

ESSAYS ON
WORKPLACE SOCIAL STRUCTURE AND EMPLOYEE MOBILITY

by

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ABSTRACT

The study of the influence of organizations in patterning employees' mobility has received growing attention in management research. This dissertation extends our understanding of the effect of social structure of workplace on employees' mobility in two different ways. First, the dissertation analyzes the mobility consequences of heterogeneity in top management teams (TMTs) as moderated by the structuring and functioning of the organizations. In particular, I focus on the firms' orientation to bureaucracy in moderating the well-known mobility implications associated with TMT heterogeneity. Novel predictions are developed and tested in the context of Dutch accounting industry during the period 1940 to 1982. Second, the dissertation theorizes the link between organizational stratification and mobility into entrepreneurship. In particular, I offer a theoretical framework to predict the conditions under which wage inequality in organizations constrain or enable employee mobility into entrepreneurship. I test the predictions in the context of business service sector in Sweden during the period 1993 to 2007.

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CHAPTER I

INTRODUCTION

1.1. Overview

Needless to say, organizations are powerful social systems that directly or indirectly influence almost every aspect of our life. Even during time away from workplaces, chances are high that our social interactions are facilitated to a great extent by formal or semiformal organizational arrangements. The opera shows we adore, the movies we enjoy, the concerts that soothes our mind, the fantasy parks our children embrace, the weddings and funerals we attend - how often are we able to break away from the influence of organizations that cater to our needs? Chances are extremely rare. In every sphere of social life, organizations or forms of organizing are critical in governing social interactions (Parsons, 1951). Indeed, the term “social” originated from latin *socialis*, meaning, companionship or alliance. While the influence of organizations are so powerful in this way, their significance in structuring the mobility and careers of individuals needs no foreword. It was only a matter of recognizing the causes, mechanisms and outcomes of mobility, that are enforced upon individuals by the variety of organizational forms.

Early research on the organizational determinants of mobility drew attention to various intra- and inter-organizational characteristics that affect mobility within and between organizations (e.g., Baron, 1984; Baron and Bielby, 1980). While the presence of internal labor markets offer opportunities for constant upward and lateral mobility and lowers mobility across organizations, factors such as growth, technological regime and change, and job similarities across organizations, resource dependence, among others,

have shown to structure mobility in myriad of ways (Baron and Bielby, 1980; Baron, Hannan and Burton, 2001; Bielby and Baron, 1981; Carroll and Mayer, 1986; Pfeffer and Leblebici, 1973; Pfeffer and Salancik, 2003; Rosenbaum, 1979; Thompson, 1967; Wholey, 1985). In addition to organizational structural aspects, the structure of opportunities in organizations also patterns mobility (Rosenfeld, 1992). White (1970) proposed a vacancy chain model to understand mobility where the creation and destruction of jobs are independent of the incumbents. The mechanism of mobility in vacancy chain conceives jobs as a series of interdependent positions. When an incumbent of a job leaves, a vacancy is created and is filled by promoting the incumbent of a lower level position. The latter position is left vacant in this process and filled by the same process, until someone enters the “chain” from outside the system and close the chain. Later research linked the vacancy chain models to organizational opportunity structures such as shape of hierarchy (Brüderl et al., 1993; Sorensen, 1977; Stewman and Konda, 1983). Recently, researchers have also noted that the traditional contours of an organizationally bounded career is waning away (Arthur and Rousseau, 1996) and that career ladders that span organizations are coming to be commonly observed pathways of mobility (Bidwell, 2013; Bidwell and Briscoe, 2010; Saxenian, 1996; Tolbert, 1996).

Mobility across organizations are induced through factors ranging from creation and destruction of jobs in the industry (Haveman and Cohen, 1994), the diversity of career paths and the distribution of employer characteristics available in the industry (Greve, 1994; Hannan, 1988), growth and change in organizations (Stewman and Konda, 1983), preference sorting (Bidwell and Briscoe, 2010; Dobrev, 2005), cultural matching (Rivera, 2012), employment history and demographic shifts (Pennings and

Wezel, 2007; 2010; Sorensen, 2000), inter-organizational competition (Sorensen, 2000), opportunity constraints and discrimination (Castilla, 2008), among others. Various organizational characteristics also shape mobility outcomes in predictable ways. For instance, while large organizations reduce outflow of employees through providing internal opportunities, older and bureaucratic organizations increase the outflow as a result of inertia (Dobrev, 2012; Kacperczyk, 2012).

Other studies noted that not only the structural and functional aspects of organizations, but also more subtle social structural composition of the workforce predicts mobility outcomes for individuals (Granovetter, 1995; Harrison and Carroll, 2006; Kanter, 1977; Pennings and Wezel, 2010; Pfeffer, 1983). For instance, Kanter (1977) noted that executives in large corporations provides selective promotion opportunities for similar others (e.g., white men), a phenomena she termed as “homosocial reproduction”. Pfeffer (1983) generalized this insight to propose a demographic model of mobility in predicting managerial succession, promotion, and turnover. Following Pfeffer’s seminal contribution, a large stream of research modeled demographic processes as social structural characteristics of workplace and derived predictions on a variety of mobility outcomes (for reviews, see Jackson et al., 2003; Jackson and Joshi, 2011; Stewman, 1988; Tsui and Gutek, 1999; Williams and O’Reilly, 1998). Granovetter’s (1985; 1995) observation that careers and mobility outcomes cannot be understood separately from the workplace social structure in which individuals are embedded echoes this view.

Moreover, research on social structural determinants of mobility is not limited to demographic research. Substantial progress has been made in opening the “black box” of demography and examining various social psychological mechanisms related to

inter-group relations and worker attachment in predicting mobility (Lawrence, 1997; Milliken and Martins, 1996). Similarly, human resource scholars have also examined it from the perspective of employee turnover and retention in organizations. This large and divergent body of literature is reviewed elsewhere (Holtom et al., 2008) and falls beyond the scope of this study.

Sometimes mobility is induced even when there are no job vacancies either within or across organizations. In this case, individuals generate jobs that are previously non-existent. In an early study on semiconductor industry in the United States, Brittain and Freeman (1981) noted that the “mobility blockages” experienced by executives are met with increased mobility not only into other organizations, but also into entrepreneurship. Similarly, employees are also “forced” into entrepreneurship when bureaucratic structures constrain work flexibility and innovativeness (Freeman, 1986). Few other early studies also noted mobility into entrepreneurship (Carroll and Mosakowski, 1987; Freeman, 1986; Harrison, 1988), but the topic has waned away from subsequent research until recently (Sorensen and Sharkey, 2014).

However, a related approach to study entrepreneurship as organizational products indirectly extended this field of research, albeit with different theoretical motivation (Audia and Rider, 2006; Sorensen and Fassiotto, 2011). The overarching goal of this stream of enquiry is to understand the various organizational determinants of entrepreneurship. Research questions such as how employees absorb skills (Gompers et al., 2005; Lazear, 2004; Phillips, 2002; Sorensen and Phillips, 2011) and knowledge (Agarwal et al., 2004; Helfat and Lieberman, 2002; Klepper and Sleeper, 2005; Phillips, 2002) relevant for entrepreneurship. Similarly, by structuring the work processes, organizations also instill values and beliefs conducive for entrepreneurship (Burton et

al., 2002; Nanda and Sorensen, 2010; Saxenian, 1994; Sorensen, 2007). For instance, Gompers et al. (2005) notes that the dynamic and non-bureaucratic work environment in Silicon Valley firms mainly contributed to the high entrepreneurial activities of the region. Social influence also operates through past peers, as Kacperczyk (2013) notes in her study on university peers and Hedge fund foundings in the U.S. asset management industry. Similarly, organizations also provide reputational capital to prospective entrepreneurs (Burton et al., 2002).

Among the recent frameworks, one that directly speaks to the early approach to study mobility into entrepreneurship (e.g., Brittain and Freeman, 1981) is when organizations are seen as structure of opportunities that condition employees' entrepreneurial entry (Kacperczyk, 2012). According to this view, the opportunities that employees encounter in organizations are structured in such a way as to make entrepreneurship an attractive career choice, in combination with the focal employee's alternative options. For instance, Sorensen and Sharkey (2014) in an analysis of Danish labor market shows that when employees have higher firm specific skills but lack enough advancement opportunities, entrepreneurship becomes the preferred choice in comparison to mobility into other firms. Wage inequality is also pointed out to be associated with higher moves to entrepreneurship, but the causal links are not clear.

1.2. Objectives

The aim of the present thesis is to examine two relatively neglected aspects of the social structure in organizations and mobility outcomes. First, despite the dense body of knowledge documenting either organizational structural (Baron et al., 2001; Bielby and Baron, 1981; Baron, 1984; Dobrev, 2012) or social structural (Harrison and Carroll, 2006; Pfeffer, 1983) consequences on mobility, we know too little about their combined

influence. For instance, while demographic heterogeneity is known to be a social structural dimension strongly associated with mobility consequences (Harrison and Carroll, 2006; Wagner et al., 1984), we rarely acknowledged the impact of their embedding in organizational structures (but see Hambrick et al., 2014; Kalev, 2014). Second, early calls to examine mobility into entrepreneurship did not gather much explicit attention from subsequent research despite widely noted empirically (Carroll and Mosakowski, 1987; Freeman, 1986; Harrison, 1988; Rosenfeld, 1992; but see Sorensen and Sharkey, 2014).

In taking up the first objective, I apply the lens of upper echelon research to understand the joint effect of organizational and social structure on mobility (Hambrick and Mason, 1984; Hambrick, 2007). Upper echelon theory does not study the mobility outcome of entire employees, but instead examine the most important group of employees in organizations – top management team (TMT hereafter). The logic underlying upper echelon research is based on the intuition that organizations are reflections of their TMTs (Hambrick and Mason, 1984) and the latter can be seen as a “microcosm” of organizations (Beckman and Burton, 2011). Moreover, TMT literature is one of the most productive and largest research stream emerged out of early demography research, while the composition of TMTs and their implications remained central to upper echelon research (Finkelstein et al., 2009). Whereas the implications of the social structure of TMTs on executive mobility has been widely examined through studying the demographic composition of TMTs (Carpenter et al., 2004), and more recently in the context of group structure (Hambrick et al., 2014), organizational structure remained as a missing link in explaining mobility consequences (Beckman and

Burton, 2011). The present thesis is one of the first studies to explicitly address this omission by examining the bureaucratic orientation of organizations.

The second objective of the thesis is to understand the impact of social structure in organizations on mobility into entrepreneurship. Unlike mobility in internal and external labor markets, individuals in this case create avenues of mobility into markets (Harrison, 1988; Rosenfeld, 1992). They not only create mobility pathways for themselves, but also for others in the labor market. By creating new jobs and stimulating mobility, entrepreneurship changes the dynamics of mobility and labor markets in general. For example, in a study on savings and loan industry in California, Haveman (1995) found that the rate of foundings, failures, mergers and acquisitions in the industry shifts the mobility patterns in predictable ways. Needless to mention, each of these events stimulates mobility by the pull of new jobs created and the push of dissolving organizations (Fujiwara-Greve and Greve, 2000; Kacperczyk and Marx, 2014). Since majority of such mobility is shaped through the employment policies and practices of established organizations, understanding how existing organizations influence mobility into entrepreneurship remains an underexplored avenue of research (Sorensen and Fassiotto, 2011; Sorensen and Sharkey, 2014). Taking on this line of enquiry with early research on organizational stratification and mobility (Bielby and Baron, 1981), I study the impact of wage inequality on mobility into entrepreneurship (Sorensen and Sharkey, 2014). First, based on recent research, I distinguish inequality into two separate components – the legitimate allocation of wages reflecting the human capital variations of employees and that do not reflect variation in human capital (Lemieux, 2006; Mouw and Kalleberg, 2010; Trevor et al., 2012). Building on this

distinction, I theorize the link between wage equality and mobility into entrepreneurship and show that the mobility outcomes can vary according to the type of inequality.

1.3. Outline of the thesis

The thesis is organized in three chapters that tackles three related but distinctive research questions. In the first two chapters, I examine the *first objective* of developing a joint understanding of organizational structural and social structural aspects on mobility consequences of top managers in the context of the Dutch accounting firms from 1940 to 1982. Whereas the first chapter approaches this broader topic through examining the retention of demographically distant TMT members (social structural) in bureaucratically oriented organizations (organizational structural), the second chapter examines the consequences of TMT heterogeneity (social structural) on top manager attrition in bureaucracies (organizational structural), along with implications on organizational survival. Finally, the third chapter examines the *second objective* of the thesis in studying mobility into entrepreneurship in the context of business service organizations in Sweden between the period 1993 and 2007.

First chapter of the dissertation titled “***Selective retention of TMTs in bureaucracies: The Dutch accounting firms, 1940-1982***” address an important topic related to mobility of top managers. Top Management Teams are widely noted for their strong tendency to homogenize not only through selection of similar others, but also through selective retention of demographically similar members (Boone et al., 2004; Nielsen, 2009; O'Reilly, Caldwell and Barnett, 1989; Sorensen, 2000). Even in contexts when TMTs require heterogeneity (Greening and Johnson, 1997), forces that pull TMTs towards homogeneity prevails over that of heterogeneity (Boone et al., 2004). Hence, this chapter recognizes the need for identifying the moderators of the “need for

homogeneity". Since TMTs are embedded in organizations, the chapter analyzes the role of organizational structure in moderating the "need for homogeneity". My aim is to understand how the preference for similar others (social structural aspects) is moderated by the values underlying the structuring and functioning of the organization. More specifically, I examine firms' orientation towards bureaucratic efficiency in determining the retention chances of demographically distant top managers. Bureaucracies are noted for their strong preference for homogeneity (Kanter, 1977), but also their ability to sustain heterogeneity (Weber, 1978). Hence, firms' orientation towards bureaucracy presents an organizational context in which attenuation of the need for homogeneity can be tested. In line with this reasoning, the chapter predicts that while the incumbent TMT of a bureaucracy prefer selection of demographically similar members, this preference for similar others is nevertheless attenuated in the retention pattern. Hypotheses are tested in the context of accounting firms in the Netherlands between 1940 and 1982 and the results support the predictions.

Building on the insights from first article, the second chapter titled "***Thriving on the strength of bureaucratic impersonality: TMT diversity and survival consequences for the Dutch accounting firms, 1940-1982***" investigates the degree to which rational bureaucratic orientation of organizations attenuate both the attrition in TMT and the risk of organizational dissolution owing to the disruptive consequences of heterogeneity reported in prior literature. The purpose is to understand how the consequences of TMT demographic heterogeneity (i.e., turnover and firm survival chances) change with the structural characteristics of organizations (i.e., rational bureaucracy). Empirical evidence shows that an orientation towards efficiency and economic rationality in organizations reduce the proportion of top manager exits and lowers the risk of

organizational dissolution. The chapter concludes that the potential costs associated with TMT demographic heterogeneity such as attrition and the higher chances of organization dissolution is less salient in rational bureaucratic organizations.

The third chapter titled “*From hierarchies to markets: Wage inequality and mobility into entrepreneurship from Swedish firms, 1993-2007*” extends research on organizational stratification and mobility. The literature on stratification and mobility almost exclusively focused on mobility within and across established organizations. However, sometimes individuals create jobs for themselves and facilitate mobility when pathways for mobility are blocked. Mobility into entrepreneurship, or “markets”, as a phenomenon has been largely ignored in the stratification and mobility literature, despite its obvious connection to the dynamics of labor markets and attainment processes. This chapter contributes to this nascent literature by theorizing on the link between organizational wage inequality and mobility into entrepreneurship. In doing so, the paper makes an important distinction between wage inequality based on human capital variations (explained wage inequality) and that does not (residual wage inequality) while predicting implications for mobility into entrepreneurship. Empirical evidence obtained from Swedish business service sector between the period 1993 and 2003 confirms my prediction that while explained wage inequality constrains mobility into entrepreneurship, residual wage inequality facilitate the same. I further found that having received education in business creates organizational “stickiness” for individuals and dampen their chances of entering entrepreneurship. In the remaining part of this dissertation, I present three articles (unpublished manuscript) and conclude with discussion of the results, limitations, scope conditions and future directions of research.

CHAPTER II

SELECTIVE RETENTION IN TMTs OF BUREAUCRACIES:

THE DUTCH ACCOUNTING FIRMS, 1940-1982

Abstract

Prior research to identify the antecedents of Top Management Team (TMT) heterogeneity found that forces that pulls a TMT towards homogeneity prevails mostly over the need for heterogeneity. We extend this research in identifying contextual moderators that attenuates the need for homogeneity by considering organizations as context within which the “need for homogeneity” is reduced. More specifically, we analyze firms’ orientation towards bureaucratic efficiency in determining the retention chances of demographically distant top managers. Results from analyses on the Dutch accounting firms between 1940 and 1982 confirms our prediction that bureaucratic efficiency indeed act as a moderator for the “need for similar others” in TMT. Implications and further research directions are discussed.

2.1. Introduction

A number of upper echelon studies have examined the antecedents of TMT heterogeneity in the framework of opposing forces that pulls TMT towards homogeneity or heterogeneity (Boone et al., 2004; Nielsen, 2009). While strategic and environmental forces act towards increasing TMT heterogeneity, cycles of attraction-selection-attrition (ASA) patterns driven by social-psychological influence drives TMT towards homogeneity (Keck, 1997; Keck and Tushman, 1993; Schneider, 1987; Schneider et al., 1995). The prevalence of TMT heterogeneity thus depends on which one of the two opposing forces prevails over the other. Overall, the results of these studies imply that homosocial reproduction of TMTs through ASA cycles appear to prevail mostly over strategic and environmental needs.

TMTs like any other social groups not only tend to reproduce own demographic features by selecting similar members, but also tend to push dissimilar members out of the team, even when there is a need for heterogeneity (Boone et al., 2004). As Boone and colleagues conclude, the need for heterogeneity also increases uncertainty and initiates the mechanism of “threat-rigidity” response thereby eventually driving the TMT towards further homogeneity. Alternatively, when the communication and decision-making efficiency suffer from heterogeneity (Carpenter, 2002; Carpenter, Sanders and Gregersen, 2001; Michel and Hambrick, 1992), dissimilar members are pushed out to restore smooth functioning. Nielsen (2009) examined the ASA cycle of TMTs in publicly listed Swiss firms and confirmed the strong influence of homogenization tendencies, which is moderated only with certain industry characteristics or firms’ internationalization efforts. Since most of the theoretically predicted “need for heterogeneity” did not appear to have an effect on increasing TMT

heterogeneity, further research may benefit from focusing on the contextual moderators of “need for homogeneity”. The key is to focus on mechanisms that *undermine the necessity* of driving out dissimilar others, as the need for similar others may disappear once the fear and uncertainty around working with dissimilar others is alleviated.

As a preliminary effort in identifying such contextual moderators, we start from analyzing organizations as contexts within which incumbent TMTs absorb the underlying values and belief system associated with the structuring and functioning of the organization, which will determine the extent to which “need for homogeneity” is evoked. In identifying such an organizational context, we will focus on one of the most pervasive and important characteristics of modern organizations, namely their rational bureaucratic administration. While prior literature on the effect of bureaucracy on managerial retention largely examined bureaucratic features such as complexity and inertia (e.g., Dobrev, 2012; Dobrev and Barnett, 2005), our theoretical framework hinges on the efficiency dimension of bureaucracies (Adler and Borys, 1996) as instilling necessary social mechanisms that support retention of demographically dissimilar others in the TMT. We believe that the bureaucratic orientation towards efficiency exhibited by an organization provides a natural framework for analyzing the attenuation of ASA cycle. More specifically, while the norms of efficiency and rationality ensuing in a rational bureaucracy may require TMTs to be homogeneous, the principle of impersonality in social relations endorsed by a rational bureaucracy provides a social structure that reduce the need for being homogeneous. We predict that efficiency considerations drive a TMT in a rational bureaucracy towards selecting demographically less distant members and amplify tendencies for homogeneity. However, as bureaucracies show more resilience towards demographic differences,

impersonality norms increase the chances that dissimilar members are retained, attenuating the tendencies for homogenization. Since various organizational or environmental imperatives may impinge on bureaucracies in the selection of dissimilar members, we believe the attenuation of the “need for homogeneity” can be most clearly observed through the retention of dissimilar members. Hence, the paper does not offer predictions on how dissimilar members are selected in the first place. Empirical evidence from an analysis on the population of the Dutch accounting firms from 1940 to 1982 provides support to our predictions.

The main contribution of our research is in highlighting the possibility of undermining ASA cycle in TMTs through one of its components – retention pattern. In doing so, we take a preliminary step to understand why ASA cycle prevails over the need for heterogeneity. While our findings underscore the logic underlying the “threat-rigidity” response argument that the drive for homogeneity is in part due to the fear and uncertainty around hiring dissimilar others, this preference for similar others is nevertheless attenuated by bridging demographic differences through norms of rationality and impersonality. The rest of the paper is organized as follows - we present the theory and hypotheses in the next section, followed by methods, discussion of the results, additional analyses for robustness checks and conclude the paper with a discussion of implications and future directions.

2.2. Theory and hypotheses

2.2.1. Homogenization through selection and retention

The idea that a social group tend to prefer similar others while extending membership is not new (Barnard, 1968; Kanter, 1977). For instance, Kanter (1977) has noted the existence of strong tendency towards “homosocial reproduction” of corporate

executives. The underlying theory behind this selection pattern is the human need for strengthening their social position through increased legitimacy and power (Pfeffer, 1983). Apart from the sociopolitical factors, organizational psychologists have pointed out the tendency of a group towards trait homogenization (Schaubroeck, Ganster and Jones, 1998). According to this theory, individuals are attracted towards and stay with organizations that match their personality characteristics. Schneider's (1987) attraction-selection-attrition model predicts the cycle of homosocial reproduction that make the members of a social group similar to each other in terms of their personality characteristics. This homogenization of personality traits, especially at the upper levels of an organizational hierarchy (Schneider et al., 1998) can also be extended to the homogenization in demographic characteristics (Boone et al., 2004). For instance, Westphal and Zajac (1995) found that demographically similar directors are selected into the board to enhance the influence of incumbent members. Similar members are easier to communicate with, wooed into the preferences of incumbent members and strengthen the identity of group as a whole (Boone et al., 1998; Boone et al., 2004; Westphal and Zajac, 1995; Zajac and Westphal, 1996). Dissimilar members on the other hand are more likely to suffer communication gaps with the rest of the TMT members (Smith et al., 1994) and are thus likely to be isolated and eventually exit from the firm (Wagner et al., 1984; Sorensen, 2000). Further, preference for similar others underlie the psychological need for stability, improving the predictability of incoming members' behavior and reducing uncertainty around the consequences of hiring an unknown person (Boone et al., 2004). Lacking precise information about the fit of a candidate with existing TMT, new hires are selected on the basis of certain demographic characteristics that match with the incumbent top managers and dissimilar members are

pushed out of the firm. Assumed in such selection and retention process is the similarity of traits underlying observable characteristics like industry experience, educational background, gender, ethnic background etc. (Pfeffer, 1983). Similar members are preferred based on the similarity and congruence in cognitive biases and capabilities inferred from the demographic characteristics. That is, the more similar the focal TMT member is to the demographic profile of majority TMT members, the more likely is the fit and solidarity that can be expected. Overall, prior literature agrees on the homophilous behavior of TMTs with respect to the selection and retention of top managers.

2.2.2. Selection in bureaucracy: reinforcement of homogenization

Organizations are bureaucratically administered under norms of rationality in order to remain technically efficient even when the idiosyncratic interests of members diverge (Weber, 1978)¹. Efficiency is achieved through promoting rationality in social interactions and ensuring predictability in organizational behavior, the two basic features of a rational bureaucracy (Dubin, 1961). Rational judgments are made on the grounds of objective use of technical knowledge for the purpose of organizational goals. Having limited objectives and an emphasis on performance and compensatory rewards are the typical characteristics of a rational bureaucracy (Udy, 1959). Predictability in organizational behavior is sought through establishing formal relations among offices and office holders, and reducing the impact of individuality of a given officer (Dubin, 1961). Predictability improves the clarity of means-end rationality and allows the

¹ Note that the meaning of the concept of efficiency used in the paper is derived from the Weberian point of view. Weber (1978) notes that the demands placed on the increased administrative complexity as a result of territorial expansion of the Roman Empire were mainly due to the diversity in cultural nuances. The Roman government addressed the difficulty in bringing together diverse population by bureaucratizing the administrative process thereby providing rational and objective criteria for implementing the law of the land.

effective use of planning and control mechanisms (Thompson, 1967). Hence, rationality and predictability are the main features of a rational bureaucratic administration where speed with which strategic decisions are made carries more weight than the perceived quality of the decisions.

The pursuit of rationality and predictability of bureaucratic organizations will call for homogeneous reproduction of TMTs. That is, the need for making efficient decisions will reflect in the selection pattern of top managers. Homogeneity fuels efficiency (Hambrick, Cho and Chen, 1996), which is central to the proper functioning of a rational bureaucracy. When efficiency is the paramount criteria for evaluating the performance of a rational bureaucratic organization, top managers' actions are geared towards identifying and eliminating inefficiency generating processes in the organization. Inefficiencies are not only generated by systems that govern organizational functioning, but also through social interactions (Raub and Weesie, 1990). This is especially true when the interactions take place among top managers with diverse background where disagreements and difficulty in executing decisions are common (Hickson et al., 1986; Hickson 1987; McCain, O'Reilly and Pfeffer, 1983; O'Reilly et al., 1989; Wagner, Pfeffer and O'Reilly, 1984). On the other hand, homogeneity facilitates easier communication among team members thereby reducing conflict and improves efficiency (Boone et al., 1998; Pfeffer, 1983). Since rational bureaucracies have a preference for making and implementing decisions without delays (Fredrickson, 1986; Mintzberg, 1979) incumbent TMT members prefer selecting demographically similar others. The combined effect of the general tendency of a social group to prefer similar others and the functional need of a rational bureaucracy for

homogeneity drive rational bureaucracies to select demographically similar members into their TMTs. Thus we offer the following hypothesis:

Hypothesis 1: *The average demographic distance of entering top managers is lower at higher levels of bureaucratic orientation.*

2.2.3. Retention in bureaucracy: attenuation of homogenization

An advantage of rational bureaucracies pertains however to the creation of impersonal social structures. Maintaining impersonality in social relations is a crucial requirement for attaining predictability in organizational behavior (Dubin, 1961)², especially in a diverse social entity (Weber, 1978). Norms of impersonality stipulates that organizational decisions are to be separated from the emotional and interpersonal considerations (du Gay, 1994; Merton, 1940). Impersonality allows the application of standards, rules and judgments equally to everyone involved and across comparable situations. It also provides possibility to evoke objective criteria in decision-making, evaluation of organizational strategies and individual performance (Ouchi, 1978). Impersonality also let those involved to raise alternative perspective into decision-making process without disagreeing to the extent of creating delays and disruptions. In order to make fast and efficient decisions, differences in opinion have to be accounted with certain given objective criteria for the evaluation of alternatives. For instance, given the possibility, maintaining the status quo is a preferred option for organizations that value efficiency and predictability (Hambrick et al., 2006; Thompson, 1967). Choosing a different course of action or choosing a new exchange partner for example, involves uncertainty in how to proceed and what to expect from the changes (Gehlen,

² See Gittell and Douglas (2012) for a hybrid model of organizations, incorporating both relational and bureaucratic models and how organizations benefit from the merits of both. However, they remain as marginal cases in the empirical realm.

1988; Merton, 1936). The deliberation required in taking a new line of action may precipitate contentious debate as a result of the diverging perspectives, if the TMT is heterogeneous and operates without norms of impersonality. This compromises the criteria of efficiency and predictability. However, impersonality downplays contentious interactions and give salience to objective criteria in the decision making process. Prior research has documented the presence of impersonality and formal relations in highly formalized organizations (Hage and Aiken, 1969; Hall, 1968; Merton, 1940; Zelizer, 2009). The root function of formalization and impersonality is to eliminate irrelevant and contentious interpersonal interactions entering into the ‘production function’. Thus, while there is a need for homogeneity from a functional point of view, homogeneity is nonetheless not required, as impersonality can feed efficiency in less homogeneous TMTs.

