0.013* (1.83) | -0.016† (-1.62) | 0.005 (1.19) | 0.124 (0.69) | -0.005 (-0.39) | 0.001 (0.06) | -0.005 (-0.65) | -0.392 (-1.29) |
| Size | -0.015*** (-8.45) | 0.036*** (14.54) | 0.009*** (7.68) | 0.141** (2.22) | -0.028*** (-13.44) | 0.035*** (14.09) | 0.018*** (11.29) | 0.190*** (2.69) |
| Centrality | -0.001 (-0.29) | -0.002 (-0.67) | -0.005*** (-3.57) | -0.092 (-1.34) | 0.005*** (2.95) | 0.000 (0.10) | -0.004*** (-2.84) | -0.058 (-0.86) |
| Exec. Chair / Dual CEO | -0.002 (-0.64) | 0.002 (0.49) | -0.004 (-1.33) | 0.007 (0.04) | 0.001 (0.26) | 0.000 (0.01) | -0.001 (-0.31) | 0.153 (0.73) |
| Outsiders | 0.004 (0.46) | -0.020† (-1.47) | 0.002 (0.32) | -0.217 (-0.58) | 0.015 (1.09) | 0.006 (0.38) | -0.013 (-1.23) | -0.001 (0.00) |
| Male | 0.010 (0.99) | 0.021 (1.43) | 0.020** (2.29) | 0.000 (1.00) | -0.020 (-1.35) | -0.048*** (-2.75) | 0.005 (0.42) | 0.302 (0.48) |
| Age | 0.000 (0.55) | -0.001** (-2.32) | -0.001* (-1.69) | 0.025 (1.24) | -0.003*** (-5.26) | 0.000 (0.52) | 0.000 (0.02) | 0.044* (1.74) |
| CFO/FD | -0.005 (-1.32) | -0.016*** (-2.85) | -0.003 (-0.76) | 0.172 (1.01) | 0.008* (1.65) | 0.002 (0.37) | 0.000 (0.01) | -0.074 (-0.34) |
| Obs. | 4,341 | 4,341 | 4,341 | 4,341 | 3,713 | 3,713 | 3,713 | 3,713 |
| Firms | 670 | 670 | 670 | 670 | 510 | 510 | 510 | 510 |
| (Between) $R^2$ | 11.53% | 35.36% | 7.39% | 3.24% | 13.48% | 44.40% | 14.10% | 6.74% |

Levels of significance as follows: *** 1%, ** 5%, * 10%, † 15%.

## 6. Conclusion

Using a unique dataset composed of information from both publicly traded and privately held firms, we examined the relationship between governance characteristics and accounting results. Our results are broadly consistent with the view that entrenchment is no more likely in one or the other type of firm, and that director centrality is actually associated with more rather than less entrenchment. These findings are consistent with the view that well-ensconced CEOs are able to pack the board with directors that have a lot of connections, but do not provide substantial oversight to decision-making at such companies. There were few consistent or obvious relationships with entrenchment associated with either outsider portion, male participation, director age, or CFO/FD experience on the board. In addition, we did not find that executive participation on the board (either by a CEO or executive chair) was clearly associated with entrenchment or poor performance. Finally, we found little evidence that country-level variation was associated with different relationships among governance characteristics and accounting outcomes.

Clearly, more research into the underlying mechanisms of corporate governance at privately held firms-and how they differ from or resemble mechanisms for publicly traded companies—needs to be undertaken, and in various institutional settings. We hope that this paper makes an initial contribution to such understanding by providing evidence on the relationships between various governance and board characteristics vis-à-vis financial outcomes.

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**Appendix:** Data Matching Details

We began with two different data sets, BoardEx and Orbis. The latter has a much larger number of observations. For example, of French observations, BoardEx contains 296 firms, whereas Orbis contained 16,371. Our process of matching then began with identifying firms in BoardEx, and then matching them to firms in Orbis. For each firm in the BoardEx database, we attempted to identify its corresponding match in the Orbis file, based on firm name and location. It was necessary to do this manually, because small discrepancies in firm name existed among the different data bases, so an exact match would have substantially reduced the number of observations. To provide an example, there was a firm listed in the BoardEx dataset with name "COMPAGNIE DES ALPES SA (CDA)" which we matched with observations in the Orbis database containing the firm name "COMPAGNIE DES ALPES S.A.". Next, we removed observations of firms that had been matched by name but had a different country code in the BoardEx database (perhaps due to a coding error or a firm that moved its location over time). This reduced the number of BoardEx firm-year obsevations from 11,139 to 11,089.

Next, we matched each BoardEx firm-year observation to its corresponding Orbis firm-year observation. We checked Orbis data for firm founding date, and omitted missing data, leading to a reduction of observations from 11,089 to 10,961. More truncation was necessary due the fact that (1) some firm-year observations in Orbis had no data for cash, leverage, net income, ROA, and size; (2) even when matches on firm name and year could be found, it was not always possible to find an observation for a given firm in every year in both Orbis and BoardEx. For example, the Orbis data available to us had no observations prior to 2003, even though BoardEx data extended back (in some limited cases) to 1999. So all of the BoardEx firm-year observations with an annual report date prior to 2003 were omitted from our analysis. This final data set had a total of 11,082 observations, and was the basis for the Windsorization process described, such that all observations below the 5% level were replaced with the value of the 5% observation, and likewise for the 95% level. This was done for the accounting variables including: size, ROA, cash, leverage, risk, and coefficient of variation. Descriptive statistics from the resulting data set are reported in Table 1. In the Appendix Table A, below, we report the extreme values of the variables prior to Windsorization, and their values following the procedure.

**Appendix Table A:** Windsorization Values

| Variable | Lowest value prior to Windsorization | Windsorized value (5%) | Highest value prior to Windsorization | Windsorized value (95%) |
|---|---|---|---|---|
| Size<br>*(natural log of total assets)* | .8292197 | 9.402117 | 19.37619 | 17.14771 |
| ROA<br>*(net income /total assets)* | -379.4997 | -.1728669 | 74.05649 | .1783594 |
| Cash<br>*(cash / total assets)* | 0 | .0046025 | 1 | .4214128 |
| Risk<br>*(standard deviation of ROA)* | 0 | .0068561 | 134.0117 | .2683391 |
| Leverage<br>*(non-current liabilities / total assets)* | -.123158 | .003244 | 77.00008 | .6009482 |
| Coefficient of variation<br>*(standard deviation of ROA / mean ROA)* | -822.3452 | -4.691017 | 148.5279 | 6.032218 |
| Firm Age<br>(2012 – founding year) | 1 | 6 | 363 | 148 |
| Director Age<br>(mean age of all directors) | 34 | 47 | 73 | 62.66667 |
| Centrality<br>(total board connections / number of directors) ; divided by 100 to ease presentation of coefficients in results tables | 0.66667 | 25 (becomes 0.25) | 2310.758 | 564 (becomes 5.64) |

# DEVELOPMENT AND CURRENT CRITICISM OF ASSET IMPAIRMENT IN GERMAN TAX ACCOUNTING

***Patrick Velte****

**Abstract**

In German tax accounting, the going concern value ("Teilwert") is the central measurement of asset impairment since 1934. The conceptual weaknesses of the concept have set the future of the 80-year old fiscal measurement tradition up for discussion. First, I shed light on the development of the accounting measurement concepts from Prussian Civil Code 1794 (ALR) to the German Income Tax Act 1934. Then, I analyse the main results of the current tax jurisdiction and draw a comparison to the German commercial law and the IFRS. I state that the creation of a common basis for measurement under commercial and tax law would be desirable, since the going concern value was understood as neither an exception, nor as being subject to the whims of targeted tax accounting policies. The provision of a purely indicator-based impairment test by the IASB is also recommended.

**Keywords**: Going Concern Value; Tax Accounting; Asset Impairment; Fair Value; Cash Generating Units

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## 1. Introduction

Under German Tax Accounting Law, the measurement of the going concern value (so called "Teilwert") and the write-down of assets to going concern value have constituted fundamental controversies since the German Income Tax Act 1934 was introduced. The debate largely focuses on material conceptual weaknesses and room for interpretation in the company-specific calculation of the going concern value, as well as the proof of expected ongoing asset impairment. The German judicature has invested a multitude of casuistic efforts to clarify the write-down to going concern value since the 1920s, some of which have been inconsistent with fiscal administration. In contrast to the principle of prudence pursuant to the German Commercial Code (HGB), the recent focus has been on the reporting and valuation of the options and exceptions provided for the write-down to going concern value in order to generate additional tax income. The conceptual weaknesses of the concept of the going concern value and the discretionary powers in the context of the write-down to going concern value are profound and have set the future of the 80-year old fiscal measurement tradition in Germany up for discussion. In light of this current situation, the objective of the analysis provided in this paper is to illustrate the historical development of the going concern value while taking into account the judicature and the fiscal administration, and to offer recommendations for the future development of the write-down to going concern value. Comparable measurement standards under the German Commercial Code (HGB) and the International Financial Reporting Standards (IFRS) are included in the discussion of an appropriate reform of the write-down to going concern value.

The course of examination is broken down as follows: Before the legitimacy of a write-down to going concern value on account of an expected ongoing asset impairment is discussed in detail, chapter two will provide a detailed analysis of the definitional classification of the going concern value. In this context, the development of the measurement concepts of the lower applicable value and the going concern value from Prussian Civil Code of 1794 (ALR) to the German Income Tax Act 1934 will be the starting point for the present discussion. Fictions in connection with the understanding of the going concern value for income tax purposes, the lower and upper limit of the going concern value, as well as the assumptions relating to the going concern value and their company-specific refutation round off the second chapter. The third chapter begins with an examination of the controversial reporting and valuation options for the write-down to going concern value for tax purposes, taking particular account of the principle of consistency. Next, the requirements for an expected ongoing asset impairment or reversal of the impairment are explained. With a view to a future modification of the write-down to going concern value, the fourth chapter comprises a comparative appraisal of the relevant measurement concepts for assets under the German Commercial Code and international standards (lower applicable value, fair value, value in use and net selling price). A summary of the findings is provided in chapter five.

## 2. Legal concept of the going concern value and judicial clarification

### *2.1. Diversity of the measurement standards in German law history*

The adoption of the General German Commercial Code (ADHGB) 1861 established uniform measurement rules for the states of the German Confederation for the first time. It determined in article 31 that all fixed assets and receivables shall be recorded at their fair value at the time of recording. The definition provided by the legislature stood in contrast to that of the Prussian Civil Code ("Allgemeines Preußisches Landrecht (ALR)") 1794, which provided for the measurement of assets at their fair market value. Consequently, an asset's value would not be based exclusively on its net asset value, but would also include its benefit in the specific circumstances (Lange 2011, 55). The lower applicable value under ADHGB 1861 as an indeterminate legal concept proved a highly valuable guide and a standard requiring interpretation and improvement (Makower 1865, 10). The first attempt to provide guidance and clarification was based on the decision of principle of the Higher Commercial Court of the Reich ("Reichsoberhandelsgericht (ROHG)" (1873). The lower applicable value was interpreted as a general market value that could not be set at equal with a value proposition based on subjective judgement or pure speculation. Although the market value has been justified as a selling price with the concept of accounts as statistics of divestiture (Koch 1957, 3), the ROHG (1873) unequivocally clarified that the objective is the going concern of the business and therefore any impact liquidation would have on an individual asset should not be taken into account in the determination and assessment of its value. However, the relevant decision contained no indication of an approach to the quantification of the difference between liquidation value and going concern value (Lange 2011, 75). Based on this issue, the Imperial Court of Justice ("Reichsgericht (RG)" (1887)) state that the value which the individual assets hold for the business should be taken into account, given that individual assets in themselves generate no income. In a later judgement, the RG (1899) realised that business yields could not be taken into account for the individual measurement it had demanded.

With the introduction of the authoritative principle (see Freidank and Velte 2010), first in Saxony and Bremen (1874) and later in Prussia (1891), the measurement rules according to the German Commercial Code were consulted for the determination of profits for tax purposes. Uniform tax laws for the entire Reich at the commencement of the Weimar Republic in 1919 created the foundation for a uniform measurement standard by means of the Reich Tax Code ("Reichsabgabenordnung (RAO)") 1919. It provided the first codification of the fair market value, i.e. the price which would be achieved for an item in the ordinary course of business on account of its condition and giving due attention to all factors that would influence such price. In this context, the going concern of the organisation was equally assumed, and the option to permit the recognition of assets permanently dedicated to the operation of the business at a lower value was included, if it truly equals the actual value at the time the accounts are prepared (section 139 RAO 1919). The intention was to capture impairment charges as the difference between the actual value of an asset and its depreciated acquisition and manufacturing costs. In this context, the RAO 1919 is considered the starting point of the going concern value concept from a fiscal perspective (Lange 2011, 98).

The German Income Tax Act (1920) implemented the requirement to apply the measurement principles defined in the RAO, giving priority to the RAO over the German accounting principles set out in the German Income Tax Act ("Einkommensteuergesetz (EStG)"), insofar as relevant provisions exist under RAO and these contain no gaps. Consequently, the fair market value could be higher or lower than the acquisition or manufacturing costs. In order to address inflationary trends, the Amendment of the Income Tax Act (1921) included the historical cost principle as an upper measurement limit, leaving only the option to recognise a lower fair market value. However, once the currency stabilised, EStG 1925 once again allowed an alternative measurement at (higher) fair market value and acquisition costs. Simultaneously, the Reich Valuation Law declared the fair market value as the decisive measurement standard. The (depreciated) acquisition or manufacturing costs set out in Section 6 EStG have been the predominant measure of value since the German Income Tax Act (1934) while also serving as a ceiling for non-current and current assets for tax accounting. From this point onwards, the fair market value of an asset could no longer be substituted for its (depreciated) acquisition and manufacturing costs; the only alternative measurement available now is the (lower) going concern value pursuant to Section 6 Subsection 1 no. 1 clause 2 and no. 2 clause 2 EStG. Meanwhile, Section 6 Subsection 4, 6 clause 1 EStG provides that the fair market value should be used in the case of a gratuitous asset transfer from the business assets of an entity subject to tax to the business assets of another entity, in the case of an exchange, as well as in the event of the exclusion, limitation or establishment of taxation in Germany. In accordance with Section 6 Subsection 1 no. 1 clause 3 EStG, the going concern value measures the amount which a buyer of the entire operation would estimate for the individual asset as part of the total purchase price of the business based on the assumption that the buyer will continue the operation of the business. This definitional understanding and its position on the adjustment value for the acquisition or manufacturing

costs have remained unchanged since the introduction of the German Income Tax Act of 1934.

The term and fundamental concept of the going concern value are based on a concept put forward by Mirre (1913) who criticised the consideration of individual asset values employed under the concept of fair market value, given that the enterprise value cannot be explained in its entirety by the sum of individual assets and liabilities. Rather, a multitude of synergy effects (Mirre 1913, 163) affect the original goodwill which is not eligible for recognition. The missing value which would reflect the economic value of the asset for the company as a whole (calculation of total value) should be expressed by means of the going concern value. From a fiscal policy perspective, the fact that the going concern value generally exceeds the fair market value constitutes a benefit, as the creation of unwarranted hidden reserves is prevented (BFH 1980). While the fair market value considers the disposal of an individual asset in isolation, the going concern value additionally captures the added value resulting from the combination of the individual asset and the total assets of the business. Nevertheless, this difference in conceptual understanding between the fair market value and the going concern value (BFH 1955) does not exclude the possibility of both values being equal BFH 2001b).

### 2.2. Fictions of the going concern value and value range

The understanding of the going concern value pursuant to the German Income Tax Act (1934) constitutes a theoretical construct grounded in three hypothetical assumptions (BFH 1968). The first fiction refers to the acquisition of the entire business, whereby the legal permissibility or actual possibility of an acquisition by a third party is not material. The entity subject to tax might consider a disposal as entirely unacceptable. Although the going concern value was only explicitly codified through the German Income Tax Act of 1934, the Reich Court of Finance ("Reichsfinanzhof (RFH)" (1926)) had already confirmed it as a comparative value for the acquisition or manufacturing costs as defined in Section 19 Subsection 1 clause 2 EStG 1925. Here, a differentiation was made between the value of an asset as part of the economic unit (going concern value) and the value of an asset after removal from its economic context (individual value) (RFH 1926). In this respect, the central issue of the landmark decisions of the RG in 1887 and 1889 is raised again. The (added) value which should be allocated to an asset in the context of business operation, i.e. on account of its integration in business operations needs to be quantified. With respect to assets that cannot be sold individually for legal or factual considerations, the hypothetical buyer of the company must assume the position of the company owner and determine the value of the asset from this perspective (BFH 1976). The fictitious buyer's lack of interest in the acquisition of a particular asset or any incentive for the avoidance of specific incidental costs cannot be invoked (BFH 1966a). Moreover, the entity subject to tax must take into account the company-specific situation when determining the going concern value, giving due consideration to the market situation, the sector and location of the business premises as key factors of influence (BFH 1973a).

The second fiction is the determination of the going concern value in consideration of the going concern of the business and expectations for the future. The RFH (1928) had already clarified before the Amendment of the EStG that the fair market value as defined in EStG 1925 was not a liquidation value, but had to serve the going concern of the business. Therefore, the approach of considering the individual selling price in the fictitious context of asset stripping is excluded (BFH 2005). Rather, the going concern value must be understood as a going concern value in terms of affiliation with an active company that continues its participation in economic activities. The assumption is made that the fictitious buyer would continue the operation of the business in the same manner as the entity subject to tax did on the valuation date (continuity of business operations) (BFH 2002a). Insofar as no unsound measures have been taken, the fictitious buyer will be guided by the same considerations as the seller and appropriate the same value to the relevant asset as the entity subject to tax (BFH 1967). This only places the hypothetical buyer in the position of the relevant entity subject to tax for the purpose of measurement (BFH 1995). What are not recognised are the motives of the entity subject to tax which are entirely subjective and not based on the objective nature of the company, e.g. the business acumen of the managing director. This perspective also highlights the fiscal administration of Guideline 6.7 German Income Tax Guidelines ("Einkommensteuerrichtlinien (EStR)), given that the going concern value is an objective measure of value dependent on the market situation on the reporting date which must be determined by means of estimation in accordance with the individual situation. This implies a factual determination and free consideration of evidence, requiring conclusive, economically feasible and reasonable estimation results.

The third fiction requires the allocation of the total purchase price to the individual assets, given that the going concern value of an asset constitutes a part of the enterprise value. Thus, the going concern value calculated in accordance with the differential method represents the amount which the fictitious buyer would deduct from the purchase price of the company if the relevant assets were not included in the acquisition (RFH 1926). On account of logic inconsistencies, the differential method was abandoned in favour of purchase price allocation

methods (RFH 1928). Compliance with the individual measurement principle of the German accounting principles ("Grundsätze ordnungsmäßiger Buchführung (GoB)") on the one hand, and the necessity of the determination of the income-related total value on the other hand, should provide an allocation of the fictitious total value to the going concern values of the individual assets (RFH 1935). In this respect, an identity between the sum of the individual values of the assets and the total value of the business had been simulated (RFH 1938). Even though the purchase price allocation method proved unsuitable, it materially influenced the legal definition of the going concern value pursuant to the tax law 1934.

Other methods proposed for the deduction of the going concern value presented in the literature (Gümpel 1987) did not prevail in the courts and were discontinued over time. To serve the purpose of the classic theory of the going concern value, the Federal Court of Finance ("Bundesfinanzhof (BFH)") established going concern value assumptions within upper and lower limits by means of case-by-case decisions with case-by-case refutations as a second best solution (Löffler 2011, 83). Over time, these going concern value assumptions resulted in increasing fragmentation with respect to the determination of the going concern value for individual assets, and consequently there is no longer a conceptual relationship between the going concern value and the income-related total value pursuant to Section 6 Subsection 1 no. 1 clause 3 EStG. Nevertheless, the measurement of the going concern should be charged to the entity subject to tax in accordance with the total enterprise value (BFH 1968). Until today, the position of the judicature has continued in favour of a price- or cost-based net asset valuation. In contrast to the RFH (1926; 1928), the BFH (1973b) clarified that the consideration of the total purchase price would not go as far as a pro rata allocation of the enterprise value calculated according to the capitalised earnings method to the individual assets (BFH 1973b). The determination of the total purchase price would only constitute a tool for the calculation of the share attributable to the assets included in the sale (BFH 1968). The total value of the business, including any existing goodwill, should not be determined from the top down (BFH 1973b), but rather developed from the bottom up by adding the individual going concern values. The court stated that the going concern value was introduced back in 1934 based on the concept of net asset value and not that of capitalised earnings (BFH 1999b). Otherwise, the formulation of Section 6 Subsection 1 no.1 clause 3 EStG would not have been placed in the context of the total purchase price, instead the term part of the total purchase price would have been used. The BFH (1999b) acknowledges the fact that the relationship between the going concern value for tax purposes and the principle of individual measurement is beset by tensions. However, it requires that the individual measurement should not take priority over the concept of the going concern value. The buyer of an asset would include aspects of both the intrinsic value and capitalised earnings (BFH 1989a). While the BFH (1981) issued statements on the determination of the going concern value in later years that discuss a distribution of the total purchase price to individual assets, these are not convincing in the context of an overview on account of their conceptual inconsistencies.

The value range of the going concern value is defined by the individual selling price as a floor and the replacement or reinstatement costs as a ceiling. The RFH had already confirmed the replacement cost for the deduction of the going concern value as a net asset value in 1926. It constitutes the expenditures necessary to purchase or create assets of the same type and quality on the valuation date. This requires a company-specific measurement. The stock exchange or market price could act as a basis for the determination of the replacement costs if such prices exist for the asset on the valuation date; alternatively, the purchase price applies (BFH 1965). In contrast, reinstatement or reproduction costs describe the expenditures necessary for the reinstatement of an asset of the same type and quality and at the same stage of production on the valuation date by the fictitious buyer of the entire company (BFH 1970). Meanwhile, the individual selling price or market value constituting the lower limit for the going concern value measures the price that could be achieved for an asset in the event of an individual sale or liquidation (BFH 1987). Given the applicability of the principle of business continuity from a conceptual perspective - as discussed above - and the judiciary attempts to exclude isolated measurement, this constitutes a conflict. Consequently, the individual selling price may only be recognised as the going concern value if the relevant asset is dispensable in business operations, as, in this case, no added value is created within the context of business operations. In this case, the individual selling price equals the fair market value pursuant to Section 9 German Valuation Act ("Bewertungsgesetz (BewG)") less the expected disposal costs (BFH 1986). It is also noted that the replacement cost and the individual selling price would frequently correspond. However, in certain instances, the individual selling price could also exceed the replacement costs (BFH 1983a).

### 2.3. Going concern value assumptions and their refutation

In order to mitigate the difficulties of the determination of the going concern value and to conceal the lack of conceptual development of the going concern value, the BFH had established refutable going concern value assumptions, which as a whole reflect the key practical cases of write-downs to

going concern value and therefore contain no systematic understanding (Knobbe-Keuk 1993, 177). They illustrate the rule-exception-relationship between acquisition or manufacturing costs and the going concern value or the corrective nature of the going concern value:

1. At the time of the acquisition or completion of an asset, the going concern value of this asset equals the acquisition or manufacturing costs (BFH 2007a). This assumption is based on the general economic experience that neither a merchant, nor a fictitious buyer would pay more for an asset than the benefit derived for his business (BFH 1998).

2. With respect to fixed assets not subject to wear, this assumption also applies on subsequent valuation dates (BFH 2007a).

3. With respect to fixed assets subject to wear, the going concern value on subsequent valuation dates equals the acquisition or manufacturing costs less the linear scheduled depreciation (BFH 2001a). Thus, the going concern value assumption does not apply, if the asset has been depreciated according to the declining balance method, or an amortization charge for an intangible asset with a finite useful life, special write-downs or increased amortisation charges have been applied (BFH 1989b).

4. The going concern value of current assets equals the presumed replacement or reinstatement costs (BFH 2000), whereby the expected sales revenue (stock exchange or market price) must also be included for goods held for sale (BFH 1983b). According to the differential theory, the fictitious buyer would procure or manufacture the asset himself, if it were missing in the acquisition of the business. Given that the factors of influence on the going concern value categorically take effect quicker for current assets than fixed assets, the going concern value assumption does not aim at the acquisition or manufacturing costs. In contrast to the fixed assets, fiscal administration has provided detailed explanations for the measurement of the inventory at going concern value in Guideline 6.8 EStR. Thus, for the inventory, the assumption that going concern value = replacement cost continues to apply if the purchase price on the reporting date is lower than the historical cost, even if a corresponding sales price reduction is not expected. For inventories not held for sale, the individual selling price is entirely irrelevant to the determination of the going concern value. For inventories held for sale, the going concern value must be recognised at the amount which remains after deduction of the average enterprise profit and the operating expenses still to be incurred after the reporting date from the expected achievable selling price (subtraction method). As a rule, the going concern value should equal the amount resulting from the deduction of the share of the average gross profit margin incurred after the reporting date from the achievable sales revenue.