Rational bureaucracies therefore show an inherent capability to be resilient towards and sustain demographically dissimilar TMT members conditional on being selected. While hiring similar others may be a preferred option, homophily is often not perfect, implying that bureaucratic organizations hire less similar TMT members too. Various strategic, socio-political and institutional factors may contribute to selection of dissimilar members. Once selected, it provides a context for disagreements, including that originate from differences in the assessment of decision-making premises. Lacking norms of impersonality, even purely cognitive disagreements can quickly escalate into personal disagreements and deteriorate the social relations with antagonism and distrust (Brehmer, 1976). Having an impersonality culture in the organization allows a demographically heterogeneous top management team to engage in constructive dialogue and for the consideration of a wide variety of alternatives for decision-making,

without jeopardizing the criteria of efficiency. It also helps the TMT to pay sufficient attention to the deviant views of the dissimilar members while allowing the majority decisions to be implemented without creating dissatisfaction among dissimilar members. The bureaucratic ‘esprit de corps’ inculcated promotes group solidarity and facilitate easier integration into the organization (Evans and Rauch, 1999). Further, demographically dissimilar members bring different views on approaching organizational crises (Greenings and Johnson, 1997) and adapting to environmental changes (Keck, 1997). The fit of dissimilar members is eventually ‘revealed’ in a rational bureaucracy, largely due to the explicit expectations regarding the norms and consequences of action. Therefore, we expect that the norms of impersonality in social relations endorsed by rational bureaucracies will allow attenuating the turnover of demographically dissimilar members.

Hypothesis 2:*The positive effect of demographic distance on the likelihood of exit of individual top management team members will be weaker at higher levels of bureaucratic orientation.*

2.3. Methods

2.3.1. Empirical setting

Studies on TMT composition must confront with the unique demographic history of organizations and the role it plays in shaping subsequent composition, which warrant longitudinal analysis of organizations (Sorensen, 2000). But to measure all the dimensions of a bureaucratic firm structure for a long period requires detailed observations that often exceed the lifetime of observers. This calls for the use of archival data to test the propositions advanced in this paper. Archival data provide also

indicators with which the extent of bureaucratization of firms can be reliably inferred over a long span of time. Below, we offer such an analytical strategy to test our theory.

A further challenge scholars face is due to the need of selecting a set of organizations marked by a similar archetypical TMT structure (Beckman and Burton, 2011). For example, organizations constituted according to a divisional firm structure may not have the same team dynamics associated with that of organizations with a functional structure. We may expect these differences even in the same industry. Our choice of anchoring the test of our arguments into a professional service industry (see below), offers a convenient way to get around this problem by providing a uniform TMT structure (partnership form). Moreover as in professional service firms are often organized as partnership teams, they represent a context marked by relatively interdependent TMTs, at least in the sense that actions and performance of each partner influence the collective rewards of the entire partnership team.³

For these reasons, we decided to test our hypotheses in the Dutch accounting industry. In this setting, a unique proxy for bureaucratic firm structure can be observed: the extent of division of labor. The PA (Partner-Associate) structure, where partners are owners but also actively involved in managing the firm and are the residual claimants of firm profits, well describes the model of division of labor employed in this industry. Associates are employees, holding claim for a fixed salary with an opportunity to get promoted into partnership (Gilson and Mnookin, 1989; Maister, 1993). Partners leverage their work by hiring associates and delegating routine tasks to achieve scale

³ One may argue that partners operate independently of each other than in most other TMT settings. This is true if we see interdependence only as coordinated activities. However, partnership teams provide a more powerful setting for separating interdependence based on coordinated activities and interdependence based on “collective fate”. Where actions are relatively independent but returns (e.g., profits, future income) are tied to collective performance, conflict is more likely as it introduce uncertainty into one’s own beliefs about peer behavior and collective rewards.

(Lent, 1999) and efficiency (Hitt *et al.*, 2001). In this process, partners also provide guidance to associates in their career progression towards the partnership, though not everyone will get promoted (Galanter and Palay, 1991). Thus associates upon joining the firm get long term training and development to become partners not only with respect to the knowledge and skills of audit technology, but also to manage more “softer” aspects of leading a firm such as client relations, within-firm relations as well as the ability to guide an associate to the partnership track. This type of career progression is fundamental to build an effective career in bureaucracy, but also the firms indeed benefit from partners’ deep knowledge of the firm, including the underlying values and belief systems.

The degree to which an accounting firm employs division of labor oriented to efficiency is reflected in the *leverage ratio* of the firm (Sherer, 1994), which is the ratio of the number of associates to the number of partners in a firm. Leverage ratio represents the division of labor within the firm: the more the work is “leveraged” to associates, the more pronounced the division of labor of the firm. But the leverage ratio is closely linked to strategy, human resource practices and capabilities of the firm (Sherer, 1994). For instance, leverage is employed largely to contract large projects that involve substantial routine works. Such projects are usually executed in an efficient way by hiring more associates and training them to complete the allocated task as fast and accurate as possible. Also, associates are less costly when compared to partners, where latter’s time could be invested in tasks that require higher levels of knowledge, skills and expertise. Studies on professional service firms confirmed that higher leverage is employed for efficient allocation of human resources (i.e., through division of labor) and coordination through routines (Garicano and Hubbard, 2007).

Because highly leveraged firms rely on routines and focus on efficiency, clients belong more to the firm than specific partners since client relation procedures are standardized and less specific to individual partners⁴. This will foster trust and group solidarity among partners because the threat of individual partners defecting the firm with clients is lower and there is greater transparency in partner-client relationships, thereby shifting the burden of building trust in partner-partner relationships to partner-firm relations. Standardization of processes also brings in standardized information gathering procedures, which reduces biases in decision-making. This focus on efficiency of service delivery lead firms to emphasize technical efficiency (Pinnington and Morris, 2003). Changes in leverage structure are not common and can only take place slowly over a long period of time (Maister, 1993).

Specifically, we study the Dutch audit industry during the period 1940-1982. The Dutch accounting industry originated in 1882 and the sector was populated by single proprietorships and equal partnership firms, until the first quarter of the 20th century. The organizational form of “Partner-Associate structure”, famously called as “the Cravath Model” among law firms (Galanter and Palay, 1991), was adopted by some firms in the early 1930s. However, the widespread adoption of this organizational form came only after the law of 1939 that legitimized the accounting industry in the Netherlands, even though the proportion of adoption historically never reached above 16 percent at the industry level. Until then, they were adopted by few large firms to try and test the usefulness of the PA structure. Thus, the industry remained with majority of

⁴ A more recent trend in the professional service industry is to hire high status partners to whom clients are attached. However, our analyses on accounting firms terminates in 1982, a period when this practice was not yet common.

firms retaining the traditional partnership forms and single proprietorships, where as some firms restructured to PA form to increase efficiency.

2.3.2. Data.

The name, address, firm affiliation, educational attainments, and employment status (partner or associate) of each accountant registered in the Dutch audit industry during the years 1940-1982 was gathered (see Maijor and van Witteloostuijn, 1996 for details). The data also provide the year of founding of each firm and the province in which the firm operated. The dataset was reconstructed by aggregating individual level observations and rearranging the data at the firm level, eventually constructing a panel dataset with 4796 observations across 42 years (unbalanced). To estimate the average distance of entering partners (H1), we used a sample of the data with only those firm years in which the hiring of a new partner is observed, totaling 778 firm years⁵. To estimate the likelihood of exit of members from TMTs (to test H2), we used the individual level data including the observations on 2151 partners over a period of 42 years (unbalanced), for a total of 12,947 observations.

2.3.3. Measures

Dependent variables. The dependent variables used in the analyses are two: the *average demographic distance* of the entering partner from the existing TMT members was employed to test hiring trends; a binary variable *exit* (coded as 1 each time a voluntary exit is observed, zero otherwise) is used to estimate the likelihood of partner exit; The *average demographic distance* of entering partners is calculated by averaging the root mean squared Euclidean distance of the entering partner X_i from each incumbent team member X_j and taking the square root. The measure is hence, the square root of the

⁵ For robustness check, we ran a Heckman correction model to check for any selectivity issue, but found no evidence on selection bias. Results are reported in model 3 in 3.3.

term, $\text{Sqrt} [\sum(X_i - X_j)^2/(n-1)]$, where X_i is the industry tenure of the focal individual (partner) i , who is entering the partnership from outside the firm; X_j is the industry tenure of incumbent j ; $i \neq j$ and n is the number of group members. We focus on industry tenure as it has been found to influence the strategic choices and preferences made by the top managers (Boeker, 1997) and that the differences in industry tenure among top managers result in differences and conflict in TMT decision making process (Pennings and Wezel, 2010). The dichotomous variable, *exit*, is used to estimate the likelihood of exit by the partners from the focal firm.

Independent variables. The independent variables are *bureaucracy* and *demographic distance*. The extent of *bureaucracy* is measured by the leverage structure of the firm, which is the ratio of number of associates employed per partner of the firm (see “empirical setting”). Again, we took the square root of the measure of leverage to reduce the skewness of its distribution. The *demographic distance* of the focal TMT member is employed for the testing of exit likelihoods. *Demographic distance* is measured as the root mean squared Euclidean distance of the focal partner X_i from each incumbent team member X_j , in terms of industry tenure and calculated using the formula, $\text{Sqrt}[\sum(X_i - X_j)^2/(n-1)]$, where the terms corresponds to observations as before.

Controls. We used the following controls in all the models, which are sorted according to whether they pertain to industry specific, firm specific or individual specific factors.

Industry specific controls: Since the Netherlands went through the consequences of World War II, a dummy variable *WWII* is added to isolate the specific dynamics during the war years that influenced the selection and retention decisions of partners.

Independence for Indonesia in 1945 is another major historical event took place in the Netherlands that had specific influence on the Dutch accounting firms – hence we coded

1 for years after 1945 to isolate that effect. Dummy variables for two main regulatory events in the Dutch accounting industry are also added. First, the formation of a single association for the Dutch audit professionals, named NIvRA, set standards for auditor quality and persuaded the government to pass a legislation to limit the audit practice to those who passed a professional examination thereby limiting the auditor supply. Therefore, the dummy *NIvRA industry association* indicating 1 if the observation year is 1966 or after, 0 otherwise is added. Second, a legislation is passed in 1971 (Act on Annual Financial Statements of Enterprises) requiring all companies to publish annual audits increased the demand for audit services. We added a dummy to capture this change in demand, *AFSE 1971* if the observation year is 1971 or after, 0 otherwise.

The overall economic condition or economic growth is a significant predictor of partner mobility in the accounting firms, hence we added *GDP* (Gross Domestic Product expressed in 100s of U.S. \$) as a control in the models. Number of firms in the local industry may significantly shape the distribution of managerial opportunities through legitimization and competition, which in turn affects the entry and exit patterns of top managers. Hence we controlled for the number of audit firms operating in the same province as the focal firm operates by the variable *local density* and its squared term *local density squared* (Hannan and Carroll, 1992); We also added *Industry concentration ratio* measured as the combined market share of the four largest firms operating in the industry, to control for the extreme skewness of the firm size distribution. Since prior studies found that industry dynamics alter the mobility pattern of top managers, we added the *number of foundings*, *number of failures* and *number of M&As* to capture the effect of founding, dissolution and mergers and acquisition events observed in the industry in a given year (Haveman, 1995); It has been shown that

heterogeneity in the size distribution of firms in an industry helps individuals to find better match with employers (Hannan, 1988) and it shapes the mobility pattern of employees within the industry (Greve, 1994). A better match with the firm might reduce the likelihood of partner exit and the resulting matching of partners having certain demographic profile with certain firms might attract partners with similar backgrounds and reduce the demographic heterogeneity in their top management teams. Therefore, we included *firm size diversity* as a control, calculated using the Blau index.

Firm specific controls: *Firm age and firm size* are the two important control variables employed to isolate the effect of bureaucratic complexity and inertia, which has been previously studied. Our division of variable measure (captured through *leverage ratio*) after controlling for firm age and size capture at best the orientation of a firm towards bureaucratic efficiency. Also, size is an important factor of firms that might affect the dynamics of entry and exit pattern of partners due to reasons apart from bureaucratic characteristics. For instance, large firms may have the resources to not be pessimistic about selecting dissimilar TMT members, as disruptions from differences among TMT members may not affect the firm to a great extent like in smaller firms. In contrast, if power struggles exist in large firms, similar TMT members get selected to reify the existing power structure (Boone et al., 2004). Similarly, partners might be less likely to exit from large firms owing to the resources and opportunities such firms can provide. Controlling for the size and age of a firm thus rules out many alternative explanations. Firm *growth* is another important control added in the analyses, which determine the entry and exit pattern of top managers. It is measured by the percentage change in the total number of auditors in the firm over the previous period. Prior research conducted in the audit industry reported a high correlation (~0.98) between the auditor head count

and growth in business, which makes it attractive to use this measure as firm growth (Maijor and Witteloostuijn 1996, Boone, Brdcheler et al. 2000). We also added a dummy indicating 1 if the firm is a *traditional partnership* and 0, if not. Our theoretical construct ‘top management team’ might loose relevance in the firms that do not employ associates, even though, we have reason to believe that some of the dynamics of TMT composition that is explored here has its strongest effect in traditional partnerships. Further, they can also be considered as an empirical example for the ideal-typical non-bureaucratic firms or collegial bodies (Waters,1989). However, for the sake of the definitional clarity of our main dependent variable, we control for the effect of such firms. We control for the effect of firms in our sample that existed before 1940, to avoid sample selection bias. For example, socio-political, cultural or historical factors might intervene in the mobility pattern of partners in and out of firms that existed for a long time in the industry. Hence, we added a dummy variable *left censor* for firms that already exist in the industry at the beginning of the study period. Since the panel is unbalanced, where observation interval between the units ranging from 2 to 5 years, we included a control *time since last observation* to accommodate the factors relating to the length of time that might affect the estimation. Finally, as the Dutch provinces are uniquely different due to historical, cultural and religious factors, province dummies are also added to capture any unobserved province specific heterogeneity in the estimation procedure.

Individual specific controls: In addition to the controls used in all the models, we have some model specific controls. In the models estimating the likelihood of partner exits, *number of previous exits* are included to control for the differences in individual propensity to change jobs; a dummy variable for the events of *retirement*; Another

control that is added in exit analysis is *promotion*, to isolate the partners who are promoted to the TMT from within the firm – and thus less likely to trigger dissent and conflict.

2.3.4. Estimation procedure

The hypotheses are tested using linear regression within a GEE framework and discrete time event history models. While linear models are used to estimate the average distance of entering partners, complementary log-log regression is used to estimate the likelihood of partner exit from the firm. In the model for the demographic distance of entering partners, we modeled the error correlation structure as independent, with robust standard errors clustered by firm. Independent correlation structure is specified keeping in mind that the average demographic distance of entering members may be correlated across the observations of the same firm, but this correlation can take arbitrary values. This is further validated with the Quasi Akaike Information Criteria (QIC), which gave a better fit of the model with the independent correlation structure. Unobserved firm level heterogeneity is addressed by clustering the observations by firm.

In the complementary log-log model to estimate the likelihood of partner exit, we employed discrete time event history models and, in particular, complementary log-log models⁶. The reason for using a complementary log-log specification as opposed to a generalized logit model is the absence of small observation intervals in our data set. The odd ratios of logit model approach the ratio of actual rate of change only if the intervals between the observation points are sufficiently small (Yamaguchi, 1991). Another approach is to use continuous-time specification to obtain a model for data

⁶ Note that individual specific heterogeneity is addressed using the control variable “number of previous exits”.

grouped into intervals (Allison, 1995), using a complementary log-log function. The models reported were run in STATA 12.

2.3.5. Results

Correlations and summary statistics of the covariates used in the models are reported in table 2.1 and 2.2. To examine the process by which homogenization takes place, we tested hypothesis 1 to map the average demographic distance of entering partners (see models 1 to 3 in table 2.3). Most of the controls report the results as we expected. Particularly noteworthy among them are the coefficients of the AFSE act in 1971, industry concentration ratio, size heterogeneity of firms, firm age and firm size. AFSE act in 1971 made it mandatory for all Dutch firms to report annual audited financial statement, irrespective of the size of the firms and the industry in which they were operated. This opened up a large market for audit practice, as different firms (according to their size or industry profile) have different needs on the nature of audit report, on which accounting firms specialized. Hence, AFSE act increased the demand for not only the sheer number of auditors required in the industry, but also in terms of the variations in their industry tenure, which proxies the unique skills and expertise partners bring into the firm. The coefficient on AFSE 1971 in the analyses on average distance of entering partners (table 2.3) is positive and strongly significant, which indirectly reflects the need for demographically dissimilar members in the TMT (and hence the average need for heterogeneity in the firms in a given period)⁷. The same variable also drives down the likelihood of partner exit (signaling the demand for partners within the firm) as can be seen from the analyses on partner exits (table 2.4).

⁷ We also use this variable as a robustness check for the effect of the presence of “strategic need for heterogeneity” on the demographic distance of exiting partners.

Table 2.1. Summary statistics and correlations of covariates used in the firm level analyses (partner entry)

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13
1. GDP (in 100s of \$)	113.90	15.88	89.66	143.10	1.00												
2. Local density	66.99	38.10	1.00	117.00	-0.50	1.00											
3. Ind. Conc. Ratio	0.24	0.11	0.15	0.49	0.82	-0.54	1.00										
4. No. of foundings	14.20	14.07	0.00	64.00	0.11	0.23	0.06	1.00									
5. No. of failures	18.09	18.26	0.00	96.00	0.13	0.34	0.07	0.15	1.00								
6. No. of M&As	14.16	10.17	2.00	38.00	0.68	-0.40	0.48	0.33	0.23	1.00							
7. Size diversity	0.17	0.10	0.00	0.44	0.37	0.26	0.27	0.19	0.33	0.18	1.00						
8. Firm age (ln)	1.74	1.51	0.00	4.17	-0.46	0.31	-0.45	-0.20	-0.05	-0.42	-0.10	1.00					
9. Firm size (ln)	1.66	1.04	0.69	5.64	0.20	0.06	0.15	0.06	0.09	0.07	0.34	0.12	1.00				
10. Firm growth	0.26	1.15	-0.95	17.00	-0.10	0.11	-0.12	0.04	-0.02	-0.12	-0.02	0.23	0.08	1.00			
11. Time since last obs	2.04	4.65	0.00	51.00	-0.16	0.13	-0.17	0.05	-0.05	-0.14	-0.01	0.37	0.01	0.54	1.00		
12. Avg. Distance	3.60	5.90	0.00	36.00	-0.32	0.21	-0.31	-0.07	0.02	-0.21	-0.10	0.61	0.02	0.02	0.05	1.00	
13. Bureaucracy	0.40	0.45	0.00	1.73	0.02	0.16	-0.05	0.01	0.04	-0.06	0.21	0.19	0.69	0.13	0.09	0.02	1.00

Table 2.2. Summary statistics and correlations of covariates used in the individual level analyses (partner exit)

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. GDP (in 100s of \$)	119.98	14.72	89.66	143.10	1.00													
2. Local density	66.44	35.94	1.00	129.00	-0.44	1.00												
3. Ind. Conc. Ratio	0.26	0.12	0.11	1.00	0.69	-0.52	1.00											
4. No. of foundings	14.41	13.67	0.00	64.00	0.10	0.22	0.05	1.00										
5. No. of failures	19.40	19.45	0.00	96.00	0.20	0.28	0.14	0.25	1.00									
6. No. of M&As	14.69	10.48	0.00	38.00	0.55	-0.34	0.38	0.36	0.37	1.00								
7. Size diversity	0.19	0.10	0.00	0.44	0.42	0.18	0.37	0.11	0.32	0.25	1.00							
8. Firm age (ln)	1.67	1.29	0.00	4.32	-0.42	0.33	-0.36	-0.16	0.03	-0.29	-0.11	1.00						
9. Firm size (ln)	2.37	1.95	0.00	5.67	0.55	-0.09	0.37	0.15	0.16	0.25	0.44	-0.13	1.00					
10. Firm growth	6.01	22.84	-1.00	184.00	0.20	-0.08	0.12	0.12	0.01	0.21	0.16	-0.33	0.31	1.00				
11. No. of prior exits	3.80	6.73	0.00	64.00	-0.17	0.01	-0.03	-0.05	0.01	-0.05	-0.06	0.11	-0.02	0.00	1.00			
12. Time since last observation	1.53	1.88	0.00	44.00	-0.01	0.07	-0.05	0.08	0.06	0.08	-0.01	0.15	-0.00	-0.04	-0.05	1.00		
13. Bureaucracy	0.53	0.47	0.00	2.83	0.32	0.06	0.15	0.10	0.14	0.12	0.36	0.05	0.79	0.18	-0.03	0.04	1.00	
14. Demographic distance	2.24	1.57	0.00	8.71	0.17	0.04	0.12	0.08	0.12	0.10	0.22	0.07	0.58	0.12	0.19	0.05	0.54	1.00

Industry concentration ratio on the other hand, implies few large firms combined, controlled majority of the market share. This indicates that most of the other firms become specialized and hence prefer partners with similar industry experience and hence driving down the need for dissimilar TMT members. Coefficients of industry concentration ratio on the demographic distance of entering partners in the Dutch accounting industry are strongly negative and significant, supporting this possibility (table 2.3). The same variable also reports similar effect on partner exits, partly reflecting the reduced mobility opportunities with industry consolidation. Age and size of the firm are the other two noteworthy controls. While firm age increase the average demographic distance of entering partners (table 2.3), firm size reduce the likelihood that demographically distant members exit the firm (table 2.4). One possibility is that as firms age, they also develop norms that alleviate the fear of selecting dissimilar others and underscore the benefits of selecting dissimilar members gained from prior experience and propagated through legends and stories. On the other hand, size of the firm might allow abundant resources to let dissimilar members experiment with deviant ideas and hence makes them satisfied in the partnership (Kacperczyk, 2012). Notice that the estimates obtained for the size diversity variable appear aligned with the work of Hannan (1988), which argues that external opportunities feed the mobility of organizational members. Finally in the analyses on partner exits, in order to control for unobserved individual specific heterogeneity in the propensity for mobility, we added a control variable indicating the number of previous exits from partnerships the focal partner had. The corresponding coefficient is positive and statistically significant, suggesting that the variable captures unobserved heterogeneity in individual propensity for mobility.

Main effects: Results of our analyses on the main effects of bureaucracy on the average demographic distance of entering partners are reported in model 2 (table 2.3). Confirming our prediction in hypothesis 1, the average demographic distance of entering partners is lower in

organizations with a higher orientation toward rational bureaucracy. That is, rational bureaucracies exhibit hiring pattern that favors demographically similar members into their top management teams. We argued that hiring of similar members are motivated by the need for similar others due to both strategic and socio-psychological needs.

In hypothesis 2, we predicted that demographically distant members are less likely to exit from rational bureaucracies. Results reported in table 2.4 (models 5-6) found evidence to our prediction. Bureaucracy doesn't appear to have an average effect on the individual partners' likelihood of exit, but depends on the demographic profile of partners. The interaction between the demographic distance of individual TMT members and the rational bureaucracy variable appears in line with our hypothesis 2: the disruptive effect of demographic heterogeneity on the likelihood of exit of demographically distant TMT members are attenuated at higher values of rational bureaucracy. Figure 2.1 plots this interaction effect, which suggest that bureaucracy moderate the chances that dissimilar members exit the firm. Note that bureaucracy exhibits a higher hazard of top manager exit at low demographic distance of top managers, which is consistent with prior studies on the effect of bureaucracy on employee exits (e.g., Kacperczyk, 2012; Sorensen, 2007; but see Dobrev, 2012). Our research instead indicates that this tendency is attenuated or sometimes even reversed for demographically distant members (see fig. 2.2 as well), possibly an indication to the value such top managers bring to TMT decision making. We consider this as a strong support to our hypothesis that the fear of having demographically dissimilar members in the TMT is less the more rational bureaucratic a firm is. The results further indicate that the benefits of having dissimilar members in TMT may instead become salient only through bureaucratic mechanisms and they are valued once their fitness is “revealed”.

Table 2.3. GEE linear regression analysis estimates on the average demographic distance of entering partners in the Dutch accounting firms, 1940-1982

VARIABLES	Controls Model 1	Entry distance Model 2	Selection Model 3
CONTROLS			
World war II	0.763 (1.056)	0.975 (1.037)	0.800 (1.020)
Independence for Indonesia	-0.543 (1.302)	-0.573 (1.314)	-1.432 (1.657)
NIvRA industry association 1966	-0.481 (0.774)	-0.480 (0.778)	0.131 (0.815)
AFSE 1971	2.548** (1.141)	2.546** (1.150)	1.179 (1.833)
GDP per Capita (in 100s of \$)	0.000 (0.072)	0.003 (0.072)	0.039 (0.091)
Local density	0.069 (0.042)	0.064 (0.041)	0.031 (0.052)
Local density (squared)	-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)
Industry concentration ratio	-10.085*** (2.945)	-10.154*** (2.970)	-7.565** (3.050)
Number of foundings	0.032** (0.015)	0.034** (0.015)	0.038** (0.015)
Number of failures	0.011 (0.009)	0.009 (0.009)	0.007 (0.009)
Number of M&As	0.061* (0.036)	0.059 (0.036)	-0.015 (0.087)
Firm size heterogeneity	1.421 (4.069)	1.859 (4.076)	-0.029 (4.604)
Firm age (ln)	2.548*** (0.261)	2.503*** (0.262)	3.290*** (0.776)
Firm size (log)	-0.135 (0.218)	0.044 (0.231)	-0.103 (0.290)
Firm growth	-0.060 (0.194)	-0.070 (0.203)	-0.363 (0.344)
Traditional partnership	0.728 (0.497)	-1.067 (0.837)	-2.379 (1.453)
Time since last observation	-0.240*** (0.044)	-0.225*** (0.045)	-0.269*** (0.057)
Left censor	1.362 (1.218)	1.586 (1.203)	1.262 (1.176)
Province dummies	YES	YES	YES
MAIN EFFECTS			
Bureaucracy (sqrt)		-2.542*** (0.957)	-3.450*** (1.259)
Inverse Mills Ratio			-1.809 (1.896)
Constant	-2.215 (6.264)	-1.100 (6.370)	-0.447 (6.179)
Observations	778	778	778
Chi2	494.2	499.4	493.2
Degrees of freedom	27	28	29

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

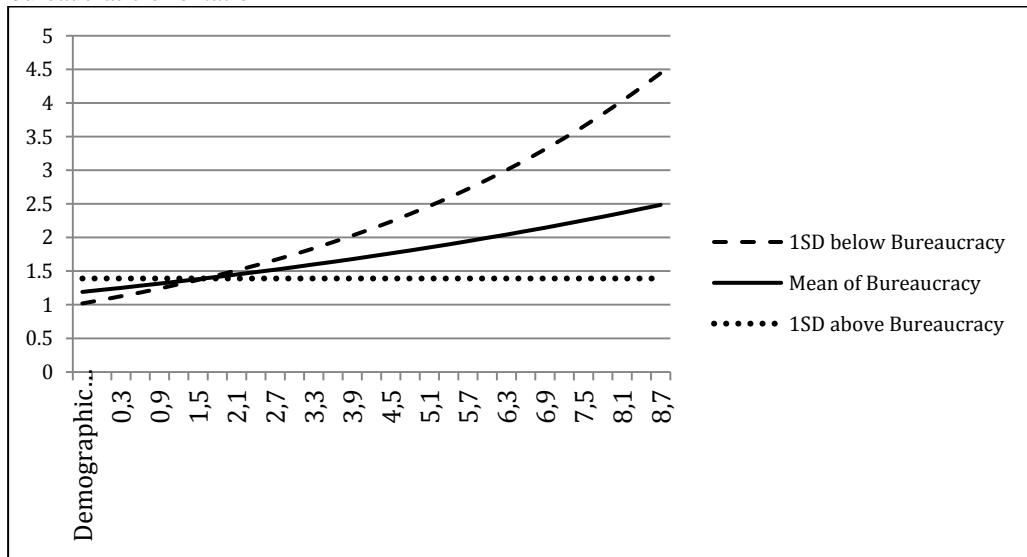
Table 2.4. Estimates of the complementary log-log regression analyses on the likelihood of partner exit in the Dutch accounting firms, 1940-1982