5. Finally, a specific going concern value assumption is made for investments recorded at equity. With respect to the identity between the going concern value and the acquisition costs at the time of acquisition, the determination of the value based on the concept of total enterprise value must include the results of operations, the expected results of operations, as well as the assets and the functional significance of the holding (BFH 2003).

The refutations of going concern value assumptions are linked to restrictive conditions, given that the required facts must be stated explicitly to invalidate the assumptions. Documentation must provide the reason for and the amount of the write-down to going concern value in a manner verifiable by the fiscal authority (BFH 1975). This requires a substantiated description of the actual situation and effects on the costs, to facilitate a specific understanding of the impairment. They will therefore also stand up if excess prices are paid. A refutation of the going concern value assumption for an asset on the valuation date is tied to the existence of a lower going concern value compared to the book value for various items. In this context, and in accordance with objectively identifiable facts, the replacement or reinstatement costs on the reporting date must verifiably be lower than the going concern value (BFH 2002b), or the expected sales revenues must have dropped, or other circumstances must have materialised that reduce the going concern value of the asset.

On the other hand, a refutation of the going concern value assumption is possible for reasons of an unsound measure. For the purpose of such refutation, the entity subject to tax must show by means of specific facts and circumstances that the acquisition or production of the relevant asset constituted an unsound measure from the beginning, or that circumstances materialised between the point of acquisition or production and the reporting date that resulted in an ex post facto unsound measure. An unsound measure is defined in Guideline 6.7 EStR as the economic benefit of the acquisition or production of an asset irrespective of the results of operations of the business objectively and significantly lagging behind the expenditure incurred for the acquisition or production of the asset, resulting in an expenditure which is uneconomic to the extent that it would not be honoured in the purchase price by a fictitious buyer of the entire business (BFH 1988a). The entity subject to tax must have included incorrect or erroneous assumptions in its considerations that led to the purchase or production of the asset (BFH 1972). The extent to which misguided considerations might be deliberate is disputed. For a profit-oriented business, an unsound measure cannot be claimed for deliberate loss-making products that are intended to increase the attractiveness of the company as loss leaders. The BFH (1999a) justifies the inapplicability of the write-down to going concern value with the adoption of the

same strategy by the fictitious buyer of the business. However, this typified course of action has received critical commentary in the literature (Marx 2014, 592). If a business is unprofitable, lower going concern values can also not be claimed if the company fails to take measures to liquidate or close down the business as soon as possible (BFH 1973c). With respect to the acquisition of property, Guideline 6.7 EStR points out that the mere fact that an excessive price has been paid and consequently an unsound measure has been taken, does not establish a write-down to going concern value. Rather, the excess price can only be included in the write-down to going concern value to the proportionate amount that the comparative value has reduced compared with the time of acquisition if lower replacement costs can be proven on the valuation date (BFH 2002b).

## 3. Requirements for the recognition of write-downs to going concern value for assets

### *3.1. Fiscal reporting and valuation options and the principle of consistency*

Since 2009, the prevailing view is that the write-down to going concern value constitutes fiscal reporting and valuation options which - contrary to the former scope of the authoritative principle - can be exercised independently from impairment charges pursuant to Section 253 Subsection 3 clause 3, 4 and Subsection 4 clause 1 German Commercial Code ("Handelsgesetzbuch (HGB)") (Günkel 2010, 513). This assessment is based on the limitation of the authoritative principle in Section 5 Subsection 1 clause 1(2) EStG ("unless a different approach has been chosen in the context of the exercise of fiscal reporting and valuation options"). Consequently, the entity subject to tax could equally waive a write-down to going concern value if an impairment charge has been recognised in the financial statements. The fiscal administration also highlights these autonomous fiscal reporting and valuation options in the circulars of 2010 by the German Federal Ministry of Finance ("Bundesministerium für Finanzen (BMF)" (2010) and Guideline 6.8 Subsection 1 clause 3 German Income Tax Guidelines ("Einkommensteuerrichtlinien (EStR)"). Such exercise in fiscal autonomy in terms of a waiver or regular refusal of a write-down to going concern value would highlight its exceptional character. Reporting and valuation options are meant to assist the prevention of the creation of hidden reserves in the interest of the ability-to-pay principle (Sittel 2003, 71). However, reporting and valuation options also create a basis for a targeted tax accounting policy, which in turn is not consistent with the supplementary principle of uniformity of taxation (Hennrichs 2013, 535). Moreover, it should be noted that in the course of the legislative procedure law reform 2009, the Federal Council of Germany had encouraged a clarification, while the Federal Government had no intention of changing the scope of the authoritative principle. Rather, it was established that the authority of the impairment charge under the German Commercial Code should continue to apply to the write-down to going concern value. The statement offered by the Federal Government in the explanatory memorandum was insufficient to abide by the authoritative principle for the write-down to going concern value. Nevertheless, it contradicts the prevailing view in the literature that the classification of the write-down to going concern value is an autonomous fiscal reporting and valuation option (Arbeitskreis Bilanzrecht der Hochschullehrer Rechtswissenschaft 2009, 2571).

Analogously to the impairment charge, the tax accounting policy is not limited by the principle of consistency in the context of the write-down to going concern value (Velte 2014, 240). Apart from the approach of lower going concern value or continuation with discounted acquisition or manufacturing costs, the prevailing view is that intermediate values may also be considered. The literature additionally considers as permissible the retrospective recognition of the write-down to going concern value over time and the alternation between a write-down to going concern value and a reversal of the impairment (Zwirner and Künkele 2013, 2078). However, with regard to the BMF (2010), the fiscal administration demands compliance with the principle of consistency in the event of conscious change between write-downs to going concern value and reversal of the impairments. This aims to ensure that the exercise of the reporting and valuation options is not based on arbitrary arrangements. The assessment in the literature only necessitates a consistency test, if the reversal of the impairment is only applied to the accounts for tax purposes and not to the financial statements for reporting purposes (Dietel 2012, 484). Overall, the discussion results in a broad range of fiscal accounting options when a write-down to going concern value is recognised, while the room for interpretation in the projection of the impairment has not yet been targeted.

### *3.2. Expected ongoing asset impairment*

With respect to the interpretation of the indeterminate legal concept of expected ongoing asset impairment, the explanations of the BFH (2009) constitute tautology. A write-down to going concern value requires an expected reduction in value of the asset below the applicable book value. While the asset impairment need not be final, it equally must not be temporary (BFH 2011). Thus, the entity subject to tax must seriously expect an ongoing impairment on the reporting date on the basis of objective evidence (BFH 2007b). Moreover, the specific character of the relevant asset is granted a material significance for the

projection. From the perspective of a prudent and diligent businessman (BMF 2014), the reasons for the ongoing nature of the impairment must outweigh the reasons against the same. The statutory requirement of objectivity in the determination of the going concern value is mitigated by subjective influences (Prinz 2014, 1827). As a general guideline aligned with the requirement for the write-down to going concern value of fixed assets, the relevant asset must be expected not to achieve its (discounted) acquisition or manufacturing costs throughout a material proportion of its expected retention time within the company (BMF 2014). In the context, impairments for special cause, e.g. catastrophes or technological advances, are regularly considered ongoing.

The reporting date is the authoritative time of valuation for the going concern value (BFH 1997). Consequently, the circumstances that impair the going concern value on the reporting date, must have existed in the actual value relationship. This is consistent with the adoption of the principle of adjusting events pursuant to Section 252 Subsection 1 no. 3 German Commercial Code (HGB), according to which any information or events that may influence the result and which come to light after the reporting date known at the time of the preparation of the financial statements for reporting purposes or the accounts for tax purposes (if no obligation to prepare financial statements exists) (BMF 2014) must be included in the financial statements and accounts. A period-based consideration which had been included in the draft version of the new decree on the going concern value was not adopted. The BFH (2011; 2013a) emphasized the reporting date orientation, opening the door to criticism for the tacitly implied information efficiency hypothesis. At the same time, Guideline 6.7 EStR contained a note that the write-down to going concern value must be executed exclusively on the balance sheet date and not on any other random day between the balance sheet date and the reporting date.

### *3.3. Reversal of impairment*

If write-down to going concern value has been performed and the value of the relevant asset subsequently increases, a reversal of the impairment at the next balance sheet date has been compulsory since the German Tax Relief Act ("Steuerentlastungsgesetz (StEntlG)") 1999/00/02. The write-up is not subject to a de minimis limit of 5%, wherefore the write-down to going concern value and the reversal of the impairment are not treated equally (Prinz 2014, 1829). Thus, the extent to which the going concern value (valuation floor) is still below the discounted acquisition or manufacturing costs (valuation ceiling) should be examined. In this context, the continued existence of the specific reasons for the initial write-down to going concern value is immaterial. An adjustment of the balance sheet recognition is also necessary from other perspectives, e.g. if the entity subject to tax is lacking opportunity or tendency to substantiate (BMF 2014). This constitutes de facto impairment reversal options at the expense of the principle of uniformity of taxation (Adrian and Helios 2014, 727). The entity subject to tax must categorically substantiate the valuation ceiling (historical acquisition or manufacturing costs) with appropriate documentation. For undeveloped real property, the notarised contracts held at the Land Registry would offer such substantiation (BMF 2014). If the substantiation of the historical acquisition or manufacturing costs is impossible, the book value in the oldest accounts still available will be considered as the valuation ceiling. However, the fiscal authority may determine a higher valuation ceiling.

## 4. Comparison of the going concern value concept with alternative accounting standards

### *4.1. Current value under German Commercial Law*

The perpetuation of the going concern value concept has resulted in vigorous controversy in the German literature throughout recent decades (Hennrichs 2013, 523). This ambivalence characterises the 80-year old legal tradition of the going concern value under German Income Tax Law, whereby the calls or plans for its abolishment (e.g. Ernst & Young 2004) have not thus far been realised. We will compare the measurement concepts of the book value under German commercial law, as well as the fair value, the value in use and the net realisable value under IFRS, in order to develop the fiscal going concern value concept.

German commercial law has always shown a commitment to a strict interpretation of the creditor protection principle and categorically only permitted the (lower) book value for impairment charges in accordance with the principle of valuation at the lower of cost or market. However, the draft bill intended the replacement of the book value with the fair value in accordance with the IFRS, which should equal a market price pursuant to Section 255 Subsection 4 clause 1 draft of the German Commercial Code (HGB). While the book value as an adjustment benchmark for fixed and current assets has been retained in the final law version, the historical cost principle has been punctuated ever since. The specification of the book value in the context of the going concern value concept is riddled with difficulties and estimation issues, as has already been illustrated in the context of the introduction by means of the ADHGB 1861. Moreover, neither the German accounting principles, nor the rulings of the BFH insist on a compulsory method of measurement. The law reform 2009 was linked with an obligation to apply impairment charges in the event of an expected

ongoing impairment of fixed assets and the option of an impairment charge for an expected ongoing impairment of financial assets for the financial statements for reporting purposes which apply irrespective of the legal form of the entity (Section 253 Subsection 3 clause 3, 4 HGB). Meanwhile, impairment charges to the lower stock exchange or market price or book value in accordance with the principle of valuation at the lower of cost or market are now required for current assets irrespective of the duration of the impairment (Section 253 Subsection 4 clause 1 HGB). Analogue to the fiscal law, a requirement for the reversal of the asset impairment in the financial statements must also be observed under Section 253 Subsection 5 clause 1 HGB, whereby derivative goodwill is excluded.

The relevant supporting values of the book value must be derived from the procurement and sales market. Given that the assumption of the continued use of fixed assets categorically applies, the condition of the procurement market has priority. Accordingly, the replacement or reinstatement costs are relevant for the going concern value ceiling. If a stock exchange or market price value for an asset can be determined, the replacement cost is represented by the stock exchange or market price on the reporting date in accordance with the ruling of the BFH for publicly listed shares (Adler, Düring and Schmaltz 1995). The individual selling price as a going concern value floor only applies in exceptional cases for the deduction of the book value under commercial law. While the legal definition of the going concern value implies capitalised earnings, the rulings of the BFH do not require them for any specific estimation; and under commercial law, it is recommended as a supporting value if a value cannot be determined from the perspective of the buyer or seller, e.g. for investments recorded at equity or intangible assets (Adler, Düring and Schmaltz 1995). In contrast, the stock exchange or market price should be the primary measure for current assets pursuant to Section 253 Subsection 4 clause 1 HGB, insofar as it exists. This point also corresponds to the rulings of the BFH on the going concern value. If the stock exchange or market price cannot be determined, Section 253 Subsection 4 clause 2 HGB provides for an alternative recognition at the lower book value. Guidance by the procurement market once again considers the replacement or reproduction costs; the sales market considers the selling price less the expenditures still arising until the point of sale (Freidank and Velte 2013, 469).

In the context of the principle of prudence, the recommendation for the interpretation of an expected ongoing asset impairment is to assume such an impairment if in doubt, unless specific evidence of a temporary opinion exists. Here, the legislature in its justification for the draft bill the law reform 2009 had assumed a temporary impairment, if there is a reasonable prospect that the evidence for an impairment would cease within twelve months. The assumption of a projection horizon of one year for reasons of prudence was also taken into account for the reform of the group management report pursuant to the German Accounting Standards 20.127. In the case of fixed assets subject to wear, for the assessment of durability under commercial law, half the remaining useful life or a reasonable period of 3-5 years (as is used in operational organisational planning) is assumed in accordance with the rulings of the BFH. A restriction of the time period is especially useful for assets with a longer useful life, as it avoids an over-complication of impairment charges.

As shown above, the ceiling and floor for the book value and the going concern value are identical; therefore, a substitution of the going concern value with the book value had been discussed in the course of earlier tax reforms in order to strengthen the authoritative principle, e.g. by the Major Tax Reform Commission 1971, in the draft of the Third Tax Reform Act of 1974 and in the consultations on the StEntlG 1999/2000/2002. In the literature, a stronger functional alignment of the going concern value concept with the German accounting principles was demanded, given that the purposes of the measurement concepts were not in conflict (Euler 1991, 191). The BFH (1985) only offered the cryptic response that the book value and the going concern value were not identical, but merely equal. Differences in content between the going concern value dependent on capitalised earnings and the book value free of surplus expenditure were highlighted in the literature. Factors relating to the enterprise value would be included in the determination of the going concern value which would not be taken into account for the book value. In addition, the differences in interpretation of the principle of loss-free measurement based on two rulings of the BFH (1966b) are stated for a value deviation. For instance, the going concern value assumes the fictitious profit-oriented buyer who, in theory, would need to deduct a calculated share in profits which is inconsistent with the measurement under German commercial law (Herzig 2012, 1345). However, the validity of this approach is increasingly questioned, especially since not even the inclusion of overheads for the determination of losses is clarified in BFH rulings. Outside of this issue, the loss-free measurement and the consideration of a profit margin are not considered incompatible for the rendering of accounts for reporting purposes.

Moreover, disagreement exists as to whether a measurement at the lower going concern value can (still) be considered an expression of the German accounting principles, and in particular, the imparity principle. The restriction of the devaluation option for tax purposes compared to reporting purposes is due to a broadening of the basis of tax assessment (Prinz 2014, 1826). The diminishing of the authoritative principle in Section 5 Subsection 1 EStG and the qualification of the write-down to going concern value

as autonomous reporting and valuation options for tax purposes equally takes account of these tax policy motives. However, the adoption of the concept of expected ongoing asset impairments from commercial law was intentional and aimed to prevent the introduction of an indeterminate legal concept (Hörhammer and Schumann 2014, 552). The BMF (2014) also contains an explicit reference to the German commercial law with respect to the concept of the expected ongoing asset impairment. Consequently, a uniform understanding of the term continues to exist and a deviation from it is only possible under specific aspects of German tax law (BFH 2011). This reference instruction suggests a congruence of the regulations under commercial and tax laws in accordance with the authoritative principle, even though the write-down to going concern value requires separate interpretation (Adrian and Helios 2014, 722). The BFH (2013b) confirmed this with respect to the purpose of the subjective definition of error for legal financial issues, based its statement on the explanatory report to the tax reform 1999/00/02 and specified that while the concept of ongoing impairment has been adopted from commercial law, the principle of prudence has been diminished in favour of the ability-to-pay principle (BFH 2009a). Furthermore, the BFH qualified the significance of the principle of valuation at the lower of cost or market for the determination of profits for tax purposes in another ruling. Even before the German commercial law reform, if the book value was lower than the going concern value under commercial law, this value was not authoritative, because a higher going concern value in relation to the present value takes priority over the value measurement according to commercial law (BFH 1988b). Thus, the going concern value should constitute a measurement limit preventing undervaluations in its substantive legal function for the consideration of the ability to pay of the entity subject to tax; specifically, to prevent the creation of unwarranted hidden reserves in accordance with the principle of valuation at the lower of cost or market. However, the associated decoupling of the impairment charges under commercial law and the fiscal write-down to going concern value would result in the latter clearly qualifying as a reservation of measurement pursuant to Section 5 Subsection 6 EStG. This has not yet been explicitly confirmed by the BFH. Apart from this interpretation, the going concern value continues to serve the anticipation of losses and therefore the imparity principle. In this context, the BFH also stressed that a prudently measuring businessman should determine the going concern value in accordance with his general experience and the specific circumstances in each case (BFH 2009b). Consequently, the controversy is reduced to the measurement of the subjective ability-to-pay in accordance with the full profits or the profits in anticipation of a loss.

### *4.2. Fair value, value in use and net selling price according to IFRS*

Given that - unlike the annual financial statements under HGB - the IFRS only serve to provide information, not as a basis for the assessment of payments, (depreciated) acquisition or manufacturing costs need not reflect the value ceiling of the assets, but a measurement may equally be recognised directly in equity (e.g. pursuant to IAS 16 or 38), or recognised in the profit and loss account (e.g. pursuant to IAS 40) at the higher fair value. In addition, the recognition of the fair value is obligatory e.g. for certain financial instruments. As a framework standard for the determination of the fair value in different circumstances, IFRS 13 considers the fair value as the price that would be achieved for an asset in the course of a proper business transaction between market participants at the valuation date, or which would have to be paid in the case of a debt transfer (IFRS 13.9). Thus, the fair value must be understood as the market or commercial value in the form of a selling price, whereby a fictitious transaction as in the going concern value concept is assumed (Theile and Pawelzik 2012, 210). The market participants in this context are independent, possess sufficient knowledge and information and are willing and able to perform the transaction (IFRS 13.22).

Moreover, the IASB has specified three levels of the fair value hierarchy in IFRS 13, in analogy to the going concern value assumptions. On the first level, current prices in an active market with asset and debts identical to the object of measurement should be taken into account (IFRS 13.76). If no active market exists, the second level calls for the consultation information about similar assets or debts that exist in an active market. If such market prices cannot be determined either, the third level requires the alternative consultation of valuation methods (IFRS 13.89). The methods used here can be market price-based, cost-based or income-based (IFRS 13 B.5-33).

Apart from the general deduction of the fair value in IFRS 13, the impairment charge on assets pursuant to IAS 36 should be noted, which is exercised if the recoverable amount falls below the book value. The impairment test pursuant to IAS 36 differs from the rendering of accounts under German commercial or fiscal law because the duration of the impairment is not taken into consideration. Rather, the International Accounting Standards Board (IASB) adopts an indicator-based approach, whereby the internal and external indicators for impairment that must be reviewed on each valuation date can be permanent or temporary indicators for impairment depending on the context (IAS 36.12). This approach aims to mitigate the issues of projecting the temporal scope of the impairment, as well as the margin of discretion and flexibility of arrangement. This would also serve the comparability of the accounts. Moreover, the value indicators pursuant to IFRS are

also similar in content to the measurement concept under German commercial and fiscal laws (Lange 2011, 208).

The central measurement standard for impairment charges is the recoverable amount, which equals the higher of net selling price or value in use (IAS 36.6; 36.8). Similar to the rulings of the BFH which only recognises a measurement at the individual selling price for assets not material for business operations, the IAS 36 assumes that the entrepreneur would only sell an asset if the net realisable value was higher (Lange 2011, 210). In contrast to this understanding specific to the relevant sales market, use of the asset will continue if the value in use is higher, and in this case, it would be considered material for business operations, which is equally consistent with the rulings of the BFH. IAS 36.6 defines the value in use as the present value of future cash flows that would be expected based on the continued use of the asset in business operations. This creates parallels to the concept of the going concern value which equally represents a company-specific measure of value (Lange 2011, 209). The difference is that the rulings of the BFH provide a market-oriented measurement standard by defining the replacement or reinstatement costs as a value ceiling in accordance with German commercial law.

IASB attempts to solve the age-old problem that the determination of the value in use requires an earnings-related total enterprise value despite the individual measurement principle by means of the allocation of cash generating units (CGU) (Lange 2011, 211). For certain assets, an isolated estimation of the value in use is not possible (IAS 36.66). According to IAS 36, this applies to corporate assets and derivative goodwill. An allocation to a CGU as the smallest possible group of assets within a business which generates cash flows (largely) independent of other assets transfers elements of the overall assessment to IFRS accounting (IAS 36.69). The formulation that largely independent cash flows should be considered for the definition of the CGU constitutes an indeterminate legal concept and therefore an implicit measurement and reporting option. IASB deliberately avoids the definition of threshold values, creating additional potential margins of discretion and flexibility of arrangement for the management. Even in the event of a warranted change in CGU composition, a deviation from the requirement of consistency may occur (IAS 36.72). Through the incorporation of the maximum number of assets with a strong cash flow in the CGU, an increase in cash flows is achieved that stands in relation to an increase in the value in use (Klingels 2005, 245). For companies enjoying organic growth, this strategy results in a potentially complete offset of the difference between the book value and the recoverable amount (balancing effect) and therefore in an omission of any impairment charges.

It should be noted in this context that a pooling of assets as corporate assets had been planned for German commercial law to minimise the difference to the IFRS (Section 253 Subsection 3 clause 5 HGB draft). The planned requirement received heavy criticism on account of the margin of discretion and the flexibility of arrangement. While increased consideration of synergies and economies of scope on account of compliance with the principle of overall assessment might strengthen the informative function, it also poses the risk of diminished objectivity in the rendering of accounts. These reform plans were dropped in light of the above considerations. A corresponding discontinuation of the principle of prudence is not provided for in the current reform of accounting pursuant to the German Commercial Code.

A potential allocation of individual assets to CGUs also conflicts with the ability-to-pay principle under German fiscal law, even though the measurement synergies would result in a trend move towards lesser or even fewer write-downs to going concern value for profitable companies, which would be beneficial from a fiscal policy perspective. The BFH (1967) also rejected a write-down to going concern value on account of additional costs for a production facility, because sufficient profitability for overall business operations was verified. However, an overall assessment was fabricated in this case which is inconsistent with an objective determination of profits for tax purposes, presumably based on earlier rulings of the RFH on the allocation method. Earlier parallels in the content are also apparent with respect to the derivative goodwill, which must equally be allocated to CGUs pursuant to the IFRS and which has been assessed before the law for the streamlining of taxation 1986 in accordance with the entity theory (Velte 2008). Both the former entity theory and the impairment-only approach pursuant to IFRS only permit an impairment charge, if the value of the goodwill is impaired in its entirety, including its original components (former tax law) or the CGUs carrying the goodwill (IFRS). This is due to the judgement that a de facto separation of derivative and original goodwill components becomes impossible over time. A retrospective recognition of the original goodwill is permissible in spite of the prohibition of recognition. This highlights the highly restrictive possibility of a write-down to going concern value for tax purposes pursuant to the former entity theory which frequently equalled a total write-down prohibition for the derivative goodwill.

Similar to German commercial law, IAS 2.9 provides for a strict principle of valuation at the lower of cost or market for the measurement of inventories, by recognising the lower of acquisition or manufacturing costs and the net realisable value. An impairment charge may apply in the event of damage, obsolescence, sales price decreases or increases in the estimated production costs or the estimated costs incurred until the point of sale; therefore, a write-

down to going concern value is permissible (IAS 2.28). However, given that inventories are held for sale, the IASB bases its measurement on the sales market, whereas the BFH is guided by the procurement (replacement or reinstatement costs) with respect to current assets. Meanwhile, IAS 2.32 provides a restriction with respect to raw materials, consumables and supplies for which the replacement costs are a reliable basis for the determination of the net realisable value of the inventories of goods. This constitutes factual reporting and valuation options pursuant to IAS 2.