VARIABLES	MAIN ANALYSES			ROBUSTNESS ANALYSES	
	Model 4	Model 5	Model 6	Model 7	Model 8
CONTROLS					
World war II	0.244** (0.122)	0.263** (0.122)	0.286** (0.122)	0.308** (0.135)	0.297 (0.381)
Independence for Indonesia	-0.415*** (0.090)	-0.406*** (0.090)	-0.407*** (0.090)	-0.751*** (0.124)	1.422*** (0.258)
NIVRA industry association 1966	0.984*** (0.108)	1.017*** (0.108)	1.013*** (0.108)	0.788*** (0.145)	N.A
AFSE 1971	-0.770*** (0.104)	-0.756*** (0.104)	-0.739*** (0.104)	YEAR <1971	YEAR />=1971
GDP per Capita (in 100s of \$)	0.028*** (0.005)	0.027*** (0.005)	0.027*** (0.005)	0.040*** (0.007)	0.141*** (0.026)
Local density	-0.022*** (0.006)	-0.021*** (0.006)	-0.020*** (0.006)	0.001 (0.009)	0.035** (0.016)
Local density squared	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	-0.000 (0.000)	-0.000*** (0.000)
Industry conc. ratio	-0.781** (0.357)	-0.742** (0.356)	-0.725** (0.356)	0.345 (0.780)	-0.565 (0.518)
Number of foundings	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.004** (0.002)	0.012** (0.006)
Number of failures	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.001)	0.022*** (0.002)	0.009* (0.005)
Number of M&As	0.002 (0.004)	0.002 (0.004)	0.003 (0.004)	0.004 (0.006)	-0.067*** (0.009)
Firm size heterogeneity	0.719** (0.315)	0.760** (0.314)	0.752** (0.314)	-0.788 (0.482)	1.088* (0.584)
Firm age (ln)	-0.005 (0.021)	0.003 (0.021)	0.003 (0.021)	0.035 (0.024)	-0.194*** (0.053)
Firm size (ln)	-0.034** (0.015)	-0.081*** (0.022)	-0.099*** (0.022)	0.107*** (0.031)	-0.296*** (0.040)
Firm growth	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.008*** (0.001)	0.007*** (0.001)
Traditional partnership	0.218*** (0.052)	0.011 (0.071)	-0.113 (0.077)	0.121 (0.090)	-0.716*** (0.167)
Number of previous exits	0.053*** (0.002)	0.049*** (0.002)	0.050*** (0.002)	0.042*** (0.003)	0.126*** (0.011)
Promotion	-0.006 (0.095)	-0.005 (0.095)	-0.040 (0.096)	-0.225** (0.114)	0.652*** (0.194)
Retirement	-2.051*** (0.101)	-2.077*** (0.101)	-2.070*** (0.101)	-2.378*** (0.175)	-2.817*** (0.175)
Time since last observation	0.026** (0.012)	0.021* (0.012)	0.023* (0.012)	-0.046** (0.020)	0.543*** (0.045)
Left censor	0.181** (0.080)	0.107 (0.081)	0.120 (0.081)	-0.236*** (0.087)	N.A
Province dummies	YES (0.250)	YES (0.250)	YES (0.249)	YES (0.344)	YES (0.541)
MAIN EFFECTS					
Demographic distance (sqrt)		0.116*** (0.018)	0.174*** (0.022)	0.061** (0.026)	0.396*** (0.053)
Bureaucracy (sqrt)		-0.119 (0.089)	0.330** (0.130)	-0.075 (0.155)	1.689*** (0.306)
Demographic distance (sqrt) X Bureaucracy (sqrt)			-0.174*** (0.038)	-0.027 (0.043)	-0.722*** (0.103)
Constant	-4.936*** (0.557)	-5.004*** (0.556)	-5.074*** (0.557)	-7.630*** (0.791)	-21.797*** (3.615)
Observations	12,947	12,947	12,947	8,584	4,363
Log-likelihood ratio	-5552	-5530	-5520	-3463	-1710

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 2.1. Multiplier of exit hazard of top managers as a function of their demographic distance at varying levels of bureaucratic orientation



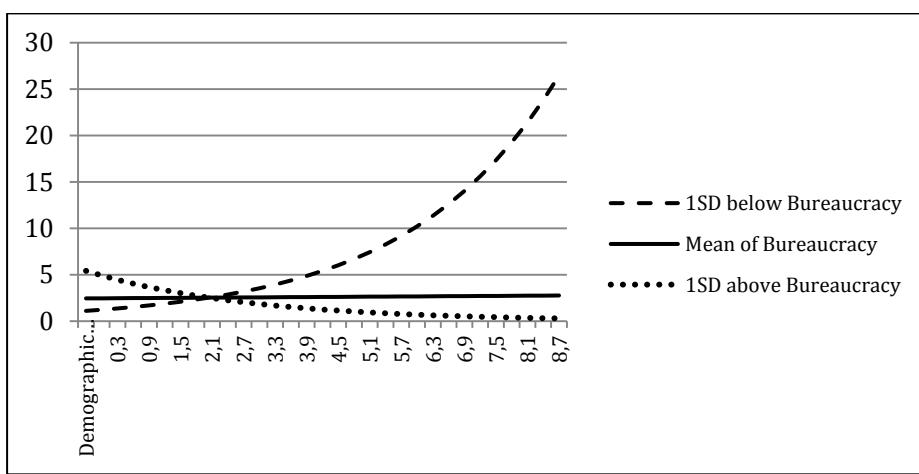
2.3.6. Robustness checks

Two robustness checks were conducted. First, a possible argument against our entry models (i.e., those used to test H1) is that firms that hire differs systematically from that do not, and that the result can be driven by sample selection bias because we included in the analysis only those firms that hire in a given year. To check for any selection bias, we ran a Heckman correction model using the entire sample (i.e., including the observations of firm years in which no hiring is reported) and obtained the inverse mills ratio, which is then included as a control variable in the earlier model (see model 3 in table 2.3). The results obtained from this procedure appear consistent with those in our main model (see model 2). Hence, we are able to rule out any selection bias in the results.

Second, the moderation effect of bureaucracy on the need for retaining similar others may be observed more clearly if we analyze H2 when a need for heterogeneity arises. That is, we need to identify an external trigger that increase the need for heterogeneity and demonstrate that the trigger for heterogeneity impact on actual retention pattern, the more a firm is bureaucratically oriented. To analyze this, we identify a regulatory event in the Dutch accounting industry that increased the need for

heterogeneity. The Act on Annual Financial Statements of Enterprises (AFSE) passed in 1971 required all firms in the Netherlands to file a mandatory audited financial report irrespective of their size and industry profile. This regulation essentially increased the variety of auditing techniques required to meet the demands of firms that ranges in all size and industry profile. However, we also expect that this demand for heterogeneity impact more on rational bureaucracy in their ability to retain dissimilar members. Results reported in models 7 and 8 in table 2.4 (and as discussed in the results on control variables) corroborate this claim. Model 7 reran our analyses on partner retention *before* 1971 and model 8 *on and after* 1971. Earlier results obtained on retention of distant members appear to be particularly relevant in post 1971 period after the implementation of the regulation⁸. Figure 2.2 plots the interaction effect of H2 in post AFSE 1971 period. As we can observe, the moderation effect of bureaucracy is stronger after 1971 and demographic distance even shows a moderate negative effect on the hazard of exit. Thus, the need for homogeneity is attenuated when the system of values that underlie the structuring and functioning of organizations helps alleviate the fear of working with dissimilar others.

Fig 2.2. Multiplier of exit hazard of top managers as a function of their demographic distance at varying levels of bureaucratic orientation after AFSE 1971



⁸ We also perform this analyses on the average distance of entering partners, which appears to be consistent with this prediction (i.e., average demographic distance of entering partners is higher in post regulation period) even though the results are not statistically significant. However, considering that the analyses are performed with only 150 observations against an overall 778 used in our main analyses, we don't make a conclusion and did not include in the results.

2.4. Discussion

Prior efforts to identify the context in which the strategic need for heterogeneity overwhelms the social-psychological need for homogeneity in TMTs conclude that the need for heterogeneity do not prevail in most of the cases analyzed. While Boone et al. (2004) found that the need for heterogeneity breaks the ASA cycle towards homogeneity only in the presence of a corporate board that is more powerful than the TMT, Nielsen (2009) concludes that when firms pursue internationalization strategy or when operates in a highly dynamic industry, the tendency of homogenization of TMT is attenuated as a result of the strategic need for heterogeneity. We take a different approach to extend this stream of research by asking a fundamentally different question: What attenuates the tendency for TMT homogenization *without* the strategic need for heterogeneity? As the social-psychological need for working with similar others overpowers the strategic need for heterogeneity in most empirically analyzed cases, we argue that a fruitful way to proceed is to identify conditions that attenuates the *social-psychological need for similar others* itself. Only then we would be able to advance our understanding of the conditions under which the strategic need for heterogeneity prevails.

In doing so, we started with the assertion that the rational bureaucratic orientation of firms provides an ideal condition to analyze this conjuncture. Rational bureaucracies are driven by efficiency considerations and to facilitate the continuous and efficient functioning of the TMT, the incumbent top managers exhibit hiring preferences that are biased towards demographically similar individuals, ruling out the existence of a need for heterogeneity. Within this context, we then analyze how this preference for similar others are systematically attenuated in the retention pattern of top managers. Our findings suggest that as the preference for similar others in selection pattern is likely to be driven by the fear and uncertainty around working with dissimilar others, rational bureaucracies with a social

system that bridge the cognitive differences among demographically different TMT members attenuate the preference for similar others and facilitate the retention of dissimilar members. We have further shown in additional analyses that the strategic need for heterogeneity impacts on TMT of organizations (i.e., by increasing the presence of dissimilar members) that are more bureaucratically oriented.

Our interpretation of this finding is that even though the incumbent top managers prefer similar others, once their fit with the team is revealed, dissimilar members might be seen as an asset for the organization. Literature in self categorization and individual identity theories have documented that the perception of importance an individual attach to himself shapes the work satisfaction an employee derive from her organization (Ashforth and Mael, 1989). If the peers attach value to a dissimilar and psychologically congruent member, the chance that she might stay in the organization is higher. Hence, the current research implies that the whole process of hiring similar others and retaining those who are dissimilar are guided by a process of '*revealed match*', where members who are hired irrespective of the fear for incongruity into the team are deemed to be a fit indeed.

Two main contributions of our work to extant research are worth highlighting. A first contribution concerns the TMT literature. While prior research has investigated the effects of TMT heterogeneity with respect to a variety of outcomes, highlighting various negative and positive consequences and a wealth of moderators (for a review see, e.g., Williams and O'Reilly, 1998), scant research has focused on the antecedents of demographic heterogeneity (see Boone et al., 2004). We decided to undertake this route by centering our inquiry on a greatly underexplored determinant of TMTs composition (Beckman and Burton, 2011): the characteristics of the organization for which the TMT works (but see Dobrev, 2012). Among the various organizational characteristics, the extent of rational bureaucracy appeared a meaningful starting point. Rational bureaucracy is a

meaningful antecedent of TMT behavior because bureaucracy has been widely shown to shape a variety of organizational decisions and processes ranging from hiring, to career and organizational rules (Weber, 1978). Of course other organizational characteristics may matter for TMT heterogeneity and future research should further investigate how our advanced understanding of modern organizations may help addressing a few open questions in the TMT literature. An interesting avenue of research may for instance regard the investigation of the role of organizational structures, culture or complexity of the interdependencies imposed by production processes on the demographic composition and turnover of TMTs. Do work processes organized around reciprocal interdependencies in TMTs (Thompson, 1968) amplify the negative consequences of demographic heterogeneity?

A second contribution relates to the literature on rational bureaucracies. The shift towards bureaucratic structures is pervasive in modern organizations and fully consistent with a general tendency towards professionalization and accountability of managerial practices (see also Meyer et al., 1997). In a related literature, Espeland and Stevens (2008) have warned us not only about the power of quantifications in our society (i.e., “the capacity of quantification to channel social behavior”), but also about the risks of this approach (“the polyvalent authority of claims made with quantitative measures; and the art and artifice of numerical expression”). The present study may be conceived as a further attempt at stressing the benefits but also the limits of rational and accountable structures like bureaucracies. On the negative side, our study shows that the benefits of rational bureaucracy in fostering heterogeneity are not automatic and are constrained by the natural tendency of firms and individuals to favor homophilous hiring. On the positive side however, our study indicates that the benefits of rational bureaucracies are apparent especially when there is a strategic need for heterogeneity.

A possible limitation of this research is to focus only on the demographic heterogeneity of industry experience of top managers. Existing research points out that the heterogeneity in industry experience corresponds to the capability of a TMT to diagnose strength and opportunities of a firm, to detect changes in the technological and competitive landscape of the industry and to formulate superior strategic responses to such changes when compared to more homogeneous TMTs (Castanias and Helfat, 1991; Kor, 2003). However, in addition to heterogeneity in industry experience, heterogeneity in firm tenure and TMT tenure are associated with its own capabilities for the firm. For example, heterogeneity in firm tenure signals the combination of knowledge and skills that are required for both maintaining the firm operations and changes if needed (Castanias and Helfat, 1991; Kor, 2003). Similarly, heterogeneity in TMT tenure signals the TMT's capability benefit from complementary perspectives (Kor, 2003). Further research may investigate more dimensions of TMT heterogeneity and bring to test the robustness of our findings.

Our work points to the need for further research into this phenomenon and the ways to consciously design the hiring process taking into consideration the potential benefits associated with having a diverse TMT. First, further research could investigate the micro foundations of the hiring pattern that we observed in the current paper and investigate the specific beliefs and practices that lead the incumbent top managers to prefer demographically similar others. Second, demographic researchers could further investigate the performance consequences of rational bureaucracies that are able to maintain heterogeneity in their TMT. In this way, we can extend our knowledge not only on the antecedents, but also the consequences of having a diverse TMT so that we could make meaningful suggestions to the practitioners on the current state of top manager hiring practices and what could be done to improve the situation.

CHAPTER III

THE RESILIENCE OF BUREAUCRACY ON TMT HETEROGENEITY: CONSEQUENCES FOR DUTCH ACCOUNTING FIRMS, 1940-1982

Abstract

In upper echelon theory literature, top management team (TMT) heterogeneity is often associated with negative consequences for organizations, due to higher conflict among TMT members. We argue that the degree to which such negative consequences are observed impinges on the system of values that underlie the structuring and functioning of organizations. Specifically, the norms of efficiency endorsed by rational bureaucracies reduce perceptual differences, build trust and reciprocity, and promote group solidarity, contributing to the attenuation of conflict and negative consequences of TMT heterogeneity. Our analyses of Dutch accounting firms provide support for these claims.

3.1. Introduction

A substantial body of research has explored the consequences of TMT (top management team) heterogeneity for organizational conduct and performance (for a review, see Carpenter and Weikel, 2011; Jackson, May and Whitney, 1995; Milliken and Martins, 1996; Finkelstein *et al.*, 2009). Existing findings suggest that heterogeneous TMTs expose organizations to more conflict (Ancona and Caldwell, 1992; Hambrick and D'Aveni, 1992; O'Reilly, Caldwell and Barnett, 1989) and to reduced performance by disrupting the smooth functioning of organizations (e.g., Carpenter, Geletkanycz and Sanders, 2004; Hambrick, Humphrey and Gupta, 2014; Pennings and Wezel, 2010; Sorensen, 2000).

A core premise of this literature is that “Organizational outcomes … are viewed as reflections of the values and cognitive bases of powerful actors in the organization” (Hambrick and Mason, 1984: 193). Under this premise, TMT heterogeneity is correlated with a wide set of outcomes such as the extent of internationalization (Barkema and Shvyrkov, 2007), the speed of response (Hambrick, Chen and Cho, 1996) or the likelihood of strategic change and diversification of firms (Wiersema and Bantel, 1992; Westphal and Fredrickson, 2001). The present paper moves beyond this premise by acknowledging that the cognitive bases and belief systems of top managers not only shape but are also shaped by the organization they work for. We build our claim on ample research that suggests that organizations are social contexts in which the individual norms and beliefs of managers become intertwined with a broader system of values (O'Reilly and Chatman, 1996; also Carroll and Harrison, 1998; Beckman and Burton, 2011).

Among the variety of organizational beliefs and values that affect the cognitive

bases and the belief systems of top managers, we focus on those instilled by the orientation to efficiency of organizations. A focus on the orientation to efficiency, we contend, is relevant to shed light on the conditions under which the conflict among demographically heterogeneous managers may ensue and lead to negative organizational consequences. In particular, by drawing inspiration from the work of Weber (1978), we contend that the orientation to efficiency of rational bureaucratic organizations (i) restricts the use of subjective information in drawing judgment premises and reduces individual decision-making biases in TMTs; (ii) activates formal social relations which depersonalize interactions among TMT members; and (iii) improves trust and reciprocity among them by fostering cohesion and social integration. These effects elicited by rational bureaucracy are argued to attenuate cognitive disagreements ultimately lowering affective conflict within demographically heterogeneous TMTs.

To illustrate the relevance of our arguments, we formulate a set of hypotheses that concerns two of the most common firm-level outcomes explored within the TMT literature: TMT attrition rates and organizational performance (for a similar approach see Hambrick, Humphrey and Gupta, 2014). The moderating effects of the extent of rational bureaucracy on the negative consequences elicited by TMT heterogeneity on these two outcome variables are tested using the information on a sample of Dutch accounting firms during the period 1940-1982. This empirical context is especially suitable for testing our hypotheses because the governance structure of accounting firms exposes managers to complex interdependencies that are arguably conducive to conflict (for a discussion, see Hambrick *et al.*, 2014). Moreover, by setting our empirical analyses into a professional service industry we move beyond the existing literature –

mostly centered on organizational size and age (e.g., Sorensen, 2007) – and advance that the norms of efficiency and rationality associated with division of labor represent a fundamental hallmark of bureaucratic organizations. The results of our empirical analyses provide support to the arguments advanced by the paper: organizations endowed with heterogeneous TMTs that are embedded into rational bureaucratic structures are less exposed to the negative consequences.

3.2. Theory and Hypotheses

3.2.1. TMT heterogeneity and organizational consequences

The existing literature has conceptualized TMT demographic heterogeneity as the distance between TMT members along one or more dimensions (see Carpenter *et al.*, 2004). A key finding of this literature is that demographic heterogeneity entails negative consequences for organizations because it has the potential to increase conflict among managers (Carpenter *et al.*, 2004; Beckman and Burton, 2011; Hambrick *et al.*, 2014). According to the extant literature, in the absence of sufficient mechanisms to prevent cognitive differences from converting into personal animosities, cognitive heterogeneity among top managers increases TMT attrition and lowers organizational performance (Hambrick, 1995; but also Baron, 1984).

A careful review of the existing literature reveals three main processes through which demographic heterogeneity may increase conflict in TMTs. *First*, demographic heterogeneity accentuates the differences in the way TMT members perceive the environment (Hambrick and Mason, 1984; Hambrick, 2007). Thus heterogeneity fuels conflict through differences in perceptions and goals among members (Smith *et al.*, 1994). These differences arise as individuals carry mental modes that are shaped by prior experiences (Cyert and March, 1963; Pfeffer, 1983; March and Simon, 1958).

Information is analyzed through the filter of interpretive frames (Arrow, 1974; Simon, 1947), problems and solutions are framed according to the known rules of game (March, 1994) and necessary actions are suggested to reinforce existing beliefs (Cohen and March, 1974; March and Weil, 2005). As the interpretive frames of the TMT members diverge, the differences with which members arrive at conclusions become more visible.

Second, demographic heterogeneity reduces the salience of social identity of the TMT as a group and boosts “individual ego” thereby translating cognitive disagreements into personal animosities (Barnard, 1951, Baron 1984; Hambrick, 1995). As decision makers fail to distinguish “cognitive disagreements from personal assaults” (*c.f.* Amazon and Sapienza, 1997), divergence in perspectives often escalates to a “full scale emotional conflict” (Brehmer, 1976: 272) and perceptual differences evolve into emotionally charged conflict (Baron, 1984). Emotionally charged conflict undermines team stability and organizational performance as it can be persistent and may carry over from one decision context to the other (Hickson *et al.*, 1986). Even if a quasi-resolution of conflict is achieved (March and Simon, 1958), it leaves the team in a vulnerable position with subdued enmity between previously conflict laden social relations within the team.

Third, demographic heterogeneity reduces the ease of communication and lowers trust and reciprocity among TMT members (Ruef *et al.*, 2003; Smith *et al.*, 1994; Wagner *et al.*, 1984; Hambrick *et al.*, 2014). According to similarity-attraction principle (Berscheid and Walster, 1978), similarity among individuals facilitates social interaction and the building of social integration within teams (Festinger, 1954; O'Reilly *et al.*, 1989). Self-categorization theory posits that similar members form

groups based on any salient characteristic (Ashforth and Mael, 1989). Communication between TMT members becomes difficult as members with different demographic backgrounds fail to develop the necessary interpersonal attachment to build a cohesive group and lack trust (Ruef *et al.*, 2003). Overall, demographic heterogeneity projects differences in team members along cognitive dimensions where part of such differences translates into personal animosities through low levels of trust and reciprocity.

These three processes generate conflict and lower workplace attachment leading to increased turnover within TMTs, a well-known consequence of TMT heterogeneity (see Wagner *et al.*, 1984; Hambrick *et al.*, 2014). Moreover, conflict decreases organizational performance in the short run by delays in strategic response (Jehn *et al.*, 1999) and places organizations in a downward spiral of failure over long term (Hambrick and D'Aveni, 1992). Heterogeneity hampers trust and reciprocity within teams (Ruef *et al.*, 2003), fuels disagreement in the decision making process (Pfeffer, 1983) and reduces the speed of making competitive moves (Hambrick *et al.*, 1996). Inability to make appropriate strategic decisions and maintaining tardy response to competitive threats place the organizational survival at risk (Pennings and Wezel, 2010). While the arguments advanced in this paper may be easily extended to other demographic characteristics that activate the mechanisms elaborated here, we focus our predictions on a common metric used in the existing literature: the heterogeneity of top managers' industry tenure (see also Castanias and Helfat, 1991; Hambrick *et al.*, 1993; Kor, 2003; Pennings and Wezel, 2010; Schefczyk and Gerpott, 2001).⁹ Building on this

⁹ More fundamentally, we believe that this measure captures at best the underlying cognitive differences responsible for affective conflict: TMT members with similar industry tenure tend to be exposed to similar historical environments and their mental representations of the world are likely to be shaped similarly (Kiesler and Sproull 1982). Shared mental representations of the world make top managers to perceive market conditions similarly and more likely to socially integrate as a group.

reasoning, we introduce the following baseline hypotheses (for a similar approach see Hambrick *et al.*, 2014) on which the moderating effects of rational bureaucracy are subsequently advanced.

Hypothesis 1a: *The greater the TMT demographic heterogeneity (as indicated by the heterogeneity in industry tenure), the higher the TMT attrition experienced by the organization.*

Hypothesis 2a: *The greater the TMT demographic heterogeneity (as indicated by the heterogeneity in industry tenure), the higher the risk of organizational dissolution.*

3.2.2. Rational Bureaucracy

Most of the existing work on TMT heterogeneity rests on the premise that the cognitive bases of leaders influence strategic actions. We acknowledge instead that, “TMTs are a microcosm of the organization” (Beckman and Burton, 2011: pp. 7). Carroll and Harrison (1998), for instance, have convincingly demonstrated via computer simulation that organizational culture systematically affects a variety of organizational outcomes, including attrition rates and the demographic composition of firms. We build on this limited set of studies to claim that disagreements among demographically heterogeneous TMT members are likely to induce negative consequences for organizations when coupled with patterns of structuring, coordination and communication that rest on informal procedures. Conversely, the negative effects of demographic heterogeneity should be attenuated in organizations in which the degree of impersonality and formalization is higher.

Our claims draw inspiration from the work of Weber (1978) who has highlighted conflicts and delays within organizations as primarily related to their structuring and

functioning along informal relations. To counter such frictions, Weber proposed bureaucracy as an efficient form of organization in which “*the purely impersonal character of the office, with its separation of the private sphere from that of the official activities, facilitates the official’s integration into the given functional conditions of the disciplined mechanism*” (Weber, 1978: 968). By rationalizing activities through impersonal execution of rules, standardization of routines and de-personalization of roles, organizations achieve order, stability and efficiency needed for survival (Weber, 1978). Without the help of formal administrative mechanisms, communications within organizations may become chaotic (Simon, 1947). Lacking order and reliability in activities, organizations become incapable of surviving in the long run (Hannan and Freeman, 1984). To bring order, ensure continuity and enhance efficiency and reliability, organizations ought to become bureaucratized through rational administration (Baron, Burton and Hannan, 1999). Decisions flow from authority to subordinate positions and executed without much discretion. According to this line of reasoning, bureaucracies are the most efficient organizational apparatus to minimize incongruousness in individual beliefs and perceptions.

Even though the concept of bureaucracy and its role in reconciling clashing interests within organizations dates back to the time of Weber, the relevant literature has largely cornered around authority relations and the virtues of unquestionable subordination (Weber, 1978). That is, the role of bureaucracy in mitigating such conflict is discussed in the middle to lower levels of organizational hierarchy, where opportunities for conflict mitigation comes directly from subordination. Nonetheless, as Ouchi (1980: pp. 134) has noticed “the bureaucratic organization can create an atmosphere of trust between employees ... Because members of an organization assume

some commonality of purpose, because they learn that long-term relationships will reward good performance and punish poor performance, they develop some goal congruence. This reduces their opportunistic tendencies". Research by Landsberger (1961) has corroborated this view by illustrating that bureaucracies perform many of the efficiency enhancing functions within each given level of an organization.

We believe that the role of bureaucracy in mitigating conflict among employees can be extended to top management teams. The underlying reasoning behind this argument is that a rational bureaucratic administration inspires managerial action in more subtle ways. Not only via rules and regulations, but also through a set of "rationally debatable" principles subsumed under the "norms" (Weber, 1978: 979) shared by the organizational members. Such norms clarify expectations on the decision making process (e.g., principles and standards to be adhered to), downplay individual preferences, and shift the onus of trust and reciprocity from individuals to the social system. Therefore, while at the lower levels bureaucratic rules ensure efficient execution of decisions already made by top managers, in the upper echelons, bureaucratic formality reduces conflict by formalizing the decision making process, by bringing an impersonal character to the decision-making context, and by feeding trust and reciprocity among TMT members (Fredrickson, 1986; Hage and Aiken, 1969; Hall, 1977).

In developing our reasoning, we focus on a conception of bureaucracy aimed at enhancing efficiency via the rationalization of the organizational structure (Weber, 1978). While prior literature studied bureaucratic complexity and inertia through indicators such as firm size and firm age (e.g., Dobrev, 2012; Sorensen, 2007), our study focuses on division of labor, a hallmark of Weberian bureaucracy. However, we

claim that it is not necessarily division of labor per se that is the source of conflict mitigation in TMTs, but its associated values and norms of efficiency and rationality. The focus of an organization towards efficiency and rationality can be observed more directly once we isolate the effect of bureaucratic complexity and inertia (e.g., for a similar reasoning see also Kacperczyk 2012), that may feed inefficiencies. Hence, division of labor employed here should be interpreted as an indirect measure of the organizational rationality that prevents cognitive differences among top managers to translate into personal animosities. We will abstain from offering any prediction about the independent effect of bureaucracy on TMT attrition and organizational dissolution. Presenting hypotheses on such independent effects requires the elaboration of additional mechanisms that go beyond the scope of this paper.

3.2.3. The moderating role of rational bureaucracy on the effects of TMT heterogeneity

To better appreciate the role of bureaucracy as a critical moderator of conflict within demographically diverse TMTs, let's now elaborate on how rational bureaucratic structures aimed at enhancing efficiency may impinge on each of the three processes that we introduced earlier as triggers of conflict within TMTs.

Perceptual differences. The way in which information enter into the upper echelons of organization determines to a certain extent, whether the differences in perceptions and goals lead to dysfunctional conflict (March and Simon, 1958). Information can enter the top management team through formal or informal relations, which the members have access to, both within and outside the organization (Arendt *et al.*, 2005; Huber, 1984). If the information enters through informal channels and networks, they are hardly subjected to any systematic processing and objective scrutiny. Processing and scrutiny

means reconciling information from multiple sources, extracting systematic patterns of environmental cues and making objective inferences to be transmitted to the key decision makers. Lacking such procedures, part of the information can be biased or distorted by the source or subject to selective perception on the part of the recipients (Cyert and March, 1963).