## 5. Summary

The concept of the going concern value codified in the German Income Tax Act exists in an unresolved area of tension between capitalised earnings and net asset value despite its 80 years of existence. Following the unsuccessful attempts of the judicature to operationalise the concept of the going concern value, typifications were developed for both the development of the going concern value and the expected ongoing asset impairment. Apart from the prevailing view in the literature which assumes autonomous reporting and valuation options for tax purposes with respect to the write-down to going concern value, the typecast formulas and restrictive perspectives of the BFH for the expected ongoing asset impairment have provoked sustained criticism. This applies especially to the tautologous clarification of the expected ongoing asset impairment. Moreover, the requirement for the reversal of the impairment under fiscal law is mutating into a factual write-up option, which is inconsistent with the ability-to-pay principle on account of the clarifications provided by the BFH.

In light of the exposed weaknesses of the going concern value concept and the room for interpretation in the determination of individual going concern values, the question arises as to what extent comparable measurement concepts under German commercial law and the IFRS are suitable for the progression of the write-down to going concern value for tax purposes with respect to an appropriate measurement of the ability to pay of the entity subject to tax. The diminishment of the authoritative principle and the enhancement of the discretionary powers associated with the reporting and valuation options for the write-down to going concern value must be rejected from the perspective of the tax system. In contrast, the creation of a common basis for measurement under commercial and tax laws would be desirable, if the write-down to going concern value was understood as neither an exception, nor as being subject to the whims of targeted tax accounting policies, but rather as the interpretation of the imparity principle. After all, the ceiling and floor values (replacement cost and individual selling price) of the book value and the going concern value are identical and the marginal differences with respect to the consideration of a calculated share in profits can be overcome. Moreover, the abolishment of the existing devaluation options for expected temporary impairments of financial assets in line with the fiscal law should be considered with respect to a restriction of commercial accounting policies.

The discontinuation of the separation between expected, ongoing and temporary asset impairment and the provision of a purely indicator-based impairment test by the IASB in contrast to German commercial and tax law should be welcomed. In particular, with respect to current assets which according to their nature will only remain in the company for a short period, the requirement of permanent impairment under tax laws should be abolished in accordance with commercial law. The allocation of corporate assets and the derivative goodwill to CGUs pursuant to IAS 36 would represent a conceptual continuation of the judicature's failed attempts to distribute the total purchase price across the individual going concern values of the assets. The judicature had included elements of an overall assessment with the former entity theory for the derivative goodwill to limit the write-down to going concern value. However, the CGU concept pursuant to IFRS is suitable for neither the impairment charge under German commercial law, nor the write-down to going concern value for tax purposes on account of the associated diminished objectivity of asset valuation and the disregard for material German accounting principles.

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# THE METHODICAL FRAMEWORK OF THE DEVELOPMENT OF ADEQUATE MODEL OF ESTIMATION OF CREDIT RISK OF THE BANK

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**Abstract**

It was considered the modern methods of assessment of credit risk which are used by the foreign banks, in particular, their essence, advantages and disadvantages were discovered in this article. It was proposed and characterized the criteria of judgmental estimate adequacy of the models intended for analysis and forecast of borrower creditworthiness assessment, in particular such criteria as general accuracy of the model, the errors of 1st and 2nd kind, ROC – curve and GINI index.

**Keywords:** Bank, Credit Risk, Borrower Creditworthiness, Borrower Creditworthiness Assessment, Criteria Of The Models Adequacy Assessment

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## Introduction

The necessity of the further mechanisms development of lending to the economy is firstly defined by the circumstance that nowadays under the conditions of economy destabilization one should provide financial support of economic sectors to create new working places, significant part of budget incomings, working out and implementation of innovative production and services with the least state interference. Credit is been used as a necessary element of the country economy stabilization and the only one source of economic growth. Upon that crediting efficiency is defined by the scientific assurance of the points which economic relations between the creditors and the borrowers are based on. According to the official data the part of the problematic credits in the banking sector has increased significantly for two last years and in August, 2015 reached 19,4% of general credit. This dynamics is stipulated by a general state of economic and political situation, ineffective state regulation and unsatisfactory management, disability of the banks to adjust to the crisis and the post-crisis conditions, mainly by complex approaches lack to borrower creditworthiness assessment as a means of the credit risk minimization which is one of the important banking risks, the management of which has definite peculiarities. The important point is that the effective assessment of a certain borrower's credit risk does not only allow the banks to ensure a profit and credit activity efficiency but assists a banking credit to play its role in the money turn-over. Thus, outstanding and unrecovered credits in a certain term increase money stock in the country and arrange for inflation.

According to the above mentioned the potential to borrower creditworthiness assessment has an important significance for next successful of the banking institutions. When the banks choose ineffective methods of assessment, credit risk increases, losses and expenses of banked recourses are likely to grow. That's why the analysis and to borrower creditworthiness assessment should be increased to reduce the risk which can appear in the process of proper borrower's fulfillment of the credit agreement conditions.

The fundamental rudiments of crediting researches and assessment of credit risk are described in the scientific works of the scientists: Y. Blahodyr, V. Bordyug, I. Buchko, I. D'yakonova, N. Verhusha, L. Gerasymenko, M. Degtyareva, A. Dzyublyuk, L. Dadechko, O. Kryklii, Ye. Mordan, L. Pryidun, A. Ursulenko, M. Yurkiv and other. With it despite the fact that the borrower creditworthiness assessment is paid more and more attention as well as in the scientific researches and in the practice, the criteria of the judgmental estimate of the models adequacy being used by banks to analyze borrower creditworthiness are still not studied enough.

The aim of the research is to study modern methods and characteristics of the model adequacy criteria of the borrower creditworthiness assessment.

## Results

The problem of the timely credit reimbursement is urgent for most banks. Its solution significantly depends on potential borrower creditworthiness assessment. Detailed selection of the borrowers according to the ability of calling in a credit, the analysis of the conditions of granting a credit,

permanent control over the financial borrower state are one of the basic components which prevent problematic bank credits.

Today there are a lot of models of the borrower creditworthiness assessment which foreign banks use: microeconomic, financial, market. There are also a lot of methods of the borrower creditworthiness assessment (ratio analysis, neural network modeling, rating system, complex risk rating, statistical models (parametric, scoring models)), expert methods. Generalized methods evaluation of the borrower creditworthiness assessment is represented in the table 1.

**Table 1.** The peculiarities of the borrower creditworthiness assessment

| The name of the method of bankruptcy risk assessment | The essence of the method | Advantages | Disadvantages |
|---|---|---|---|
| Neural Network modeling | Mathematical model is built according to the principle of organization and functioning of the biological neural networks i.e. the neural networks are trained through the training examples and the ratios of the connection between the neurons are found. | - independence of the neural networks on the incoming data peculiarities (division type, lineation of the target functions, etc.)<br>- simplicity of the modeling;<br>- problem deficiency of the dimension - neural networks can be dependent even with a lot of variables | - complication of network construction for a concrete task – there is no standard scheme which forces to make the construction in any case from the beginning;<br>- complication of the results interpretations of the training due to explanation inability of the elements parameters in the network in the terms of a current task |
| Ratio Analysis) | This method is based on the financial data reporting and includes calculation of one or a few rates. | - simplicity and efficiency of the analysis;<br>-trend determination in the changes of the financial company position | - plurality of the proposed ratios; rapid response to the data analysis quality;<br>- cancellation of the methodology which is used to form financial data reporting, in particular, different methods of active asserts valuation, stipulate different values of the financial ratios. |
| Rating Systems | Credit rating consists of the components (sometimes integral), received using the expert way or the simplest mathematical operations with reporting data. | - complex and system approach to evaluate the probable default due to a scrutinous study of the company;<br>- allows to easy compare the rated companies. | - delay of the rating analysis that's why the rating is made after the financial data reporting of the enterprise and the expert agency expresses its resulting opinion in some time (3-4 months);<br>- as the result the subjectivity of the received evaluation in the expert approach is widely practiced with the transformation of the quality characteristics into quantity ones and the weight categorization in the rating formula |
| Statistical models | Are worked out due to the different statistical methods of the classification (discriminant analysis,logit\probit model, regressive analysis, etc. ) | - a high accuracy of the forecast;<br>- interpretation simplicity of the analysis results | - accuracy of the forecast depends on the choice of the most descriptive variables – financial ratios;<br>- reducing of the statistic credibility of the forecast as for the far future |
| Expert Methods | Private criteria are chosen by the experts. The criteria characterize different aspects of the financial stability. | - allow to estimate not only a probable bankruptcy of the enterprise but in general a financial state of the company<br>- simplicity and efficiency of the analysis | - subjectiveness of the analysis;<br>- plurality of the proposed ratios |

The disadvantage consists in their unsuitability for borrower creditworthiness assessment in the Ukrainian reality.

PJSC CB "Privatbank" as other Ukrainian banks makes the assessment of the individual credit risk on the ground of the methods worked out by the National Bank of Ukraine. But unfortunately it is not thorough because it does not completely take into account the available economic and political situation in the country.

That's why we have proposed some criteria of the models adequacy assessment which are intended for the analysis and forecast borrower creditworthiness. Proposed methods can be used by PJSC CB "Privatbank" as well as most of Ukrainian banks.

It's proposed to the use the following criteria of the models adequacy assessment to analyze the models quality of borrower creditworthiness assessment and to choose the best model for credit risk controlling to prevent from problematic debt growth [2]:

- a common accuracy of the model (CA);
- errors of 1st and 2nd kind;
- ROC-curve and GINI index.

Common accuracy of the model (CA) is defined as:

$$CA = \frac{CorrectForecast}{N}, \quad (1)$$

where, CorrectForecast is the quantity of correctly forecasted cases;

N – the common quantity of the cases.

A common accuracy of the model of the borrower creditworthiness assessment is a subjective estimation because it depends on the part of the borrowers defaults of the model and also the cutoff threshold. The model accuracy will also have different values for the different threshold values.

ROC-curve (Receiver Operation Characteristic) – working characteristic of the receiver, shows the dependence of the quantity of the correctly classified positive examples (true borrower creditworthiness assessment) on the wrong classified negative examples (wrong borrower creditworthiness assessment).

In the terminology of ROC- analysis the first ones are called truly positive collection, the second ones – wrong negative collection. In addition it is anticipated that a classifier has a certain parameter and if we vary it we can receive one or another divide into 2 classes. This parameter is often called a threshold or a cut-off value. There will be different errors of 1st and 2nd kind depending on it.

Let's see the table of the confusion matrix 2, which is based on the results of the model of the borrower creditworthiness assessment and factual (objective) belonging of the borrowers to the rating classes with probable default.

**Table 2.** Table of the conjunction

| | Model forecast: credit reimbursement | Model forecast: Default |
|---|---|---|
| Credit reimbursement | Truly classified (TP) | Errors of 2nd kind (FP) |
| Default | Errors of 1st kind (FN) | Truly classified (TN) |

There are the following table designations in this table:

- TP (True Positives) – truly classified positive examples (so called truly positive cases);
- TN (True Negatives) – truly classified negative examples (so called truly negative cases);
- FN (False Negatives) - positive examples classified as negative (the error of 1st kind). This is so called "error of omission" – when that thing which we are interested in, is not determined (falsely negative examples);
- FP (False Positives) – negative examples classified as positive (the error of 2nd kind). This is a false demonstration that's why the decision about its availability is falsely made (falsely positive examples).

The following relative rates in percentage are used to analyze model peculiarities of the borrower creditworthiness assessment:

- the part of truly positive examples (True Positives Rate):

$$TPR = \frac{TP}{TP + FN} \quad (2)$$

- the part of falsely positive examples (False Positives Rate):

$$FPR = \frac{FP}{TN + FP} \quad (3)$$

As a rule, there are defined two characteristics for the models of the borrower creditworthiness assessment: sensitiveness and specificity.

The sensitiveness of the model of the borrower creditworthiness assessment is a part of truly positive cases:

$$Se = TPR = \frac{TP}{TP+FN} \quad (4)$$

The specificity of the model of the borrower creditworthiness assessment is a part of truly negative cases which were correctly classified by the model [2]:

$$Sp = \frac{TN}{TN+FP} \quad (5)$$

As far as the visual comparison of ROC- curves does not always allow defining the most effective model borrower creditworthiness assessment, the evaluation of the area under the curves (AUC) is used. They can be calculated, for example, by means of a numerical method of the trapezoids:

$$AUC = \int f(x)dx = \sum[(x_{i+1} + x_i)/2]*(Y_{i+1} - Y_i) \quad (6)$$

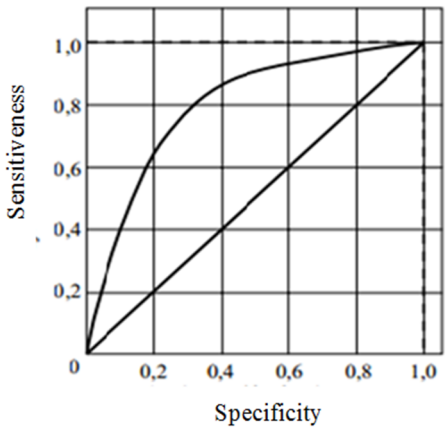
One can admit that the more AUC rate, the better the predictive power of the model of the borrower creditworthiness assessment. However one should know that AUC rate is intended for comparative analysis of a few models of the borrower creditworthiness assessment and does not include any information about the level of its sensitiveness and specificity.

The clearest and more often recollected in the theory parameter of the model quality evaluation of the borrower creditworthiness assessment is GINI index which is tightly connected with the numerical rate of the area under the ROC-curve. GINI index is wide – spread for the model ability estimation of the borrower creditworthiness assessment to divide the clients into prone and not prone to default. If the model is able to estimate the clients in default probability, most clients being prone to default, have to get bigger default probability.

ROC-curve is formed in the following way [3]:

- the values of the sensitiveness Se and the specificity Sp are calculated for each value of the cutoff threshold which is changed from 0 to 1 with the step dx (for example 0,01). As the alternative, the threshold can be each next value of the example in the selection;
- the graph of dependence is constructed: sensitiveness Se is laid off along the axis Y, along the axis X – 100 % – Sp (100% minus specificity) or the same: FPR – the part of falsely positive cases.

**Figure 1.** ROC-curve for the analysis of the models quality of the borrower creditworthiness assessment




The example of the ROC-curve of the borrower creditworthiness assessment is shown on the picture 1.

The range of GINI index values is 0 <G <1, where the customer being not prone to default, receives the highest value of the ratio. On practice the analysis of the model quality of the borrower creditworthiness assessment significantly depends on the data which it is constructed on. In general GINI index takes the value higher than 70 % to use scoring (the estimation of the returning customers financial state).

There is the model quality evaluation of the area AUC and GINI index in the table 3.

**Table 3.** Model quality evaluation of the borrower creditworthiness assessment of AUC area and GINI index

| Interval AUC | Index GINI | Model quality |
|---|---|---|
| 0.9-1.0 | 0.8-1.0 | Perfect |
| 0.8-0.9 | 0.6-0.8 | Very high |
| 0.7-0.8 | 0.4-0.6 | Appropriate |
| 0.6-0.7 | 0.2-0.4 | Medium |
| 0.5-0.6 | 0-0.2 | Unsatisfactory |

The values of the points of the ROC-curve can be used to find the optimal cutoff threshold – the compromise between the sensitiveness and the specificity of the model of the borrower creditworthiness assessment.

The criteria of the cutoff threshold can be the following points:

- the demand of the minimal value of the model sensitiveness (the specificity);
- the demand of the maximal value of the total model sensitiveness and the specificity;
- the demand of the balance between the sensitiveness and the specificity, when Sp>Se.

The ROC-curve graph goes through the upper left angle as for an ideal classifier where the part of truly positive cases is 100% or 1.0 (ideal sensitiveness), and the part of falsely positive examples is equal to zero. That's why the closer the curve to the upper left angle, the higher the ability of the evaluation model forecast of the borrower creditworthiness assessment. Vice versa, the less the knee of the curve and the closer its position to the diagonal straight line, the less effective the model.

The diagonal straight line responds to "the ineffectiveness" of the classifier, i.e. the full inconsistency of two classes.

## Conclusion

The study of the customer creditworthiness is one of the important credit risk reducing and a successful realization of the credit banking policy because it allows to avoid groundless risk at the stage of application processing for credit.

In particular, there is a general assessment of the existing methods of credit risk, also it's defined their essence, advantages and disadvantages in the article. It was considered the following methods such as ratio analysis, neural networks simulation, rating systems, complex risk assessment, statistical models (parametric, scoring models), experts methods. It's defined that almost all above mentioned methods can't be used to estimate the borrower creditworthiness assessment in the national banks activity.

It was proposed and described the criteria which allow evaluating models quality intended to define the banking borrowers' creditworthiness, in particular such as a common accuracy of the model (CA), the errors of 1st and 2nd kind, ROC-curve and GINI index.

Thus, the adequate methods of the borrower creditworthiness assessment will allow to reduce the probable borrower duties neglect, to minimize possible financial losses in case of borrower duties neglect, to reduce the quantity and a large scale of subprime credit operations, to take appropriate measures in case of risk and to produce the profitability and the efficiency of credit operations for the bank.

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# THE MIGRATION BEHAVIOR MODEL OF INDONESIAN FEMALE MIGRANT DOMESTIC WORKERS IN EGYPT

*Nurfaizi Suwandi**

**Abstract**

This paper examines the migration behavior model of Indonesian female migrant domestic workers in Egypt. I develop a model based on the Theory of Planned Behavior (TPB) combined with the Theory of Migration. Samples of 209 respondents are collected using convenience sampling technique. Structural Equation Modeling (SEM) is employed to analyze the empirical model. The findings indicate that respondents who do not have a previous employment status tend to have a better perception or attitude towards the profession of migrant domestic worker. Encouragement from the surrounding environment, including family and friends, who agree, hope, recommend, or persuade them to work as a migrant worker is a significant factor in improving the intention to become a migrant worker, especially in Egypt.

**Keywords:** Female Migrant Domestic Workers, Egypt, Theory of Planned Behavior, Theory of Migration

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## 1. Introduction

The decision to migrate is a common phenomenon that we can see anywhere, both globally and in Indonesia. At the beginning of the widespread phenomenon of migration out of country, men dominated the number of migrants. However, in recent years, this phenomenon begins to shift. Men do not longer dominate the number of migrants a broad, but women do (Suryaningsih, 2011). According to the data gathered from BNP2TKI (National Board for the Placement and Protection of Indonesian Migrant Workers), the number of workers who work in various foreign countries from 2006 to 2012 are 3,995,592. 3,048,267 of them are women and the remaining 947,325 are men. This means that the large number of migrant workers is dominated by women. Table 1 demonstrates the number of migrant workers in various foreing countries for the period of 2006-2012:

**Table 1.** The number of migrant workers in various countries from 2006-2012 based on gender

| Year | Men | Women |
|---|---|---|
| 2006 | 138,000 | 541,900 |
| 2007 | 152,030 | 544,716 |
| 2008 | 143,545 | 496,185 |
| 2009 | 103,126 | 529,046 |
| 2010 | 124,001 | 451,202 |
| 2011 | 205,054 | 376,027 |
| 2012 | 78,929 | 109,130 |
| **Total** | **947,325** | **3,048,267** |

*Source:* BNP2TKI, 2014

The arrival of female migrant workers abroad in the 20th century is mostly dominated by human trafficking victims, meaning that they are imported illegally. There are a lot of problems faced by migrant workers, in particular informal domestic workers in the Middle East, including unpaid salary, violence, sexual abuse, human rights and law violations, even threat of death as experienced by migrant Wiwin Widaningsih (20) who died in Saudi Arabia in 1999 (Daulay, 2001). However, this fact does not discourage Indonesian female workers to seek employment abroad.

Some interesting phenomena occur in Egypt as one of migrant destination countries. In Egypt, there are no rules of the foreign domestic worker sector and the Indonesian government does not list Egypt as a

placement country for informal migrant workers, but it turns out there are still many Indonesian domestic workers there. The Indonesian Embassy in Cairo, as of April of 2013, records that 1,298 women are working as undocumented/illegal informal migrant workers. These informal migrant workers leave for Egypt without any legal protection at all such as no employment contract, work permit, insurance, employment documents with salary of only about 1 million - 1.5 million Rupiahs per month, and even in some cases they do not get paid (The Indonesian Embassy in Cairo Egypt, 2013). Therefore, it becomes interesting to determine factors that affect a person's intention to become a migrant worker in Egypt. Intention to behave is important to study due to intention is a major determinant for someone to perform a behavior (Ajzen, 1991).

Previous studies on female labor migration abroad have examined it, however, most of them are in the context of formal migrant workers (Cole and McNulty (2011); Fischlmayra and Kollinger (2010); Harrisona and Michailova (2012); Hutchings *et al*., (2008); Kittler *et al*., (2011); Linehan and Scullion. 2001; Linehan and Scullion (2002); Selmer and Leung (2007); Tzeng (2006); Volkmar and Westbrook (2005), Walsh (2008)). Meanwhile, studies on migration in the context of female informal workers are still limited. This present paper, therefore, study such a phenomenon in the context of informal migrant workers, more specifically Indonesian domestic workers in Egypt.

The decision to migrate in foreign country is affected by some factors. These factors could be identified by using a theory of behavior which is commonly used to predict an individual's intention to behave i.e the Theory of Planned Behavior (TPB). This theory explains that attitude toward behavior, subjective norm, as well as perceived behavioral controls are the antecedents of intention to behave. The TPB has been applied in various fields[9]. The results of these studies indicate that attitude, subjective norm, and perceived behavioral control have effect on behavioral intention. This suggests that the TPB is much more flexible to apply in various areas and is assumed to be able to predict the intention to become a domestic worker. Therefore, this present paper combines the TPB (Ajzen, 1991) with the push-pull theory of migration (Lee, 1966) to obtain a comprehensive view of the model of migratory behavior of Indonesian female domestic workers in Egypt.

The present paper combines the TPB with the theory of migration for several reasons. First, the model developed in this study provides a larger portion of individuals who significantly influence the internal dynamic processes in migration decision making and determination of intention to become a migrant domestic worker. Second, factors affecting an individual's intention to become migrant domestic worker in Egypt, in the theory of planned behavior, is considered less complete, therefore the push-pull theory of migration is then added as supplement this shortfall due to the correlation between subjective norms (as part of the TPB) and push-pull factor in the theory of migration. Subjective norms can be defined as the support from people around, including social networking. Social networks play an important role, especially due to the tendency of humans being to migrate to the area where their networks are interconnected to one another (Jones, 2009). Third, there is a correlation of demographic characteristics (as individual factor in the theory of migration) with the formation of attitudes (as part of the TPB).

## 2. Theoretical Background and Hypotheses The Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is a theory designed to predict and explain human behavior in special cases (Ajzen, 1991). According to Ajzen (1991), the TPB is an extension of the Theory of Reasoned Action (TRA) by adding perceived behavioral control in predicting intention, in addition to two factors that have been used to predict intention in the TRA, i.e. attitudes toward behavior and subjective norms. Ajzen (1991) then explains that in the TPB, the main factor determining behavior was the intention to behave. Intention to behave is the likelihood for someone to perform a behavior. Ajzen (2005) find that a formed intention would remain a behavioral tendency until the right time and opportunity where an effort was made to realize the specific intention into certain behaviors. In the TPB, intention is a function of three basic determinants which are personal, social, and control. The personal one means attitudes, social means subjective norms, and control means perceived behavior control (PBC). The TPB basic assumption is that human beings are rational creatures and systematically use information that is possible for them. Individuals think about the implications of their actions before doing or not doing a particular behavior (Ajzen, 1991).

### The Theory of Migration

The theory of migration is introduced by Lee (1966) in a seminal paper entitled "A Theory of Migration". He argue that the volume of migration within a given territory varied with the degree of diversity of areas included in that territory, in which the concept of territory used referred to the area of origin and destination of immigrants.