As a result, not only the perspectives and the judgments of top managers tend to diverge in a demographically diverse team, but also their beliefs about the appropriateness of those judgments. For example, cues to certain changes in institutional, legal or competitive environment in the industry may be obtained through different sources, which can often be irreconcilable or even conflicting. This could accentuate individual differences if managers need to arrive at judgments regarding appropriate courses of action with high subjectivity of the information. Judgments are made using the interpretive frames of managers that are shaped by prior experiences (Hambrick and Mason, 1984). As far as the TMT is diverse with respect to members' prior experience and the information arriving to the upper echelons are not systematically processed, the judgments made with subjective information also reinforce own beliefs about its appropriateness, leading to higher levels of conflict. Formal social relations in a bureaucracy not only institutionalize the channels through which information enter into the decision-making circle, but also restrict the use of subjective information in drawing judgment premises (Huber, 1984). These institutionalized channels are departments such as "business intelligence" or roles such as "analyst" through which complex pattern of information is distilled and channeled to the upper echelons of organizational hierarchy (Davenport, 2010; Huber, 1982). They are highly standardized in the sense that complex information is subjected to systematic

analysis and make objective inferences before passing on to the decision making circle. Above and beyond formal procedures and rules, the norms of rationality instilled into TMT members invite them to stick to the underlying rational principles of objective decision-making rather than relying on individual preferences. In this scenario, heterogeneous members may still have differences in perspectives, but often with awareness that such differences offer alternative views rather than holding beliefs about the appropriateness of own judgments. Information theorists points out that the use of advanced information gathering procedures is especially helpful for decision making teams in organizations that are driven by the norms of economic rationality (Huber, 1990). The standardization of available information provides a “common platform” for reconciling heterogeneous views and reduces conflict among TMT members.

Individual egos prevail over group solidarity. The norms and rules imposed by bureaucratic organizations depersonalize cross level commands and protect the exchange from activating the ego of those involved (Barnard, 1951). For example in a highly formalized law firm, client demands on a specific issue can be transferrable across partners without considerable ego problem, as clients are considered to be “belonging to the firm” rather than to any partner (Galanter and Palay, 1991). In a study conducted with primary care physicians, Briscoe (2007) shows how the extent of bureaucracy in professional service firms serve to facilitate client handoffs through reducing physician-client specificity and increasing procedural standardization. Similarly, our arguments imply that standardizing procedures serves to separate “person” from “office” and bring an impersonal dimension not only in top managers’ inter-organizational relations, but also relationships within the TMT. Rules also serve to avoid repetitious deliberation of routine problems reducing the intensity of cross level

interaction (Landsberger, 1961) that serves as a source of conflict (Hambrick *et al.*, 2014). By separating roles from individuals and prescribing rules of behavior, bureaucratic formality downplays affective conflict derived from the perceived differences of demographically different members of the top management teams. Further, a focus on efficiency guide individual members to follow routine decision-making *procedures* (*not* routine decisions) with *precise* goals (*not* same goals) in mind (Simon, 1947) and well-defined expectation on performance evaluation (Ouchi, 1978). This leaves less chance for incongruity in the perception of demographically different members. As Ouchi (1980) put it, “Bureaucracies are characterized by an emphasis on technical expertise ... and some socialization into craft or professional standards. Professionals within a bureaucratic setting thus combine a primary affiliation to a professional body with a career orientation, which increases the sense of affiliation or solidarity with the employer and further reduces goal incongruence.”

Lack of trust and reciprocity. A further way by which bureaucracy may serve to reduce conflict is by improving trust and reciprocity in TMTs. Trust and reciprocity helps to sustain informal relations within a team (Brass, 1995; Ibarra, 1992; Oh, Chung and Labianca, 2004; Reagans and Zuckerman, 2001; Reagans, Zuckerman and McEvily, 2004). When the members of a team are similar in terms of background characteristics, greater levels of interpersonal attraction, trust and understanding prevails (Ruef, Aldrich and Carter, 2003). As the members become more diverse, trust is difficult to build. Demographic heterogeneity captures the underlying difference in perceptions and interpretive frames with which members of the team perceive the world and interpret stimuli (Pfeffer, 1983). Trust-based communication is not easy to establish when members perceive and interpret incoming stimuli differently (Ruef *et al.*, 2003).

Lacking enough trust and reciprocity, diverse TMTs are more likely to face conflict in decision-making process.

Trust and reciprocity derived from the similarity of individuals can be substituted with a more formal type of trust and reciprocity relationship built on the bureaucratic “esprit de corps” towards the impersonal discharge of duties (Evans and Rauch, 1999; Weber, 1978). The norms of bureaucracy stipulate that duties are to be discharged irrespective of individual differences (Merton, 1939). The onus of trust and reciprocity is transferred from individuals to the social system through norms inspired by underlying bureaucratic principles. Such norms set clear expectations regarding social interactions between top managers thereby reducing incongruences in individual beliefs about behavioral standards and social norms (e.g., challenging alters’ perspectives without undermining their social position) to be followed.¹⁰ Bureaucracies carry an identity independent from the social identity of individuals who occupy positions within the organization (du Gay, 1994). This promotes a sense of stewardship among the top managers who in turn derive a part of their social identity from the organizational membership. Trust and reciprocity, otherwise hard to *emerge* in a diverse team, is *infused* through formal mechanism in rational bureaucracies.

Based on this reasoning, we argue that conflict in top management teams is reduced at higher levels of bureaucratic rationality because cognitive disagreements hardly translate into personal animosities. Conflict is mitigated by the bureaucratic impersonality with which managerial duties are performed (du Gay, 1994) and with goal clarity (Fredrickson, 1986; Simon, 1947), well defined performance expectations

¹⁰ While such expectations are also shaped by joint experience working together (Eisenhardt and Schoonhoven, 1990; Smith et al., 1994), members of a TMT tend to be highly mobile and hence an unlikely source of conflict mitigation beyond brief periods (Pennings and Wezel 2010).

(Ouchi, 1978) and standardized information gathering procedures (Huber, 1990). Low levels of conflict provide time and an environment conducive for building a cohesive group (Harrison *et al.*, 1998) and higher levels of social integration ensues in the top management team (O'Reilly *et al.*, 1989). Cohesion and social integration facilitate communication and reduce conflict and turnover. While it is not straightforward to argue that bureaucratic impersonality enables the organization to benefit from the heterogeneity of its top managers, it is logical to expect that bureaucracies allow managers to organize swift responses to competitive threats (Hambrick *et al.*, 1996; Boone *et al.*, 2004), and expose less their organizations to the risk of dissolution. We therefore advance the following moderation hypotheses to the predictions made in H1a and H2a.

Hypothesis 1b: *The positive relationship between TMT demographic heterogeneity (as indicated by the heterogeneity in industry tenure) and TMT attrition is attenuated at higher levels of bureaucratic orientation.*

Hypothesis 2b: *The positive relationship between TMT demographic heterogeneity (as indicated by the heterogeneity in industry tenure) and organizational dissolution is attenuated at higher levels of bureaucratic orientation.*

3.3. Methods

3.3.1. Empirical Setting. See chapter two for the detailed description of empirical setting, which is the basis of the present study also.

3.3.2. Data. The name, address, firm affiliation, educational attainments, and employment status (partner or associate) of each accountant registered in the Dutch audit industry during the years 1940-1982 was gathered (see Maijor and van Witteloostuijn, 1996 for details). The data also provide the year of founding of each firm and the province in which the firm operated. The dataset was reconstructed by aggregating individual level observations and rearranging the data at the firm level,

eventually constructing a panel dataset with 4796 observations across 42 years (unbalanced). In the analyses for TMT attrition, we dropped 906 observations that correspond to partner exits following firm failure leaving 3890 observations for the analyses on TMT attrition. In the analyses on organizational dissolution, we lagged our main independent variables by one period, dropping 907 observations from the original sample. Since the inclusion of the covariate *firm growth* (lagged) drops observations also from t-2 (i.e., percentage growth in firm size over previous period), 779 observations are further dropped from the analyses reducing the sample to 3110 observations.

3.3.3. Measures. The dependent variables we use in the analyses are *TMT attrition* and *organizational dissolution*. *TMT attrition* is a variable calculated as the number of partners exiting from a focal firm divided by total number of partners in that firm in a given year, if the firm is not dissolved the same year. Since the decision to quit as a result of conflict may not get delayed for more than a year or two and most of our observations are made with an interval ranging from 3-5 years, we use contemporaneous values of the dependent and independent variables in the estimation. *Organizational dissolution* is measured as a dummy variable, coded “1” when a firm dissolves, “0” otherwise. The main independent variables we use are *TMT heterogeneity* and *rational bureaucracy*. *TMT heterogeneity* was computed by calculating the standard deviation of industry tenure observed among the TMT members within each firm (see Sorensen, 2000 for a similar measure). To overcome skewness in the distribution, we transformed the variable by taking square root and approximates to a normal distribution. According to the values reported in table 3.1, the average heterogeneity of tenure of partners in the firm is around 5 months (i.e., $0.65^2 \times 12$) with a standard

deviation of 15.6 months (i.e., $1.21^2 \times 12$) whereas in some firms it goes up to 32 years¹¹. The extent of *bureaucracy* is measured by the leverage structure of the firm, which is the ratio of number of associates employed per partner of the firm (see “empirical setting”). Again, we took the square root of the measure of leverage to reduce the skewness of its distribution. *Rational bureaucracy* has a maximum value of 8 (2.83×2.83) in the sample -- i.e., for every partner, there are roughly 8 associates whereas the average is as low as 0.0324¹². However, if the zero values are excluded from the data set, the average is 0.9 – i.e., approximately one associate for every partner. The lagged values of *TMT heterogeneity* and *rational bureaucracy* are used to estimate the risk of organizational dissolution. Unlike TMT attrition, we expect a delay in the effect of TMT demographic heterogeneity on the risk of organizational dissolution: since the risk of organizational dissolution is heightened through persistent delays in decision-making (Hambrick *et al.*, 1996), we can expect a lagged effect of this variable. **Controls.** We added many control variables according to three types of influences that might affect the estimation of the hypothesized relationship - historical, geographical and firm specific controls. First, historical controls that correspond to unique historical events took place in the Netherlands and elsewhere that could impact on the TMT heterogeneity through shaping mobility patterns into and out of firms. They include: a dummy variable *WWII*, coded 1 if the observation year is between 1939 and 1944 and 0 otherwise, to capture the supply/demand variations during World War II; a dummy variable *Independence for Indonesia* is included to control for the immediate change in demand/supply conditions following the liberation of Indonesia, a former Dutch colony; dummy variables for two main regulatory events in the Dutch accounting

¹¹ The analyses were rerun after removing outliers, but results remain unchanged.

¹² Note that differences in summary statistics arise from the differences in levels of analyses.

industry is also added. First, the formation of a single association for the Dutch audit professionals, named NIvRA, set standards for auditor quality and persuaded the government to pass a legislation to limit the audit practice to those who passed a professional examination thereby limiting the auditor supply. The dummy *NIvRA 1966* indicates “1” if the observation year is 1966 or later, “0” otherwise. A legislation was also passed in 1971 (Act on Annual Financial Statements of Enterprises) which required all companies to publish annual audits increased the demand for audit services. We added a dummy to capture this change in demand, *AFSE 1971* coding “1” if the observation year is 1971 or later, “0” otherwise.

The second set of controls corresponds to the geographical and economic dynamics that might influence partner exits and organizational dissolution. The gross domestic product (GDP) scaled to hundreds of U.S dollars, *GDP (in 100s of \$)*, is included to isolate the variations in audit demand and supply owing to general economic conditions in the Netherlands in a focal year; *local density* and *local density squared* measuring the number of firms in a focal province and its square term to capture the effect of cognitive legitimacy and competitive pressures respectively, on partner exits and dissolution (Hannan and Carroll, 1992); *Industry concentration ratio* measured as the combined market share of the four largest firms operating in the industry, to control for the extreme skewness of the size distribution; *Number of foundings, failures* and *M&As* to capture the effect of number of firm foundings, dissolutions and mergers and acquisitions on the demographic dynamics of top management teams (Haveman, 1995); The size distribution of firms in an industry is known to shape mobility patterns (Greve, 1994) and hence we include a control for the *size diversity* in the industry, measured as Blau index, to rule out its influence on partner exits; Holland has eleven provinces with

strong geographical uniqueness along religious and political dynamics, hence we include *provincial dummies* to control for any unobserved province specific dynamics influencing our hypothesized relationship.

The third set of controls pertains to various firm level characteristics that might influence the proportion of partner exits and organizational dissolution. The most important controls by which we want to isolate the alternative dimensions of bureaucracy are the size and age of the firm. While prior literature studied the effect of bureaucratic inertia, complexity and hierarchy on various employee outcomes, our study focuses on the efficiency aspect of bureaucracies. Although we also acknowledge that the system of values and beliefs in a bureaucracy is also correlated with firm size and firm age, these measures capture complexity and inertia respectively more than the efficiency dimension associated with division of labor. Further, it has been shown that the managerial propensity to leave and the risk of organizational dissolution are also affected to a large extent by the age and size of the firm owing to the various other factors (see Carroll and Mayer, 1986; Dobrev, 2012; Greve, 1994; March, 1981). Therefore, we control for *firm age* and *firm size*, where firm size is measured in this case as the total number of auditors practicing in a focal firm, following Boone *et al.*, (2000); a properly specified model of partner exits and organizational dissolution should include both mean firm tenure and mean industry tenure of partners, but simultaneous inclusion of mean firm and industry tenure will introduce multicollinearity issue. Therefore we included *mean firm tenure* of partners in the attrition models as it is likely to have more impact on attrition (Dobrev, 2012; Hitt *et al.*, 2001) while *mean industry tenure* is included in dissolution models as it is likely to have more impact on firm performance (Kor and Misangyi, 2008); in order to rule out the alternative explanation

that the performance and growth of firms drives down partner attrition and the risk of audit firm failure, we control for *firm growth*, calculated as the percentage growth in the headcount of all accountants in the firm, since prior studies in accounting industry, including the Dutch accounting industry has shown that there is a high correlation of 0.99 between revenues and number of auditors in the firm; we further add a dummy variable for *single partner* firms as such firms are run by only one partner and hence will be measured as having no heterogeneity; *traditional partnerships* to control for the influence of firms that does not employ associates – and hence not fitting into a TMT-employee firm structure by definition. We controlled for the effect of such firms instead of dropping them from the sample because many of these firms expand to include associates and more than one partner. Therefore dropping them will introduce sample selection bias. Since we observe the events in an unbalanced panel, with time between two observations ranging from 2 to 4 years, we added a variable *time since last observation* to avoid bias while estimating risk ratio of partner exits as well as firm dissolution. Few firms started adopting the PA structure as early as 1925 as an effort to understand the benefits of leveraging. However, they are not observed in our data and we attempt to avoid left censoring bias with a dummy for the firms that already adopted a PA structure at the beginning of our observation window – *left censor* (Guo, 1993). Finally, mobility has been shown to impact the failure rates of the firms in this industry. In those models, the most robust findings pertain to the number of exiting partners (Wezel et al., 2006; Pennings and Wezel, 2010, Table 2, outbound models). I build on those models and attempted to isolate the effects of partner exits on failure rates by creating a variable that captures the systematic and historical differences among firms in the number of partner exits observed until time t. In that spirit, the variable 'cumulative

number of exits' was created and added as a control to my models. Table 3.1 reports the summary statistics and the correlations among the variables used in the models.

3.3.4. Estimation procedure. To estimate the proportion of partner exits, we used fractional logistic regression with robust standard errors (table 3.2, model 1-3). The proportion of exits is a continuous variable, but truncated at zero and one. Since linear regression will predict values beyond this interval, which are not meaningful, a better solution is to use logistic regression in a generalized linear model framework (for example, see Zhao, Chen and Schaffner, 2001). By applying logistic estimation to fractional variable, the predicted probability will be contained within the interval 0 and 1. Further, since the normality assumption of error terms are violated in the limited dependent variable models, incorrect estimates of the standard errors may be obtained and therefore, robust standard errors are to be estimated. The analyses are performed in STATA 12 with the routine *glm* in binomial family and link *logit*. To estimate the likelihood of organizational dissolution (table 3.3, models 6-8), complementary log-log models within an event history framework are employed. Complementary log-log regression model is the discrete time equivalent of Cox models for continuous event history data. Since our data is discrete time, complementary log-log regression model is a natural choice for our setting. Further, it requires no assumptions regarding the baseline hazard of failure. Since hazard of failure at time t may influence the hazard at time t+1, in order to account for the non-independence of failure hazard, we employed a cluster-robust standard error estimator. All the models reported were run in STATA 12 and the routine *cloglog* with cluster-robust option was used.

Table 3.1. Descriptive statistics and bivariate correlations

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. GDP (in 100s of \$)	113.17	13.95	89.66	143.1	1																
2. Local density	67.95	39.74	1	129	-0.42	1															
3. Local density squared	6196.06	4850.81	1	16641	-0.44	0.98	1														
4. Ind conc ratio	0.22	0.09	0.11	0.49	0.78	-0.47	-0.49	1													
5. Number of foundings	12.49	12.49	0	64	0.01	0.32	0.26	0.01	1												
6. Number of failures	16.14	17.75	0	96	0.17	0.34	0.28	0.07	0.17	1											
7. Number of M&As	12.28	9.65	0	38	0.67	-0.33	-0.38	0.48	0.21	0.34	1										
8. Firm size heterogeneity (ln)	0.14	0.09	0	0.37	0.24	0.5	0.46	0.11	0.23	0.43	0.15	1									
9. Firm age (ln)	1.72	1.24	0	4.32	-0.3	0.24	0.25	-0.31	-0.19	0.08	-0.24	0.07	1								
10. Firm size (ln)	0.5	0.9	0	5.67	0.13	0.05	0.03	0.07	0.07	0.09	0.07	0.18	0.1	1							
11. Firm growth (ln)	0.01	0.56	-5.67	5.22	0.04	0.04	0.03	0.02	0.01	0.05	0.01	0.07	0.05	0.35	1						
12. Cum. partner exits (sqrt, t-1)	0.79	1.49	0	9.9	-0.19	0.13	0.14	-0.13	-0.04	0.03	-0.13	0.03	0.57	0.41	0	1					
13. Mean firm tenure	5.42	6.44	0	66	-0.23	0.15	0.14	-0.23	-0.13	0.1	-0.13	0.03	0.66	-0.08	0	0.23	1				
14. Mean industry tenure	11.85	11.33	0	66	-0.26	0.14	0.11	-0.13	-0.05	0.12	-0.04	0.05	0.45	0.08	0.05	0.32	0.47	1			
15. Time since last observation	1.87	3.27	0	51	-0.13	0.08	0.08	-0.13	0.01	0	-0.05	0.01	0.39	0.01	0.06	0.14	0.13	0.2	1		
16. TMT heterogeneity (sqrt)	0.65	1.21	0	5.66	0.02	0.07	0.06	0.02	0.05	0.08	0.03	0.11	0.13	0.74	0.25	0.39	-0.05	0.19	0.03	1	
17. Rational Bureaucracy (sqrt)	0.18	0.39	0	2.83	0.04	0.07	0.06	-0.02	0.02	0.05	0.01	0.12	0.12	0.69	0.27	0.27	-0.01	0.05	0.03	0.38	1

3.3.5. Results

Table 3.2 provides the results for the fractional logistic regression on the proportion of partner exits. Model 1 reports the estimates of control variables and most of them were according to our expectations. Notable among them is the negative and significant effect of firm size and firm age on the proportion of partner exits. While firm size and firm age can be seen as a proxy for bureaucracy, since we have a more precise measure for bureaucracy vis-à-vis division of labor, these variables may capture other causal factors that reduce attrition. For instance, controlling for firm size is especially important in our context as it confers significant resource and status advantages for partners that drive down the attrition from the partnership. Similarly, firm age might tie partners to the firm as it could be related to “history and tradition” or the entrenched relationship between partners and clients. Both the measures however, might be also correlated with bureaucracy apart from these factors, so we replace our main bureaucracy variables in the robustness analyses with firm size and firm age. Another noteworthy control is the cumulative number of exits until time t-1, which captures the firm specific propensity for managerial exits and is found to be positive and highly significant, thus capturing the unobserved firm heterogeneity in the factors that contribute to exits. A surprising result among the controls is the coefficient of firm growth. The positive and strongly significant effect of firm growth (as measured as percentage increase in the auditor headcount) on proportion of partner exits is contrary to our expectation that partners may be less likely to leave in fast growing firms (i.e., with high performance). This result however suggests that when an audit firm is growing in size, partners tend to be highly mobile. The positive effect of growth on attrition also helps to rule out the

Table 3.2. Fractional logit regression models for the proportion of partner exits from audit firms in the Dutch accounting industry, 1940-1982.

VARIABLES	MAIN ANALYSES			ADDITIONAL ANALYSES	
	(1)	(2)	(3)	(4)	(5)
World war II	-0.231 (0.188)	-0.216 (0.189)	-0.202 (0.190)	-0.217 (0.189)	-0.235 (0.186)
Independence for Indonesia	-0.769*** (0.262)	-0.758*** (0.264)	-0.760*** (0.265)	-0.753*** (0.264)	-0.711*** (0.267)
NIVRA industry association 1966	3.239*** (0.264)	3.328*** (0.266)	3.348*** (0.266)	3.353*** (0.266)	3.301*** (0.268)
AFSE 1971	-1.363*** (0.358)	-1.368*** (0.361)	-1.376*** (0.360)	-1.372*** (0.359)	-1.432*** (0.365)
GDP per Capita (in 100s of \$)	-0.031** (0.015)	-0.031** (0.015)	-0.030** (0.015)	-0.031** (0.015)	-0.028* (0.015)
Local density	0.026** (0.010)	0.027*** (0.010)	0.027** (0.010)	0.027** (0.010)	0.026** (0.010)
Local density squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
Industry conc. Ratio	-1.282 (1.224)	-1.456 (1.246)	-1.503 (1.243)	-1.476 (1.238)	-1.494 (1.247)
Number of foundings	-0.018*** (0.005)	-0.018*** (0.005)	-0.018*** (0.005)	-0.018*** (0.005)	-0.017*** (0.005)
Number of failures	0.016*** (0.003)	0.016*** (0.003)	0.015*** (0.003)	0.016*** (0.003)	0.016*** (0.003)
Number of M&As	-0.006 (0.012)	-0.007 (0.012)	-0.007 (0.012)	-0.007 (0.012)	-0.007 (0.012)
Firm size heterogeneity (ln)	1.646* (0.852)	1.769** (0.861)	1.808** (0.863)	1.770** (0.862)	1.462* (0.852)
Firm age (ln)	-0.216*** (0.068)	-0.215*** (0.068)	-0.213*** (0.068)	-0.216*** (0.068)	-0.084 (0.071)
Firm size (ln)	-0.644*** (0.105)	-0.773*** (0.116)	-0.715*** (0.119)	-0.252 (0.257)	-0.815*** (0.114)
Firm growth (ln)	0.282*** (0.087)	0.280*** (0.089)	0.271*** (0.088)	0.269*** (0.088)	0.199** (0.088)
Cumulative partner exits (sqrt, t-1)	0.645*** (0.046)	0.651*** (0.046)	0.652*** (0.046)	0.652*** (0.046)	0.696*** (0.049)
Mean firm tenure	0.005 (0.009)	0.005 (0.009)	0.004 (0.009)	0.005 (0.009)	0.001 (0.009)
Firms run by one partner	-0.499*** (0.137)	-0.277 (0.177)	-0.169 (0.185)	0.240 (0.291)	-0.204 (0.178)
Traditional partnerships	-0.437*** (0.162)	0.215 (0.284)	0.137 (0.282)	0.111 (0.282)	0.082 (0.285)
Time since last observation	0.038*** (0.013)	0.036*** (0.013)	0.038*** (0.013)	0.037*** (0.013)	0.036*** (0.013)
Left censor	-1.135*** (0.217)	-1.260*** (0.216)	-1.215*** (0.215)	-1.172*** (0.215)	-0.801*** (0.220)
Province dummies	YES	YES	YES	YES	YES
TMT heterogeneity (sqrt)		0.187*** (0.058)	0.246*** (0.064)	0.402*** (0.110)	0.545*** (0.073)
Rational Bureaucracy (sqrt)		0.802*** (0.295)	0.871*** (0.290)	0.463 (0.317)	0.731** (0.296)
TMT heterogeneity (sqrt) X Rational Bureaucracy (sqrt)			-0.171** (0.081)		
TMT heterogeneity X Firm size (ln)				-0.179** (0.078)	
TMT heterogeneity X Firm age (ln)					-0.180*** (0.025)
Constant	2.914** (1.423)	1.990 (1.455)	1.881 (1.456)	1.586 (1.454)	1.582 (1.468)
Observations	3,890	3,890	3,890	3,890	3,890
Log-likelihood ratio	-1646	-1640	-1638	-1637	-1618

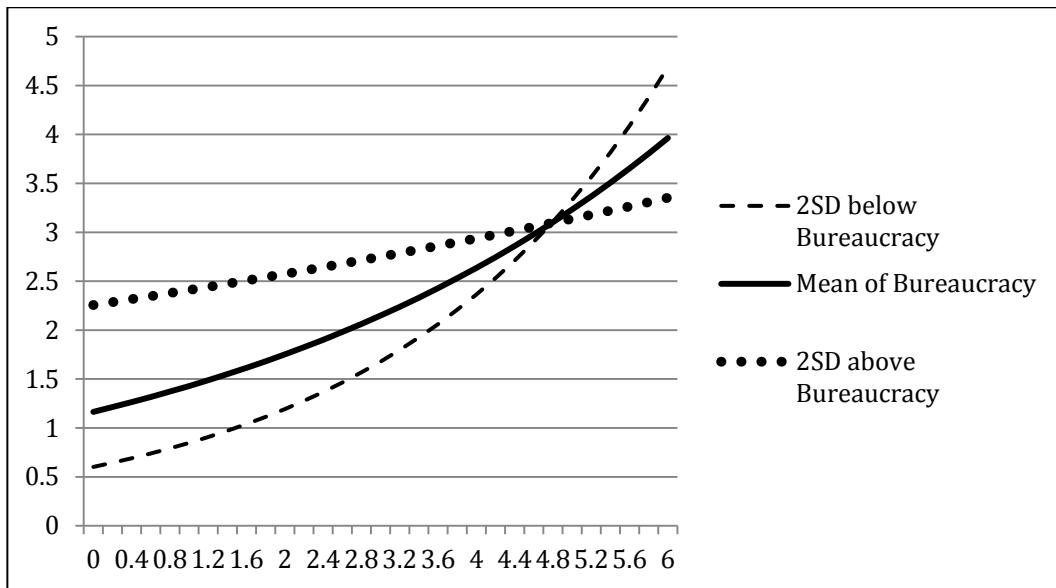
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

alternative explanation that partners may be less likely to leave when the firm is growing in size.

In model 2, we test the effect of demographic heterogeneity on the attrition of partners from the firm (hypothesis 1a). As predicted, demographic heterogeneity increases proportion of exits of TMT members. In model 3, we test hypothesis 1b in which we advanced that bureaucracy reduces the TMT attrition. The results reported in table 3.2 (model 3) appear supportive to our hypothesis with a negative and highly significant coefficient of the interaction variable. Figure 3.1 plots the interaction effect of bureaucracy (at its mean value and two standard deviation above and below mean) on the relationship between TMT demographic heterogeneity and the multiplier of the proportion of partner exits from the firm.

Fig. 3.1. Interaction of bureaucracy with TMT demographic heterogeneity and prop. of top manager exits [Y-axis: Multiplier of TMT attrition rate; X-axis: TMT heterogeneity]



Upon examining the interaction plot, our predictions appear only partially supported. While we observe a moderation effect of bureaucracy on the positive relationship of TMT heterogeneity on TMT attrition across our sample, only in the case of 36 firms (at TMT heterogeneity >4.8) TMT attrition turns out to be lower in highly bureaucratic firms than in

low bureaucracy counterparts. This unexpected result is mostly due to a strong positive effect of bureaucracy on TMT attrition, which emerges as a strong predictor of TMT attrition (see also Sorensen, 2007). Thus only weak support to our prediction is obtained from the analyses.

We expect conflict mitigation not only to reduce TMT attrition within firms, but also to lower the risk of organizational dissolution. Table 3.3 reports the results of the analyses that test our predictions on the negative moderation of bureaucracy on the positive relationship between demographic heterogeneity and organizational dissolution.

Model 6 in table 3.3 reports the estimation of the control variables. While firm size reduce hazard of organizational dissolution, there is a positive age dependence on firm failure. Paradoxically, firm growth has a positive effect on the hazard of failure. Though this appears to run against the common wisdom, this “paradox of growth” would suggest that growing too fast might also destabilize the organizations through constant readjustment of routines, processes and relations to intra and extra industry actors.

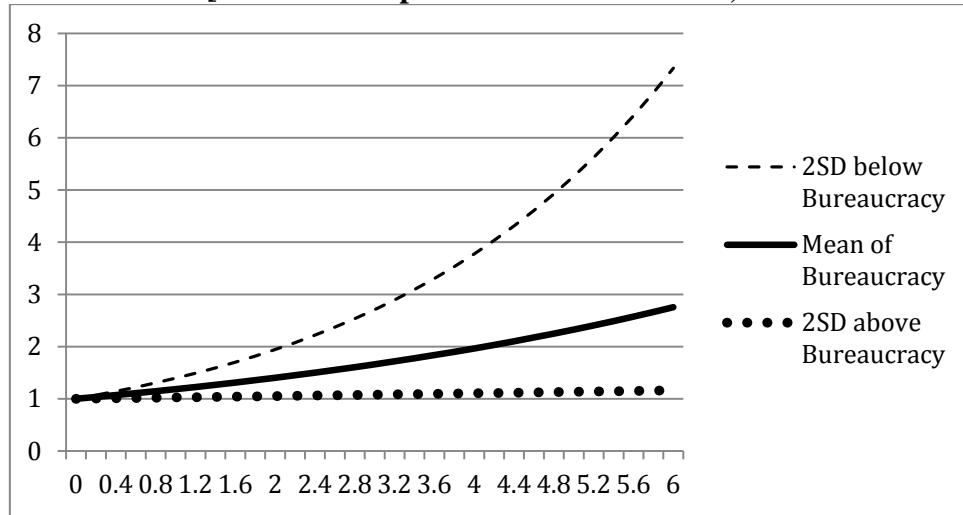
In the main results, we found that demographic heterogeneity increases the likelihood of organizational dissolution in our sample (hypothesis 2a, model 7). As predicted by hypothesis 2b, the higher the extent of bureaucracy of the focal firm, the weaker the effects of demographic heterogeneity on organizational dissolution (model 8, table 3.3). Figure 3.2 plots the interaction effect of rational bureaucracy (at its mean value and two standard deviation above and below mean) on the relationship between TMT demographic heterogeneity and the multiplier of hazard of dissolution. The graph illustrates a clear moderation effect of bureaucracy on the relationship between TMT heterogeneity and rate of firm dissolution. Overall, the extent of bureaucratic rationality of a firm appears to downplay the negative consequences of TMT heterogeneity on organizational survival chances.

Table 3.3. Complementary log-log regression analyses for the hazard of audit firm failure in the Dutch accounting industry, 1940-1982.

VARIABLES	MAIN ANALYSES			ADDITIONAL ANALYSES		
	(6)	(7)	(8)	(9)	(10)	(11)
World war II	0.803*** (0.215)	0.830*** (0.217)	0.837*** (0.218)	0.814*** (0.218)	0.824*** (0.218)	0.837*** (0.220)
Independence for Indonesia	-1.195*** (0.373)	-1.229*** (0.377)	-1.224*** (0.375)	-1.207*** (0.374)	-1.213*** (0.379)	-1.224*** (0.365)
NIvRA industry association 1966	-1.034*** (0.343)	-1.042*** (0.345)	-1.034*** (0.343)	-1.039*** (0.343)	-1.032*** (0.346)	-1.034*** (0.311)
AFSE 1971	-2.473*** (0.681)	-2.495*** (0.685)	-2.496*** (0.681)	-2.472*** (0.680)	-2.504*** (0.690)	-2.496*** (0.655)
GDP per Capita (in 100s of \$)	0.095*** (0.020)	0.097*** (0.020)	0.098*** (0.020)	0.097*** (0.020)	0.096*** (0.020)	0.098*** (0.020)
Local density	-0.036*** (0.013)	-0.036*** (0.014)	-0.036*** (0.014)	-0.034** (0.014)	-0.037*** (0.013)	-0.036*** (0.013)
Local density squared	0.000* (0.000)	0.000* (0.000)	0.000* (0.000)	0.000 (0.000)	0.000* (0.000)	0.000* (0.000)
Industry conc. ratio	6.633*** (1.883)	6.642*** (1.896)	6.559*** (1.881)	6.561*** (1.879)	6.671*** (1.911)	6.559*** (1.980)
Number of foundings	-0.004 (0.010)	-0.004 (0.010)	-0.004 (0.010)	-0.004 (0.010)	-0.004 (0.010)	-0.004 (0.008)
Number of failures	0.029*** (0.004)	0.029*** (0.004)	0.029*** (0.004)	0.030*** (0.004)	0.029*** (0.004)	0.029*** (0.004)
Number of M&As	-0.044*** (0.017)	-0.044*** (0.017)	-0.045*** (0.017)	-0.045*** (0.017)	-0.044*** (0.017)	-0.045*** (0.016)
Firm size heterogeneity (ln)	-3.222*** (1.048)	-3.150*** (1.046)	-3.122*** (1.052)	-3.128*** (1.054)	-3.115*** (1.037)	-3.122*** (1.075)
Firm age (ln, t-1)	0.232*** (0.057)	0.235*** (0.057)	0.234*** (0.056)	0.233*** (0.057)	0.287*** (0.065)	0.234*** (0.056)
Firm size (ln, t-1)	-0.152 (0.097)	-0.316** (0.134)	-0.248* (0.138)	0.072 (0.216)	-0.326** (0.132)	-0.248* (0.147)
Firm growth (ln, t-1)	-0.225** (0.093)	-0.232** (0.094)	-0.236** (0.092)	-0.235** (0.093)	-0.237*** (0.092)	-0.236** (0.095)
Cumulative partner exits (sqrt, t-1)	0.024 (0.036)	0.027 (0.038)	0.027 (0.037)	0.026 (0.037)	0.038 (0.037)	0.027 (0.041)
Mean industry tenure (t-1)	0.013*** (0.005)	0.012** (0.005)	0.012** (0.005)	0.012** (0.005)	0.010* (0.005)	0.012** (0.005)
Firms run by one partner	-0.120 (0.151)	-0.010 (0.162)	0.054 (0.160)	0.165 (0.176)	0.021 (0.163)	0.054 (0.162)
Traditional partnerships	-0.074 (0.155)	-0.043 (0.171)	-0.071 (0.166)	-0.059 (0.168)	-0.026 (0.170)	-0.071 (0.163)
Time since last observation	0.042*** (0.010)	0.044*** (0.010)	0.044*** (0.010)	0.043*** (0.010)	0.043*** (0.010)	0.044*** (0.010)
Left censor	-0.457** (0.216)	-0.542** (0.221)	-0.496** (0.216)	-0.441** (0.211)	-0.422* (0.223)	-0.496** (0.244)
Province dummies	YES	YES	YES	YES	YES	YES
TMT heterogeneity (sqrt, t-1)	0.141** (0.061)	0.195*** (0.062)	0.264*** (0.080)	0.307*** (0.099)	0.307*** (0.069)	0.195*** (0.069)
Rational Bureaucracy (sqrt, t-1)	0.196 (0.211)	0.334 (0.208)	0.028 (0.216)	0.203 (0.210)	0.203 (0.207)	0.334 (0.207)
TMT heterogeneity (sqrt, t-1) X Rational Bureaucracy (sqrt, t-1)			-0.218** (0.088)			-0.218** (0.096)
TMT heterogeneity (t-1) X Firm size (ln, t-1)				-0.162** (0.071)		
TMT heterogeneity (t-1) X Firm age (ln, t-1)					-0.066** (0.031)	
Constant	-12.147*** (1.984)	-12.477*** (2.013)	-12.675*** (2.003)	-12.729*** (2.004)	-12.558*** (2.021)	-12.676*** (1.976)
Observations	3,110	3,110	3,110	3,110	3,110	3,111
Log-likelihood ratio	-1194	-1192	-1189	-1189	-1190	-1189
Rho						3.12e-06

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Fig. 3.2: Interaction of bureaucracy with TMT demographic heterogeneity and rate of failure [Y-axis: Multiplier of firm failure rate; X-axis: TMT heterogeneity]



3.3.6. Robustness Checks

Three robustness checks were run to corroborate our results, to test our reasoning with a different dependent variable and to rule out unobserved heterogeneity. First, prior studies on bureaucracy used firm size and firm age as the measure of bureaucracy (e.g., Dobrev, 2012; Sorensen, 2007). Although this measure has been criticized for not being able to capture the unobservable effects associated with firm size and firm age (see Kacperczyk, 2012), the size and age of a firm are clearly correlated with bureaucracy. Either of these measures can foster efficiency and the underlying value system under the circumstances that complexity do not feed anonymity¹³ rather than impersonality, and inertia do not feed stubbornness on the part of top managers whose prior decisions lead to the inertia generating mechanism. Hence in alternative models, we use as moderator firm size (model 4, table 3.2 for TMT attrition and model 9, table 3.3 for firm dissolution) and firm age (model 5, table 3.2 for TMT attrition and model 10, table 3.3

¹³ Anonymity feeds in when firm grows too big to maintain the organizational value system uniformly and hence fail to instill the values uniformly.

for firm dissolution). The results obtained from these additional analyses provide additional evidence aligned with our theoretical arguments.

Second, in the models on TMT attrition, we address the issues of unobserved heterogeneity by including a control for cumulative number of partner exits until time $t-1$. As we saw in the results (models 1-5, table 3.2), this variable exhibits a strong and highly significant effect on TMT attrition, partly capturing issues of unobserved heterogeneity (i.e., of systematic differences among firms in terms of rates of turnover among TMT members). This variable however appears to be a weak predictor of firm dissolution (models 6-10, table 3.3) and hence we would not be confident to rule out unobserved heterogeneity in the dissolution models. In order to check for unobserved heterogeneity in such models, we performed a complementary log-log regression with a “frailty” term (Jenkins, 1997) in the equation (model 11, table 3.3). This is achieved by running the regression with `xtcloglog` routine in Stata 12. The results suggest that there is no unobserved heterogeneity in the model (as indicated by a non-significant rho). We can also see that the main results discussed in the paper are indeed robust to the frailty-included regression in model 11.

Third, above and beyond the results obtained from modeling organizational dissolution, we also checked the robustness of our findings to the use of a short-term measure of performance (i.e., firm growth, in headcount). Since growth measures are dependent on firm size, we resorted to the model proposed by Gibrat (1931), one of the most common and previously used approach in the literature (see e.g., Greve, 2008; Sorensen, 1999). This approach models firm size at time t while controlling for firm size at time $t-1$. The results (not reported but available on request) obtained from this

additional analysis appear aligned with those discussed so far and provide further support to our theory.¹⁴

3.4. Discussion

The predictions of upper echelon theory on the organizational consequences of TMT heterogeneity rest on the fundamental premise that managerial choices determine organizational outcomes (Hambrick and Mason, 1984). Much less attention has been given to the investigation of how organizational values and belief systems influence TMT processes (see Beckman and Burton, 2011). Recent research has started to approach this question by pointing out that the extent to which heterogeneous TMT members are required to have more interactions would accentuate the potential for conflict among them (Hambrick *et al.*, 2014). The results of our paper suggest that, even in the context of highly interdependent TMTs, such as those of professional service firms, the positive relation between TMT interdependence and conflict (and hence organizational outcome) is attenuated, if not nullified, in those contexts in which the dominant values and belief system are oriented to efficiency and rationality. In

¹⁴ Two additional robustness checks are worth reporting. Pennings and Wezel (2010) found that changes in TMT demographic heterogeneity increase the risk of organizational dissolution by disrupting the “quasi-resolution” of conflict. The use of that measure was justified by the fact that the focus of that paper was on the mobility of managers and its effects on the demographic makeup of firms. Our models aim at controlling for the potentially disruptive consequences of mobility through the number of exits witnessed by the organization *until t-1*. We also replaced this variable with the number of exits *at t-1* and obtained results qualitatively similar to those reported in table 3.3. Nonetheless, to further prove the robustness of our results, we rerun the models on TMT attrition and organizational dissolution while controlling for the changes in heterogeneity (flow). The results obtained from this procedure turned out to be consistent with those discussed here. Our paper is nevertheless concerned with the levels or stock of diversity and our analyses time frame is also different from that of Pennings and Wezel (2010). Further, Boone, Brocheler and Carroll (2000) found that as the market concentrates, a process called resource partitioning (Carroll, 1985) occurs according to which large and small accounting firms co-exit together in separate niches and reduce the risk of firm dissolution. To test the theory, they interacted the size of firm with a measure of market concentration ratio, which is the combined market share of the eight largest firms in the industry. The results obtained from additional analyses that control for this interaction (with four largest firms though) indicate that bureaucracy still performs the same function in attenuating the consequences studied in the main models presented in this paper.

particular, while TMT heterogeneity is positively related to TMT attrition and organizational dissolution, the extent of rational bureaucratic orientation of a firm systematically reduces the magnitude of these effects. The results of our analyses are also robust to various additional analyses, some of which are reported in the paper.

A first contribution of our research lies in demonstrating the importance of the organizational context within which social processes such as TMT interactions take place and pointing to the need of understanding the consequences of such processes through the lens of organizational values and belief systems. Our approach is novel to the TMT literature as most researchers have focused on clarifying the link between TMT composition and organizational outcomes by focusing on the mediation and moderation processes (Jackson 1992; Lawrence 1997; Priem *et al.*, 1999). Similarly to Carroll and Harrison (1998), instead, we view the micro-processes argued by demographic research as embedded into a distinctively macro-social dynamics. Instead of referring to organizational culture and to the processes of cultural transmission among employees, we decided to focus on the organizational orientation to efficiency and rationality. In so doing, we drew inspiration from the work of Weber (1978) and from his profound reflections on the implications of bureaucratic structures for organizational behavior. Our analyses indeed demonstrate that the negative consequences of demographic heterogeneity on TMT attrition and on the hazard of organizational dissolution are reduced in organizations that exhibit a clear focus on efficiency and rationality. The attenuation of the negative consequences of TMT heterogeneity within a context marked by complex interdependencies suggest that interactions between heterogeneous TMT members need not necessarily amplify conflict as indicated by Hambrick and his colleagues (2014). Instead, the extent to

which interactions between heterogeneous TMT members increase conflict vary with the degree to which organizations are able to embed such interactions into a system of norms that rewards collegiality and group identity.

A second contribution of our research relates to extending the role of bureaucracy in mitigating conflict among employee to research on top management teams. Organization theory has long ago posited that a solution for conflict within organization exists in the form of bureaucracies, since the writings of Max Weber. Countless studies in this trail flourished over many decades that followed, but only to amass evidences one over the other on the role of bureaucracies in realizing efficient execution of decision made by the organizational elites. The focus of this stream of research has been primarily dedicated to the efficiency of bureaucracy in the execution of decisions, assuming that decisions are made without any friction. In an ideal typical bureaucracy where a supreme authority decides for the entire organization, obviously conflict does not exist. However modern organizations are seldom ruled by one authority, but rather by oligarchies. This is a widely accepted concept among organization and management theorists (Finkelstein *et al.*, 2009) which has overtaken the single leader paradigm dominated in the first half of the century (Selznick, 1957). A selective understanding of the role and functioning of bureaucracies have limited our understanding of the conflict mitigating function of bureaucratic rationality in the context of TMTs.

A possible reason behind the lack of attention to the structural resilience of bureaucracies towards heterogeneity is the general assumption that organizational researchers hold about hierarchical and bureaucratic organizations as antithetical to heterogeneity, innovation and change (Pfeffer, 2013). With the emergence and

popularity of alternative organizational arrangements such as matrix structures and the so-called “informal” organizations, there is a tendency to wither away from whatever hierarchical or bureaucratic element a social system exhibits. This lethargy towards hierarchies and bureaucracies arise from our tendency to equate them with mechanistic organizations as opposed to organic forms of other post-bureaucratic organizations (Byrkjeflot and du Gay, 2012). Needless to say, prior research has reported higher levels of quit rates from bureaucracies (e.g., Sorensen, 2007), which we also replicated in our analyses. Bureaucracies indeed seem to experience a “revolving door” pattern on the selection and retention of top managers. But more importantly, our results on the analyses of firm dissolution indicate that bureaucracies are relatively resilient to high levels of TMT attrition. However, Styhre (2007) argues that bureaucracies are not necessarily mechanical systems, but “organisms structured in accordance with some mechanical principles, yet capable of responding to and dealing with external changes”. Similarly, Leavitt (2003, 2005) points out that hierarchical work arrangement (another facet of bureaucracy) are not only persisting but also thriving despite the intense attack from human relations movement. Hierarchy is a fundamental organizing principle of all social and biological systems (Prigozhin, 1989) and the need for hierarchical arrangement stems from the basic human psychological need for order and stability. As Pfeffer (2013) concludes, “We may want hierarchy to disappear, so we actively seek out confirming evidence of its unimportance and imminent demise. But hierarchy and its consequences seem here to stay”. Therefore, as an organizational arrangement that has been in existence for thousands of years and still persisting and even thriving, bureaucracies deserve some merit for attention. The Weberian approach to bureaucracy as a solution for heterogeneity becomes therefore relevant in this background.

A possible caveat in interpreting the findings of our study is that we do not conceptualize bureaucracy in terms of its unintended consequences such as inefficiency and highly politicized governance structures. Instead, we focused on the feature of bureaucracy that motivated its success in capitalist societies, namely its focus on efficiency and rationality. We believe that our approach is loyal to Weber's original conception of a bureaucratic organization, oriented towards the instrumental end to which it is constituted, vis-à-vis achieving superior technical efficiency. Additionally, consider that prior empirical research in organization theory has focused on features like hierarchy, complexity and bureaucratic inertia (see Sorensen, 2007), whereas our study emphasizes division of labor, one of the main sources with which bureaucracy achieves efficiency. Again, our approach is particularly interesting, as efficiency represents the key dimension of Weber's ideal typical bureaucracy (see also Adler and Borys, 1996). Moreover, remember that our arguments that tie organizational outcome to TMT heterogeneity require capturing the underlying organizational values and belief system embedded in the principles of efficiency and rationality. Under this premise, division of labor represents an ideal proxy of organizational orientation to efficiency, especially upon controlling for complexity and inertia through firm age and firm size.

Three main limitations of this study are worth mentioning. First while our research aims to bring scholarly attention to the organizational values and belief systems in which TMT members are embedded, we focused on a simplified context: while partners are considered as top managers in accounting firms, partnership teams are not strictly organized according to contemporary corporate structure. Thus, our study remains silent about the potential effects of the structure of the TMT itself. However TMT structure is likely to shape the outcome of TMT interactions (Beckman and Burton, 2011;

Hambrick *et al.*, 2014). Future research should validate how, hierarchical TMT structures and norms interact to produce the organizational outcomes explored here. Second, there are limitations to the extent to which a professional service firm can be bureaucratized, as bureaucratization may be argued to conflict with the professional logic of organization (Waters, 1989). Although we believe that this argument speaks in favor of a conservative test of the theory, future efforts should be dedicated to other industries, where bureaucratization is more prevalent. Last but not least, the micro-mechanisms of reduction of conflict due to bureaucratization remain largely unobserved. The longitudinal research design adopted in this paper favored the external validity of our findings and leveraged the variation across firms over time in the extent of bureaucratization observed. We welcome future research that will complement this weakness of our work with a fine-grained analysis of the processes by which trust and reciprocity are developed in heterogeneous TMTs of rational bureaucracies.

CHAPTER IV

FROM HIERARCHIES TO MARKETS: WAGE INEQUALITY AND MOBILITY INTO ENTREPRENEURSHIP FROM SWEDISH FIRMS, 1993-2007

Abstract

Research on organizational stratification and mobility concerns with individual mobility within and across established organization, while mobility into entrepreneurship has received much less attention. Building on recent developments, the present paper theorizes on the link between organizational wage inequality and mobility into entrepreneurship. In doing so, the paper makes an important distinction between wage inequality based on human capital variations (explained wage inequality) and that does not (residual wage inequality) while predicting implications for mobility into entrepreneurship. Empirical evidence obtained from Swedish business service sector confirms my prediction that while explained wage inequality constrains mobility into entrepreneurship, residual wage inequality facilitate the same.

4.1. Introduction

Recent surge in the scholarly attention towards wage inequality in organizations (e.g., Barth et al., 2014; Bidwell, Briscoe and Fernandez-Matteo, 2013; Davis and Cobb, 2010; Neckerman and Torche, 2007) reinvigorated the study of stratification and mobility that once occupied prominent place in organizational sociology (Baron and Bielby, 1980; Blau, 1977; Hedström, 1991; Pfeffer, 1977; Sorensen, 1977), economics (Baker et al., 1988; Lydall, 1959; Lemieux, 2006; Rosenbaum, 1980; Simon, 1957), and organizational behavior (Baron and Pfeffer, 1994; Langton and Pfeffer, 1994; Bloom and Michel, 2002; Trevor, Reilly and Gerhart, 2012). Inequality is consequential not only for organizations and society in aggregate but also for structuring individual career mobility within and across organizations (Baron and Bielby, 1980; Castilla, 2008; Sørensen, 1977). However, movements within and across organizations are not the only forms of mobility. Sometimes, mobility is instilled when individuals create new jobs in the market through entrepreneurship (Carroll and Mosakowski, 1989; Harrison, 1988; Haveman, 1995; Rosenfeld, 1992; Sorensen and Sharkey, 2014). By founding new organizations and creating jobs that were non-existent in the labor market, individuals not only facilitate mobility for oneself but also for others. Further, such mobility fuelled by entrepreneurship changes the dynamics of labor market in predictable ways (Haveman, 1995; Haveman and Cohen, 1994). Yet, we know so little about the effect of wage inequality on mobility into entrepreneurship, beyond assuming that constraints to wage attainment make entrepreneurship an attractive mobility destination (Sorensen and Sharkey, 2014).

Building on the insights that inequality in organizations structure mobility into entrepreneurship (Brittain and Freeman, 1980; Harrison, 1988; Rosenfeld, 1992;

Sorensen and Sharkey, 2014), this paper seeks to clarify the link between the two. It is possible that employees may be either pushed out or held back depending on the conditions upon which wage inequality is observed (Trevor et al., 2012). Wage inequality may be seen as legitimate to the extent it reflects the differences in human capital among employees and unacceptable otherwise. Following prior research, I refer to the former type of inequality as *explained wage inequality* and the latter as *residual inequality* (Lemieux, 2006; Mouw and Kalleberg, 2010; Trevor et al., 2012). I suggest that explained wage inequality act as a constraint whereas residual wage inequality facilitates mobility into entrepreneurship. More precisely, when wage inequality is explained by differences in human capital (i.e., explained wage inequality), it will raise the opportunity cost of entering entrepreneurship for a focal individual because wages can be significantly increased by human capital accumulation. Conversely, when the wage inequality is not explained by differences in observed human capital (i.e., residual wage inequality), then it will lower the opportunity cost of entrepreneurship for a focal individual net of other factors that condition their preference for entrepreneurship. This is because additional investments in human capital (e.g., firm tenure) will not increase wages substantially, for reasons beyond the control of individuals. Hence, specifying whether observed wage inequality is *explained* or *residual* helps to clarify the role of inequality as constraints or opportunities in facilitating mobility into entrepreneurship.

Since wage inequality may not influence all individuals in the same way, I examine the role of one individual specific factor that changes their propensity to enter entrepreneurship for illustrative purpose – specific education in business (hereafter business education) - in influencing the main relationship between wage inequality and mobility into entrepreneurship. I do this to go beyond theorizing on the average effects

of mobility into entrepreneurship and to explicitly acknowledge at least one source of individual specific heterogeneity in shaping mobility patterns. Business education is chosen as a source of individual heterogeneity because it influences individuals' career choice in either favoring an organizational career (Pfeffer and Fong, 2004) or entering entrepreneurship (Marvel et al., 2014). However, I do not offer an exhaustive examination of a variety of components that introduce individual specific heterogeneity. Instead, I control for individual heterogeneity (both fixed and time-varying) in the analyses and limit the theorizing to only one factor.

The hypotheses are tested in the context of business service industry in Sweden between 1993 and 2008, with a sample of linked employee-employer data comprising all individuals in the labor market and all the firms in the business service sector as classified according to standard industrial classification (SIC) criteria. Business service sector is an ideal context to test the hypotheses offered in this paper because of the importance of human capital (knowledge) and lower cost of entrepreneurial entry in comparison to other contexts. Results suggest that while explained wage inequality decreases the hazard of individuals' mobility into entrepreneurship, residual wage inequality increases the same. However, the change in the hazard of entrepreneurship is stronger for the drop associated with explained wage inequality than the upward shift of hazard rate associated with residual wage inequality. Finally for individuals, education in business seems to favor attainment in organizations more than being instrumental in their mobility into entrepreneurship.

The main contribution of the paper is to the literature on organizational stratification and mobility. I agree with Sorensen and Sharkey (2014) in recognizing entrepreneurship as an important mechanism for understanding individual mobility and

attainment. The specific contribution of the paper is in clarifying the link between wage inequality and entrepreneurship by proposing *explained wage inequality* and *residual wage inequality* as constraints and opportunities respectively, for mobility into entrepreneurship. Wage inequality can be perceived as legitimate if the wage allocations are based on differences in human capital and hence increase the opportunity cost of entering entrepreneurship for a focal individual (i.e., constraints). On the other hand, wage inequality can also be perceived as illegitimate when the wage allocations do not reflect the differences in human capital thereby lowering the opportunity cost of entering entrepreneurship (i.e., opportunities). These effects remain robust to alternative specifications accounting for the possibility of unobserved individual skills and abilities. Even though the paper builds on the concept of explained and residual wage inequality studied in recent literature (Lemieux, 2006; Mouw and Kalleberg, 2010; Trevor et al., 2012), they have not been examined in the context of mobility into entrepreneurship. Whereas Trevor et al. (2012) has derived implications for mobility in terms of the attraction and retention of high performing employees, novelty of the present paper is in examining explained and residual inequality in the context of entrepreneurship.

4.2. Theory and hypotheses

4.2.1. Wage inequality: Explained and residual components

Wages are long considered as relational and social in its distribution (Barnard, 1968). More than returns to human capital (Becker, 2009), wages are positional goods that confer status and privilege in organizations (Frank, 1985; Folger and Cropanzano, 1998). Inequality in wage can either improve individual and organizational performance by increasing incentives to work harder and have a longer tenure (Ehrenberg and Smith,

1994; Heneman, 1992; Zenger, 1992; Milgrom and Roberts, 1988) or demoralize the workforce through perceptions of lack of fairness and justice (Deutsch, 1985; Kohn, 1993; Baron and Pfeffer, 1994).

Broadly, arguments have been clustered around two broad approaches – one that is based on tournament model of wage structure and the other on social comparison process. While tournament model argues that wage inequality will act as an incentive for employees to perform better and have a longer career in the organization (Ehrenberg and Smith, 1994; Lazear, 1995; Mahoney, 1979; Milgrom and Roberts, 1988), social comparison model takes a contrasting view that wage inequality breeds discontent and increase employee turnover (Cappelli and Sherer, 1990; Kochan and Osterman, 1994; Baron and Pfeffer, 1994; Pfeffer and Langton, 1993). Clearly, the point of departure is whether wage inequality acts as source of motivation or discontent for employees.

True to McGranahan's (1981) caution that the measurement of inequality also alters the meaning it conveys, recently scholarship found that the implications of wage inequality differs according to whether the inequality is explained by differences in human capital (Mouw and Kalleberg, 2010) and individual performance (Trevor et al., 2012) or not. In their study on the National Hockey League teams, Trevor and colleagues found that inequality in wages that are explained by differences in productivity *increases* team performance, whereas inequality that is not accounted for the differences in productivity *decreases* team performance. They attributed this performance differences to employees' perception of wage inequality as legitimate (source of motivation) or illegitimate (source of dissatisfaction). Similarly, another recent study that investigates the effect of occupational structure on wage inequality explicitly focuses on wage inequality that is unaccounted for differences in individual

human capital (Mouw and Kalleberg, 2010). Inspired by these developments, the present study theorize on the link between wage inequality and mobility into entrepreneurship by taking into account the differences in the meaning of explained and residual wage inequality. *Explained wage inequality* is that component of inequality in wages that are accounted for differences in human capital – general purpose and firm-specific human capital - and hence perceived by employees as legitimate basis for wage allocation. *Residual wage inequality* is that component of observed inequality in wages that are not accounted for differences in human capital and hence perceived by employees as illegitimate basis for wage allocation. I suggest that whether wage inequality acts as constraint or opportunity for mobility into entrepreneurship depends on the type of inequality – i.e., explained or residual wage inequality.