Lee (1966) summarizes four factors which enter

[9]Kolvereid (1996) apply the TPB to predict the intention to choose employment status, while Chiou (1998); Alam and Suyuti, 2011; Kim and Chung, 2011; Albayrak *et al*., 2013 use the TPB to predict the intention to buy. More recently, Do Paco *et al*., (2011); Solvesik (2013) implement the TPB to predict the entrepreneurship intention.

into the decision to migrate. First, factors associated with the area of origin including the limited land ownership, lower wages, lag between planting and harvest for farmers, job scarcity, and limited types of job in rural areas. The second factor is those associated with the area of destination. These include high level of wage and diverse jobs. The third factor is intervening obstacles. These are obstacles faced in both area of origin and destination of migration. Obstacles are considerable influence on the volume of population mobility. The obstacles include: the cost of displacement and the topography of the area of origin with the destination that affects transportation mode. The fourth is personal factors. These also serve as a significant factor affecting the population mobility (Lee, 1966). It is caused by personal factors which are able to assess whether an area of destination is positive or negative and decide to move from or stay in the place of origin.

## Hypothesis Development

### *The influence of demographic characteristics on attitudes towards the profession of migrant domestic worker*

#### *a. Age*

Cieri *et al.,* (2009) note that the identification of generation had an impact on the attitude toward behavior that determined the presence of desire to return to the country of origin of the expatriates (formal sector workers). Difference in generation gives rise to the difference in their attitudes towards the formation of behavior in working, such as between generation X and generation Y (Arsenault, 2003).

Generation X began to enter the world of work in the 1980s until the early 1990s, in the transition era from the economy restructuring after the financial crisis that creates challenges in the world of work and social life (Bogdanowicz and Bailey, 2002). This generation, according to Cieri *et al*., (2009), has a tendency to be flexible and ready to accept changes that occur constantly, being triggered by the need for survival. Generation Y are subsequently present, working in an era which is a more "comfortable" compared to Generation X, thus leading the trigger for working to turn from the need to survive into the need for sense of comfort. Generation in this era have higher optimism and confidence than in generation in the previous era, supported by a wider range of career development opportunities (Salt in Cieri *et al*., 2009). Differences in the characteristics between the two generations show a difference in perspective (in this case, it can be defined as attitude toward behavior) on a job of different age levels. Paas & Halapuu (2012) show negative effect of age on the attitudes towards migration. Thus, the formulated hypothesis is as follows:

$H_1$: Age has negative effect on attitudes towards the profession of migrant domestic worker

#### *b. Marital Status and Number of Dependents*

Study by Leonard and Cronan (2005) in the context of ethical behavior in the use of information system showed that personal environment (influenced by family, friends, or colleagues) and personal values (including individual experience and achievement in the past) were factors affecting the formation of attitudes that led to certain behaviors. Experience of working abroad, according to Cieri *et al*., (2009), often attracts those who do not have a personal attachment. This is due to the potential for more promising career development opportunities. Workers who are married (attached to marriage), on the other hand, often prefer stability in their work and community. The same logic also applies to those who have dependents to support (Pringle and Mallon, 2003). Someone who has been married and has children will tend to choose to keep working in a place that is close to his/her family. A review of several literatures underlies the effect measurement of the number of dependents and marital status on the formation of attitude in this study. This description generates hypotheses as follows:

$H_2$: Marital status has negative effect on attitudes towards the profession of migrant domestic worker.

$H_3$: Number of dependents has negative effect on attitudes towards the profession of migrant domestic worker.

#### *c. Income and Employment Status*

Lee (1966) explains that the main factor behind the migration of labor to a destination was a macro or contextual factor that was often seen as the attractiveness of the destination country and the thrust of the country of origin (push and pull factors). In general, the movement of people from one area to another is caused by several factors including employment scarcity and low income. Vadlun (2010) finds that factors encouraging women to migrate were (1) urgent needs, (2) desire to repair house or build a house, (3) educational needs of children, (4) desire help parents make a hajj(pilgrimage), (5) husband has no job, does not give a living, or marries again, and children cannot stand the stepmother. The findings of study by Wirawan (2006) indicate that income and employment status before becoming a migrant worker had negative effect on the decision to become a migrant worker. According to Azjen (2005), in general, background factors including demographic characteristics (age, gender, ethnicity, race, education, income, and religion) can affect the intention and behavior, but the effect is mediated by more specific perception and beliefs about the desired behavior. This description generates hypotheses as follows:

$H_4$: Income before becoming a migrant domestic worker has negative effect on attitudes towards the

profession of migrant domestic worker.

$H_5$: Employment status before becoming a migrant domestic worker has negative effect on attitudes towards the profession of migrant domestic worker.

***The influence of attitudes towards the profession of migrant domestic worker, subjective norms and perceived behavior control on the intention to become a migrant domestic worker***

Ajzen (1991) explains that intention is a function of three basic determinants, i.e. attitude, subjective norm, and perceived behavioral control (PBC). Attitude toward behavior reflects a person's positive or negative evaluation of a particular behavior (Ajzen, 1991). In this study, it relates to the level of a person's positive or negative evaluation about the idea to become a migrant worker. Subjective norm is defined as a person's perception of social pressure to show or not to perform a behavior due to certain consideration (Ajzen, 2005). In this study, it relates to a person's perception of the views of people around (e.g., family, friends) about migrant worker and can motivate the people to become a migrant worker. Perceived behavioral control is defined as a person's perception of the difficulty or ease to perform a behavior (Ajzen, 1991). In this study, it relates to the difficulty or ease to become a migrant worker.

The Theory of Planned Behavior (TPB) has been applied in various fields of study including to predict purchase intention (Alam& Suyuti, 2011; Kim & Chung, 2011; Albayrak *et al*., 2013), behavior to play online games (Lee, 2009), employee involvement (Tang *et al*., 2010), knowledge sharing behavior (Tohidinia & Mosakhoni, 2010), and entrepreneurial intention (Solesvik, 2013). The results of these studies indicated that attitudes, subjective norms, and perceived behavioral control had effect on behavioral intention. This suggests that the TPB is flexible to use in various areas. Phenomenon to be explained in this study is a person's intention to become a migrant domestic worker under the influence of attitudes towards profession of migrant domestic worker, subjective norms, and perceived behavioral control. Therefore, I develop some following hypotheses:

$H_6$: Attitudes towards profession of migrant domestic worker have positive effect on the intention to become a migrant domestic worker.

$H_7$: Subjective norms have positive effect on the intention to become a migrant domestic worker.

$H_8$: Perceived behavioral control has positive effect on the intention to become a migrant domestic worker.

## Research Model

The model of this study combines the Theory of Planned Behavior (TPB) and the theory of migration for the context of informal workers which are female migrant domestic workers in Egypt. This study explores the model of individual positions in the migration theory building. The TPB is established by using its basic assumption that humans behave in a conscious way, consider all available information and can/cannot perform a behavior under their owned personal intentions. While the classical theory of migration talks more about migration within a macro scope, the model developed in this study focuses on a micro scope which, in this case, is on individuals as actors who choose to carry out a migration.

This is in line with the argument that the dissatisfaction with individual position can encourage a revision to the theory of migration, especially with an emphasis on individuals (Farwick, 2009). Individuals are seen as the main actors, whose background influences perception, and then determine their chosen option or course of action. The approach used in this study can be considered as a critique of the classical theory in which, although placing individuals as rational ones and have economic calculations when migrating, individuals in this context are seen as a collection of individuals who are considered to have the same background and, therefore, tend to move in the same direction.

Cieri *et al.* (2009) show that demographic characteristics do not affect an intention. This study still uses demographic characteristics, but is not as a direct determinant of intention. It is rather the determinant of attitude. As proposed by Azjen (2005), in general, background factors (including demographic characteristics) could affect an intention, but the effect was mediated by more specific attitudes and beliefs about the desired behavior.

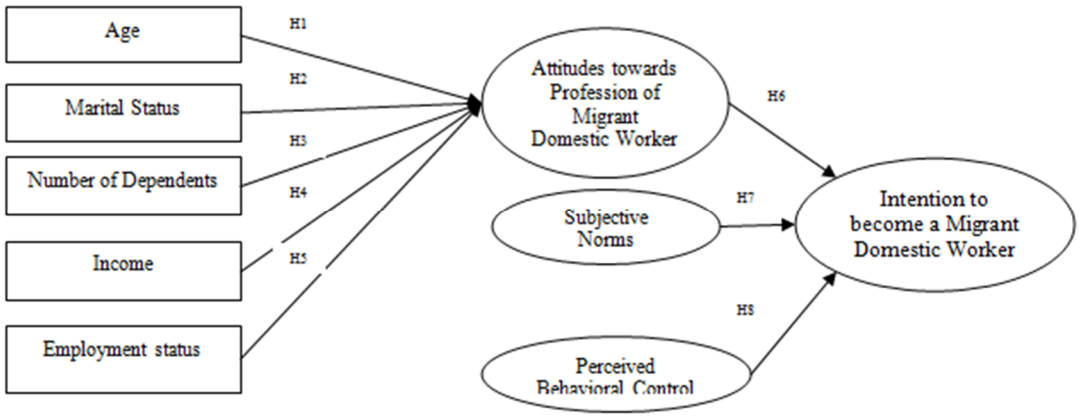
Based on the formulated hypotheses, the model of this study can be described as follows:

## 3. Methods

### *Research Design*

This research is a hypothesis-testing. Survey method is employed for the collection of primary data by distributing questionnaires to respondents. In this study, the primary data are collected from respondents through distributed questionnaires, while the secondary data of female migrant domestic workers in Egypt is gathered from the Indonesian Embassy in Cairo Egypt. The population is all Indonesian illegal female migrant domestic workers in Egypt. To collect samples, I follow the non-probability sampling design. By looking at the characteristics of population, sampled respondents are determined using convenience sampling method. The process of questionnaire distribution was done in July-September 2014. Out of 250 questionnaires distributed, 209 ones were returned (response rate of 83.6%) and filled out completely so that data which could be analyzed were 209. To test the hypotheses, I employ Structural Equation Modeling (SEM).

**Figure 1.** Research Model




## Operational Definition and Variable Measurement

### *Demographic characteristics*

Demographic characteristics which are taken into account are age, number of dependents, marital status, income before becoming a migrant worker, and employment status before becoming a migrant worker. The age of respondents, number of dependents and income before becoming a migrant worker are measured using a ratio scale. Meanwhile, marital status is measured using dummy variables, 0 for unmarried respondents and 1 for married respondents. Employment status before becoming a migrant worker was also measured using dummy variables, 0 for unemployed respondents and 1 for employed respondents.

### *Attitudes towards the profession of female migrant worker*

Attitude is defined as a disposition to respond favorably or unfavorably to an object, person, institution, or event (Ajzen, 2005). Attitude towards the profession of female migrant worker is an individual assessment to like or dislike the behavior to become a female migrant worker. The measurement of attitude towards the profession of female migrant worker in this study used three statement items adopted from Ajzen (2006).

### *Subjective norms*

Subjective norm is defined as a person's perception of social pressure to perform or not to perform a behavior under certain consideration (Ajzen, 2005). In this study, it relates to an individual's belief or perception to comply with the direction or recommendation or solicitation from important people around her (e.g., family, friends) about working as female migrant worker and can motivate the person to become a female migrant worker. The measurement of subjective norms in this study used 6 statement items adopted from Ajzen (2006).

### *Perceived Behavior Control*

'Perceived behavioral control is defined as a person's perception of the difficulty or ease to perform a behavior (Ajzen, 1991). In this study, it relates to the difficulty or ease to become a female migrant worker. The measurement of perceived behavioral control in this study used five statement items adopted from Ajzen (2006).

### *Intention to become a female migrant worker*

Intention to behave is the subjective probability of an individual engaged in a behavior (Ajzen, 1991). Intention to behave is someone's intention to perform or not to perform a behavior (being a migrant worker). The measurement of intention to behave in this study used three statement items adopted from Ajzen (2006).

Each question item to measure variables of attitudes towards the profession of migrant worker, subjective norms, perceived behavioral control, and intention to become a migrant worker was assessed using a Likert scale. The scale uses five (5) alternative options: strongly disagree, disagree, neutral, agree, and strongly agree.

## 4. Results

### *Description of the respondent characteristics*

Based on the description of respondent characteristics in Table 2, this study covers 45 respondents aged 22-30, 86 respondents aged 31-39, and 64 respondents aged 40-48, and 14 respondents aged 49-57. Meanwhile, the number of married respondents is 107

and unmarried respondents is102. The number of respondents who have dependent(s)is 205 and those who do not have dependent(s) is only 4. This means the majority of respondents have dependent(s), husband, or children. The number of dependents owned by respondents varies from 1 to 6. In term of income before becoming a migrant worker in Egypt, the number of respondents with income of <900,000 is 145, while 48 respondents do not have income before being a migrant worker. In term of employment status before being a migrant worker, the number of employed respondents is 161, and the remaining 48 do not work.

**Table 2.** Description of the respondent characteristics

| Characteristics | Frequency | Percentage (%) |
|---|---|---|
| **Age** | | |
| 22 - 30 yo | 45 | 21.5 |
| 31 - 39 yo | 86 | 41.2 |
| 40 - 48 yo | 64 | 30.6 |
| 49 - 57 yo | 14 | 6.7 |
| **Marital Status** | | |
| Married | 107 | 51.2 |
| Unmarried | 102 | 48.8 |
| **Possession of dependents** | | |
| Have | 205 | 98.1 |
| Do not have | 4 | 1.9 |
| **Number of dependents** | | |
| 0 (Do not have) | 4 | 1.9 |
| 1 | 15 | 7.2 |
| 2 | 49 | 23.4 |
| 3 | 58 | 27.8 |
| 4 | 52 | 24.9 |
| 5 | 20 | 9.6 |
| 6 | 11 | 5.3 |
| **Income before being a migrant worker** | | |
| 0 (Do not have) | 48 | 23 |
| < 900.000 | 145 | 69.4 |
| 1.000.000 – 2.000.000 | 16 | 7.6 |
| **Employment status before becoming a migrant worker** | | |
| Employed | 161 | 77 |
| Unemployed | 48 | 23 |

*Source:* processed data results, 2014

### *Goodness-of-fit Analysis*

Table 3 describes the results of the goodness of fit of the model in this study. In this test, the $\chi^2$value produces a significance level of less than 0.05 with a$\chi^2$value of 651.133, indicating the poor fit of the model. Chi-Square is very sensitive to sample size, thus requiring other indicators to produce a definitive justification of the model fit (Ghozali and Fuad, 2005). The value of CMIN/DF, GFI, AGFI, TLI, CFI and RMSEA in this research model shows poor level of fit. This means that the proposed model is less appropriate to describe the migration behavior of female migrant domestic workers in Egypt. It is because the surveyed respondents were illegal migrant workers who mostly did not think rationally, but tended to be emotional since they were more driven by external factors such as weak economic condition/underprivileged. They also did not have information about migrant workers in Egypt and did not plan to go to Egypt and even they did not know that they would be placed in Egypt. These conditions do not fit with the basic the TPB's assumption that explains that humans are rational creatures and use information systematically. Individuals think about the implications of their actions before doing or not doing certain behaviors (Ajzen, 1991).

**Table 3.** The Results ofGoodness-of-Fitof the Model

| *Goodness-of-fit Indices* | *Cut-off Value* | **Results** | **Model Evaluation** |
|---|---|---|---|
| *Chi-Square* ($\chi^2$) | Expected to be Low | 651.133 | - |
| *Degrees of freedom* | Positive | 185 | Fit |
| *Probability level (p)* | ≥0.05 | 0.000 | Unfit |
| *CMIN/DF* | ≤2.0 | 3.520 | Unfit |
| *GFI* | ≥0.90 | 0.781 | Unfit |
| *AGFI* | ≥0.90 | 0.700 | Unfit |
| *TLI* | ≥0.90 | 0.824 | Unfit |
| *CFI* | ≥0.90 | 0.859 | Unfit |
| *RMSEA* | ≤0.08 | 0.110 | Unfit |

*Source:* processed data results, 2014

### *Path coefficient Analysis*

This analysis is viewed from the significance of model regression weight which can be seen in Table 4:

**Table 4.** Hypothesis Testing Results

| **Hypotheses** | **Estimate** | **S.E.** | **C.R.** | ***β*** | ***p*** | **Hypothesis Test** |
|---|---|---|---|---|---|---|
| $H_1$: Age→S TKW | .003 | .009 | .364 | .027 | .716 | **Rejected** |
| $H_2$:SP →S TKW | -.015 | .136 | -.108 | -.008 | .914 | **Rejected** |
| $H_3$:JT→S TKW | -.055 | .056 | -.991 | -.077 | .322 | **Rejected** |
| $H_4$:P TKW→S TKW | .000 | .000 | 1.288 | .140 | .198 | **Rejected** |
| $H_5$:SP TKW →S TKW | -.512 | .258 | -1.984 | -.225 | .047 | **Supported** |
| $H_6$:S TKW →N TKW | .088 | .073 | 1.196 | .087 | .232 | **Rejected** |
| $H_7$:NS →N TKW | .166 | .080 | 2.074 | .162 | .038 | **Supported** |
| $H_8$:PPP → N TKW | .022 | .070 | .318 | .024 | .750 | **Rejected** |

*Source:* processed data results, 2014

Note:
SP = Marital Status
JT = Number of Dependents
P TKW = Income Before Being a Migrant Worker
SP TKW = Employment Status Before Being a Migrant Worker
S TKW = Attitude toward profession of migrant worker
NS = Subjective Norms
PPP = Perceived Behavioral Control
N TKW = Intention to Be a Migrant Worker

These test results show that from the 8 paths analyzed, there are two paths that have a significant relationship as seen from the level of hypothesis test significance (p)that is less than 0.05 (5%).

The results presented in Table 4 show that the C.R. value of Age on attitudes towards profession of migrant worker is 0.364, the β value is 0.027 at a significance level of p> 0.05 and has a positive effect, so it can be concluded that hypothesis 1 is rejected. The C.R. value of marital status on attitudes towards profession of migrant worker is -0.108, the β value is -0.008 at the significance level of p> 0.05 and has a negative influence, so it can be concluded that hypothesis2 is rejected. The C.R. value of the number of dependents on the attitude towards the profession of migrant worker is -0.991, the β value is -0.077 with a significance level of p> 0.05 and has a negative influence, so it can be concluded that hypothesis 3 is rejected. The C.R. value of income before becoming a migrant worker on attitudes toward the profession of migrant worker is 1.288, the β value is 0.140 with a significance level of p> 0.05 and has a positive effect, so it can be concluded that hypothesis 4 is rejected. The C.R. value of employment status before being a migrant worker on the attitude towards the profession of migrant worker is -1.984, the β value is -0.225 with significance level of p <0.05 and has a negative influence, so it can be concluded that hypothesis 5 is supported. The C.R. value of attitudes towards the profession of migrant worker on the intention to become a migrant worker is 1.196, the β value is 0.087 with a significance level of p> 0.05 and has a positive effect, so it can be concluded that hypothesis 6 is rejected. The CR value of subjective norms on the

intention to become a migrant worker is 2.074, the β value is 0.162 with a significance level of p <0.05 and has a positive effect, so it can be concluded that hypothesis 7 is supported. The CR value of perceived behavioral control on the intention to become a migrant worker is 0.318, the β value is 0.024 with a significance level of p> 0.05 and has a positive effect, so it can be concluded that hypothesis 8 is rejected.

## 5. Discussion

### *The influence of age on attitudes towards the profession of migrant worker*

The influence of age on attitudes towards the profession of migrant worker is found to be not significant. This gives information that age is not a significant variable to establish an attitude towards profession of migrant worker. This result indicates the inability of this study to support previous studies which suggest that age is the best predictor affecting the formation of attitudes that lead to individual behavior (Pol in Vilčeková and Sabo, 2013). In this study, the respondents' age ranged from 22 to 57 and most of them had a positive attitude towards the profession of migrant worker. This shows that age is not a factor forming attitudes towards the profession of migrant worker, meaning that respondents with young and old ages have arelatively similar attitude towards the profession of migrant worker.

### *The influence of marital status on attitudes towards the profession of migrant worker*

The influence of marital status on attitudes towards the profession of migrant worker is found to be not significant. Therefore, it is clear that marital status is not a significant variable to establish an attitude towards the profession of migrant worker. This result then indicates the inability of this study to support previous studies which suggest that workers who are bound by marriage prefer stability in their work and community and experience to work abroad often attracts those who have had a personal attachment (Cieri *et al.,* 2009).

Married respondents are 107, while 102 respondents are not married, and most of them have a positive attitude towards the profession of migrant worker. This means that respondents who have married or not married have a relatively similar attitude towards the profession of migrant worker. This is probably caused by the fact that many female migrant domestic workers in Egypt were already married and then divorced by their husbands. As a result, many married migrant workers tended to have a positive attitude towards the profession of domestic migrant worker. They assumed that working as a migrant worker was a good choice to solve economic and social problems.

### *The influence of number of dependents on the attitude towards the profession of migrant worker*

The influence of number of dependents on attitudes towards the profession of migrant worker was found to be not significant. This describes that number of dependents is not a significant variable to form an attitude towards the profession of migrant worker. This result then indicates the inability of this study to support the previous studies which explains that workers who are bound by marriage prefer stability in work and community. The same logic also applies to those who have dependents to support (Pringle and Mallon, 2003). On the one hand, number of family dependents limits the space for someone to not work away from home, but on the other hand, the number of family dependents causes a person to get a job with better salary despite having to work away from home. This phenomenon leads the number of dependents not to serve a major factor that affects the attitudes towards profession of migrant worker. This means that respondents who have either few or many dependents or have no dependents have a relatively similar attitude towards the profession of migrant worker.

### *The influence of income before being a migrant worker on the attitude towards the profession of migrant worker*

The influence of income before being a migrant worker on attitudes towards profession of migrant worker is found to be not significant. This describes that income before being a migrant worker is not a significant variable to form an attitude towards the profession of migrant worker. This result then indicates the inability of this study to support previous studies which explain that demographic characteristics(including age, income, and profession) are significant factors that influence the formation of attitudes (Jusoh and Ling, 2012). A person's previous income is not a major factor affecting the formation of attitudes towards a profession or occupation. A person with a high income does not always have a bad perception of other professions, as well as someone who has a low income does not always have a good perception of other professions. This is possible because someone's attitude or perception of certain profession may be more influenced by their knowledge of the profession and its working conditions which are assessed not only in term of income but also in term of comfort. This phenomenon is likely to cause income before being a migrant worker not to be the main factor that affects the attitudes towards the profession of migrant worker. This means that respondents with a high income or low or even no income at all before becoming a migrant worker have a relatively similar attitude towards the profession of migrant worker.

### *The influence of employment status before being a migrant worker on attitudes towards the profession of migrant worker*

The influence of job status before being a migrant worker on the attitude towards profession of migrant worker was found to have negative and significant effect. This finding supports the hypothesis proposed in this study. This then suggests that the effect of employment status before becoming a migrant worker on the attitude to become a migrant worker supports the results of previous studies. A study of Jusoh and Ling (2012) and Bellman *et al.,* (1999) show that demographic characteristics (including age, income, and profession) and personal characteristics (represented by experience in the past) are the factors influencing the formation of attitudes. Someone who does not have a previous employment status tends to have a better perception or attitude toward a particular profession, in this case, is that of migrant domestic worker. This is possible because they will see such a profession as an opportunity for them to get a job.

### *The influence of the attitude towards profession of migrant worker on the intention to be a migrant worker*

The influence of the attitude towards profession of migrant worker on the intention to be a migrant worker was found to be significant. This describes that the attitude towards profession of migrant worker is not a significant variable to establish the intention to become a migrant worker. This result indicates the inability of this study to support previous studies which explains that intention is a function of three basic determinants, i.e. attitude, subjective norm, and perceived behavioral control (PBC) (Ajzen, 1991).

This insignificant relationship indicates that perceiving or thinking of becoming a migrant worker is a good, right and beneficial decision, but is not always followed by increased intention to become a migrant worker in Egypt. This phenomenon is likely to occur because they were illegal migrant workers, and in fact, not all respondents wanted to go to Egypt or intended to become a migrant worker in Egypt. Since they are illegal, they might not know they would be placed in Egypt. They assume that being a migrant worker was a good, true and beneficial choice but their main destination to work was possibly not in Egypt. The description of respondents indicated that most of respondents have a positive attitude towards the profession of migrant worker but from their respond regarding the intention to become a migrant worker, although most have the intention to become a migrant worker, there were also some respondents who did not intend to become a migrant worker. This phenomenon is likely to cause attitude towards the profession of migrant worker not to be the main factor affecting the intention to become a migrant worker.

### *The influence of subjective norms on the intention to become a migrant worker*

In this study, subjective norms have positive and significant effect on the intention to become a migrant worker. This shows the higher the subjective norms, the higher the intention to become a migrant worker. This finding shows that this study supports the hypothesis that indicates a positive and significant influence of subjective norms on the intention to become a migrant worker. This then suggests that the effect of subjective norms on the intention to become a migrant worker found by the findings of previous studies is in accordance with the finding of this study (Ajzen, 1991).