4.2.2. Explained wage inequality and mobility into entrepreneurship

When wages are allocated based on observed differences in human capital, wage inequality act as a motivational mechanism to boost the effort and retention of employees (Trevor et al., 2012). In this context, wage inequality mainly act as a tournament model of reward allocation (Lazear, 1995). Tournament model explains the efficiency of incentive based wage structure in organizations where rewards are allocated according to relative rather than absolute performance of employees (Lazear and Rosen, 1981). Individual employees will forgo a part of their wage in return for a disproportionate reward upon winning a series of job progressions. As rewards for winning the tournament are exceptionally high, the tournament model of wage structure will induce incentive to perform better and stay longer in the organization.

Initial empirical evidence of a tournament model was gathered from golfing tournament (Ehrenberg and Bognanno, 1990) where work interdependence is very low,

later research on auto racing where team interdependence is highly relevant for tournament performance found some evidence for the performance benefits (Becker and Huselid, 1992). Accordingly, wage inequality induces performance and motivates employees to have a longer career in the organization (Erhemberg and Smith, 1994; Milgrom and Roberts, 1988). According to this reasoning, wage inequality not only induces performance but also encourage employees “*to take risks and be entrepreneurial*” (Becker and Huselid, 1992, pp.348). Indeed, this model resembles a lottery system or gambling where a few are rewarded disproportionately at the cost of the majority. In an organization with high wage inequality, the main incentive for continued employment while risking forgone wage is the “lottery” upon winning the tournament.

The tournament model has a major implication on entrepreneurial entry of employees where *explained wage inequality* is a key impetus for retaining high performers. To the extent differences in wages are tied to differences in human capital and investment in human capital accompanies disproportionate rewards in future, employees will perceive higher opportunity cost to enter entrepreneurship. Skewed wage distribution signals highly competitive wages for those who have the most human capital, attracting not only employees with high human capital (e.g., industry tenure, university education), but also those who are willing to invest effort in its further accumulation. Given that investments in human capital will not increase the wages proportionately but rather in a non-monotonically increasing function, part of returns to human capital investments at present are paid off in the form of substantial increase in future wage. This type of pyramidal incentive system is the basis of tournament model of employment and its effectiveness rest on the assumption that *any* employee can reach

the top of the wage distribution given her *relative* investments in human capital exceeds the majority. Hence, social comparison of wages by employees will not raise questions on the legitimacy of wage allocation, since any employee can obtain large increases in wages by substantially increasing investments in human capital. This will increase the efforts of all employees irrespective of current wages as well as the absolute value of their current effort, as what matters the most is the relative eventual accumulation of human capital over the majority of employees. Further, employees will prefer a longer career in the organization since the cumulative advantage of human capital accumulation will realize as higher wages entirely only at higher levels of human capital. Since additional investments in human capital accumulation increases wages non-monotonically, explained wage inequality raise opportunity cost of entering entrepreneurship and reduce mobility into entrepreneurship.

Hypothesis 1: *Explained wage inequality in organizations decreases the hazard of mobility into entrepreneurship for a focal individual.*

4.2.3. Residual inequality and mobility into entrepreneurship

In contrast, residual wage inequality will not act as a motivational mechanism because additional investments in human capital will not increase wages proportionately. Wage increases are instead based on criteria largely unobservable for other employees. Often, employers hold beliefs about the competence of employees based on their observable social status and allocate wages accordingly (Ridgeway, 2014). In these cases, instead of acting as a motivational mechanism, wage inequality will be dysfunctional for employee productivity and retention. Unlike explained wage inequality, social comparisons of wages by employees raise doubts about the legitimacy of wage allocation, leading to employee dissatisfaction.

Social comparison models explaining the effect of wage inequality on employee turnover document a positive relationship between the two (e.g., Baron and Pfeffer, 1994). If wages are relational good, then inequality in the distribution of wages breeds discontent, motivating employees to consider relying on alternative sources of income. The effect of wage inequality on individual mobility out of the organization is widely documented in the literature (Bloom, 1999; Bloom and Michel, 2002; Cappelli and Sherer, 1990; Cowherd and Levine, 1992; Lazear, 1995; Baron and Pfeffer, 1994; Pfeffer and Davis-Blake, 1992; Pfeffer and Langton, 1993; Trevor et al., 2012).

While earlier research did not differentiate between unequal distributions of wages that are attributed to differences in human capital or performance of employees (e.g., Bloom, 1999; Baron and Pfeffer, 1994), recent findings indicate that inequality in explained wages (i.e., accounted for human capital differences) motivates employees and inequality in unexplained wage (i.e., unaccounted for human capital differences) demotivates them (Trevor et al., 2012). This is in line with the evidences from other studies noting that dissatisfaction and turnover intentions among employees may be higher when performance outcomes of individuals cannot be clearly separated from that of organizational performance. For instance, Harder (1992) in a study of baseball and basketball contexts found that when individual performance cannot be clearly delineated from that of the team such as basketball matches, dissatisfaction and turnover is high compared to baseball matches where rewards are linked to individual performance.

These evidences support the equity theory of human behavior in social exchange which states that rewards should be seen as legitimately distributed in proportion to the efforts, else employees will respond by withdrawing effort or leaving the organization

(Akerlof and Yellen, 1990; Cowherd and Levine, 1992; Trevor et al., 2012). Similarly, relative deprivation theory rooted in social psychology literature posits that when individuals perceive deprivation in wages when compared to a reference group, such as those in the same occupation or level of organization, employees become dissatisfied with current wage structure (Davis, 1966; Sweeney et al., 1990). Increased dissatisfaction result in exercise of voice through unionization (Hircsh, 1982; Freeman, 1982), lower (greater) cooperative (competitive) behavior among peers (Bloom, 1999; Lazear, 1995; Pfeffer 1998) or leads to higher quit rates (Bloom and Michel, 2002; Cappelli and Sherer, 1990; Cowherd and Levine, 1992; Pfeffer and Langton, 1993).

While the implications of residual wage inequality for employee turnover is noted (Trevor et al., 2012), we know relatively little about their mobility into entrepreneurship. Evidence exists suggesting that overall wage inequality in organizations increases employee mobility into entrepreneurship (Sorensen and Sharkey, 2014). Yet, by specifying the underlying mechanisms directly on residual wage inequality, we can acknowledge that wage inequality do not always lead to entrepreneurship. Instead, it is only when wage allocations are not based on observed human capital differences does inequality increase mobility into entrepreneurship. When additional investments in human capital do not translate to proportionate increase in wage, neither immediately (realized) nor in future (perceived), then there is little incentives for individuals to do so. When expectations of future rewards are not present, opportunity cost for entering entrepreneurship declines. Hamilton (2000) shows that majority of entrepreneurs earn less than had they been remained in employment. Accordingly, if future employment do not reward individuals commensurately with their increasing human capital accumulation, then it is not any better to remain in

employment than entrepreneurship. Instead, entrepreneurship offers non-pecuniary benefits that cannot be obtained from employment (Hamilton, 2000). While the above arguments do not mean that entrepreneurship become the most attractive choice for an average individual as wage inequality increases, it certainly implies that the relative attractiveness of entrepreneurship in comparison to *current* employment increases. That is, incentives in forgoing current employment in favor of an uncertain “job” will be stronger when future expected rewards in current employment declines.

Hypothesis 2: *Residual wage inequality in organizations increases the hazard of mobility into entrepreneurship for a focal individual.*

I have discussed the distinctive implications of wage inequality in organizations for the entrepreneurial entry of an *average* individual conditional on whether the prevailing wage distribution reflects differences in individual human capital or not. In doing so, I focused on human capital that is most important for the determination of wage – general purpose and firm-specific human capital (Becker, 2009). Next, I will discuss the implications of business education in introducing individual level heterogeneity into the average effect hypothesized above – business education. There are sufficient reasons to expect that business education will influence individual career attainment within the organization as well as entry into entrepreneurship. Business education is a valuable form of knowledge that can aid further accumulation of human capital in pursuit of higher wages in the organization (Pfeffer and Fong, 2004) or enable individuals to enter entrepreneurship (Marvel et al., 2014). Below, I discuss the effect of business education on the relationship between (1) explained wage inequality and entrepreneurial entry of individuals; and (2) residual wage inequality and entrepreneurial entry of individuals.

4.2.4. Business education in amplifying the negative effect of explained wage inequality

When wage inequality is accounted for differences in human capital, employees are motivated to contribute more effort in accumulating human capital that will eventually be rewarded with disproportionate wages. In this scenario, business education enables employees to compete for higher-level management roles to which higher wages are attached. They help employees to absorb more knowledge and skills necessary for further accumulation of management specific human capital (Elman and O'Rand, 2004). At least two arguments can be evoked to explain the role of business education in boosting the organizational career of individuals. First, business education provides individuals with necessary training for the hierarchical progression of organizational career (Brenner and Tomkiewicz, 1982; Simon, 1967; Manhardt, 1972; Trank and Rynes, 2003). Business management is a profession and business education socialize future managers into the profession through imparting suitable training related to business concepts, practice, values and norms required for a meaningful professional career (Pfeffer and Fong, 2004; Simon, 1991). Since higher wages are attached to higher positions in the hierarchy that involves managing the work of other employees (Sørensen, 1996), business education will be crucial in attaining higher wages. Second, it serves as a valuable source of social capital required in the development of the organizational career (Abbott, 1988). Indeed, it has been noted that students of business are more prone to see their education with the sole motivation of career attainment (McCabe and Trevino, 1995; Pfeffer and Fong, 2004).

Given this strong orientation to career development, employees who received business education have strong incentives to continue in employment, especially when

wage distributions are perceived as legitimate. Combining the conceptual knowledge received from training, the tacit knowledge regarding practice, norms and values absorbed and the social capital accumulated through professional socialization, business graduates have greater chances of reaping the rewards from skewed wage distribution in the organization, especially when they are tied to differences in human capital and are seen as legitimate. In other words, having received business education will further increase the opportunity cost of entering entrepreneurship and accentuate the constraints induced by explained component of wage inequality.

Hypothesis 3: *Education in business amplifies the negative effect of explained wage inequality on individual entrepreneurial entry.*

4.2.5. Business education in amplifying the positive effect of residual wage inequality

Education provides an individual with necessary cognitive skills needed for planning through various stages of entrepreneurial process (Marvel et al., 2014). From making business plans to initiating legal procedures, higher education will be a value asset for a founder (Davidsson and Honig, 2003). It not only provides cognitive skills, but also helps making legitimate claims while reaching out to potential resource providers such as banks, foundations or venture capital firms. However, prior research has noted that not all types of education matter equally for entrepreneurship (Ucbasaran et al., 2008; Unger et al., 2009). Business education equips one with the theoretical or abstract knowledge about concepts in entrepreneurship and is often termed as “declarative memory” in cognitive psychology (Aldrich and Ruef, 2006; Fiske and Taylor, 1991). Relevant knowledge provides individuals with generalizable principles of, for instance -

inventory management, cost accounting, authority and reward structure, etc. - that are helpful in entrepreneurship.

On the other hand if wage distributions do not reflect differences in human capital and are seen as illegitimate, employees with business education are more likely to enter entrepreneurship than those who did not. First, the broad conceptual training received in business education helps them navigate the diverse aspects of organizational founding process (e.g., w.r.t. corporate law, operations management, financing, bookkeeping, customer relations etc.). Second, norms and values absorbed from professional socialization helps individuals to project a “professional identity” to resource providers and to make legitimate claims of their possible success. Third, professional contacts serve as valuable social capital for potential entrepreneurs in accessing opportunities, resources, advices etc. in entering entrepreneurship. Overall, business education will accentuate the positive effect of residual wage inequality on entrepreneurship.

Hypothesis 4: *Education in business amplifies the positive effect of residual wage inequality on individual entrepreneurial entry.*

4.3. Methods

4.3.1. Data

The hypotheses are tested in a large-scale data that draws from the population register of the entire population above sixteen years old and the tax register comprising all firms registered in Sweden over a fourteen-year period, from 1993 to 2007. Since wage inequality is partly a function of the characteristics of industry in which the focal firm functions, there are concerns of heterogeneity across industries in terms of entrepreneurial entry of individuals (Davidsson, 2007; Shane, 2008; Wiklund et al.,

2011) Hence, I limit the present study to industries that are very similar to each other in terms of the requirements for entrepreneurship – business service sector. This sampling approach will alleviate to some extent the concerns regarding the specificity of findings to any single industry by drawing conclusions from multiple but related industries. Of course, any effort to generalize the findings to less similar contexts such as manufacturing or other industries with substantial entry costs need replication. A second advantage in drawing the sample from business service sector is that entry cost into entrepreneurship is relatively low when compared to many other sectors. Since employees' entrepreneurial entry in response to wage inequality can be ideally observed when entry cost of entrepreneurship is low, sampling on business service firms is an ideal setting to test the hypotheses offered in this paper.

Business service sector comprises a number of knowledge intensive industries including accounting, legal, consulting, market research, architecture, advertising, marketing, recruitment agencies, technical testing, photography, and security agencies, among a few other miscellaneous sub-sectors (Delmar & Wennberg, 2010; Von Nordenflycht, 2010). Most of the firms in the data between the study period 1993 and 2007 are small in size. Approximately 61 percent of the firms are single proprietorship firms and another 31 percent has only 2 to 10 employees, which together accounts for 92 percent of the sample size (table 4.1). This size distribution of firms is comparable to similar sectors in other countries as reflected in the industry concentration ratio, for example the Netherlands, the United States and the United Kingdom (Beattie and Fearnley, 1994; Maijor et al., 1995; Pennings and Wezel, 2007 Simon and Bonini, 1958).

Table 4.1. Firm size distribution in the data

Firm size	Frequency	Percent
Size 1	142,463	61.73
Size 2-10	71,615	31.03
Size 11-49	13,609	5.9
Size 50-249	2,572	1.11
Size 250-449	327	0.142
Size 500-999	132	0.057
Size 1000-4999	57	0.025
Size 5000+	9	0.004
Total	230,784	100

The overall base sample includes 230,784 firms and 1,378,253 individuals observed over a period of 14 years (unbalanced panel) totaling 4,817,181 observations. The panel is unbalanced because many individuals enter and exit the job market during the study period. Since the concept of wage inequality is meaningless in single proprietorships, I deleted 142,463 firms (hence an equal number of individuals) from the sample, equaling 476,474 observations. After dropping the single proprietorships, the new sample size is 4,340,707 observations. Since the concept of tournament model of wage distribution is less meaningful in firms with 10 or less employees, I further dropped 374,529 individuals from 71,615 firms with 10 or less employees, thus dropping 1,066,566 observations from the sample. Further, I dropped 123,825 observations from the year 2008 - the last year in which I observed the dependent variable *entrepreneurship* at time t+1 – and hence the analyses were performed on data only until 2007. The final sample used in the analyses contains 3,150,316 observations corresponding to 1,041,829 individuals in 13,662 firms.

4.3.2. Measures

Dependent variable: *Entrepreneurship*

In this paper, I focus on entrepreneurship as instances of organizational founding (Aldrich and Ruef, 2006; Lippmann et al., 2005; Yang and Aldrich, 2012). Even though organizational founding is far from the only form of entrepreneurship (Shane, 2012), and most of the time individuals enter entrepreneurship through self-employment (Shane, 2008), it is certainly the type of entrepreneurship that changes the dynamics of mobility (Haveman, 1995). Hence the present paper is concerned only about entrepreneurship by organizational founding. *Entrepreneurship* is a binary variable coded “1” when an entrepreneurial entry is observed as made through *incorporation* by the focal individual at year t+1. Broadly, economic activities in the market can be undertaken either on behalf of an individual or an entity with legal validity as a “person” to whom transactions are made. An organization as a legal entity or a legal person absorbs risk while the individuals who founded the organization can limit their risk to a limit determined by the quantum of the resources they contributed. Such legal entities are “*incorporated*” in the legal vocabulary. The motivations and ramifications of the legal form of the organization is discussed elsewhere (Weber, 2003) and do not form part of the present conceptualization. What is important in the usage of this definition for the dependent variable is that it signals an intention from the part of the founder to engage in efforts to found an organization. A founder can decide to carryout economic transactions on ones own behalf by being self-employed, or embed the economic transactions with market by incorporating the business. By opting incorporation, a founder signals the market about the intended predictability and perpetuation of the transaction party, which in principle gain significance beyond the

existence of its founder (Delmar & Shane, 2004; Katz & Gartner, 1988). Once the entity assumes a “life” separable from the founder, a framework for collective action emerges and the fate of many individuals or a collectivity could be tied to the existence of the entity (Barnard, 1968; March and Simon, 1958). The present study concerns itself with the founding of such entities, or otherwise, organizations.

Some of these entities may never become fully-fledged organizations by hiring employees and establishing stable or recurring market transactions and hence cannot be strictly included in the current definition. Nevertheless, the present operationalization of an organization through “incorporation” is theoretically motivated. Whether it eventually develops into an organization or not is less of a concern than understanding entrepreneurship as an attainment process through mobility. Further, leaving out the entities that never fledge into an organization will bring unobservable methodological issues into the analyses by sampling only on survived firms (Yang and Aldrich, 2012).

Independent variables

Following recent research, I decomposed the overall wage inequality in organizations into two components – the part that is explained by differences in individual human capital and the other part that is unaccounted for observed differences in human capital (Mouw and Kalleberg, 2010; Trevor et al., 2012). I operationalize these components as ***explained wage inequality*** and ***residual wage inequality***. In order to calculate explained and residual wage inequality, I estimated the wage equation with a set of human capital variables that are known to determine wages (Becker, 2009). First, *industry tenure* is a form of general human capital that is correlated with knowledge and expertise (Neal, 1995). Second, *university education* is yet another form of general human capital that is known to determine wage (Elman and O’Rand, 2004). Third, *firm tenure* implies

valuable firm-specific knowledge that determines employee wages (Lazear, 2003).

Since firm tenure is highly correlated with industry tenure, I used a set of categorical dummies to indicate the level of firm tenure for a focal individual. Fourth, firm fixed effects are needed to control for differences in firm resources on employee wage determination. However, there are roughly 13,662 firms in my data, which pose considerable computational challenge in using fixed effects. An alternative is to use fixed effects for firm size categories. Although not perfect, this approach would partial out some of the firm specific determinants of wages since similar size means similar structures, processes, resource endowments and so on (Hannan and Freeman, 1984). Fifth, wages are also contingent on industry (Krueger and Summers, 1988) and unobserved macro-level determinants (Phillips, 1958; Taylor, 1979), hence I included industry and year fixed effects.

Following standard approach to reduce skewness, I took logarithm of wage to construct the dependent variable in the wage equation (Blinder, 1971). The wage equation to be estimated is specified as,

$$\mathbf{Y}_i = b_0 + b_1 \mathbf{H}_i + b_2 \mathbf{X}_i + e_i \quad (1)$$

where \mathbf{Y}_i is the log of wage for a focal individual i , \mathbf{H}_i is the set of human capital measures of employee i , \mathbf{X}_i is the set of fixed effects for industry and year for the focal individual i , e_i is the deviation of estimated wage from its mean and represents the wage component that is not explained by \mathbf{H}_i and \mathbf{X}_i .

Explained wage inequality is computed from the above equation by using the predicted wage $\hat{\mathbf{Y}}_i$ to compute variance in within firm expected wages (Trevor et al., 2012). Even though coefficient of variation is a more widely used measure of inequality, which can

be computed using the predicted wage, I follow Trevor et al. (2012) to calculate explained wage inequality.

Residual wage inequality is computed from the above regression equation by squaring the residuals. Each residual e_i represents an individual's wage component that is unexplained by the human capital variable in the regression. That is, e_i is the standard deviation from the fitted wage equation based on human capital variables. Following prior research, I employed variance of e_i , as the measure for residual inequality (Lemieux, 2006; Trevor et al., 2012; Mouw and Kalleberg, 2010). The distributions of explained and residual wage inequality across firm size categories are listed in table 4.2.

Table 4.2. Wage inequality types (explained and residual) by firm size categories

Firm size	Explained wage inequality (μ)	Residual wage inequality (μ)
Size 11-49	0.51661	1.050452
Size 50-249	0.0449326	0.7988013
Size 250-449	0.0466568	0.7362953
Size 500-999	0.0479081	0.6417693
Size 1000-4999	0.0489434	0.6781062
Size 5000+	0.0618204	0.785864

Business education is coded as a binary variable with “1” if an individual has enrolled in business related university education in the past and “0” otherwise. In Sweden, there are no MBA degrees, where all business degrees are either bachelor or master. This system provides an advantage in my analysis. It is possible that in some contexts MBA degree can be used as a legitimate claim for higher wages, which may not lead to negative reaction from employees (Connolly, 2003; Pfeffer and Fong, 2003). Not having MBA degrees in the context thus help to rule out this possibility.

Individual level controls

Age: A set of age categories is included to capture the effect of age on entrepreneurial entry. The information is obtained from his/her date of birth indicated on

passports/national id. The omitted category is aged 16 to 39 against which comparison is made. I used categorical indicators for age instead of a continuous variable since age is highly correlated with some other variables such as industry tenure. Also, it allows accounting for non-linear effect of wage on entrepreneurial entry without introducing multicollinearity issues.

#Geography mobility: Number of geographic mobility indicates the number of times a focal individual shifted residence across local counties (Fredriksen and Wennberg, 2013).

Scandinavian: This binary variable indicates whether the focal individual is born in Scandinavian countries including Sweden. Scandinavian countries share many similarities in culture, language, appearance and other observable and unobservable influences that make them face similar constraints and opportunity sets in entrepreneurship.

Female: Prior research documented substantial variation across gender in entrepreneurial behavior of individuals where female transition to entrepreneurship is much rarely observed when compared to men. Hence a binary variable is coded “1” for females.

Married: An individual’s preference for entrepreneurship may vary according to his/her marital status. To control for the unobserved preferences that are common to married individuals, a binary variable is coded “1” for married.

#Children: A count variable indicating the number of dependent children belonging to the focal individual.

Wage (log): Log transformed wage of the focal individual is included to control for individual differences in opportunity cost.

Income from capital: This variable indicates the interest received on cash deposits that indirectly measure the liquid wealth of the focal individual.

Prior entrepreneurship is also a binary variable coded “1” if a focal individual has experienced at least one spell of entrepreneurship in the past, and “0” otherwise.

Left censor dummy: Some of the individuals in the sample enter labor market before 1993, the earliest year in which I can observe the focal individual’s labor market experience. While the ones who entered the labor market on or after 1993 but entered the study period only in 2002 (the first year of the study period) can be tracked and hence controlled to account for left censoring by adding a variable *time since labor market entry* (see robustness analyses), there is only one way to control for the left censoring induced by individuals who entered the labor market before 1993 –by adding a dummy indicating whether the focal individual has entered the labor market before 1993.

Right censor dummy: Similarly, a binary variable is coded “1” for all individuals who remain in the sample at the end of the sample period 2007 and who has not entered entrepreneurship in 2008. This is done to avoid the ongoing spells at the end of study period from biasing the estimates.

Firm level controls

Peer influence: Peer influence is an indirect measure included to capture the influence of the entrepreneurial entries made by colleagues in previous year of the focal firm. That is, if n individuals entered entrepreneurship at time $t-1$ in a focal firm f , then it is argued to positively influence the entrepreneurial entry decision of a focal individual i at time t in the same firm f (e.g., Nanda and Sorensen, 2010). Hence the variable measures the number of individuals moved to entrepreneurship at time $t-1$ from the focal firm.

Firm size: Prior studies noted that firm size is a strong predictor of entrepreneurial entry of employees (Elfenbein et al., 2010; Kacperczyk, 2012; Parker, 2009; Sørensen, 2007). Firm size is measured as the number of employees in the focal firm and entered as categorical dummies into the model. The size distribution is divided into six categories: 11-49, 50-249, 250-499, 500-999, 1000-4999 and 5000+. The category with eleven to forty nine employees is specified as omitted category. The purpose of entering categorical dummies instead of a continuous variable is more than to control for the firm size effect. It also gives a better picture of the dependent variable dissected according to firm size, where firm size can also correlate with wage inequality.

Mean wage: Mean wage in the focal firm is included since the dependent variable coefficient of variation in wages is sensitive to the mean wage in firms and hence included to control for variations arising from changes in mean wages (McGranahan, 1981).

#Occupational groups: Continuous variable measuring the number of different occupational categories observed in the firm in a given year to control for the extent of division of labor.

Multiple Workplace: Binary variable coded as “1” to isolate the effect of firms with more than one workplace.

#Spinoffs: Number of spinoffs observed in a focal firm in a given year to control for the unobserved firm level differences in how “entrepreneurial” the firm culture is (e.g., Gompers et al., 2005).

Firm dissolution: A binary variable indicating whether the focal firm is dissolved in year t to isolate the effect of sudden job displacement on entrepreneurial entry (Rider et al., 2014).

Other controls

County of residence: This binary variable indicates the county of residence of the focal individual to control for geographic heterogeneity in entrepreneurship-friendly environment and local cultural and institutional norms.

Industry fixed effect: Dummies for each industry in the business service sector.

Year: Year fixed effects are added to control for other macro level unobserved changes in the society.

Two additional variables are introduced in the additional analyses to control for firm level unobserved influences on individuals' entrepreneurial entry decisions. These variables are not included in the main models because of large number of missing values. Hence, I use them only for robustness checks.

Net turnover: Continuous variable reporting the net turnover of sales for a focal firm in a given year to control for the firm performance heterogeneity in predicting employees' entrepreneurial entry.

Personnel social expenses: This variable documents the average personnel cost incurred for the focal firm. This cost is mostly similar in proportion for firms in Sweden by law, but still some unknown variations are observed after accounting for total salary variations in the data. Specifically, after dividing by total wages paid out, I observed that the standard deviation in social cost between firms is twice that of the mean implying substantial heterogeneity across firms in terms of their social cost spending. Interviews with Swedish HR managers indicates this to be attributed to additional perks offered such as health club membership cards, bonus payments, company cars, etc. Such perks could potentially be both negatively or positively related to perceived wage

injustice in a firm, depending on how they are distributed. I therefore include firms' personnel social expenses as a predictor.

4.3.3. Estimation procedure

Since my data is recorded yearly even though the underlying process may be continuous, I follow the discrete-time event history modeling (Allison, 1984; Brüderl et al, 1992; Box-Steffensmeier and Jones, 2004). The most common approaches to discrete-time modeling is logit and probit, since it can be applied to non-event history data structures too (Allison, 1984). However, both logit and probit models presume a symmetric response function requiring that the response outcomes zero and one should be symmetrically distributed. Entrepreneurship is usually a rare event in labor market, where the events (i.e., '1's) are far less recorded than non-events ('0's). This pattern is also observed in our sample where the events are observed only 13,151 times during the entire study when compared to 3,317,484 non-events (see table. 4.5). This clearly violates the functional form assumptions behind logit and probit models. An alternative is to use complementary log-log models with the functional form,

$$\log[-\log(1-\lambda_i)] = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki} \quad (2)$$

Since the complementary log-log function is asymmetric, it accounts for the skewed response distribution associated with rare events.

The regressions are estimated in Stata 13.1 with the routine **cloglog**. In order to account for the correlation in data and to allow for within group (i.e., individual) observations to be correlated, clustered standard errors are used, which are obtained by the option **cluster (groupID) robust** in the models.

Summary statistics and bivariate correlations of variables used in the main models are given in table 4.3 and 4.4 respectively.