The finding that reveals positive and significant effect shows that the higher the perceived support from important people around, the more increased the intention to become a migrant worker. Strong encouragement from the surrounding environment, both from family and friends, who agrees, expects, recommends, or persuades to become a migrant worker is a significant factor in improving a person's intention to become a migrant worker, especially in Egypt.

The most dominant factor of subjective norm is encouragement from sponsors or brokers. They promise prospective migrant workers very interesting future. The promise was mostly not consistent with the fact, for example: offering a high salary, but it turned out that the salary was not paid. The factor of encouragement from sponsor is what causes women are interested in working abroad, especially in Egypt, even within the volatility of Egyptian economy and the absence of an agreement between Indonesia and Egypt in terms of sending informal domestic workers. The results of this study can provide a recommendation to Indonesian government in term of the mode of sending illegal migrant domestic workers in Egypt. Socialization to people, especially prospective migrant workers, is important to do so that they are not easily influenced by sponsors or brokers who offer untrue promises.

### *The influence of the perceived behavioral control on the intention to become a migrant worker*

The influence of the perceived behavioral control on the intention to become a migrant worker is found to be not significant. This gives information that perceived behavioral control is not a significant variable to establish the intention to become a migrant worker. This result then indicates the inability of this study to support previous studies which explain that intention is a function from three basic determinants including attitude, subjective norm, and perceived behavioral control (PBC) (Ajzen, 1991).

The description of the respondents' respond indicates that, on the one hand, the majority of

respondents did not know about the requirements and procedures to become a migrant worker and things to do during working as a migrant worker in Egypt, on the other hand, they stated that to become a migrant worker was dependent entirely on their own, and they also expressed that their readiness to become a migrant worker in Egypt once there was an opportunity. There was also quite a lot of respondents who were aware of the requirements, procedures, and things to do during working as a migrant worker in Egypt. They went to Egypt recklessly without thinking about the possible risks. This respondents' ignorance occurs because they were illegal migrant workers. Egypt was not their main destination country for working. Some of these factors are likely to lead to the relationship between perceived behavioral control and intention to become a migrant worker in Egypt becomes insignificant.

## 6. Conclusions

The study provides some interesting findings. First, demographic factors such as age, marital status, number of dependents, and income before becoming a migrant worker were not significant factors in establishing attitudes towards the profession of migrant worker, especially in Egypt. Meanwhile, employment status before working as a migrant worker was a demographic factor which was found to have significant effect on the intention to become a migrant worker, especially in Egypt. These findings indicate that respondents who do not have a previous employment status tend to have a better perception or attitude towards certain profession.

Second, attitude towards the profession of migrant worker and perceived control behavior in the context of this study are not a significant variable to form the intention to be a migrant worker, especially in Egypt. This phenomenon is likely to occur because they were illegal migrant workers so that they possibly did not know that they would be placed in Egypt. Moreover, they did not know the conditions required, including process and workflow procedures and what to do to become a migrant worker.

Third, subjective norm is found to have positive and significant effect on the intention to become a migrant worker. This finding indicates that the higher the perceived support from important people around, the more increased the intention to work as a migrant worker. Encouragement from the surrounding environment, both from family and friends, who agrees, expects, recommends, or persuades to become a migrant worker is a significant factor in improving a person's intention to become a migrant worker, especially in Egypt.

The results show that out of three determinant variables of intention to work as a migrant worker, only one of which affected the intention, i.e. subjective norm. This finding gives an implication for the Indonesian government to immediately arrest those who become distributors of illegal migrant workers, especially in Egypt. The Indonesian government should conduct socialization to the community, especially those who want to be a migrant worker, about the risks of working as an illegal migrant worker. The government should also provide training to prospective migrant workers so that they can work in the formal sector, and for former migrant workers, they are recommended to open their own business in Indonesia.

## 7. Limitation and future research

However, I acknowledge some limitations of this study. First, the limited number of samples due to the difficulties in finding the respondents as they are illegal migrant workers. Future studies should more consider the characteristics of respondents to be studied so there is no difficulty in collecting data.

Second, this study employs a non-probability sampling by convenience sampling method which was an easy/simple sampling method, causing the generalization of the findings was limited. Future studies should use probability sampling technique so that research findings can be generalized.

Third, the model in this study is less appropriate to describe the behavior of female migrant domestic workers in Egypt. This happens due to the non-fulfillment of the TPB's basic assumption. Future studies can replicate the model to be applied in the same context in different countries so that it can be seen the effect of different countries.

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# ANALYSIS OF DETERMINANT FACTORS IN THE CHOICE OF FREIGHT SERVICES PROVIDER

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**Abstract**

Choice making in freight demand is critical to any firm as transportation cost can reach as much as 75% of the total cost of finished and shipped goods. The knowledge of the factors that influences the choice decision making for shippers will be of particular interest to carriers and the shippers alike. The study therefore set out to determine the factors that influence the choice of carriers for companies; evaluate the factors and degree of influence or level of significance of these factors or attributes. Five (5) firms' decision-making processes were studied for a combined total of 508 road trucking choice decision for what type or who does the shipment of their products and raw materials to and away from their respective manufacturing plants between January and June 2014. The firms were given a set of attributes or factors so that they are ranked using Likert scale of 1 to 5 to identify their level of significance. Multiple regression technique was used to establish the relationship between the factors and the choice of carriers. Regression analyses using analysis of variance, variance inflation factors and t-Test was done at 95% confidence level. The results showed that freight charges, quality of service, trust, price elasticity of freight demand and customer relations were the most significant factors/attributes that influenced the choice of a carrier in the five hundred and eighty shipments recorded for all firms in the study.

**Keywords:** Hire-And-Carry; Owner-Occupier; Freight Cost; Customer Relationship; Quality Of Service

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## Introduction

Freight demands have a direct correlation with the type and amount of economic activities with the industries. The amount of goods produced and consumed in an area and the relationship between producers, consumers and intermediate suppliers has great impact on the magnitude and spatial distribution of freight. Freight demand is a direct function of the types of industries in a region or economy. The types of industries in an economy can be broadly classified into goods related and services, each having unique impact on freight flows. Manufacturing industries for example varies in types and quantities of goods produced and consumed as well as the type of transportation service used to meet the demand for production inputs and supply of outputs. An estimation and analysis of freight transport demand if properly done would give an insight into the factors that must be considered to ensure a smooth flow of inputs and outputs to and fro production centres to the final points of consumption at reasonable and sustainable costs.

## 1. Research objectives

The objectives of the study are therefore:

- To determine the factors that influence the choice of carriers for companies and,
- To evaluate the factors degree of influence or level of significance of these factors or attributes.

## 2. Theoretical foundation

According to Kanafani (1983), there are three basic approaches to the analysis of commodity transportation demand, namely the input-output approach, spatial interaction modeling and the microeconomic perspective. In the first method, sectorial relationship of the economy was analyzed where transportation was identified as one of the sectors, making it possible to investigate transportation requirements of other sectors, translating same into flows of goods and this approach was used by Liew *et al* (1985).

The second approach of spatial interaction modelling is aggregate in nature. Here, surpluses and deficits of commodities are located at various points of space and a process is then postulated whereby commodities flows occur from points of excess supply

to points of excess demand. The transportation system is explicitly represented as network, with its nodes and arcs, and considerable effort is placed on assigning traffic flows to that network. Studies like the seminal Harvard-Brookings model of Kresge *et al* (1971) and Harker's (1987) generalized spatial price equilibrium model fits this approach.

Thirdly, the microeconomic approach, which is often called econometric where the basic decision unit of analysis is the firm and the firm, is considered the potential user of transportation. Winston (1983) classified the microeconomic models into aggregate and disaggregate models. Aggregated studies used data that consists of total flows by mode at the regional or national level whereas disaggregate studies uses data that are made of information relating to individual shipments. Generally, aggregate models tends to be cost minimizing in nature, exploring firms and their need to save cost of transportation in their choice of modes of shipments. Examples of such studies are those of Oum (1979a, 1979b), Friedlaender *et al* (1980). From a theoretical point of view, disaggregate models seems preferable to aggregate ones, however, aggregate models can turn more useful than their disaggregate counterparts. An aggregate methodology can become the best approach, practically, if cost limitations preclude an adequate sampling of the population of a large-scale policy analysis.

This paper however explores the disaggregate models as they hold a number of conceptual strengths. Firstly, observations are much larger with more precise estimate of parameters. Secondly, the model allows much richer empirical specifications and better capturing of the variation in character of shippers (firms). Lastly the model does not require the unrealistic assumption of identical decision-makers as aggregate models do. We can classify disaggregate models as behavioral and inventory. This study uses the behavioral model, where the decision-maker is the physical distribution manager of the receiving or shipper firm. Shipment size is therefore the choice of the firm and not the agent or the carrier, consequently, mode choice is modelled. The core of the literature pertaining to behavioral models is based on the notion that the decision-maker maximizes utility with respect to choice of mode.

The approach presented by McFadden (1973) is that of utility maximization, where the utility function includes a random component. In this random utility approach the decision-maker makes a discrete choice by choosing among alternative modes i.e. *i* to *j*). The choice of the mode from the *j* available routes is assumed to maximize the decision-maker's utility. The utility function for the individual decision-maker is specified as follows.

$$U_i = V(B, X_i, S) + E(X_i, S) \quad (1)$$

With I = $i \rightarrow j$ and

Where $U_i \rightarrow$ the utility associated with utility function is $V(B, X_i, S)$

and the vector function $V$ consists of a vector of unknown parameters B set of modal attributes

$X_i \rightarrow$ socio-economic characteristics of the decision-maker,

$S \rightarrow$ Systematic utility, that is, the same functional form applying to all shippers. The random portion of the utility function is E $(X_i, S)$ this component of the utility reflects the unobserved tastes, preference and characteristics of the individual decision – maker. Consequently, this term varies across decision makers.

According to the utility maximization assumption, the individual shipper chooses a particular mode $i$ only if the utility realized from choosing mode $i$ is greater than the utility realized from any other mode. Thus, the individual will choose mode $i$ if $(U_i > U_{s,} \, for \, all \, i, j)$. Thus, the mode choice probabilities depend, in part, on the random utility difference $(E_i - E_j)$ and their distribution (Small and Winston, 1998). Using this framework, McFadden extends the mode choice model to situations when the decision maker is confronted with more than two alternatives. He accomplishes this by assuming that his distribution of the random component follows the extreme valve distribution.

Ogwude (1986) noted the most determinant modal choice in the Nigerian industry as the freight rates charged and the economic costs of transport services to the industries. He noted the neglect of the rail transport as partly a reason among others for the relatively higher cost of its services compared to road which is also in line with Olanrewaji (1983).

Armstrong (2001) found that trucking prices are largely inelastic, and recommended mode shifting, end-to-end matching, improved carrier negotiation and shipment visibility as other ways to reduce expenses for third party logistics (3PL). Samimi *et al* (2011) in their study on behavioral analysis of freight mode choice decisions examined the way truck and rail competes for commodity in the US. The study made use of two binary mode choice models including some shipment specific variables (e.g. distance, weight and value) mode specific variables (e.g. haul time and cost) as determinants. The study found shipping cost as a central factor for rail shipments while road shipment are found to be more sensitive to haul time. Sensitivity of mode choice decision was further analyzed under different fuel price fluctuations, and concluded that even a 50% increase in fuel cost does not cause a significant modal shift between truck and rail.

Beuthe *et al* (2000) present direct and cross-elasticity estimates for demands on rail, road and inland waterway for ten different categories. Origin-destination models and cost information were used to compute modal elasticity of Belgian freight instead of statistical analysis. The results however shows that truck tonnage demand is inelastic but elastic when

calculated by tons-km, showing as well a dominant position for trucking over shorter distances. Rail demand is elastic but less so than for inland waterways. Rail demand elasticity are larger for rail tonnage than for tons-km. Cross elasticity show that rail demand appears more sensitive to cost variation than the other modes. Roberts (2012) on his study on the key factors and trends in transportation mode and carrier selection focused on modal and carrier choice decision process to determine what factors play the largest role in products deliveries. The study identified cost, service, product characteristics, relationships and capacity as factors for consideration in modal choice decision process. However, an important finding of the study is that the factors play a part in both modal and carrier selection decision making process simultaneously, and not as part of a stepped process as was previously assumed.

However, this study did consider choices made within the same mode (road trucking) as there is very little or no competition between the road and rail modes of transportation in Nigeria. The study considered owner-occupier and hire-and-carry services as alternative means of shipping the goods/products of the firms considered in this study all of which are in the Irete Industrial Layout in Owerri, Imo State Nigeria.

Transportation costs usually form the bulk of the cost of shipped goods/commodity (Stephens, 2003). Making sound decision on choice of means of shipment is therefore a very important decision for shippers. A good knowledge of the factors that influence the choice of carriers an organization seeking to reduce their transportation cost and ultimately the cost of their production in the market particularly those firms that have strong competitors is therefore very vital. It must be noted that there are many decision makers within the freight logistics and industry supply chain network. Shippers, consignees, carriers and other logistics services providers play a critical role in contributing to decision about what, how, when and where transportation services are used to move goods across the supply chain.

## 3. Methods

The scope of the study was Irete Industrial Layout where five (5) firms' decision-making processes were studied for a combined total of 508 roads trucking choice decision for what type or who does the shipment of their products and raw materials to and fro their respective manufacturing plants between January and June 2014. The firms are: Nigeria Bottling Company Limited (NBC), Camela Vegetable Oil Limited (CVO), GM Cord Aluminum (GMC), KSL Investment Limited (KSL) and Palm Essence Industries Limited (PEI). NBC are the local franchise making the following Coca-Cola products: Coke; Fanta, Sprite; Five Alive; Schweppes; Burn Energy drink; Cappy and Eva Water. CVO produces vegetable and refined oil for both domestic and industrial consumption. GMC makes long span aluminum roofing sheets and other aluminum products. KSL specializes in the manufacturing of Henzo Water products of different size and PEI also produces vegetable oil product.

The respective Supply Chain Managers or Distribution Managers of these firms were given a spreadsheet to capture the factors that were significant in the selection of carrier for each shipment their respective firms did within the period of the study. The factors identified by the research and deemed important in choice decision-making were: freight cost; customer relationship of the service provider; quality of service offered; value of cargo to be shipped; accessibility of service provider; price elasticity of demand for freight; trust or competency index of the service provider; distance of shipment; safety index of the firm. These factors or attributes can be categorized into three broad categories: market-forced attributes, service provider (carrier) attributes and the cargo attributes. Market-forced attributes are the attributes or factors that cannot be influenced by any single firm in the market/industry as all players participating in the market are deemed to be as equals with same knowledge and understanding of prevailing market conditions (perfect market is assumed). The attributes include price or freight cost and price elasticity of demand for and accessibility of service provider. Accessibility of service provider dealt with the availability of choice of carrier for any given shipment, regardless of the distance and nature of the cargo. Service provider attributes are those that can be influenced by the carrier and they include customer relationship index of carrier with the shipper or consignor and the consignee; quality of service offered; trust and safety index of the firm. For the cargo attributes, these are attributes or factors that the cargo imposes on the shipment and the carrier due to its natural circumstances. They include value of cargo and its nature. However, a fourth category of attribute is noted to be shipment specifics and that is captured by the distance of shipment. The distance of shipment affects the travel length and time which could be further affected by the nature of the road and traffic situations. These attributes were ranked on the Likert scale of 1 to 5 with one signifying the least level of importance of the given attribute in deciding which carrier will be used. The carriers are broken down into two categories: owner-occupier and hire-and-carry. Owner-occupier mean the firm owns the vehicle used in the shipment and so provides the services in-house while hire-and-carry mean the vehicle of carriage is owned by another firm that is contracted to do the shipment, that is a third-party logistics service provider.

The sample size was the actual/real life value as it was the exact number of shipments made by all the firms within the January – June 2014 study period. In

all, a total of 508 shipments were made. The data collected was analyzed using multiple regression analysis, analysis of variance and variance inflation factor to carry out this analysis. The aim of the test is to know how the companies make their choice of freight demand and what influences their choice of freight demand.

Consider the following linear model with $k$ independent variables:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k + \varepsilon \quad (2)$$

The standard error of the estimate of $\beta_j$ is the square root of the $j$+1, $j$+1 element of $s^2(X'X)^{-1}$, where $s$ is the root mean squared error (RMSE) (note that $RMSE^2$ is an unbiased estimator of the true variance of the error term, $\sigma^2$); $X$ is the regression design matrix — a matrix such that $X_{i, j+1}$ is the value of the $j^{th}$ independent variable for the $i^{th}$ case or observation, and such that $X_{i, 1}$ equals 1 for all $i$. It turns out that the square of this standard error, the estimated variance of the estimate of $\beta_j$, can be equivalently expressed as

$$\hat{\text{var}}(\hat{\beta}_j) = \frac{s^2}{(n-1)\widehat{\text{var}}(X_j)} \cdot \frac{1}{1-R_j^2}, \quad (3)$$

where $R_j^2$ is the multiple $R^2$ for the regression of $X_j$ on the other covariates (a regression that does not involve the response variable $Y$). This identity separates the influences of several distinct factors on the variance of the coefficient estimate:

- $s^2$: greater scatter in the data around the regression surface leads to proportionately more variance in the coefficient estimates
- $n$: greater sample size results in proportionately less variance in the coefficient estimates
- $\widehat{var}X_j$: greater variability in a particular covariate leads to proportionately less variance in the corresponding coefficient estimate

The remaining term, $1 / (1 - R_j^2)$ is the variance inflation factor (VIF). It reflects all other factors that influence the uncertainty in the coefficient estimates. The VIF equals 1 when the vector $X_j$ is orthogonal to each column of the design matrix for the regression of $X_j$ on the other covariates. By contrast, the VIF is greater than 1 when the vector $X_j$ is not orthogonal to all columns of the design matrix for the regression of $X_j$ on the other covariates. Finally, note that the VIF is invariant to the scaling of the variables (that is, we could scale each variable $X_j$ by a constant $c_j$ without changing the VIF). The equation *ii* above shows the total freight demand and the respective factor/attributes that were considered in the decision making for the freight demand. For this study equation *ii* can be written as

$$Y = \beta 0 + \beta 1\ P1 + \beta 2\ C + \beta 3\ R + \beta 4\ Q + \beta 5\ V + \quad (4)$$

$$\beta 6\ A + \beta 7\ E + \beta 8\ T + \beta 9\ D + \beta 10 S + \varepsilon.$$

Where $P$ *is* Cost, $C$ is customer relationship index, $V$ is value of cargo, $A$ is accessibility, $E$ is price elasticity of demand for freight, $T$ is trust, $D$ is distance of shipment and $S$ is the safety index of the firm.

The MegaStat analytical tools was used for the purpose of this research. It is easy and user friendly and gives coloration to test results. The deeper the color intensity the more significance the attribute is.

## 4. Results And Discussion

The result of the analysis done for PIE showed that cost or freight charges, price elasticity of demand for freight, customer relation, accessibility and quality of service were the most significant factors/attributes that influenced the choice of a carrier in the hundred shipments recorded for the firm. Freight charges were the most significant factor and it was followed by price elasticity of demand for freight, customer relation, accessibility and quality of service. The *VIF* showed that reliability, accessibility, price elasticity of demand for freight, trust and safety index of the carrier were the factors that influence the uncertainty in the coefficient estimates (see table 1).

The demand decision equation for PIE can now be given as:

$$\begin{gathered} Y_{PIE} = -1.8618 - 0.8042P_{PIE} - 0.5461C_{PIE} \\ +0.1242R_{PIE} + 0.4967Q_{PIE} + 0.0493V_{PIE} + \\ 0.2094A_{PIE} + 0.3223E_{PIE} + 0.6792T_{PIE} + \\ 0.3437D_{PIE} + 0.0556S_{PIE} + \varepsilon. \end{gathered} \quad (5)$$

The result of the analysis done for KSL (table 2) showed that cost or freight charges, customer relation, accessibility, price elasticity of freight demands, and safety index of the carrier were the most significant factors/attributes that influenced the choice of a carrier in the hundred shipments recorded for the firm.

Freight charges were the most significant factor and it was followed by customer relation, price elasticity of freight demand, safety index of the carrier and accessibility. The *VIF* showed that value of cargo, accessibility, distance of shipment and safety index of the carrier were the factors that influence the uncertainty in the coefficient estimates (see table 2). However, value of cargo and accessibility had the strongest *VIF* values.

The demand decision equation for KSL can now be given as:

$$\begin{gathered} Y_{ksl} = 8.3765 - 1.2375P_{ksl} - 0.2320C_{ksl} \\ +0.0177R_{ksl} - 0.00114Q_{ksl} + 0.1059V_{ksl} - \\ 0.1373A_{ksl} - 0.0730E_{ksl} - 0.0244T_{ksl} - \\ 0.0678D_{ksl} + 0.1983S_{ksl} + \varepsilon. \end{gathered} \quad (6)$$

**Table 1.** Regression Analysis for Palm Essence Industries (PIE)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.869 | | | | | | |
| | Adjusted $R^2$ | 0.855 | n | 100 | | | | |
| | R | 0.932 | k | 10 | | | | |
| | Std. Error | 0.747 | Dep. Var. | Y | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 330.7536 | 10 | 33.0754 | 59.21 | 5.48E-35 | | | |
| Residual | 49.7134 | 89 | 0.5586 | | | | | |
| Total | 380.4669 | 99 | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=89)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | -1.8618 | 2.7278 | -0.683 | .4967 | -7.2819 | 3.5584 | 0.000 | |
| Cost | -0.8042 | 0.0853 | -9.433 | 4.77E-15 | -0.9736 | -0.6348 | -0.631 | 3.053 |
| Customer Relation | -0.5461 | 0.2333 | -2.341 | .0215 | -1.0096 | -0.0826 | -0.147 | 2.690 |
| Reliability | 0.1242 | 0.4032 | 0.308 | .7588 | -0.6770 | 0.9254 | 0.026 | 4.823 |
| Quality of Service | 0.4967 | 0.2155 | 2.305 | .0235 | 0.0685 | 0.9249 | 0.130 | 2.156 |
| Value of Cargo | 0.0493 | 0.0992 | 0.497 | .6204 | -0.1477 | 0.2463 | 0.034 | 3.230 |
| Accessibility | 0.2094 | 0.0905 | 2.314 | .0230 | 0.0296 | 0.3893 | 0.172 | 3.774 |
| Price Elasticity of demand for freight | 0.3223 | 0.1007 | 3.201 | .0019 | 0.1222 | 0.5224 | 0.240 | 3.839 |
| Trust | 0.6792 | 0.5323 | 1.276 | .2053 | -0.3785 | 1.7369 | 0.114 | 5.402 |
| Distance of shipment | 0.3437 | 0.2563 | 1.341 | .1834 | -0.1656 | 0.8531 | 0.091 | 3.105 |
| Safety Index of the firm | 0.0556 | 0.1998 | 0.278 | .7815 | -0.3414 | 0.4526 | 0.025 | 5.429 |
| | | | | | | | *Mean VIF* | 3.750 |

*Source:* Field work 2014

**Table 2.** Regression Analysis for KSL Investment Limited (KSL)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.970 | | | | | | |
| | Adjusted $R^2$ | 0.967 | n | 100 | | | | |
| | R | 0.985 | k | 10 | | | | |
| | Std. Error | 0.299 | Dep. Var. | Y | | | | |
| | | | | | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 257.6690 | 10 | 25.7669 | 287.78 | 3.07E-63 | | | |
| Residual | 7.9686 | 89 | 0.0895 | | | | | |
| Total | 265.6377 | 99 | | | | | | |
| | | | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=89)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 8.3765 | 1.2311 | 6.804 | 1.14E-09 | 5.9304 | 10.8226 | 0.000 | |
| Cost | -1.2375 | 0.0376 | -32.951 | 1.20E-51 | -1.3121 | -1.1629 | -1.023 | 2.859 |
| Customer Relation | -0.2320 | 0.0757 | -3.066 | .0029 | -0.3824 | -0.0816 | -0.080 | 2.004 |
| Reliability | 0.0177 | 0.1003 | 0.176 | .8604 | -0.1816 | 0.2170 | 0.005 | 2.016 |
| Quality of Service | -0.0114 | 0.1149 | -0.100 | .9209 | -0.2397 | 0.2168 | -0.002 | 1.856 |
| Value of Cargo | 0.1059 | 0.0887 | 1.194 | .2358 | -0.0704 | 0.2822 | 0.088 | 16.271 |
| Accessibility | -0.1373 | 0.0671 | -2.046 | .0437 | -0.2707 | -0.0040 | -0.143 | 14.550 |
| Price Elasticity of demand for freight | -0.0730 | 0.0311 | -2.344 | .0213 | -0.1348 | -0.0111 | -0.074 | 2.936 |
| Trust | 0.0244 | 0.1278 | 0.191 | .8490 | -0.2296 | 0.2784 | 0.006 | 3.297 |
| Distance of shipment | -0.0678 | 0.1165 | -0.582 | .5618 | -0.2992 | 0.1636 | -0.020 | 3.490 |
| Safety Index of the firm | 0.1983 | 0.0854 | 2.321 | .0226 | 0.0285 | 0.3680 | 0.104 | 5.948 |
| | | | | | | | *Mean VIF* | 5.523 |

*Source:* Field work 2014

The result of the analysis done for GMC (table 3) showed that cost or freight charges, customer relation, reliability of carrier's service, quality of service, price elasticity of freight demands, and trust index of the carrier were the most significant factors/attributes that influenced the choice of a carrier in the hundred shipments recorded for the firm. Freight charges were the most significant factor and it was followed by customer relation, trust index of carrier, price elasticity of freight demand, quality of service, and reliability. The *VIF* showed that all the attributes were the factors that influence the uncertainty in the coefficient estimates (see table 3). However, accessibility, value of cargo, and safety index of carrier had the strongest *VIF* values.

The demand decision equation for GMC can now be given as:

$$Y_{GMC} = 10.0331 - 1.2149P_{GMC} - 0.4751C_{GMC} - 0.3401R_{GMC} - 0.6040Q_{GMC} + 0.0906V_{GMC} - 0.0730A_{GMC} - 0.1172E_{GMC} - 0.5733T_{GMC} - 0.0965D_{GMC} + 0.1204S_{GMC} + \varepsilon. \quad (7)$$

The result of the analysis done for NBC (table 4) showed that cost or freight charges, customer relation, value of cargo, price elasticity of freight demands, trust index of the carrier and safety index of the carrier were the most significant factors/attributes that influenced the choice of a carrier in the hundred and eight shipments recorded for the firm. Freight charges were the most significant factor and it was followed by trust, value of cargo, price elasticity of freight demand, customer relation, and safety index of the firm.

The *VIF* showed that freight charges, customer relation, reliability, price elasticity of demand for freight, distance of shipment and safety index of the firm were the attributes that influenced the uncertainty in the coefficient estimates (see table 4).

**Table 3.** Regression Analysis for GM Cord Aluminum (GMC)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.981 | | | | | | |
| | Adjusted $R^2$ | 0.979 | n | 100 | | | | |
| | R | 0.990 | k | 10 | | | | |
| | Std. Error | 0.242 | Dep. Var. | Y | | | | |
| | | | | | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 265.3783 | 10 | 26.5378 | 451.76 | 1.00E-71 | | | |
| Residual | 5.2281 | 89 | 0.0587 | | | | | |
| Total | 270.6064 | 99 | | | | | | |
| | | | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=89)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 10.0331 | 1.2286 | 8.166 | 1.98E-12 | 7.5919 | 12.4743 | 0.000 | |
| Cost | -1.2149 | 0.0453 | -26.843 | 1.91E-44 | -1.3048 | -1.1249 | -0.983 | 6.175 |
| Customer Relation | -0.4751 | 0.1090 | -4.359 | 3.49E-05 | -0.6916 | -0.2585 | -0.162 | 6.338 |
| Reliability | -0.3401 | 0.1298 | -2.621 | .0103 | -0.5979 | -0.0822 | -0.089 | 5.308 |
| Quality of Service | -0.6040 | 0.2158 | -2.799 | .0063 | -1.0327 | -0.1752 | -0.108 | 6.827 |
| Value of Cargo | -0.0906 | 0.0709 | -1.278 | .2045 | -0.2315 | 0.0503 | -0.092 | 24.036 |
| Accessibility | 0.0730 | 0.0728 | 1.003 | .3187 | -0.0717 | 0.2177 | 0.074 | 25.192 |
| Price Elasticity of demand for freight | -0.1172 | 0.0407 | -2.877 | .0050 | -0.1981 | -0.0362 | -0.120 | 7.957 |
| Trust | 0.5733 | 0.1652 | 3.470 | .0008 | 0.2450 | 0.9016 | 0.127 | 6.154 |
| Distance of shipment | 0.0965 | 0.1158 | 0.833 | .4071 | -0.1336 | 0.3266 | 0.031 | 6.323 |
| Safety Index of the firm | 0.1204 | 0.0881 | 1.366 | .1752 | -0.0547 | 0.2955 | 0.076 | 14.356 |
| | | | | | | | *Mean VIF* | 10.867 |

*Source:* Field work 2014

However, reliability, customer relation, distance of shipment, cost, safety index of carrier and price elasticity of freight demand had the strongest *VIF* values.

The demand decision equation for NBC can now be given as:

$$Y_{NBC} = 2.6729 - 1.2399P_{NBC} - 0.8267C_{NBC} - 0.4250R_{NBC} - 0.0836Q_{NBC} + 0.1412V_{NBC} - 0.0156A_{NBC} - 0.01615E_{NBC} - 0.5987T_{NBC} - 0.03759D_{NBC} + 0.2373S_{NBC} + \varepsilon \quad (8)$$

**Table 4.** Regression Analysis for Nigeria Bottling Company (NBC)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.954 | | | | | | |
| | Adjusted $R^2$ | 0.949 | n | 108 | | | | |
| | R | 0.977 | k | 10 | | | | |
| | Std. Error | 0.388 | Dep. Var. | Y | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 304.2187 | 10 | 30.4219 | 202.16 | 2.60E-60 | | | |
| Residual | 14.5968 | 97 | 0.1505 | | | | | |
| Total | 318.8155 | 107 | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=97)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 2.6729 | 1.9944 | 1.340 | .1833 | -1.2854 | 6.6312 | 0.000 | |
| Cost | -1.2399 | 0.0563 | -22.017 | 1.64E-39 | -1.3517 | -1.1281 | -1.038 | 4.708 |
| Customer Relation | 0.8267 | 0.3105 | 2.662 | .0091 | 0.2104 | 1.4430 | 0.225 | 15.083 |
| Reliability | -0.4250 | 0.3981 | -1.068 | .2884 | -1.2152 | 0.3651 | -0.112 | 23.472 |
| Quality of Service | -0.0836 | 0.1612 | -0.519 | .6052 | -0.4035 | 0.2363 | -0.017 | 2.275 |
| Value of Cargo | -0.1412 | 0.0407 | -3.473 | .0008 | -0.2219 | -0.0605 | -0.121 | 2.564 |
| Accessibility | -0.0156 | 0.0406 | -0.383 | .7026 | -0.0962 | 0.0651 | -0.011 | 1.676 |
| Price Elasticity of demand for freight | -0.1615 | 0.0551 | -2.930 | .0042 | -0.2709 | -0.0521 | -0.132 | 4.288 |
| Trust | 0.5987 | 0.1503 | 3.984 | .0001 | 0.3004 | 0.8971 | 0.129 | 2.229 |
| Distance of shipment | 0.3759 | 0.2120 | 1.773 | .0793 | -0.0449 | 0.7968 | 0.116 | 9.027 |
| Safety Index of the firm | 0.2373 | 0.0893 | 2.657 | .0092 | 0.0600 | 0.4145 | 0.124 | 4.617 |
| | | | | | | | *Mean VIF* | 6.994 |

*Source:* Field work 2014

**Table 5.** Regression Analysis Camela Vegetable Oil (CVO)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.955 | | | | | | |
| | Adjusted $R^2$ | 0.950 | n | 100 | | | | |
| | R | 0.977 | k | 10 | | | | |
| | Std. Error | 0.366 | Dep. Var. | Choice | | | | |
| | | | | | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 251.7774 | 10 | 25.1777 | 187.54 | 2.68E-55 | | | |
| Residual | 11.9485 | 89 | 0.1343 | | | | | |
| Total | 263.7259 | 99 | | | | | | |
| | | | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=89)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 2.8570 | 1.0209 | 2.799 | .0063 | 0.8285 | 4.8855 | 0.000 | |
| Cost | -1.0628 | 0.0534 | -19.916 | 1.50E-34 | -1.1689 | -0.9568 | -0.902 | 4.027 |
| Customer Relation | 0.4232 | 0.1390 | 3.044 | .0031 | 0.1470 | 0.6994 | 0.131 | 3.623 |
| Reliability | 0.0152 | 0.1662 | 0.092 | .9273 | -0.3151 | 0.3455 | 0.004 | 3.516 |
| Quality of Service | -0.1087 | 0.1174 | -0.925 | .3572 | -0.3420 | 0.1247 | -0.040 | 3.759 |
| Value of Cargo | -0.0117 | 0.0547 | -0.214 | .8309 | -0.1205 | 0.0970 | -0.012 | 5.731 |
| Accessibility | -0.0144 | 0.0505 | -0.285 | .7760 | -0.1148 | 0.0860 | -0.012 | 3.468 |
| Price Elasticity of demand for freight | -0.0366 | 0.0397 | -0.921 | .3596 | -0.1155 | 0.0423 | -0.036 | 2.985 |
| Trust | 0.9523 | 0.1286 | 7.406 | 7.07E-11 | 0.6968 | 1.2078 | 0.342 | 4.200 |
| Distance of shipment | -0.1027 | 0.1069 | -0.961 | .3391 | -0.3150 | 0.1096 | -0.033 | 2.258 |
| Safety Index of the firm | -0.3509 | 0.0962 | -3.646 | .0004 | -0.5421 | -0.1597 | -0.211 | 6.601 |
| | | | | | | | *Mean VIF* | 4.017 |

*Source:* Field work 2014

The result of the analysis done for CVO (table 5) showed that cost or freight charges, trust, safety index of the carrier, and customer relation, were the most significant factors/attributes that influenced the choice of a carrier in the hundred and eight shipments recorded for the firm. Freight charges were the most

significant factor and it was followed by trust, safety index of the firm, and customer relation. The *VIF* showed that safety index of the firm, value of cargo, trust, freight charges, quality of service, customer relation, reliability, and accessibility were the factors that influence the uncertainty in the coefficient estimates (see table 5). However, safety index of the firm, value of cargo and freight charges had the strongest *VIF* values.

The demand decision equation for CVO can now be given as:

$$Y_{CVO} = 2.8570 - 1.0628P_{CVO} + 0.4232C_{CVO} + 0.0152R_{CVO} - 0.1087Q_{CVO} - 0.0117V_{CVO} - 0.0144A_{CVO} - 0.0366E_{CVO} + 0.9523T_{CVO} - 0.1027D_{CVO} - 0.3509S_{CVO} + \varepsilon. \quad (9)$$

Camela Vegetable Oil Limited (CVO), GM Cord Aluminum (GMC), KSL Investment Limited (KSL) and Palm Essence Industries Limited (PEI).

**Table 6.** Regression Analysis for Owner Occupier (OC)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.925 | | | | | | |
| | Adjusted $R^2$ | 0.921 | n | 221 | | | | |
| | R | 0.962 | k | 10 | | | | |
| | Std. Error | 0.471 | Dep. Var. | Y | | | | |
| | | | | | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 573.7375 | 10 | 57.3738 | 258.63 | 3.58E-112 | | | |
| Residual | 46.5864 | 210 | 0.2218 | | | | | |
| Total | 620.3239 | 220 | | | | | | |
| | | | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=210)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 4.2153 | 0.9849 | 4.280 | 2.84E-05 | 2.2738 | 6.1568 | 0.000 | |
| Cost | -1.1513 | 0.0367 | -31.361 | 3.54E-81 | -1.2236 | -1.0789 | -0.962 | 2.632 |
| Customer Relation | 0.0044 | 0.0959 | 0.046 | .9635 | -0.1846 | 0.1934 | 0.001 | 2.616 |
| Reliability | 0.0420 | 0.1225 | 0.343 | .7322 | -0.1996 | 0.2836 | 0.011 | 2.812 |
| Quality of Service | 0.3895 | 0.1106 | 3.522 | .0005 | 0.1715 | 0.6075 | 0.084 | 1.597 |
| Value of Cargo | -0.0385 | 0.0332 | -1.159 | .2476 | -0.1039 | 0.0269 | -0.034 | 2.424 |
| Accessibility | 0.0028 | 0.0297 | 0.094 | .9251 | -0.0558 | 0.0614 | 0.002 | 1.956 |
| Price Elasticity of demand for freight | -0.0733 | 0.0299 | -2.453 | .0150 | -0.1322 | -0.0144 | -0.067 | 2.117 |
| Trust | 0.2471 | 0.1202 | 2.056 | .0410 | 0.0102 | 0.4840 | 0.059 | 2.340 |
| Distance of shipment | 0.0066 | 0.0996 | 0.067 | .9468 | -0.1896 | 0.2029 | 0.002 | 2.640 |
| Safety Index of the firm | 0.0932 | 0.0728 | 1.280 | .2020 | -0.0503 | 0.2367 | 0.050 | 4.266 |
| | | | | | | | *Mean VIF* | 2.540 |

*Source:* Field work 2014

The result of the analysis done for OC (table 6) showed that cost or freight charges, quality of service, price elasticity for freight demand, and trust were the most significant factors/attributes that influenced the choice of a carrier in the two hundred and twenty-one shipments recorded for the for OC. Freight charges was the most significant factor and it was followed by quality of service offered by the carrier, price elasticity for freight demand, and trust. The *VIF* showed that safety index of the firm was the only attribute or factor that influenced the uncertainty in the coefficient estimates (see table 6).

The demand decision equation for OC can now be given as:

$$Y_{OC} = 4.2153 - 1.1513P_{OC} + 0.0044C_{OC} + 0.0420R_{OC} + 0.3895Q_{OC} - 0.0385V_{OC} - 0.00028A_{OC} - 0.0733E_{OC} + 0.2471T_{OC} + 0.0066D_{OC} + 0.0932S_{OC} + \varepsilon. \quad (10)$$

**Table 7.** Regression Analysis for Hire-and-Carry (HC)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.916 | | | | | | |
| | Adjusted $R^2$ | 0.913 | n | 287 | | | | |
| | R | 0.957 | k | 10 | | | | |
| | Std. Error | 0.523 | Dep. Var. | **Choice** | | | | |
| | | | | | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 829.2337 | 10 | 82.9234 | 302.64 | 2.03E-142 | | | |
| Residual | 75.6239 | 276 | 0.2740 | | | | | |
| Total | 904.8575 | 286 | | | | | | |
| | | | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=276)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 4.5441 | 0.8021 | 5.665 | 3.69E-08 | 2.9650 | 6.1232 | 0.000 | |
| Cost | -1.0464 | 0.0369 | -28.386 | 7.57E-84 | -1.1189 | -0.9738 | -0.840 | 2.892 |
| Customer Relation | -0.2545 | 0.0969 | -2.627 | .0091 | -0.4453 | -0.0638 | -0.075 | 2.683 |
| Reliability | -0.1824 | 0.1183 | -1.541 | .1244 | -0.4154 | 0.0506 | -0.044 | 2.737 |
| Quality of Service | 0.0978 | 0.0933 | 1.048 | .2955 | -0.0859 | 0.2814 | 0.028 | 2.284 |
| Value of Cargo | -0.0251 | 0.0344 | -0.731 | .4653 | -0.0928 | 0.0426 | -0.022 | 3.032 |
| Accessibility | 0.0811 | 0.0334 | 2.427 | .0159 | 0.0153 | 0.1469 | 0.071 | 2.809 |
| Price Elasticity of demand for freight | -0.0550 | 0.0313 | -1.757 | .0800 | -0.1167 | 0.0066 | -0.049 | 2.531 |
| Trust | 0.5433 | 0.1113 | 4.879 | 1.80E-06 | 0.3241 | 0.7625 | 0.138 | 2.641 |
| Distance of shipment | 0.2039 | 0.0929 | 2.195 | .0290 | 0.0210 | 0.3868 | 0.060 | 2.430 |
| Safety Index of the firm | -0.1181 | 0.0585 | -2.018 | .0445 | -0.2333 | -0.0029 | -0.065 | 3.448 |
| | | | | | | | *Mean VIF* | 2.749 |

*Source:* Field work 2014

The result of the analysis done for HC (table 7) showed that cost or freight charges, trust, customer relations, accessibility, distance of shipment, safety index of the carrier were the most significant factors/attributes that influenced the choice of a carrier in the two hundred and eighty-seven shipments recorded for the for HC. Freight charges were trust, customer relations, accessibility, distance of shipment, safety index. The *VIF* showed that safety index of the firm was the only attribute or factor that influenced the uncertainty in the coefficient estimates (see table 7).

The demand decision equation for HC can now be given as:

$$Y_{HC} = 4.5441 - 1.0464P_{HC} - 0.2545C_{HC} - 0.1824R_{HC} + 0.0978Q_{HC} - 0.0251V_{HC} + 0.0811A_{HC} - 0.0550E_{HC} + 0.5433T_{HC} + 0.2039D_{HC} - 0.1181S_{HC} + \varepsilon. \quad (11)$$

The result of the analysis done for all firms in the study (table 8) showed that cost or freight charges, quality of service, trust, price elasticity of freight demand and customer relations were the most significant factors/attributes that influenced the choice of a carrier in the five hundred and eighty shipments recorded for all firms in the study. Freight charges were followed by quality of service, trust, price elasticity of freight demand and customer relations. The *VIF* showed that safety index of the firm was the only attribute or factor that influenced the uncertainty in the coefficient estimates (see table 8).

The demand decision equation for all firms in the study can now be given as:

$$Y_{ALL} = 4.5441 - 1.0464P_{ALL} - 0.2545C_{ALL} - 0.1824R_{ALL} + 0.0978Q_{ALL} - 0.0251V_{ALL} + 0.0811A_{ALL} - 0.0550E_{ALL} + 0.5433T_{ALL} + 0.2039D_{ALL} - 0.1181S_{ALL} + \varepsilon. \quad (12)$$

**Table 8.** Regression Analysis for all firms

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | 0.905 | | | | | | |
| | Adjusted $R^2$ | 0.904 | n | 508 | | | | |
| | R | 0.952 | k | 10 | | | | |
| | Std. Error | 0.539 | Dep. Var. | **Choice** | | | | |
| ANOVA table | | | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* | | | |
| Regression | 1,382.3853 | 10 | 138.2385 | 475.90 | 3.22E-247 | | | |
| Residual | 144.3664 | 497 | 0.2905 | | | | | |
| Total | 1,526.7517 | 507 | | | | | | |
| Regression output | | | | | *confidence interval* | | | |
| *Variables* | *coefficients* | *std. error* | *t (df=497)* | *p-value* | *95% lower* | *95% upper* | *std. coeff.* | *VIF* |
| Intercept | 4.4558 | 0.6159 | 7.235 | 1.77E-12 | 3.2458 | 5.6659 | 0.000 | |
| Cost | -1.0993 | 0.0278 | -39.595 | 8.1526438447 5406E-156 | -1.1538 | -1.0447 | -0.897 | 2.698 |
| Customer Relation | -0.1511 | 0.0720 | -2.099 | .0364 | -0.2926 | -0.0096 | -0.046 | 2.525 |
| Reliability | 0.0052 | 0.0863 | 0.061 | .9517 | -0.1643 | 0.1748 | 0.001 | 2.442 |
| Quality of Service | 0.2851 | 0.0715 | 3.988 | .0001 | 0.1447 | 0.4256 | 0.074 | 1.786 |
| Value of Cargo | -0.0244 | 0.0253 | -0.964 | .3355 | -0.0741 | 0.0253 | -0.022 | 2.624 |
| Accessibility | 0.0368 | 0.0237 | 1.555 | .1206 | -0.0097 | 0.0834 | 0.033 | 2.297 |
| Price Elasticity of demand for freight | -0.0715 | 0.0229 | -3.119 | .0019 | -0.1166 | -0.0265 | -0.064 | 2.235 |
| Trust | 0.2821 | 0.0818 | 3.447 | .0006 | 0.1213 | 0.4428 | 0.070 | 2.174 |
| Distance of shipment | 0.1358 | 0.0707 | 1.922 | .0552 | -0.0030 | 0.2746 | 0.041 | 2.342 |
| Safety Index of the firm | -0.0603 | 0.0478 | -1.262 | .2076 | -0.1543 | 0.0336 | -0.033 | 3.575 |
| | | | | | | | *Mean VIF* | 2.470 |

*Source:* Field work 2014

## 5. Conclusion

In summary, the study showed that cost or freight charges, quality of service, trust, price elasticity of freight demand and customer relations were the most significant factors/attributes that influenced the choice of a carrier in the five hundred and eighty shipments recorded for all firms in the study. Freight charges was followed by quality of service, trust, price elasticity of freight demand and customer relations and the *VIF* showed that safety index of the firm was the only attribute or factor that influenced the uncertainty in the coefficient estimates.

The demand decision equation for all firms in the study can now be given as:

$$Y_{ALL} = 4.5441 - 1.0464P_{ALL} - 0.2545C_{ALL} - 0.1824R_{ALL} + 0.0978Q_{ALL} - 0.0251V_{ALL} + 0.0811A_{ALL} - 0.0550E_{ALL} + 0.5433T_{ALL} + 0.2039D_{ALL} - 0.1181S_{ALL} + \varepsilon. \quad (13)$$

For hire-and-carry (HC) carriers or "*transporter*" should not charge excessive freight rates, should build customer trust and good customer relations, be sure to have their services available to shippers as at when needed (accessibility), have roadworthy vehicles that can travel to whatever distance, and have safety as their watchword and standard to keep. On the other hand, owner-occupier (OC) was seen to have cost or freight charges, quality of service, price elasticity for freight demand, and trust to be the most significant factors/attributes that influenced the choice. It is noteworthy, that shipper using OC are very sensitive to changes in quantity (number of freight movement made) for the marginal change in freight rate/charges (fare/price). This is true for all firms in the study except for CVO. NBC for example has its own vehicles and also patronizes Leventis Motors, a third-party logistics service provider. Price elasticity of freight demand is one of the strong determinant factors in choice of carrier.

CVO had 80% of its shipments made by HC the remaining by OC. NBC recorded 75% percent usage of OC and the remaining used HC for its shipments. GMC ships its consignments using 92% of HC and OC had 8%. KSL does 100% OC shipments and PIE had 90% for HC and the remaining used OC shipments. From the study it was found out that most of the companies go on HC (57% of the shipments) and OC (43%).

## 6. Recommendation

Base on the result of the study, the following recommendations can be made:

– Road trucking freight rate should be very competitive as it was the most significant factor in the choice decision making for carrier.

– Fluctuations in fares and market responses were also a strong factor in deciding which carrier to be used. Firms (carriers) should try as much as possible to maintain a stable fare regime. This might be difficult because of the volatile nature of prices of petroleum products.

– Carriers should keep great corporate image and relationship with the general public and the customers in particular. This should include maintaining great quality of service and trust.

– Denial of service is a strong turn-away for would-be customers in the future, hence carriers should make available and accessible their services to intended customers when and where needed.

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# A MINDSET OF ENTREPRENEURSHIP FOR SUSTAINABILITY

***Shirley Mo-Ching Yeung****

**Abstract**

This study focuses on exploring the elements needed for entrepreneurship education in the future for generating economic, social and environmental sustainability for the community and for developing future leaders through understanding the existing entrepreneurship related policies, programmes, modules and the perception of teenagers of entrepreneurship skills to realise the importance of a mindset of entrepreneurship and the ways of integrating multidisciplinary knowledge for developing entrepreneurship spirit to meet the challenges of the future. This topic has not been comprehensively explored in the past. After conducting quantitative analysis on 95 undergraduate students of a post-secondary institution in Hong Kong on entrepreneurship skills, the regression results presented in this paper found "entrepreneurship skills include implementation skill" can explain about 33percent of the change in the dependent variable of "sustainable skill sets include building a positive mindset". And, the mean scores of "entrepreneurship skills include creativity and risk-taking are the same as 4.02 out of a 5-point scale while "dislike handling paperwork with details", "dislike facing people I don't know" and "dislike being challenges" received the lowest scores of 2.6, 2.7 and 2.7 respectively. With regard to the qualitative analysis of existing entrepreneurship related programmes, it is found that business, management, finance and contemporary issues are the common elements in existing programmes of which the skills of creativity, risk-taking, socialization, handling details and challenges are lacking. When analysing the meeting notes of UNESCO, APEID in February, 2015 of nine countries (India, Pakistan, Sri Lanka, Indonesia, Malaysia, Philippines, China Hong Kong, Japan, and Republic of Korea), there is a trend on the importance of entrepreneurship and innovation mindset with three common concerns, that is, a lack of competent teachers teaching entrepreneurship programmes, a lack of industry exposure and a lack of government support. This paper highlights the key elements of future entrepreneurship related programmes for sustainability. Both educators and policy makers not only need to respond to the ecosystem of entrepreneurship education, but also need to co-produce relevant and meaningful entrepreneurship related modules and programmes which focus on soft skills development for building a positive mindset for handling challenges of the future.