Table 4.3. Summary Statistics

Variables	Mean	S.D.	Min	Max
1. Entrepreneurship	0.00	0.06	0.00	1.00
2. Age 40_55	0.26	0.44	0.00	1.00
3. Age 55+	0.10	0.31	0.00	1.00
4. #Geographic mobility	0.23	0.51	0.00	8.00
5. Scandinavian	0.86	0.34	0.00	1.00
6. Female	0.47	0.50	0.00	1.00
7. Married	0.42	0.49	0.00	1.00
8. #Children	0.70	1.01	0.00	13.00
9. Industry tenure	2.85	3.79	0.00	18.00
10. Firm tenure	1.97	2.96	0.00	18.00
11. University education	0.34	0.47	0.00	1.00
12. Business education	0.04	0.19	0.00	1.00
13. Prior entrepreneurship	0.02	0.14	0.00	1.00
14. Wage (log)	6.87	1.60	0.00	12.47
15. Income from capital	12.66	0.01	11.77	14.56
16. Left censor dummy	0.26	0.44	0.00	1.00
17. Right censor dummy	0.47	0.50	0.00	1.00
18. Peer Influence	0.00	0.03	0.00	1.00
19. Firm size 11_49	0.28	0.45	0.00	1.00
20. Firm size 50_249	0.27	0.45	0.00	1.00
21. Firm size 250_499	0.10	0.30	0.00	1.00
22. Firm size 500_999	0.08	0.27	0.00	1.00
23. Firm size 1000_4999	0.15	0.36	0.00	1.00
24. Firm size 5000+	0.11	0.32	0.00	1.00
25. Mean wage in firms (log)	6.87	1.13	1.10	9.95
26. #Occupational groups	4.14	3.79	0.00	9.00
27. Multiple workplace	0.48	0.50	0.00	1.00
28. Cumulative spinoffs	3.84	4.46	0.00	13.30
29. Firm failure	0.04	0.20	0.00	1.00
30. Explained wage inequality	0.12	0.07	0.00	1.05
31. Residual wage inequality	2.14	3.74	0.00	69.11

Table 4.4. Bivariate correlation

Variables	1	2	3	4	5	6	7	8	9
1. Entrepreneurship	1.00								
2. Age 40_55	0.02	1.00							
3. Age 55+	0.00	-0.20	1.00						
4. #Geographic mobility	-0.01	-0.15	-0.12	1.00					
5. Scandinavian	0.01	-0.01	0.06	-0.04	1.00				
6. Female	-0.03	-0.01	-0.03	0.01	-0.01	1.00			
7. Married	0.03	0.26	0.16	-0.19	-0.03	-0.01	1.00		
8. #Children	0.02	0.09	-0.22	-0.13	-0.06	0.05	0.40	1.00	
9. Industry tenure	0.05	0.24	0.23	-0.15	0.09	-0.07	0.28	0.03	1.00
10. Firm tenure	0.02	0.21	0.19	-0.14	0.10	-0.05	0.24	0.02	0.75
11. University education	0.04	0.02	-0.06	0.01	0.05	-0.09	0.07	-0.02	0.08
12. Business education	0.02	0.02	-0.03	-0.01	0.04	-0.01	0.06	0.03	0.07
13. Prior entrepreneurship	0.06	0.08	0.06	-0.04	0.04	-0.06	0.09	0.02	0.19
14. Wage (log)	0.05	0.24	0.04	-0.07	0.14	-0.15	0.25	-0.06	0.35
15. Income from capital	0.02	0.01	0.03	-0.00	0.01	-0.02	0.01	-0.01	0.04
16. Left censor dummy	0.03	0.20	0.17	-0.12	0.12	-0.05	0.22	0.02	0.55
17. Right censor dummy	0.04	0.13	-0.03	-0.05	0.01	-0.03	0.10	0.03	0.27
18. Peer Influence	0.03	0.01	0.00	-0.01	0.02	-0.02	0.02	0.01	0.05
19. Firm size 11_49	0.04	0.02	-0.00	-0.01	0.05	-0.04	0.04	0.01	0.00
20. Firm size 50_249	-0.01	-0.02	-0.02	0.00	-0.02	0.00	-0.03	0.02	-0.07
21. Firm size 250_499	-0.01	-0.00	-0.00	0.00	-0.02	-0.00	-0.01	0.00	-0.01
22. Firm size 500_999	-0.01	0.02	0.02	-0.01	0.02	-0.02	0.01	-0.01	0.04
23. Firm size 1000_4999	-0.02	0.00	0.00	0.00	0.03	0.00	0.01	-0.02	0.07
24. Firm size 5000+	-0.02	-0.01	0.01	0.02	-0.08	0.08	-0.03	-0.02	-0.00
25. Mean wage in firms (log)	0.03	0.17	0.06	-0.06	0.16	-0.12	0.23	-0.06	0.32
26. #Occupational groups	-0.01	-0.08	0.01	0.04	-0.09	0.02	-0.10	-0.03	-0.00
27. Multiple workplace	-0.02	0.05	0.03	-0.02	0.06	-0.01	0.08	-0.03	0.18
28. Cumulative spinoffs	-0.02	-0.02	-0.00	0.02	-0.02	0.06	-0.01	-0.02	0.03
29. Firm failure	0.01	0.02	0.00	-0.01	0.01	-0.01	0.01	0.00	-0.05
30. Explained wage inequality	0.01	0.03	0.06	-0.03	0.00	-0.00	0.08	0.00	0.42
31. Residual wage inequality	0.01	-0.05	0.01	-0.00	-0.04	-0.00	-0.06	0.05	-0.15

Table 4.4. Bivariate correlation (continued)

Variables	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
10. Firm tenure	1.00																					
11. University education	0.06	1.00																				
12. Business education	0.07	0.28	1.00																			
13. Prior entrepreneurship	0.15	0.05	0.02	1.00																		
14. Wage (log)	0.32	0.24	0.14	0.10	1.00																	
15. Income from capital	0.03	0.03	0.04	0.07	0.03	1.00																
16. Left censor dummy	0.44	0.03	0.06	0.13	0.20	0.02	1.00															
17. Right censor dummy	0.23	0.10	0.05	0.07	0.28	0.01	0.05	1.00														
18. Peer Influence	0.02	0.05	0.03	0.14	0.04	0.02	0.00	0.04	1.00													
19. Firm size 11_49	0.01	0.05	0.01	0.13	0.07	0.02	0.03	-0.00	0.09	1.00												
20. Firm size 50_249	-0.05	0.01	-0.02	-0.03	-0.05	-0.00	-0.04	-0.04	-0.01	-0.38	1.00											
21. Firm size 250_499	-0.01	0.00	-0.02	-0.03	-0.03	-0.00	-0.00	-0.01	-0.01	-0.21	-0.20	1.00										
22. Firm size 500_999	0.02	0.03	-0.01	-0.03	0.04	-0.00	0.01	0.01	-0.02	-0.18	-0.18	-0.10	1.00									
23. Firm size 1000_4999	0.08	-0.00	0.08	-0.04	0.05	-0.00	0.06	0.03	-0.04	-0.27	-0.26	-0.14	-0.13	1.00								
24. Firm size 5000+	-0.04	-0.10	-0.05	-0.04	-0.10	-0.01	-0.05	0.02	-0.04	-0.22	-0.22	-0.12	-0.11	-0.15	1.00							
25. Mean wage in firms (log)	0.27	0.27	0.13	0.07	0.71	0.02	0.16	0.25	0.06	0.10	-0.07	-0.04	0.06	0.07	-0.14	1.00						
26. #Occupational groups	0.00	-0.02	-0.04	-0.03	-0.10	-0.00	-0.32	0.19	-0.01	-0.23	-0.05	0.02	0.03	0.11	0.22	-0.05	1.00					
27. Multiple workplace	0.15	0.06	0.05	-0.06	0.23	-0.01	0.12	0.12	-0.04	-0.45	-0.14	0.08	0.18	0.35	0.21	0.33	0.15	1.00				
28. Cumulative spinoffs	-0.00	-0.02	0.03	-0.08	-0.06	-0.01	0.04	-0.10	-0.06	-0.46	-0.27	0.00	0.11	0.40	0.49	-0.08	0.11	0.40	1.00			
29. Firm failure	-0.04	-0.01	-0.00	-0.01	0.02	0.00	-0.01	-0.10	-0.00	0.07	0.03	-0.01	-0.02	-0.05	-0.05	0.02	-0.05	-0.10	-0.04	1.00		
30. Explained wage inequality	0.31	0.13	0.05	0.09	0.13	0.02	0.05	0.24	0.04	-0.03	-0.15	-0.05	0.01	0.02	0.27	0.18	0.23	0.13	0.18	-0.10	1.00	
31. Residual wage inequality	-0.13	-0.06	-0.01	0.01	-0.56	0.02	-0.09	-0.08	0.01	0.08	0.02	-0.01	-0.05	-0.08	0.00	-0.32	0.03	-0.20	-0.05	0.00	-0.05	

4.4. Results

Controls: Results of the complementary log-log regression predicting entrepreneurial entry of individuals are reported in table 4.5. Model 1 presents the baseline results with controls for various individual and firm level characteristics that would influence entry into entrepreneurship. With respect to individuals' age, younger employees are more likely to enter entrepreneurship than the older employees (Tåg et al., 2014). Scandinavian natives have higher chances of entering entrepreneurship when compared to others. This result is at odds with findings from U.S. based sample where immigrants are considered to have higher chances of experiencing entrepreneurship. One reason could be that the dependent variable is entrepreneurial entry by incorporation, where familiarity with legal procedures and language might give natives an edge over immigrants in entering entrepreneurship, at least in Sweden.

In line with findings from other countries or studies, female employees are less likely to experience entrepreneurial entry than male employees (Shane, 2008). Married employees are more likely to leave paid employment to enter entrepreneurship than those with children. However when self-employment is also considered as entrepreneurship, having children lowers the attractiveness of entrepreneurial entry.

As with respect to general human capital, both industry tenure and general university education seems to encourage entrepreneurial entry, in line with the prevailing findings on spinoffs and the role of human capital in entrepreneurship (Klepper and Sleeper, 2005; Ucbasaran et al., 2008). The result on university education is stable even after controlling for business specific education in other models in table 4.5. Prior experience in entrepreneurship is also associated with future entry into entrepreneurship (Wright et al., 1997).

Table 4.5. Complementary log-log models predicting entrepreneurship (controls)

VARIABLES	(1) Baseline	(2) Main effects(H1&H2)	(3) H3	(4) H4
Individual level controls				
Age 40_55	0.041* (0.022)	0.006 (0.022)	0.007 (0.022)	0.005 (0.022)
Age 55+	-0.037 (0.034)	-0.081** (0.034)	-0.082** (0.034)	-0.075** (0.034)
#Geographic mobility	-0.008 (0.023)	-0.005 (0.023)	-0.006 (0.023)	-0.005 (0.023)
Scandinavian	0.464*** (0.044)	0.452*** (0.044)	0.452*** (0.044)	0.450*** (0.044)
Female	-0.594*** (0.023)	-0.541*** (0.023)	-0.542*** (0.023)	-0.534*** (0.023)
Married	0.290*** (0.024)	0.286*** (0.024)	0.286*** (0.024)	0.284*** (0.024)
#Children	0.067*** (0.010)	0.057*** (0.010)	0.057*** (0.010)	0.059*** (0.010)
Industry Tenure	0.040*** (0.003)	0.068*** (0.004)	0.068*** (0.004)	0.067*** (0.004)
University Education	0.383*** (0.021)	0.443*** (0.022)	0.439*** (0.022)	0.444*** (0.022)
Prior entrepreneurship	0.711*** (0.031)	0.712*** (0.031)	0.713*** (0.031)	0.705*** (0.031)
Wage (log)	0.560*** (0.021)	0.485*** (0.015)	0.485*** (0.015)	0.506*** (0.015)
Income from capital (log)	1.151*** (0.245)	0.595** (0.293)	0.610** (0.299)	0.845*** (0.300)
Left censor indicator	0.030 (0.029)	-0.010 (0.029)	-0.013 (0.029)	-0.008 (0.029)
Right censor indicator	1.037*** (0.024)	1.053*** (0.024)	1.051*** (0.024)	1.050*** (0.024)
Firm level controls				
Peer Influence	0.470*** (0.122)	0.428*** (0.120)	0.380*** (0.122)	0.426*** (0.121)
Firm Size 50-249	-0.605*** (0.026)	-0.535*** (0.026)	-0.541*** (0.026)	-0.539*** (0.026)
Firm Size 250-499	-1.021*** (0.045)	-0.972*** (0.045)	-0.986*** (0.044)	-0.972*** (0.045)
Firm Size 500-999	-1.235*** (0.056)	-1.162*** (0.056)	-1.161*** (0.056)	-1.169*** (0.056)
Firm Size 1000-4999	-1.772*** (0.063)	-1.702*** (0.063)	-1.697*** (0.063)	-1.711*** (0.064)
Firm Size 5000+	-2.105*** (0.105)	-2.015*** (0.105)	-2.038*** (0.105)	-2.011*** (0.105)
Mean wage (log) in firms	-0.238*** (0.017)	-0.259*** (0.016)	-0.264*** (0.016)	-0.262*** (0.016)
#Occupational groups	-0.144*** (0.008)	-0.140*** (0.007)	-0.137*** (0.007)	-0.138*** (0.007)
Multiple Workplace	-0.043* (0.023)	-0.035 (0.023)	-0.037 (0.023)	-0.040* (0.023)
Cumulative Spinoffs	0.059*** (0.005)	0.059*** (0.005)	0.058*** (0.005)	0.058*** (0.005)
Firm Dissolution	0.380*** (0.038)	0.353*** (0.038)	0.350*** (0.038)	0.352*** (0.038)
Other controls				
County of residence FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

On average, higher wage seems to be a strong predictor of entrepreneurial entry, even after controlling for firm characteristics that are associated with a strong internal labor market, such as firm size and number of occupations in the firm. It is not clear whether high wage earners enter entrepreneurship because of relatively limited opportunities in the firm to increase their earnings even further or higher wage increase savings that can act as a safety net for uncertain earnings in early stages of entrepreneurship. It is to be noted in this context that income from capital is also associated with higher entrepreneurial entry, possibly supporting the benefits of financial resources.

Among the firm characteristics, peer influence in entrepreneurship captured by the number of employees who left the firm for entrepreneurship in the previous period appear to be a strong predictor of entrepreneurial entry, in line with existing evidence (Nanda and Sorensen, 2010). Various firm size categories (reference category being firms having 11 to 49 employees) appear to support the “small firm effect” on entrepreneurial entry, where larger firms being less likely to facilitate entrepreneurial entry of individuals (Elfenbein et al., 2010; Kacperczyk, 2012; Sorensen, 2007; Tåg et al., 2014).

Mean wage in firms seem to reduce mobility into entrepreneurship. Higher mean wage implies the firms’ overall ability to compensate employees and keep them attracted to the employment. However, note that this is the average effect for all individuals, whereas the effect of wage inequality (i.e., main independent variable) implies differences among employees in the share they receive.

As expected, the more occupational groups in a firm, the less likely an employee is to enter entrepreneurship signaling a broader internal labor market (Baron and Bielby, 1980; Baron, Davis-Blake and Bielby, 1986). Curiously, having multiple workplaces in

a firm seems to reduce entrepreneurial entry of employees but only when business education and prior entrepreneurship experience is not controlled for. On the other hand the cumulative number of entrepreneurial entries of individuals in the focal firm or the “entrepreneurial prominence” of firms (Burton et al., 2002) is associated with higher chances of observing entrepreneurial transitions of employees. Finally, firm dissolution seems to push displaced employees into entrepreneurship. Overall, most of the results on controls are in line with the prevailing findings, which lends credence to the comparability of this specific sample to other contexts explored in the previous literature.

Main effects:

The results of hypotheses tested are presented in models 2-4 of table 4.5. Model 2 introduces main effects on explained and residual wage inequality, along with the effect of business education. Hypothesis 1 predicts that explained wage inequality reduces employee mobility into entrepreneurship. Confirming my predictions, a one-standard deviation increase in explained wage inequality decreases employee hazard of entering entrepreneurship by almost 84 percent ($e^{-1.83}$). Hypothesis 2 predicts that residual wage inequality increases employee mobility into entrepreneurship. Supporting the prediction, a one-standard deviation increase in the residual wage inequality increases employee hazard of entering entrepreneurship by roughly 7 percent ($e^{0.071}$). Though I did not offer any hypotheses on the effect of business education and prior entrepreneurship experience on employee mobility into entrepreneurship, the results appear nevertheless in line with existing evidence in the literature. In comparison to those who did not receive business education, employees who received their university

education in business increases their hazard of entering entrepreneurship by 11 percent ($e^{0.104}$).

Table 4.5. Complementary log-log models predicting entrepreneurship (main effects)

VARIABLES	(1) Baseline	(2) Main effects (H1&H2)	(3) H3	(4) H4
Main effects				
Explained wage inequality		-1.827*** (0.178)	-1.500*** (0.180)	-1.820*** (0.178)
Residual wage inequality		0.071*** (0.003)	0.071*** (0.003)	0.080*** (0.003)
Business Education		0.104*** (0.033)	0.455*** (0.061)	0.403*** (0.042)
Interactions effects				
Explained wage inequality X Business education			-2.828*** (0.437)	
Residual wage inequality X Business education				-0.098*** (0.010)
Constant	-22.957*** (3.087)	-15.356*** (3.708)	-15.519*** (3.781)	-18.720*** (3.790)
Observations	3,330,635	3,330,635	3,330,635	3,330,635
#Events	13,151	13,151	13,151	13,151
#Non-events	3,317,484	3,317,484	3,317,484	3,317,484
#Individuals	1,113,017	1,113,017	1,113,017	1,113,017
Chi2	36361	38406	38555	38129
Degrees of freedom	74	77	78	78
Log-likelihood ratio	-69474	-69230	-69206	-69179

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In model 3, I test the hypothesis 3 that business education accentuates the negative effect explained wage inequality has on entrepreneurial entry of employees. As predicted, the result indicates that while a one-standard deviation increase in explained wage inequality decreases employee hazard by 80 percent ($e^{-1.5}$) for an employee who did not receive business education, the hazard rate drops by 94 percent ($e^{-2.828}$) –i.e., 14 percent stronger for those who received business education. Figure 4.1 plots the result.

Result of the test for hypothesis 4 is presented in model 4 of table 4.5. Whereas hypothesis 4 predicts that having business education amplifies the positive effect of residual wage inequality on employees' hazard of entrepreneurial entry, the result indicates that it actually moderates the entry hazard (see also fig. 4.2). This means that

contrary to what I expected, business education act as a deterrent for entrepreneurial entry, at least in organizations with high wage inequality. Perhaps business education prepares one for an organizational career than entrepreneurship. An alternative possibility is that business education might be correlated with some unobserved firm specific abilities that confer higher wages and hence they could be benefiting more from high wage inequality. If so, one potential consequence is that the wage equation may be underestimated owing to unobserved individual abilities.

Fig. 4.1. Interaction of explained wage inequality and business education

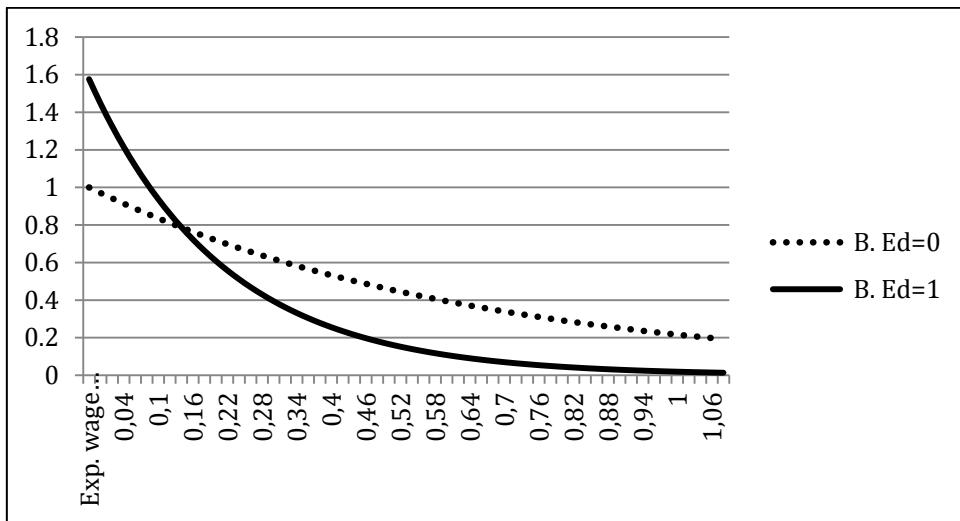
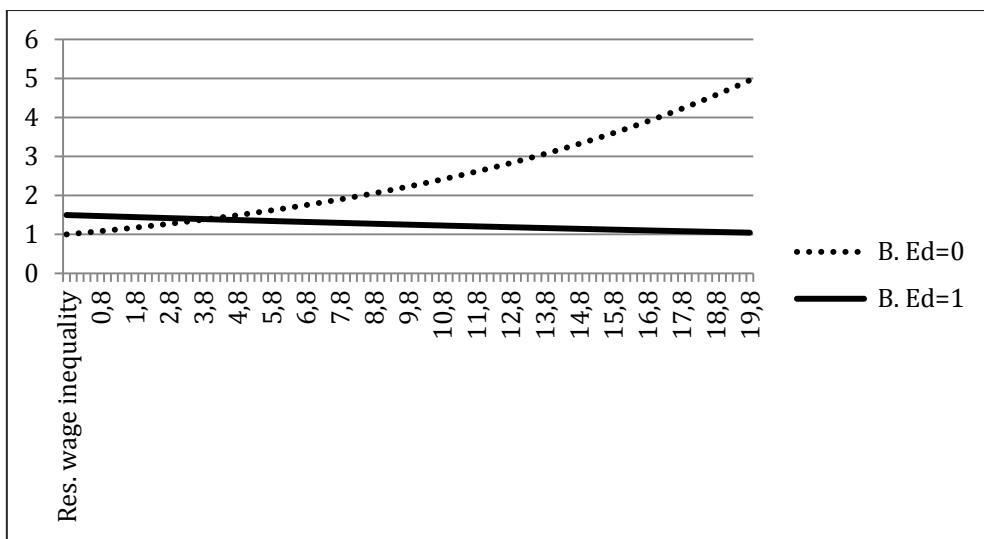


Fig. 4.2. Interaction of residual wage inequality and business education



4.5. Robustness checks

In order to examine the possibility of unobserved individual abilities biasing the wage equation from which the inequality measures are calculated, I performed a number of tests for unobserved heterogeneity. Theoretically, the presence of unobserved heterogeneity is conceivable in entrepreneurship due to unobservable nature of entrepreneurial skills or dispositions among workers and managers, which may be uncorrelated with wage inequality (Sørensen & Sharkey, 2014). The problem of unobserved heterogeneity – called ‘frailty’ in hazard analysis – tends to stem from incomplete model specification. Models with no frailty are at risk over-estimating negative time dependence in the hazard rate, as well as underestimating the proportionate effect on the hazard from a change in the predictors (Lancaster, 1985). Duration models can account for heterogeneity by incorporating frailty as a latent random effect that enters multiplicatively on the hazard function. To accommodate for unobservable heterogeneity among individuals, I include frailty based on individual random effects in the complementary log-log models reported in model 5 of table 4.6. These random effects accounts for individuals’ unobserved fixed preferences in entering entrepreneurship (Rabe-Hesketh & Skrondal, 2012) and have been shown to substantially reduce unobserved heterogeneity in panel data sets (Follmann and Goldberg (1988). Even though the frailty model does not account for all sources of unobserved heterogeneity (e.g., due to unobserved external influences on individuals), group-level parameters have been shown to be efficiently estimated in discrete-time hazard models using frailty models (Xue and Brookmeyer (1997). The results indicate that the frailty models are not different from that of unconditional model and that the presence of unobserved heterogeneity cannot be confirmed. Since the main results are

robust to that of frailty models and since the presence of frailty could not be confirmed as indicated in the insignificance of the test for $\rho > 0$, I retained unconditional complementary log-log models reported in the main analyses.

A more rigorous approach to address this concern is to estimate fixed effect logit model (Allison, 2009; Sørensen, 2007). Fixed effect models can be employed when the outcome variable report occurrence of event at least two times for every individual in the analyses. For that reason, fixed effect regression can be performed only for a subsample of my data with individuals who experienced entrepreneurship at least once during the study period. The model is especially appropriate when the within-individual variation in predictor variables is larger than variation across individuals, as in the present case where main independent variables are firm level measures (explained and residual wage inequality) that do not change between individuals for any given panel. Although dropping most of the observations will raise doubts about sample selection issues, combining the findings from frailty proportional hazard models reported earlier with that of conditional fixed effects can be used to invalidate any such concerns.

In models 6 of table 4.6, I report the results from conditional fixed effects logit model on entrepreneurial entry of employees. The number of observations drops from 3,330,635 to 91,180, corresponding to 11,115 individuals and 13,151 events observed in the period investigated. The results shows that the main findings related to the effect of explained and residual wage inequality reported in table 4.5 (models 1-4) are somewhat robust to unobserved heterogeneity tests. While the earlier finding on the negative effect of explained wage inequality (80 percent decline) is now 3 percent lower (77 percent decline), the positive effect of residual inequality (7 percent increase) now drops to roughly 1 percent. It is important to note that this is the average effect of individuals

irrespective of their socio-demographic background. It is possible that the 6 percent drop may belong to loss of between-category effects in predicting *who* enter entrepreneurship in response to residual wage inequality in organizations, but nevertheless falls beyond the scope of this study.

Beyond individual level, unobserved heterogeneity can also arise from differences in firm performances or personnel policies. To test for this, I included two additional firm level variables into the main analyses of cloglog models – sales turnover and average personnel cost of the focal firm. Since both of these measures have large number of missing values, I used them for robustness analyses instead of adding as controls in the main models. The results of this analysis reported in model 7 of table 4.6 do not raise any concerns regarding the presence of firm-level unobserved heterogeneity.