**Keywords:** Entrepreneurship Education, Sustainability, Creativity, Risk-Taking, Co-Produce

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## 1. Introduction

Entrepreneurship education has been a hot issue in past few years in all parts of the world. United Nations Educational, Scientific, Cultural Organization (UNESCO), (Asia-Pacific Educational Innovations for Development (APEID) has been organizing a number of conferences and meetings to increase the awareness of re-visiting existing programmes and policies in relation to quality entrepreneurship education since 2011. Based on information released from UNESCO, APEID of an Economist Intelligence report (2014) that 81 percent of entrepreneurs interviewed mentioned that they had acquired more entrepreneurial skills through work experience rather than through education. The report also concluded that successful entrepreneurs could make use of education, but traditional teaching methods risk undermining attitudes conducive to entrepreneurship. It is time to re-think and re-visit the elements to be put in place in entrepreneurship related programmes for helping teenagers who intend to start up their business or who believe entrepreneurship skills can be applied into the workplace to avoid the pitfalls.

Besides entrepreneurship education, academics and industry practitioners should understand the growing importance of sustainable development (SD) in higher education to generate economic, social and environmental impacts for community. Educators and industry practitioners who are involved in academic and adult training programme design need to demonstrate the rationale of programme design and make the it meaningful to the target learners and the community. Understanding the global and local environment and documents related to entrepreneurship education and sustainable

development are needed for programme design, implementation, monitoring and review process. Example documents are: 1) UNESCO documents on entrepreneurship education (EE) and sustainable development (SD) in higher education, 2) Government Policy Address of 2015, 3) manpower projection reports of Hong Kong government, and 4) Education Bureau (EDB) requirements on Qualification Framework (QF) levels about the programme learning outcomes, This is to correspond to the recommendations of Economist Intelligence Unit (2014) that policy choices and the cultural environment were needed to help aspiring entrepreneurs understand how they could avoid some of the many pitfalls of starting a business.

Moreover, on-going study on teenagers' knowledge, attitude, skills, value, their perception and their understanding of entrepreneurship and sustainable development are needed so as to increase the competency of learners who intend to run their businesses. In fact, entrepreneurship education not only prepares learners to run businesses, but also helps learners understand that there is a need to apply the spirit of entrepreneurship into the workplace for business success.

## 2. Objectives and Contributions

In recent years, entrepreneurship funding has been provided by the government. Many entrepreneurship and innovation related competitions have been held by different sectors, including the banking and finance industry; and a number of short term programmes with site visits have been organized by universities. There is a growing interest of teenagers and graduates from post-secondary institutions in becoming entrepreneurs; and the 70s / 80s have returned to the workforce as business or social entrepreneurs. However, entrepreneurship programmes in undergraduate level are lacking to help teenagers to develop a mindset of entrepreneurship for the workplace. This has created a dramatic need of educators who not only have industry but also possess solid entrepreneurship experience with a mindset of innovations and risk-taking to bring in positive economic returns, to help the community to expand socially via caring the needy and to implement environmental related measures into the business for sustainability. This triggers the author to re-visit the existing curriculum related to entrepreneurship education to develop the soft skills of entrepreneurship and investigate the true meaning of entrepreneurship education in relation to sustainability. In fact, the skills of 4Cs (critical thinking skill for solving problems, communication skill for understanding and communicating ideas, collaborating skill for working with others, and creating skill for producing high quality work) mentioned by Kivunja (2015) are needed for entrepreneurship education for sustainable development in the future.

The purpose of this paper is to explore relevant government policy, including the policy address 2014, the manpower projection report 2018 of Hong Kong; and study the existing curriculum of three major entrepreneurship-related undergraduate programmes in Hong Kong to identify the major elements to fulfill the gaps between academics and industries in terms of developing talents in entrepreneurship education with relevant knowledge, skills, attitude and value for the future no matter they are future business / social entrepreneurs or they apply entrepreneurship spirit in the workplace for career success. It is expected that multi-disciplinary knowledge and skills through co-production are needed in entrepreneurship related programmes.

## 3. Contextualization of Entrepreneur Education in Hong Kong

In the Policy Address of the youth section, Chief Executive of the Hong Kong Special Administrative Region, on January 14, 2015 mentioned that partnership between business and schools needed to be strengthened to enhance students' understanding of different trades and preparation for their future employment through activities such as workplace orientation and visits, mentorship and career experience programmes. Moreover, a $300 million fund has been set up for Youth Development Fund to support innovative youth development activities which are not covered by existing schemes, including subsidy (in the form of matching fund) will be provided for NGOs to assist young people in starting their own business. Moreover, The Information Portal for Accredited Post-secondary Programmes (IPASS) and youth section under the Hong Kong government website provides information for young people about starting their own business, e.g. Youth Business Hong Kong provides financial access for business start-ups and business mentoring. Business executives and experts are invited to coach young business starters on the knowledge of business and right attitude to set up businesses.

When studying the Policy Address of Hong Kong, 2015, there are a few observations that are of importance when re-visiting the sustainable programme design, activities deployed and assessments used for the competency of learners in relation to the entrepreneurship education in the coming years. From a viewpoint of industry, it is found that the government is going to support creative and cultural industries for reaching a diversified workforce and helping teenagers to realize their talents. These industries include professional services, exhibition business, information technology, design and film production industries. Examples are:

"Sustained economic development will provide our young people with more and better employment opportunities and chances of upward mobility,

increase people's income, and enhance the Government's financial capacity in addressing problems relating to housing, poverty, ageing population and environmental protection. We must maintain Hong Kong's competitiveness in both the international and Mainland markets, and forestall any act that harms the investment and business environment. (para 6, 2015).

"Trading, financial services, shipping, tourism and professional services are Hong Kong's pillar industries. Apart from them, many emerging industries of a small scale but with great potential deserve the community's attention and government support. (para 17, 2015).

"In 2012, professional services contributed as much as 4.7% of our GDP, equivalent to the contribution of the whole tourism industry, and provided nearly 200 000 job opportunities. At present, through the Mainland and Hong Kong Closer Economic Partnership Arrangement, many professional services sectors can enjoy preferential access to the Mainland market. We will continue to foster the development of professional services.(para30, 2015).

"The Government has commissioned a consultancy study to assess the future demand for convention and exhibition facilities in Hong Kong, and will consider constructing a new convention centre above the Exhibition Station of the Sha Tin to Central Link around 2020"(para 38-40, 2015).

"On financial support, the Government's Innovation and Technology Fund (ITF) has provided about $8.9 billion for more than 4 200 projects. The funding scope of the ITF was expanded in mid-2014, providing stronger support for downstream R&D projects and our universities. Last September, we launched the Technology Start-up Support Scheme for Universities to encourage university students and teaching staff to start their own technology business and commercialise their R&D deliverables. I propose injecting $5 billion into the ITF and subsuming the Research and Development Cash Rebate Scheme under the Fund. The Government is also setting up an Enterprise Support Scheme to enhance our funding support for R&D projects of the private sector (para 45-46, 2015).

"Hong Kong's cultural and creative industries have grown at a rate faster than the overall economy in recent yreas. From 2005 to 2012, the value added of the cultural and creative industries increased rapidly ay an average annual rate of 9.4. We will continue to promote the development of Hong Kong's film industry through a four-pronged strategy. We will:

- Encourage more local film production;
- Nurture production talent;
- Promote film appreciation among students and young people to build up audiences; and
- Showcase and promote the brand of "Hong Kong Films" in the Mainland, Taiwan and overseas markets, facilitate the participation of local films in international film festivals, and help drive Hong Kong's development as a film financing platform in Asia. (para. 53-56, 2015).

"Adequate and quality manpower resources are the key to our sustainable socio-economic development. Our labour force is expected to decline from around 2018. The Steering Committee on Population Policy (SCPP) put forward the policy objective of "developing and nurturing a population that will continuously support and drive Hong Kong's socio-economic development as Asia's world city, and engendering a socially inclusive and cohesive society that allows individuals to realise their potential, with a view to attaining quality life for all residents and families".(para. 135, 2015).

"We need to create diversified job opportunities with promising prospects for the younger generation on the one hand, and provide them with varied learning, training and development opportunities on the other hand." (para. 138,2015).

From a macro-level perspective, there are favorable policies supported from the Hong Kong government on nurturing young people to be entrepreneurs in the businesses sector and the creative industry sectors. Moreover, the Manpower Projection to 2018 of the Labor and Welfare Bureau, 2012 indicated that there would have an average annual change (2009-2015) in manpower requirements in education services (+4.4%), environmental industries (+4.3%), innovation and technology (+4.5%), and testing and certification services (+2.3%) among the six pillar industries in Hong Kong. In fact, there is a growing trend of young entrepreneurship in Hong Kong of which are related to these industries. According to information released by Hawksford Hong Kong on the latest research by the Hong Kong Trade Development Council (HKTDC) and Hong Kong Federation of Youth Groups that nearly 20% of Hong Kong's youth currently operated or planned to kick-start their own business venture in the near future. Furthermore, 6% of the 2,000 respondents (aged 18-35 years) who had been surveyed as part of the research study already owned and operated their own business while 11% of the respondents intended to start their own venture over the next three years. Hence, this paper is going to explore the perception of undergraduate students on skill development and the elements required for a sustainable curriculum for entrepreneurship related programmes in Hong Kong via comparing the curriculum of three major entrepreneurship-related undergraduate programmes in Kong Kong.

## 4. Knowledge-based Economy and Sustainable Development

According to the definition of Brundtland Commission (1992) of the United Nations,

"sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The basic element of sustainability is the economic aspect to support the business in short term, and support the new products, services, processes and people in the long term. In order to generate economic and social impacts via launching a meaningful and relevant programme to the community, the guiding six principles of UN Principles for Responsible Management (PRME) indicated below possibly shed some lights to educators in designing an entrepreneurship related programme with relevancy to learners. Principle 1, 2 and 5 are worth to be considered especially in the pedagogy used inside and beyond the classroom; and assessment methods to evaluate the competency of learners for taking up challenges in the future.

Principle 1. Purpose: We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy.

Principle 2. Values: We will incorporate into our academic activities and curricula the values of global social responsibility as portrayed in international initiatives such as the United Nations Global Compact

Principle 3. Method: We will create educational frameworks, materials, processes and environments that enable effective learning experiences for responsible leadership

Principle 4. Research: We will engage in conceptual and empirical research that advances our understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value.

Principle 5. Partnership: We will interact with managers of business corporations to extend our knowledge of their challenges in meeting social and environmental responsibilities and to explore jointly effective approaches to meeting these challenges

Principle 6. Dialogue: We will facilitate and support dialog and debate among educators, students, business, government, consumers, media, civil society organisations and other interested groups and stakeholders on critical issues related to global social responsibility and sustainability.

After considering the contexts of government policy on entrepreneurship education, a holistic way of understanding the trend of skill development is also a concern when closing the gap between what the learners can do and what the employers and the community expect them to do.

## 5. Trend of Curriculum Development and Skill Development

Education is to help learners to create their own knowledge. Gardner and Davis (2014) mentioned that the acquired knowledge and skills needed to be put into a broader context; related to other forms of knowledge and understanding; and serving as a product to further learning, with its initial romantic encounters." (p. 186) They also mentioned that new knowledge must be build on what had already been consolidated by earlier thoughtful individuals and groups.

Under an environment of globalization and technology explosion, it is hard to keep business sustained with customers, market and business retained and / or expanded. According to the study of Louw (2013, p. 56), UNESCO called for educational sustainable development in the coming 10 years with the four main goals identified in relation to education, that is, rethinking and revising education from nursery school to university to include a clear focus of current and future societies on the development of knowledge, skills, perspectives and values related to sustainability. Besides, Liddy et. al. (2008) highlighted that education for sustainable development was to facilitate the development of knowledge, skills and attitudes necessary to engage with global social and environmental challenges. Systemic, critical and creative thinking were seen as essential abilities to make decisions and judgements in favour of sustainable development (UNECE, 2005 quoted in Liddy et al., 2008, pp. 429) They also mentioned that active and participatory learning approaches were recognised as enhancing the development of the skills listed above to trigger deep-level learning. "However, the inclusion of such learning approaches in higher education is often seen as problematic and unsuitable for substantial student numbers or in large theatres. Furthermore, independent learning is often assumed as pre-existing ability in higher education students and therefore time it not assigned to developing these skills." (Laurillard, 2002 quoted in Lidday et al., 2008, pp. 429) They also mentioned that educators/ lecturers in higher education settings were employed due to their subject expertise, and were rarely expected to engage in education delivery training or methodology. This opens an improvement area in higher education for educators/ lecturer with more solid experience in utilising different approaches to the traditional didactic methods.

In the 17th International Conference on Teaching and Learning organized by UNESCO-APEID, Bajunid (2014) mentioned that any radical turning points in professional policy shifts required mid-set changes in teachers regarding their beliefs, assumptions, out the box thinking, time management, creativity, edupreneurship and wethanschaaung. "The emerging of basic literacies and new literacies demands continuous learning by teacher as perennial leaner." Bajunid (2014) also quoted the code of practice for quality assurance in public universities in Malaysia developed by the QA Department of the Malaysian Ministry of Higher Education (2008) that the key foci of programme quality were: conceptual

framework, knowledge, skills, content knowledge, pedagogical content knowledge, pedagogical and professional knowledge and skills, professional disposition and assumption system with evaluation, field experience and clinical practice, diversity, faculty qualifications, performance and development, unit governance and resources (p.6) Moreover, he highlighted that all programmes objectives should align with the following learning outcomes:

1. Knowledge;
2. Practical Skills;
3. Social Skills and Responsibilities;
4. Communication, Leadership and Team Skills;
5. Problem-solving and Scientific Skills;
6. Information Management and Life-long Learning Skills; and
7. Management and Entrepreneurship Skills.

For entrepreneurship education, it is not only to nurture future business and social entrepreneurs, but also help learners develop a mindset of entrepreneurs with creativity, problem-solving skills and communication skills which have been uncovered by scholars participating a meeting of entrepreneur education, UNESCO, APEID (2013). Scholars of the said meeting came from Cambodia, China, Hong Kong (SAR), Malaysia, Philippines, and the U.S.; and they further concluded that there were seven elements for a sustainable curriculum, including: environmental elements, life-long skills, transferable skills, cultural characteristics, elements of helping learners to learn new things, relevancy, and interesting. Yeung (2011) also mentioned that educators had been trying to make their overall performance more transparent through adopting different regional and international standards, in order to make the attributes of their students more explicit and to improve their institution's public recognition. With the growing importance of validation of institution's mission, quality of programmes and employability of students, educators need to re-visit the design of assessments to match the programme intended objectives, programme and module intended learning outcomes and ultimately the skills developed by students.

Tracing back to research on entrepreneurship education, different scholars put up different perspectives on the expectations on entrepreneurship education. For example, Chua mentioned in her paper of "Revitalizing Entrepreneurship" that government needed to support programs of Industrial Research Chair Scheme to assist industry and universities with research efforts in technology fields that were not yet developed in Hong Kong but for which there is good development potential and Teaching Company Scheme to foster university-industry partnerships by enabling local companies to hire graduates students from universities to assist in proprietary research and development work. In 2013, Yu mentioned that the sustainability and advancement of the TEC (The Teen Entrepreneurship Competition) were closely related to advancing 'Character Building' at the individual level, advancing 'Partnership Building' at the institutional level, and advancing 'Social Responsibility' at the societal level. However, she highlighted that the "TEC might still overlooked an alignment with the existing curriculum development. A further capacity building of course development and policy making should be sought."(p. 705)

In 2012, Cheung conducted a study on the importance of entrepreneurship education and the impacts of new Business, Accounting and Financial Studies (BAFS) initiative on promoting entrepreneurship education in Hong Kong. He found that the key components for capacity building in schools were teacher knowledge, skill and disposition, professional communities, programmee coherence, technical resources, leadership. He recommended that teachers needed to work collaboratively and actively building professional, Learning communities for the sake of their own growing and student learning benefits." (p. 708) Moreover, Neupert et al. (2004) also put forward that entrepreneurship education and business plan competitions led to a stronger belief in one's entrepreneurial abilities.

Based on scholars' studies on sustainable development and entrepreneurship education of 2004 to 2014, it is identified that building a platform for learners to implement knowledge and skills learnt is crucial. Besides, education is a process of character building of both the teachers and learners for sustainable development. And, industry and university collaboration plays a definite role in the education process.

## 6. Future Skill Development - 4Cs and Transversal Skills

Our next generation is moving to seeking for instant and ready-made solutions for problems. This is a challenge for educators, especially in entrepreneurship education, as soft skill training involved with socialization skills and cultural awareness/ expression are seldom be found in the existing curriculum.

Development of relevant programmes and modules with higher order skills well relies on the linkage of timely, relevant and meaningful inputs with design process control for fit-for-purpose outputs. Sibbel (2009) mentioned that higher education curricula needed to offer experiences to develop graduate attributes of self-efficacy, capacity for effective advocacy and interdisciplinary collaboration, as well as raise awareness of social and moral responsibilities associated with professional practice. Back to 2005, Kitagawa emphasized that the role of universities in the knowledge society was examined in light of the emergence of new research and learning systems, conditioned by forces of both globalisation and regionalization. This historic legal change affects state-university relations in a number of distinctive

ways, for example, perceiving the new relationship in four principal dimensions: economy, human resources, governance and community. The impact of university-society relationship is a hot topic which needs to be further studied.

Kivunja (2015) promoted the use of 4Cs (critical thinking, communicating, collaborating and creative thinking skills) in skill development. In the aspect of developing creative thinking that is in great demand under the knowledge-based economy, he invented the use 5E lenses as below:

1. In Engagement Len:
   - "Students engage in inquisitive activities;
   - Respond to 'what if' type of questions;
   - Come up with an answer different to the one given;
   - Design your own questions for the class to answer; and
   - Work individually or ina team and use digital tools to compose a digital story." (Kivunja, p. 233)
2. In Exploration Len:
   - "Take time to reflect and come up with a new idea;
   - Come up with a different ooinion about what has been covered previously;
   - Use new urls to dinf new learning resources and use them to design something new; and
3. Create a curriculum-specific simulation that will encourage your peers to practice critical thinking." (Kivunja,p.233) In Explanation Len:
   - "Link past event to new learning occurrences;
   - Develop a hypothesis to be tested;
   - Come up with a new theory to replace an existing one;
   - Create a glossary of terms from the topic leaarnt and explain them to the class;
   - Compose a narrative and explain it; and
   - Use digital-imaging technology to create a graphic to be used in a digital presentation." (Kivunja, p. 234)
4. In Elaboration Len:
   - "Design and complete a rich learning task;
   - Telegraph new ideas;
   - Develop and use new terminology;
   - Try new skills;
   - Practice injury prevention in the playground at yr school by drawing up a few simple rules; and
   - Create a video documenting a community vent in which yr class or school participated." (Kivunja, p. 234).
5. In Evaluation Len:
   - "Complete a SWOT Analysis of a new proposal for changes to a unit they are about to start;
   - Use formative assessment to improve performance;
   - Create a personal portfolio and assess each others' portfolio;
   - Show links between unit completed and the next one;
   - Complete open-ended assessment tasks;
   - Use digital tools to analyze data and to evaluate a theory learnt; and
   - Design a model of legal and ethical behaviours when using the internet." (p. 235).

Kivunja (2015) mentioned that the 4Cs and 5Es were a New Learning Paradigm that brought changes in learning, teaching, assessment and curriculum development to utilize skills for the 21st Century Skills, helping students develop skills for increased productivity, creativity, critical thinking, problem solving, communication and collaboration, not only while still at college but even more importantly, altering in their daily lives after graduation. (p. 235) However, the issue is how to put the 4Cs and 5Es into the curriculum of community development related programmes for learners to develop skills for the future as what Ryan et al. (2010) mentioned in their study that local and regional initiatives for profound change in higher education curricula through collaboration with external communities and stakeholders were need ed though considerable progress in Education for Sustainable Development (ESD) was found.

In 2010, Fisher realised that corporate sustainability and social responsibility were of utmost importance for the survival of organizations and their future generations of employees. "Organizations' product/ service offerings and vendor networks are interconnected globally and are being recognized on a global scale "

(P. 29) If educators can visualise the sustainable development goals of UNESCO, crystallize the manpower projection into curriculum design, can realise the ways of implementing 4Cs and 5Es into designing community development related programmes, the institution is working towards a sustainable organization for the benefit of learners, the industries, and the community as they can develop awareness of sustainability and social responsibility to their peers and influence students to learn in a sustainable way. Based on the literature of the above, the author has generated a model of sustainable curriculum for entrepreneurship education (see Figure 1.0).

## 7. Skill Development for New Generation to Develop in a Sustainable Way

Under globalization and technological explosion, the

learning mode has been changed significantly in the past few years. The emergence of different kinds of digital electronic devices and user-friendly software, for example, apps and QR code have also make the learning process and assessment methods more playful to the learners. Young people like to use apps in their daily life, no matter the apps are for socialization or for learning purpose.

Recently, UNESCO and United Nations (UN) Global Compact) PRME have promoted the concept of Sustainable Development (SD), Education for Sustainable Development (ESD) and transversal (non-cognitive) skills. Djordevic and Cotton (2011) mentioned that there were difficulties with regard to communicating messages about sustainability successfully even though there was a growing awareness in national and international policies of the need to integrate sustainability into both business and educational arenas." (p. 381)

"Education for sustainability development (ESD) is an issue of increasing importance in HE, steadily infusing the campus , curriculum, community and culture of many institutions (Dyer et al., 2006 in Djordjevic and Cotton, 2011).

According to UNESCO, ESD is "a process of learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities" (UNESCO, 2004 in *Djordjevic and Cotton, 2011). From an* institutional level, sustainability has the potential to become 'a gateway to a different view of curriculum, of pedagogy, of organizational change, of policy and particularly to ethos" (Sterling, 2004, p.50 in *Djordjevic and Cotton, 2011)*. In fact, ESD involves campus changes, curriculum development and pedagogic reform. Specific changes which have been made in successful sustainable universities include: teaching and learning and research policies with sustainability as a key theme; changes to core processes such as course validation and monitoring to enhance sustainability content; sustainable procurement offices to manage the institution's day to day business; and campaigns to change behaviours of staff and students regarding electricity, paper use ad recycling." (p. 381-381)

"Sender and receiver do not share the same understanding about the meaning or value of sustainability, meaning that the recipient will not act on the communication. Perceptions of the ESD unit in some cases reduced the impact of messages, as did the perceived lack of institutional support." (p. 391).

In 2013, Ryan and Tilbury also mentioned that ESD in the higher education curriculum was well recognized in international sustainable development dialogues. However, early pioneers in this area met with substantial obstacles and now faced the prospect of attempting systemic education change in a new and difficult sector climate." (p. 272) They also highlighted that "ESD movement was a commitment to rethink the purposes of education and to reorient curriculum frameworks and pedagogical practice. Ultimately, it sought to shift education paradigms and extended learning opportunities so that people could contribute to more sustainable futures." They recommended embedding a deeper reflection element in the teaching and learning process to make ESD a viable education proposition, as well as the potential transfer to other parts of the education and skills sector. (Ryan and Tilbury, 2013, p. 272)

Howard and Katie (2014) mentioned the new generation was called the "App Generation" who seeks for identity, intimacy, and imagination. They also concluded that because of the breadth and the accessibility of apps inculcated an app consciousness, an app worldwide: the idea that there were defined ways to achieve whatever we wanted to achieve, if we were fortunate enough to have the right ensemble of apps, and, at a more macroscopic level, access to the 'super-app' for living a certain life, presented to the rest of the world in a certain way. " (p. 160)

"With respect to identity formation : Apps can short-circuit identity formation, pushing you into being someone else's evatar (that of your parents, your friends, or one formulated by some app producer) – or, by foregrounding various options, they can allow you to approach identity formation more deliberately, holistically, thoughtfully. You may end up with a stronger and more powerful identity, or you may succumb to a prepackaged identity or to endless role diffusion." (Howard and Katie, 2014, p. 32).

"With respect to intimacy: Apps can facilitate superficial ties, discourage face-to-face confrontations and interactions, suggest that all human relations can be classified if not predetermined in advance – or they can expose you to a much wider-world, provide novel ways of relating to people, while not preventing you from shutting off the devices as warranted – and that puts you in charge of the APPS rather than vice versa. You may end up with deeper and longer-lasting, relations to others, or with a superficial stance better described as cool, isolated, or transactional." (Howard and Katie, 2014, p. 33).

"With respect to imagination: Apps can make you lazy, discourage the development of new skills, limit you to mimicry or tiny trivial tweaks or tweets – or they can open up whole new worlds for imagining, creating, producing, remixing, even forging new identities and enabling rich forms of intimacy." (Howard and Katie, 2014, p. 33).

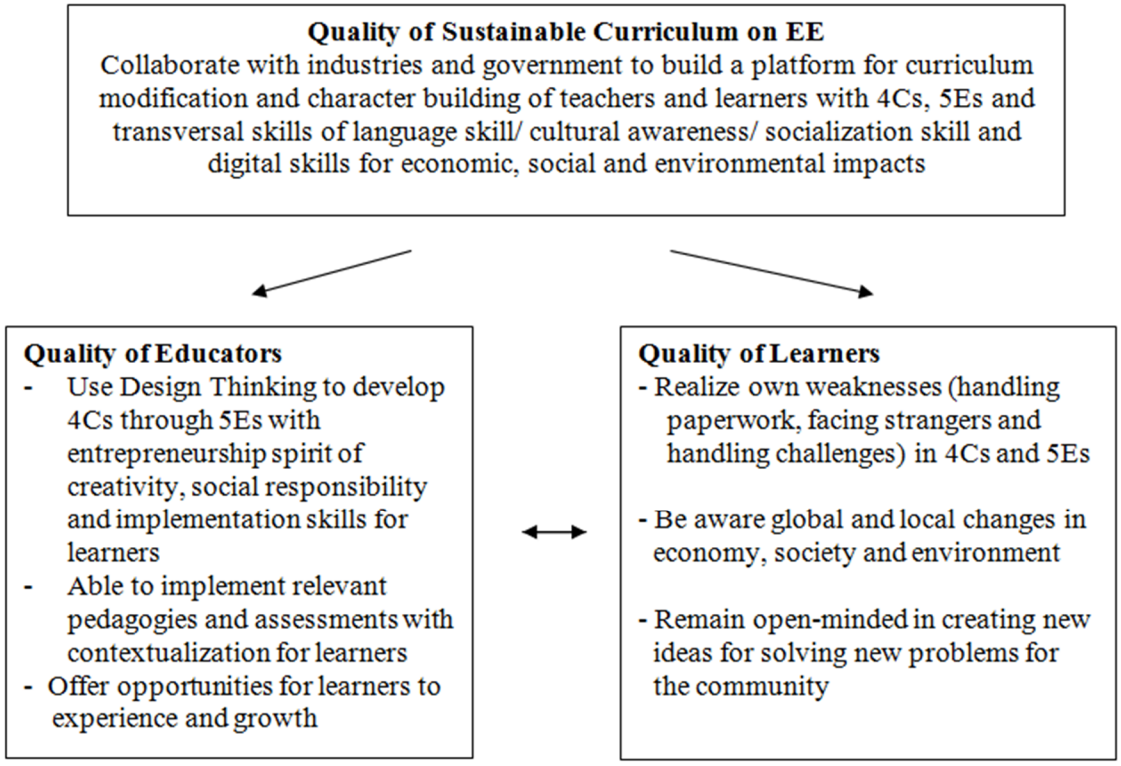
As a result, curriculum designers and teachers need to how to modify the existing curriculum, in-class / outside the classroom/ and extra-curricular activities to embed with the characteristics of "App Generation" with entrepreneurship and innovation across multiple disciplines to foster a mindset of creativity innovation, a mindset of responsibility, a mindset of protecting privacy, a mindset of cultural awareness and expression through increasing their exposure to the real world and creating a business-like platform for exchanging dialogue among peers and people at different age groups and cultural

background.

Pinho et al (2015) conducted a study on analyzing and assessing the perceptions of freshman students recent graduating from high school had towards their adaptation in college, as well as comprehending how this process of transition from high school to college occurred. They found out that the aspects related to teaching, didacticism, and relationship with professors was important to the adaptation process and these three aspects were from interdependent categories. They recommended to have diverse activities and policies to support personal growth opportunities as "the university environment was, at first, considered potentially threatening for the college students, however, the subjects showed no signs of mala-adjustment" (p. 162). In the pedagogic perspective, Schoenherr (2015) mentioned that Service-learning (SL) is an approach to engage students in applying course content to execute projects in non-profit making organization for the benefits of creating value and experiences to students and benefits for participating organizations. (2015, p. 45)

Apart from Service-learning, Jaganathan et al. (2014) also mentioned there was a growing importance in Transversal Skills (TS) in the 21st century as "transversal competence could enable graduates to be better prepared and to engage in the interconnected workforce. Digital competence; social and civic competence as well as cultural sensitivity and expressions were the core skills seen as flexible traits of competent graduates. " (2014, p.1) They mentioned that "trans-disciplinary approach reflected the ability of the higher learning institution to keep up to current trends to transform, rebrand, and remodel their teaching and learning approach for further refinement in producing capable graduates. Many higher learning institutions also had customized the trans-disciplinary educational framework according to their needs and requirements to produce relevant programmes. "(2014, p. 2) Hence, it is time to re-think the ways of delivering entrepreneurship related education to learners with transversal skills of language, cultural awareness, digitalization and socialization. Based on the above literature, Figure 1 – a conceptual framework of sustainable curriculum of entrepreneurship education has then been derived.

**Figure 1.** Model of Sustainable Curriculum for Entrepreneurship Education (EE) with 4Cs and Transversal Skill Development for Economic, Social and Environmental Impacts




## 8. The Study – Content Analysis, Quantitative Analysis and Participative Observation

Textual messages are data for conducting content analysis during the process of grounded theory that helps us to induce a concept for generalization and future prediction. From the following quotation, we can realize that content analysis is a technique to enable researcher to study human behaviour in an

indirect way. It is analysis of written contents drawn from a certain kind of communication paper, like textbooks, essays and articles from newspapers. Through analysing these written works of people, the researcher can understand the behaviour of people and organizational patterns.

Communication is to send textual messages - verbal and non-verbal for co-ordinating, integrating, controlling and persuading purposes. Hence, textual messages are tools for persuading people's minds to accept ideas. Organizational behaviour is to understand, predict and control others' behaviour. Management is to manage resources within an organization for achieving organizational goals. These three principles – business communication, organization behaviour and business management bear an inter-related relationship as follows:

- Infer attitudes, values and cultural patterns in different countries or organizations;
- Gain ideas of how organizations are perceived;
- See the trend of certain practices; and
- Differentiate practices among certain groups of people.

"Content analysis as a methodology is often used in conjunction with other methods, in particular historical and ethnographical research. It can be used in any context in which the researcher desires a means of systematizing and quantifying data. It is extremely valuable in analyzing observation and interview data." (Fraenkel & Wallen, 2003 : 482).

Content analysis is a systematic and objective analysis of selected text characteristics. This includes counting the number, frequency of words, finding out the characteristics of themes, characters, building relationship among items, paragraphs, finally establishing meaningful concept. It is not simply a quantitative research method but also a qualitative one as the purpose of the writing is also reflected through the analysis.

In this research, the author built relationship of concepts on sustainable development, curriculum design and skill development in entrepreneurship education in higher education for closing the gaps of existing entrepreneurship related programmes with the skills required in the future.

There are two levels of content analysis - describing fundamental inherent characteristics of messages and applying characteristics into related areas. The former one is objective as collected data are facts while the latter one is subjective as it is derived from researchers' point of view and personal life experience. When handling content analysis of this research, the author bears the research objectives in her mind:

Research Questions:

1) What are the present curriculum features of entrepreneurship related programmes in Hong Kong?

2) What is the perception of undergraduate learners on skill development?

3) What are the elements needed for sustainable curriculum of entrepreneurship education?

After describing the characteristics of content analysis of the above, its advantages can be summarized as follows:

- No people are involved;
- No experiments are required;
- Cost is minimal; and
- Texts found within a certain period of time in the past can reflect social phenomenon.

However, researchers shall also realize that content analysis may have limitations in the availability of texts. Moreover, they may be subjective when interpreting the selected texts. As a result, they cannot demonstrate the cause and effect relationship within selected texts explicitly. When interpreting or making inference of documents received, researches should follow the ideas of Babbie (2001). That is to:

- Trace the person or authority composing the documents;
- Think about the reasons behind of having the existence of the documents;
- Find out the ways of acquiring the information contained in the documents;
- Investigate the magnitude of biases in the documents;
- Identify the main categories and concepts brought up by the writer; and
- Internalize the theories that the documents have demonstrated.

### *8.1 Findings – Content Analysis*

Based on the content analysis, the author has collected qualitative data through the following three steps to identify the key elements for elements required for future entrepreneurship education:

Step I: Compare three major undergraduate entrepreneurship related programmes in Hong Kong;

Step II: Analyse the perception of skill development of learners studying senior year of an undergraduate programme in Hong Kong;

Step III: Identify elements needed for a sustainable curriculum for the entrepreneurship related programmes.

Research Question (1): What are the present curriculum features of entrepreneurship education related programmes in Hong Kong?

Table 1 demonstrates that the uniqueness of the three selected entrepreneurship related programmes in Hong Kong, focusing on business, management, entrepreneurship issues and soft skill elements in different perspectives with site visits to understand the business environment and professional industry practices. However, *financial and technology related modules* are not covered comprehensively to cater the changing needs of the community under digitization. And, the kinds of *soft skills training* need to match closely with the expectations of employers and the community.

**Table 1.** Curriculum of Entrepreneurship-related Programmes offered by Universities, Hong Kong

| Modules | University A (Entrepreneurship Leadership Progamme) | University B (Entrepreneurship Programme ) | University C (Bachelor of Science) |
|---|---|---|---|
| Management related concepts & theories e.g. Team management | X | X | X |
| Business related concepts & concepts e.g. Business Plan Marketing Position Sales and Marketing | X | X | X |
| Contemporary Issues in Entrepreneurship e.g. innovation sustainability partnership | X | X | X |
| Soft Skills Development e.g. problem solving skills diagnosis skills in understanding organization development | X | X | X |
| Finance related concepts & theories e.g. investment risk management budgeting | **NA** | **NA** | X |
| Technology-related applications e.g. technology in product / service design | **NA** | **NA** | X |
| Site Visit for Environment Study e.g. Business environment characteristics Social innovations | X | X | X |
| Uniqueness of Programmes | Knowledge of Business, Management, entrepreneurship and soft skills are covered with site visit | Knowledge of Business, Management, entrepreneurship and soft skills are covered with site visit | Knowledge of Business and Management, plus finance and technology related concepts are covered with technology and site visit |

### *8.2 Quantitative Analysis – Questionnaire on Skill Development*

Drawing upon the literatures on skill development, sustainable development and entrepreneurship education, the researcher designed a survey to gather opinions on the perception of students on their values, on their skill sets, on entrepreneurship skills and on sustainable skill sets. The survey was administered to participants in a post-secondary institution in Hong Kong (N=95) in March, 2015. The focus was on reaching respondents who intended to seek for internship placements in their senior year of studying a undergraduate programme, so a convenience sampling method was used. The questions in the questionnaire were structured to encourage respondents to reflect on their perception on skill development.

A questionnaire was designed with a total of 28 questions, with 11questions on perception of values, measuring the likes and dislikes of learners of respondents, eight questions on perception of skill

sets, measuring how good of the skill sets that respondents perceive, and six questions on perception of entrepreneurship skills, which asked respondents how they think about the elements of making entrepreneurship skills, and the last part with three items on perception of sustainable skills, which asked respondents how they think about the elements of sustainable skills. Here are some examples of the dimensions and the associated survey questions:

Perception on Values (a total of 11 questions)

- "I like to have freedom to choose"
- '"I like using technology for interactions."
- "I like sharing through the use of social media."
- "I dislike being challenged."
- "I dislike being isolated."
- "I dislike facing people I don't know."

Perception on Skill Sets (a total of 8 questions)

- "My communication skill is good to facilitate interaction."
- "My critical thinking skill is good to identify the key areas of concerns for discussion."
- "My creativity is good to have innovations for others to implement."

Perception on Entrepreneurship Skills (a total of 6 questions)

- "I think entrepreneurship skills can be learnt from taking modules of a programme."
- "I think entrepreneurship skills can be applied into the workplace."
- "I think entrepreneurship skills include creativity."

Perception on Sustainability Skills (a total of 3 questions)

- "I think sustainable skill sets include building a positive mindset."
- "I think sustainable skill sets include learning how to see the problems with consequences."
- "I think sustainable skill sets include accommodating people with different backgrounds for partnership."

### *8.2.1 Participants*

The population of the study consisted of students with experience in taking business and supply chain management related modules from a higher education institution in Hong Kong. The participants provided data on their perceived values and skill sets. The response rate is eighty-four percent of respondents (N=95) with 113 questionnaires distributed.

*Research Question (2):* What is the perception of undergraduate learners on skill development?

Table 2 (descriptive statistics) shows the statements with the highest mean scores over 4.0 on a 5-point scale. The four statements that most respondents agreed with on the dimensions of "Values" and "Entrepreneurship Skills" are:

- I like to have freedom to choose;
- I like instant responses from peers;
- I think entrepreneurship skills include creativity; and
- I think entrepreneurship skills include risk-taking.

For the statements receiving lowest scores are found in the dimension of "Values", ranging between 2.6 to 2.7 on a 5-point scale. They are:

- I dislike handling paperwork with details;
- I dislike facing people I don't know; and
- I dislike being challenged.

In general, the perception of skill sets respondents perceived falls in the range of 3.6 to 3.8 on a 5-point scale. The statement with the highest score is on:

"My critical thinking skill is good to identify the key areas of concerns for discussion."

**Table 2.** Descriptive Statistics

| | N | Mean | Std. Deviation |
|---|---|---|---|
| **I like to have freedom to choose.** | 93 | **4.2043** | .78794 |
| I like using technology for interactions. | 93 | 3.7097 | .78824 |
| I like sharing through the use of social media. | 95 | 3.5684 | .87096 |
| I like to create my own identity. | 92 | 3.9239 | .65017 |
| **I like instant response from peers.** | 94 | **4.0213** | .67168 |
| I like to handle things with diversity. | 94 | 3.9787 | .70297 |
| I like to handle work in a visual way rather than paper-based. | 95 | 3.7474 | .78508 |
| *I dislike being challenged.* | 93 | *2.7097* | 1.08928 |
| I dislike being isolated. | 92 | 3.7065 | 1.17237 |
| *I dislike facing people I don't know.* | 94 | *2.6915* | 1.06787 |
| *I dislike handling paperwork with details.* | 92 | *2.6413* | .88431 |
| My communication skill is good to facilitate interaction. | 95 | 3.7053 | .72748 |
| My critical thinking skill is good to identify the key areas of concerns for discussion. | 95 | 3.8000 | .62908 |
| My creativity is good to have innovations for others to implement. | 95 | 3.5684 | .84618 |
| My engagement skill is good to keep others' attention. | 95 | 3.6316 | .68499 |

| | | | |
|---|---|---|---|
| My exploration skill is good to find out something of my interest. | 94 | 3.7447 | .65478 |
| My explanation skill is good to help others understand the details. | 94 | 3.7553 | .72862 |
| My elaboration skill is good to let others know the sequence of events in a logical way. | 95 | 3.7158 | .69440 |
| My evaluation skill is good to assess issues from different angles. | 95 | 3.6421 | .69826 |
| I think entrepreneurship skills can be learnt from taking modules of a programme. | 92 | 3.4674 | .88269 |
| I think entrepreneurship skills can be applied into the workplace. | 94 | 3.8085 | .73728 |
| **I think entrepreneurship skills include creativity.** | 95 | **4.0211** | .77155 |
| **I think entrepreneurship skills include risk-taking.** | 95 | **4.0211** | .77155 |
| I think entrepreneurship skills include implementation skill. | 95 | 3.9895 | .75081 |
| I think entrepreneurship skills include social responsibility. | 95 | 3.9474 | .81695 |
| I think sustainable skill sets include building a positive mindset. | 95 | 3.9684 | .69117 |
| I think sustainable skill sets include learning how to see the problems with consequences. | 95 | 3.9263 | .65626 |
| I think sustainable skill sets include accommodating people with different backgrounds for partnership. | 95 | 3.9053 | .63704 |
| I like to be a business entrepreneur for generating economic impacts in the future, e.g. identify new target customer groups with new products. | 95 | 3.7474 | .78508 |
| I like to be a social entrepreneur for generating social impacts in the future, e.g. identify social issues with possible solutions to influence others. | 95 | 3.7684 | .75021 |
| Valid N (listwise) | 81 | | |

### *8.2.2 Reliability of Four Dimensions*

The Cronbach's alphas for the whole scale and four sub-scales are above 0.7, indicating that there is high internal consistency in the scales.

**Table 3.** Cronbach's Alpha

| Scale | No. of Items | Cronbach's Alpha |
|---|---|---|
| A) Perception of Values | 11 | .563 |
| B) Perception of Skill Sets | 8 | .861 |
| C)Perception of Entrepreneurship Skills | 6 | .834 |
| D) Perception of Sustainable Skills | 3 | .806 |
| Overall | 19 | .783 |

Regression Analysis – "I think entrepreneurship skill sets include building a positive mindset".

When separating out the dependent variable: "I think sustainable skill sets include building a positive mindset", it was found that the adjusted $R^2$ is .326 for the independent variable: "I think entrepreneurship skills include implementation skill." This explains 32.60% of the change in the dependent variable.

**Table 4.** Regression Analysis

| | B | Std. Error | P |
|---|---|---|---|
| Constant | 1.658 | .341 | .000 |
| I think entrepreneurship skills include implementation skill | .390 | .095 | .000 |

Method: Stepwise

Dependent variable: I think sustainable skill sets include building a positive mindset.

*Independent variable:*

"I think entrepreneurship skills include implementation skill"

The adjusted $R^2$ *is .326* which indicates that one predictor variable can explain 32.60% of the change in the dependent variable.

**Table 5.** Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .583[b] | .340 | .326 | .56758 |

Predictors: (Constant), I think entrepreneurship skills include implementation skill."

Research Question (2): What is the perception of undergraduate learners on skill development?

From the above mean and regression analysis of 95 respondents, it is found that respondents like freedom to choose and instant response from peers while they dislike handling paperwork with details, facing people they don't like and being challenged. They perceive their skill sets are above average and they have a basic understanding of entrepreneurship skills and sustainable skill sets.

### *8.3 Findings - Participative Observation of UNESCO, APEID Meeting*

Following the 15th UNESCO-APEID International Conference on Creativity and Entrepreneurship in Jakarta, Indonesia in December, 2011 and meetings on entrepreneurship education in Hangzhou and Malaysia were held in 2012 and 2013 respectively. Based on the experience of the author in discussion with members from nine countries in the meeting held in Malaysia, December, 2013, a summary of findings on sustainable curriculum and issues of entrepreneurship education have been drawn as below:

According to nine members of the countries of Cambodia, China, Hong Kong, Malaysia, Philippines, and the U.S, "Sustainable Curriculum" shall have the following attributes:

1) Environmental elements;
2) Transferable skills;
3) Life-longing skills for survival;
4) Cross-cultural characteristics;
5) Elements of helping students develop abilities to learn new things;
6) Relevancy; and
7) Interesting.

Besides, all members agreed that sustainable curriculum can serve the purpose of:

1) Increasing students' employability;
2) Enhancing students' creativity;
3) Widening the knowledge of students with a multi-disciplinary mindset for employability;
4) Increase students' employability via system thinking;
5) Enhance students' creativity for employability via conceptualizing ideas;
6) Increasing empathy of students in respect to fulfill customers' requirements for employability via quality thinking; and
7) Increasing students' employability via relevant internship placement.

Furthermore, when analyzing the meeting notes of UNESCO, APEID in February, 2015 of nine countries (India, Pakistan, Sri Lanka, Indonesia, Malaysia, Philippines, China Hong Kong, Japan, and Republic of Korea), there is a trend on the importance of entrepreneurship and innovation mindset with three common concerns. They are:

1) A lack of competent teachers teaching entrepreneurship programmes;
2) A lack of industry exposure; and
3) A lack of government support.

Research Questions (3): What are the elements needed for sustainable curriculum of entrepreneurship education?

Based on the content analysis on entrepreneurship related curriculum, quantitative analysis on skill development and participative observation on entrepreneurship education meetings of UNESCO, APEID, the author has drawn a comprehensive summary for t he future of entrepreneurship education in Table 6 to highlight the key elements of future entrepreneurship related programmes for sustainability.

## 9. Conclusions

Research on sustainable development, entrepreneurship education, and skill development suggest that sustainable entrepreneurship related programmes are beneficial to students in terms of building creativity, innovations, a mindset of positive thinking and enhancing their transversal competence. And, it is also beneficial to teachers and the community in terms of strengthening teachers' continual improvement and community economic and social development.

Hence, educators who are responsible for designing and delivering entrepreneurship related programmes and modules should:

- Collect relevant information before designing a programme or a module, for example, to understand the needs and expectations, values and perceptions of skill development of students, so as to provide a relevant and sustainable curriculum;
- Review, verify and validate module materials, including the provision of tangibles, to support students' learning;
- Change teaching pedagogy with industry practices, site visits with a diversified group of peers for engagement and support so as to develop transversal skills;
- Consider the needs of stakeholders in society, especially skills required by employers and manpower policy of the government, when designing, reviewing and changing the curriculum; and
- Obtain statistical results to measure learners' transversal skills and learning outcomes as a basis for judging the relevancy of programme or a module.

**Table 6.** Summary of Findings

| Content Analysis of Entrepreneurship Education, Hong Kong | Quantitative Analysis of Questionnaire on Skill Development, Hong Kong | Participative Observation of Meetings with UNESCO, APEID (2013-2015) | Considerations for Future Entrepreneurship Education |
|---|---|---|---|
| Knowledge of : Business Management<br><br>**Finance Technology related** concepts<br><br>Site visits of industries with contemporary entrepreneurship issues | The highest mean scores over 4.0 on a 5-point scale. The four statements that most respondents agreed with on the dimensions of "Values" and "Entrepreneurship Skills" are:<br>– I like to have freedom to choose;<br>– I like instant responses from peers;<br>– I think entrepreneurship skills include creativity; and<br>– I think entrepreneurship skills include risk-taking. | Elements of Sustainable Curriculum are:<br>1) Environmental elements;<br>2) Transferable skills;<br>3) Life-longing skills for survival;<br>4) Cross-cultural characteristics;<br>5) Elements of helping students develop abilities to learn new things;<br>6) Relevancy; and<br>7) Interesting. | 1) Curriculum design with academic concepts and theories and relevant practical industry experience/ practice<br>2) Pedagogic activities with respect learners' choices and engagement of peers to support learning<br>3) Learning and teaching activities and assessments with entrepreneurship spirit of creativity and risk-taking, system thinking and quality thinking<br>4) Understanding the perception of learners in removing the fear of handling paper works. facing people of a diversified background and thinking and helping how to overcome challenges that may come across n their future lives<br>5) Establishment of a competent teaching team with industry exposure and understanding how to make the curriculum relevant, interesting and help learners to transfer skills learnt from school to the workplace<br>6) Maintain on-going dialogue with the government for financial and policy support |
| | For the statements receiving lowest scores are found in the dimension of "Values", ranging between 2.6 to 2.7 on a 5-point scale. They are:<br>- I dislike handling paperwork with details;<br>- I dislike facing people I don't know; and<br>- I dislike being challenged. | Important elements for innovation and entrepreneurship education are:<br><br>1) Competent teachers teaching entrepreneurship programmes;<br>2) Industry exposure; and<br>3) Government support. | |

If educational institutions realize the interaction of the present situation of entrepreneurship education and the global economic development, they will offer more opportunities for communication with the government, the academics, the industries and the learners for re-visiting the programmes. It is believed that considering the needs of stakeholders, the competency of teachers and the relevancy of government policy can help ensure that the programme or a module can be sustainable.

The present study has some limitations. The results reported are based on small samples taken from Hong Kong only, so cannot claim to be representative of such institutions. Additionally, cultural differences, and variations in curriculum design and delivery, would probably give rise to different results in different locations, a possibility which is worth checking through further research.

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