Table 4.6. Additional analyses (controls)

VARIABLES	(5) Random effects clog-log	(6) Fixed effects logit	(7) Firm level heterogeneity
Individual level controls			
Age 40_55	0.006 (0.021)	0.108** (0.053)	-0.012 (0.026)
Age 55+	-0.081** (0.033)	0.033 (0.090)	-0.060 (0.040)
#Geographic mobility	-0.005 (0.023)	-0.034 (0.031)	0.006 (0.028)
Scandinavian	0.452*** (0.042)	- (0.042)	0.475*** (0.052)
Female	-0.541*** (0.022)	- (0.022)	-0.535*** (0.027)
Married	0.286*** (0.024)	0.167*** (0.054)	0.254*** (0.028)
#Children	0.057*** (0.010)	0.104*** (0.025)	0.065*** (0.012)
Industry Tenure	0.068*** (0.003)	0.082*** (0.008)	0.061*** (0.004)
University Education	0.443*** (0.021)	0.595*** (0.161)	0.452*** (0.026)
Prior entrepreneurship	0.712*** (0.027)	- (0.027)	0.579*** (0.036)
Wage (log)	0.485*** (0.013)	0.094*** (0.023)	0.583*** (0.026)
Income from capital (log)	0.595** (0.263)	-0.443 (0.541)	-0.242 (0.511)
Left censor indicator	-0.010 (0.027)	- (0.027)	0.012 (0.034)
Right censor indicator	1.053*** (0.023)	- (0.023)	1.036*** (0.030)
Firm level controls			
Peer Influence	0.428*** (0.114)	-2.764*** (0.157)	0.705*** (0.124)
Firm Size 50-249	-0.535*** (0.026)	-0.085* (0.049)	-0.498*** (0.032)
Firm Size 250-499	-0.972*** (0.048)	-0.022 (0.081)	-1.444*** (0.069)
Firm Size 500-999	-1.162*** (0.058)	-0.010 (0.102)	-1.034*** (0.067)
Firm Size 1000-4999	-1.702*** (0.064)	-0.221* (0.113)	-1.627*** (0.080)
Firm Size 5000+	-2.015*** (0.103)	-0.158 (0.185)	-2.173*** (0.137)
Mean wage in firms	-0.259*** (0.015)	0.052 (0.033)	-0.328*** (0.019)
#Occupational groups	-0.140*** (0.007)	-0.014 (0.011)	-0.118*** (0.009)
Multiple Workplace	-0.035 (0.024)	-0.179*** (0.050)	-0.001 (0.027)
Cumulative Spinoffs	0.059*** (0.005)	0.045*** (0.006)	0.033*** (0.006)
Firm Dissolution	0.353*** (0.037)	0.337*** (0.051)	0.143** (0.059)
Sales turnover	- (0.000)	- (0.000)	-0.000 (0.000)
Personnel expenses	- (0.000)	- (0.000)	0.000*** (0.000)
Other controls			
County of residence FE	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4.6. Additional analyses (main effects)

VARIABLES	(5) Random effects clog-log	(6) Fixed effects logit	(7) Firm level heterogeneity
Main effects			
Explained wage inequality	-1.827*** (0.161)	-1.429*** (0.277)	-1.323*** (0.191)
Residual wage Inequality	0.071*** (0.003)	0.011* (0.007)	0.069*** (0.007)
Business Education	0.104*** (0.032)	-	0.057 (0.039)
Constant	-15.356*** (3.319)	-	-5.687 (6.458)
Observations	3,330,635	91,180	2,144,430
#Events	13,151	13,151	9332
#Non-events	3,317,484	0	2,135,098
#Individuals	1,113,017	11,115	798604
Chi2	31343	9272	27537
Degrees of freedom	77	72	72
Log likelihood ratio	-69230	-18120	-47437
Frailty parameters			
Rho	.000035	-	-
$\sigma(u)$	0.0076	-	-
$\ln[\sigma^2(u)]$	-9.76 (2.62)	-	-
Chi2 for LR test	0.0076	-	-

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.6. Discussion

The specific aim of this paper is to gain conceptual clarity on the link between wage inequality in organizations and mobility into entrepreneurship. As I argued and shown empirically, wage inequality has distinctive implications on mobility into entrepreneurship depending on what meaning it conveys in an employment context. When wages are distributed reflecting the variation in human capital, they do not necessarily facilitate mobility into entrepreneurship. Instead, wage inequality will motivate employees to accumulate further human capital in the race to attain higher wages and the accompanying status. On the other hand when wage inequality do not reflect variations in human capital, then it raise questions on the unobserved criteria for

wage allocations. In this scenario, employees will realize that additional investments in human capital through continued employment will not result in higher wages in future. Wage allocation based on unobservable criteria may also evoke dissatisfaction among employees irrespective of employer's belief in the legitimacy of the reward allocation. This will decrease the attractiveness of current employment *in relation to* entrepreneurship as an avenue for attainment. I further found that educational background in business make individuals develop "stickiness" to the organizational career. This is perhaps due to their access to managerial careers, which facilitates their upward mobility within the organization more than any other occupations do (Pfeffer and Fong, 2004). Alternatively, business education can also be seen as a professional socialization into bureaucratic career. According to this perspective, business education trains individuals to ensure smooth functioning of a bureaucracy more than charter unknown pathways into entrepreneurship.

The main contribution of this research is to the literature in stratification and mobility in organizations. Decades of research on stratification in organizations and its outcome on wage allocations continue to flourish (Avent-Holt and Tomaskovic-Devey, 2010; Bidwell, Briscoe and Fernandez-Matteo, 2013; McCall and Percheski, 2010). Considerable knowledge has been generated in efforts to understand how inequality in organizations shape mobility outcome for individuals. The focus of prior research though remained largely on mobility into other firms. The perspective of this paper is to take forward the recent approach to study mobility into entrepreneurship (Sorensen and Sharkey, 2014) by clarifying the meaning of wage inequality in employment contexts as well as to highlight the importance of its different implications for mobility. As recent scholarship noted, the meaning of inequality should be understood in the context of

specific cultures or organizations (Monin, Foragues and Wang, 2014). It is otherwise misleading to derive meaningful conclusions. In the context of this study, I argued that wage inequality will increase or decrease mobility into entrepreneurship depending on the perception of inequality as based on legitimate or illegitimate allocation of wages.

Further research is needed to understand what constitutes legitimate basis for wage allocations and how it is determined in organizations. Whether wages are allocated based on actual abilities that are unobservable for employees, or based on the “cultural beliefs about the competence” of social status categories such as gender or race (Ridgeway, 2014), wage inequality facilitate mobility into entrepreneurship. Nevertheless, the mechanism of attainment based on residual inequality is much weaker in comparison to the negative effect of explained inequality, at least in the sample I studied. It has to be kept in mind that the study concerns itself with entrepreneurship as a firm founding process. Prior studies noted that over 90 percent of entrepreneurship activities are observed in the form of self-employment, which did not fall under the radar of the present study (Shane, 2008). It is not clear whether this weak effect pertains to organizational founding or entrepreneurship in general. To the extent social comparison process interfere in employee perception on the basis of wage allocation, it is possible that many would enter self-employment in response to perceive injustice rather than waiting and planning to found an organization. Further research is needed to distinguish the two types of entrepreneurial entry since their mobility implications on individual attainment as well as general labor market dynamics are contingent on the type of entrepreneurship pursued.

At least two limitations are worth highlighting. First, the study focuses on a small proportion of firms in the overall population. For deriving meaningful predictions,

I excluded both single proprietor firms and firms with 10 or less employees from the sample. Although appropriate, it raises questions on the representativeness of the findings to overall population. Since I gave more weight to the meaningfulness of the construct wage inequality over representativeness, it is fair to note that the present study speaks to workplaces where wage inequality matters. Second, by limiting the study to mobility into entrepreneurship through firm founding, the implications of residual wage inequality on mobility may be underestimated. Here, the study concerns itself with the type of mobility that has substantive implications on the individual attainment and overall labor market dynamics. This is clearly a major limitation, which needs to be examined in future research.

Overall, more work needs to be done to extend the research on organizational stratification and mobility, from a research agenda that concerned itself with mobility within and among established organizations, towards explicitly studying mobility into entrepreneurship as a promising avenue for future research. Such an examination would not only further our knowledge about individual attainment, but also help make better predictions on changes in the general supply and demand in labor market. The last point has been neglected in economics where supply and demand are considered as given, or largely determined exogenously by macroeconomic changes. Instead, sociological studies on stratification and mobility can inform micro level processes in the creation of supply and demand.

Chapter V

CONCLUSIONS

5.1. Summary

In this thesis, I explored the broader topic of mobility as structured by organizations. The three articles in the thesis couch this broader issue in more specific theoretical frameworks. First, organizations pattern mobility through shaping the social structure such as heterogeneity within the organizational boundary (Blau, 1974; 1977). On the other hand, the influence of social structure in predicting mobility is also constrained by the system of values underlying the structuring and functioning of the organization. The influence of organizational structure on the mobility outcome of heterogeneity has been unexamined. This thesis apply upper echelon theory perspective to examine this, since a large volume of literature unambiguously link heterogeneity with mobility outcomes (Finkelstein et al., 2009), but relatively less is known about the role of organizational structure (Beckman and Burton, 2011; Hambrick et al., 2014; Kalev, 2014). Specifically I studied the inflow and outflow of mobility as patterned by the bureaucratic orientation of the organization.

In the first article (chapter two), I modeled the demographic distance of top managers who enter and exit the firm as a function of the degree to which organizations are bureaucratically oriented. In particular, I studied the efficiency dimension of bureaucracy and the underlying values associated with an efficiency oriented rational bureaucracy. The analyses on Dutch accounting industry between the period 1940 and 1982 suggest that while the top managers of rational bureaucratic firms prefer

demographically similar others into their partnership, dissimilar others once selected are even less likely to leave the firm. The overall conclusion of this study is that while bureaucracies feed homogeneity through their focus on efficiency (i.e., by selecting similar others), they are indeed capable of sustaining demographically dissimilar members in the top management team (TMT). We attribute this finding to the impersonal norms and values underlying the bureaucratic orientation of firms and the usefulness of such “impersonal structures” on the integration of heterogeneous members in the TMT.

In the same theoretical framework, I organize the second article (chapter three) around the consequences of TMT heterogeneity. More specifically, I study the role of rational bureaucratic organizations in moderating the outward mobility from firms. In congruence with the widely examined consequences of TMT heterogeneity, I also studied how bureaucracies moderate the failure chances of the organization. Findings from the analyses on Dutch accounting firms between 1940 and 1982 suggest that bureaucracies indeed moderate the outward mobility of top managers and the hazard of organizational failure, thus adding an extra layer to the issues studied in the first article. Note that while the first article modeled demographic distance of top managers who enter and exit the firm without studying the rate of exit, the second article studies the rate, or attrition of top managers. Hence the two studies combined gives a richer understanding of how the bureaucratic structure of organizations pattern mobility outcomes associated with heterogeneity. Specifically, bureaucracy allows selection and retention of demographically dissimilar members into their TMT as well as the overall retention of TMT members.

Finally, in a distinctive theoretical framework, I take up the second issue studied in the thesis, namely, the role of organizational stratification on mobility outcome. Specifically, while prior research mostly focused on mobility across established firms (e.g., Baron and Bielby, 1980), I focused on a less studied mobility outcome – entrepreneurship. By patterning mobility into entrepreneurship, or “markets”, organizations indirectly influence the larger labor market dynamics by creating new jobs (Haveman and Cohen, 1994). In doing so, I examined the effect of wage inequality by distinguishing between whether the wage inequality reflects the variations in human capital (explained) or not (residual).

Analyses on the Swedish business service firms between 1993 and 2007 confirm that the effect of wage inequality on mobility into entrepreneurship is diminished in proportion to employees’ equal opportunity to convert human capital into wages (i.e., distribution of wages approximates that of human capital). Nevertheless, some are more equal than others, especially those with business education. I interpret this finding as the result of their capability to move into leadership ranks (i.e., *perceived* higher opportunity cost in leaving the employment). When wage attainment is possible through accumulation of human capital and when other social biases do not operate, employment is preferred to entrepreneurship. On the other hand, when wage distribution do not reflect that of human capital, where social biases interfere in wage allocation, mobility into entrepreneurship increases in proportion to the discrepancy between human capital variation and wage distribution. Contrary to what I expected, business education reinforces one’s preference for organizational career over entrepreneurship. Overall, stratified wage allocations (i.e., inequality) influence mobility into

entrepreneurship in predictable ways. In other words, organizations significantly impact individual mobility into entrepreneurship through their wage policies.

5.2. Contributions

The present thesis contributes to three streams of literature. First, prior studies on stratification and mobility mainly examined the effect of organizational *or* social structure on mobility outcomes for individuals (Baron, 1984; Bielby and Baron, 1980; Harrison and Carroll, 1998; Pfeffer, 1983). However, neither social structure in organizations exists independently of the influence of organizational structure nor organizational structure acts on individuals in the vacuum of the social fabric that makes workplace more than a collection of rules and procedures (McEvily et al., 2014). The present thesis recognizes this important juncture of the hard and soft structural aspects of organizations in shaping mobility outcomes for employees.

Second, by analyzing the first contribution in the context of upper echelon theory, the thesis contributes to research on top management teams (Hambrick, 2007; Hambrick and Mason, 1984). Top management team (TMT) research is one the most fertile research agenda to emerge from the demographic approach to study social structural implications on mobility (Williams and O'Reilly, 1998). Yet, despite amassing large body of literature on various demographic processes shaping the mobility of executives, TMT research did not recognize the importance of organizational structure in shaping the mobility outcome. Perhaps, this omission is rooted in the long-standing assumption that organizations are reflections of the values and beliefs of their top managers (Hambrick and Mason, 1984). In making such an assumption, scholars have unwittingly allowed for the separation of TMTs from the values underlying the structuring and functioning of the organization. Findings from

this dissertation suggests that this is indeed not the case, where the executive mobility outcome associated with TMT heterogeneity varies systematically with the structuring and functioning of the organization.

Third, by theorizing on the new avenues of mobility previously overlooked in organizational stratification and mobility research, the present thesis extends the nascent literature on mobility into entrepreneurship (Sorensen and Sharkey, 2014). In doing so, the third chapter makes an important distinction between inequality in wages that constrains and facilitates mobility. Mobility into entrepreneurship is consequential for individual attainment and labor market dynamics through generation of jobs not only for oneself, but also for others. However, only that component of wage inequality that does not reflect variations in human capital among employees contributes to mobility into entrepreneurship.

Debates exist among macro social and economics scholars on the implications of inequality in income or wealth for economic development or vice versa (Kuznets, 1955; Lippman et al., 2005). Even though this thesis do not contribute a perspective to this larger debate, the findings certainly implies that inequality can be most dysfunctional when the basis of income or wealth distribution is not based on ability or human capital endowments. As a corollary, it also implies that inequality may contribute to upward social mobility when avenues of attainment are open to anyone with willingness to invest in human capital accumulation.

5.3. Limitations and Scope Conditions

Despite the conclusions derived from various chapters being robust to alternative explanations and specifications, some limitations of the study are noteworthy. *First*, while the thesis took a first step in bringing together organizational structural and social

structural aspects in predicting mobility, it took a limited perspective on the structuring and functioning of the organization. Whereas more elaborate typologies of the structuring and functioning of organizations are available in the literature (Mintzberg, 1979), the thesis limited its scope to rational bureaucracies. However, the early foundations of organizational sociology motivated this choice, especially from Max Weber's (1978) thesis on bureaucratic forms of administration. *Second*, the thesis further limited its scope to only one dimension of bureaucracy – its efficiency dimension. Again, this choice is motivated by the source of conflict mitigating impersonality being closely intertwined with a rational bureaucracy's focus on efficiency (Adler, 2012; du Gay, 2000; 2005; Weber, 1978). *Third*, direct observations on the micro processes underlying the theories are missing in the studies, due to reliance on archival data. Here, the thesis traded depth for breadth. *Fourth*, valid doubts exist as to the generalizability of audit firm bureaucratic structure to other contexts. Since the characteristics of bureaucracy will vary across empirical context (Weber, 1978), leverage ratio as a measure of the efficiency dimension of bureaucracy will be less generalizable to contexts outside professional service industry.

While the above limitations mostly pertain to the aspects of organizational structure, the *fifth* limitation speaks to the issue of employing heterogeneity as social structural dimension. Employing demography as proxies for social structural characteristics is a long standing practice in organization studies (Harrison and Carroll, 1998; Pfeffer, 1983). However, scholars have tapped into multiple dimensions of heterogeneity, with varying mobility consequences associated with each dimension. Thus the present thesis concerns only with cognitive heterogeneity captured by heterogeneity in industry tenure. This lack of multiple perspectives on heterogeneity, of

course serves as another limitation of the study. Finally, the last two limitations pertain to the study on wage inequality and entrepreneurship. The fifth limitation of the thesis is the inattention of fourth chapter on wage inequality and entrepreneurship on the organizational structural aspects. Whereas I studied how social structural aspect (wage inequality indirectly speaks to the wage policies and the resulting interactional patterns between employees) interacts with organizational structural aspects in the first two chapters, this has not been done in the fourth chapter. Since it is one of the first attempts to study wage inequality and entrepreneurship, further research should examine how this interact with organizational structure. Finally, the sixth limitation speaks to its limited view on entrepreneurship as organizational founding, neglecting all other forms of entrepreneurship activities (e.g., self-employment, intrapreneurship). While the motivation for doing so is its relative importance in instilling mobility dynamics by not only creating jobs for oneself, but also for others, it nevertheless serves as a limitation to current study.

5.4. Future directions

The findings outlined in the thesis open a few lines of enquiry for future research. First, if bureaucracies are capable of sustaining heterogeneity, then more research is needed to understand the micro-mechanisms that prevent diverse members from being selected in the first place. If future research could unravel this mechanism, then bureaucracy will achieve its true purpose of sustaining diversity according to what Max Weber predicted long time ago. Second, bureaucracy is only one structural characteristics of the organization. Further research could systematically analyze the impact of various organizational characteristics on mobility outcomes. It could be an examination of how the elements of bureaucratic and egalitarian structures mesh into a hybrid form of

organization or other structures might be more predictive in shaping mobility patterns. Third, entrepreneurship is a less understood destination of mobility events. If residual inequality pattern mobility into entrepreneurship, then future research should examine the source of residual inequality. Extant sociological research on social status and wage attainment implies that the source of unexplained wage inequality is likely to have sociological origins, such as status bias or power dynamics. If so, one fruitful approach would be to connect this line of research to class mobility or broader social inequality.

References

- Abbott, A. (1988). The system of professions: An essay on the division of labor.
- Adler, P.S. (2012) Perspective—The Sociological Ambivalence of Bureaucracy: From Weber via Gouldner to Marx. *Organization Science* 23(1):244-266.
- Adler, P. S., and Borys, B. (1996). Two types of bureaucracy: Enabling and coercive. *Administrative science quarterly*, 61-89.
- Agarwal, R., Echambadi, R., Franco, A. M., & Sarkar, M. B. (2004). Knowledge transfer through inheritance: Spin-out generation, development, and survival. *Academy of Management Journal*, 47(4), 501-522.
- Akerlof, G. A., & Yellen, J. L. (1990). The fair wage-effort hypothesis and unemployment. *The Quarterly Journal of Economics*, 255-283.
- Aldrich Howard, E., & Ruef, M. (2006). Organizations evolving. Sage.
- Allison, P. D. (1984). *Event history analysis: Regression for longitudinal event data* (No. 46). Sage.
- Allison, P. D. (2009). *Fixed effects regression models*. Los Angeles: Sage.
- Amason, A. C., and Sapienza, H. J. (1997). The effects of top management team size and interaction norms on cognitive and affective conflict. *Journal of management*, 23(4), 495-516.
- Ancona, D. G., and Caldwell, D. F. (1992). Demography and design: Predictors of new product team performance. *Organization Science*, 3: 321-341.
- Arendt, L., Priem, R., and Ndofor, H. (2005). A CEO-advisor model of strategic decision making. *Journal of Management*, 31(5): 680-699.
- Arrow, K. (1974). J. The Limits of Organization. WW Norton and Company.
- Arthur, M. B., & Rousseau, D. M. (Eds.). (1996). *The boundaryless career: A new employment principle for a new organizational era*. Oxford University Press.
- Ashforth, B. E., and Mael, F. (1989). Social identity theory and the organization. *Academy of management review*, 14(1), 20-39.
- Audia, P. G., & Rider, C. I. (2006). Entrepreneurs as organizational products: revisited. *The psychology of entrepreneurship*, 1-33.
- Avent-Holt, D., & Tomaskovic-Devey, D. (2010). The Relational Basis of Inequality Generic and Contingent Wage Distribution Processes. *Work and Occupations*, 37(2), 162-193.
- Baker, G. P., M. C. Jensen, and K. J. Murphy. (1988). "Compensation and Incentives: Practice vs. Theory." *Journal of Finance* 43 (3): 593-616.
- Bantel, K. A. and S. E. Jackson (1989). "Top Management and Innovations in Banking: Does the Composition of the Top Team Make a Difference?" *Strategic Management Journal*: 107-124.
- Barkema, H. G., and Shvyrkov, O. (2007). Does top management team diversity promote or hamper foreign expansion? *Strategic Management Journal*, 28(7), 663-680.
- Barnard, C. I. (1968). *The functions of the executive* (Vol. 11). Harvard University Press.
- Barnard, C. I. (1951). Functions of status systems in formal organizations, in Robert Dubin (ed.), *Human Relations in Administration*, Engelwood

- Cliffs, N. J.
- Baron, J. N. (1984). Organizational perspectives on stratification. *Annual review of sociology*, 37-69.
- Baron, J. N., & Bielby, W. T. (1980). Bringing the firms back in: Stratification, segmentation, and the organization of work. *American sociological review*, 737-765.
- Baron, J. N., M. D. Burton, M. T. Hannan. (1999). Engineering bureaucracy: The genesis of formal policies, positions, and structures in high-technology firms. *Journal of Law, Economics and Organization*. 15(1) 1-41.
- Baron, J. N., Davis-Blake, A., & Bielby, W. T. (1986). The structure of opportunity: How promotion ladders vary within and among organizations. *Administrative Science Quarterly*, 248-273.
- Baron, J. N., Hannan, M. T., & Burton, M. D. (2001). Labor Pains: Change in Organizational Models and Employee Turnover in Young, High- Tech Firms1. *American journal of sociology*, 106(4), 960-1012.
- Baron, J. N., & Pfeffer, J. (1994). The social psychology of organizations and inequality. *Social Psychology Quarterly*, 190-209.
- Baron, R. A. (1984). Reducing organizational conflict: An incompatible response approach. *Journal of Applied Psychology*, 69(2), 272.
- Barth, E., Bryson, A., Davis, J. C., & Freeman, R. (2014). *It's Where You Work: Increases in Earnings Dispersion across Establishments and Individuals in the US* (No. w20447). National Bureau of Economic Research.
- Beattie, V., & Fearnley, S. (1995). The importance of audit firm characteristics and the drivers of auditor change in UK listed companies. *Accounting and business research*, 25(100), 227-239.
- Becker, B. E., & Huselid, M. A. (1992). The incentive effects of tournament compensation systems. *Administrative Science Quarterly*, 336-350.
- Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Beckman, C. M., & Burton, M. D. (2011). Bringing organizational demography back in: Time, change and structure in top management team research. *Handbook of top management team research*, 49-70.
- Berscheid, E., and Walster, E. (1978). Interpersonal attraction (2nd ed.). Reading, MA: Addison-Wesley.
- Bidwell, M. J. (2013). What Happened to Long-Term Employment? The Role of Worker Power and Environmental Turbulence in Explaining Declines in Worker Tenure. *Organization Science*, 24(4), 1061-1082.
- Bidwell, M., & Briscoe, F. (2010). The dynamics of interorganizational careers. *Organization Science*, 21(5), 1034-1053.
- Bidwell, M., Briscoe, F., Fernandez-Mateo, I., & Sterling, A. (2013). The employment relationship and inequality: How and why changes in employment practices are reshaping rewards in organizations. *The Academy of Management Annals*, 7(1), 61-121.
- Bielby, W. T., & Baron, J. N. (1981). *Organizations, technology, and worker attachment to the firm*.
- Blau, P. M. (1974). Presidential address: Parameters of social structure. *American Sociological Review*, 615-635.

- Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure* (Vol. 7). New York: Free Press.
- Blinder, A. S. (1971). *Estimating a micro wage equation: pitfalls and some provisional estimates* (No. 131). Princeton University, Econometric Research Program.
- Bloom, M. (1999). The performance effects of pay dispersion on individuals and organizations. *Academy of Management Journal*, 42(1), 25-40.
- Bloom, M., & Michel, J. G. (2002). The relationships among organizational context, pay dispersion, and among managerial turnover. *Academy of Management Journal*, 45(1), 33-42.
- Boeker, W. (1997). "Strategic change: The influence of managerial characteristics and organizational growth." *Academy of Management Journal* 40(1): 152-170.
- Boone, C., V. Broecheler, G. R. Carroll. (2000). Custom service: Application and tests of resource partitioning among Dutch auditing firms from 1880 to 1982. *Organization Studies*. 21 355–381.
- Boone, C., Van Olffen, W., Van Witteloostuijn, A., & De Brabander, B. (2004). The genesis of top management team diversity: Selective turnover among top management teams in Dutch newspaper publishing, 1970–94. *Academy of Management Journal*, 47(5), 633-656.
- Boone, C., van Olffen, W., & van Witteloostuijn, A. (1998). Psychological team make-up as a determinant of economic firm performance: An experimental study. *Journal of economic psychology*, 19(1), 43-73.
- Box-Steffensmeier, J. M., & Jones, B. S. (2004). *Event history modeling: A guide for social scientists*. Cambridge University Press.
- Brass, D. J. (1995). A social network perspective on human resources management. *Research in personnel and human resources management*, 13(1), 39-79.
- Brittain, J. W., & Freeman, J. H. (1981). *Organizational proliferation and density dependent selection: Organizational evolution in the semiconductor industry*. Institute of Industrial Relations, University of California.
- Brehmer, B. (1976). "Social judgment theory and the analysis of interpersonal conflict." *Psychological Bulletin* 83(6): 985.
- Brenner, O. C., & Tomkiewicz, J. (1982). Job orientation of black and white college graduates in business. *Personnel Psychology*, 35(1), 89-103.
- Briscoe, F. (2007). From iron cage to iron shield? How bureaucracy enables temporal flexibility for professional service workers. *Organization Science*, 18(2), 297-314.
- Brittain, J. W., & Freeman, J. H. (1981). *Organizational proliferation and density dependent selection: Organizational evolution in the semiconductor industry*. Institute of Industrial Relations, University of California.
- Brüderl, J., Preisendorfer, P., & Ziegler, R. (1992). Survival chances of newly founded business organizations. *American sociological review*, 227-242.
- Brüderl, J., Preisendorfer, P., & Ziegler, R. (1993). Upward mobility in organizations: the effects of hierarchy and opportunity structure.

- European Sociological Review*, 9(2), 173-188.
- Burton, M. Diane. 2001. "The Company They Keep: Founders' Models for Organizing New Firms." Pp. 13–39 in *The Entrepreneurship Dynamic*, edited by Claudia Bird
- Burton, M. D., Sørensen, J. B., & Beckman, C. M. (2002). *Coming from good stock: Career histories and new venture formation* (Vol. 19, pp. 229-262). Emerald Group Publishing Limited.
- Byrkjeflot, H., and du Gay, P. (2012). Bureaucracy: An Idea Whose Time has Come (Again)?. *Research in the Sociology of Organizations*, 35, 85-109.
- Cappelli, P., & Sherer, P. D. (1990). Assessing worker attitudes under a two-tier wage plan. *Industrial and Labor Relations Review*, 225-244.
- Carpenter, M. A. (2002). "The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance." *Strategic Management Journal* 23(3): 275-284.
- Carpenter, M. A., Geletkanycz, M. A., and Sanders, W. G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management*, 30(6), 749-778.
- Carpenter, M. A., Sanders, W. G., & Gregersen, H. B. (2001). Bundling human capital with organizational context: The impact of international assignment experience on multinational firm performance and CEO pay. *Academy of Management Journal*, 44(3), 493-511.
- Carpenter, M. A., and Weikel, M. K. (Eds.). (2011). *The handbook of research on top management teams*. Edward Elgar Publishing.
- Carroll, G., and Harrison, J. R. (1998). Organizational demography and culture: Insights from a formal model and simulation. *Administrative Science Quarterly*, 43: 637–667.
- Carroll, G. and Mayer, K. (1986). 'Job-shift patterns in the Federal Republic of Germany: the effects of social class, industrial sector and organizational size'. *American Sociological Review*, 51, 323–41.
- Carroll, G. R., & Mosakowski, E. (1987). The career dynamics of self-employment. *Administrative science quarterly*, 570-589.
- Castanias, R. P. and C. E. Helfat (1991). "Managerial resources and rents." *Journal of management* 17(1): 155-171.
- Castilla, E. J. (2008). Gender, race, and meritocracy in organizational careers. *AJS; American journal of sociology*, 113(6), 1479-1526.
- Cattani, G., et al. (2003). "Spatial and temporal heterogeneity in founding patterns." *Organization Science* 14(6): 670-685.
- Cohen, Michael D., and James G. March. (1974). *Leadership and Ambiguity: The American College President*. New York: McGraw-Hill.
- Connolly, M. (2003). The end of the MBA as we know it?. *Academy of Management Learning & Education*, 2(4), 365-367.
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. 1994. Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9: 371-395.
- Cowherd, D. M., & Levine, D. I. (1992). Product quality and pay equity between lower-level employees and top management: An investigation of

- distributive justice theory. *Administrative Science Quarterly*, 302-320.
- Cyert, Richard M. and James G. March. (1963). A Behavioral Theory of the Firm. Englewood Cliffs, NJ: Prentice-Hall.
- Davenport, T. H. (2010). Business intelligence and organizational decisions. *International Journal of Business Intelligence Research*, 1(1), 1-12.
- Davidsson, P. (2007). Method challenges and opportunities in the psychological study of entrepreneurship. *The psychology of entrepreneurship*, 287-323.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of business venturing*, 18(3), 301-331.
- Davis, G. F., & Cobb, J. A. (2010). Corporations and economic inequality around the world: The paradox of hierarchy. *Research in Organizational Behavior*, 30, 35-53.
- Davis, L. E. (1966). The design of jobs. *Industrial Relations: A Journal of Economy and Society*, 6(1), 21-45.
- Dobrev, S. D. (2005). Career mobility and job flocking. *Social Science Research*, 34(4), 800-820.
- Dobrev, S. D. (2012). Career Change and the Iron Cage: Organizations and the Early Labour Market Experience of Professional Managers. *Journal of Management Studies*, 49(5), 843-868.
- Dobrev, S. D., & Barnett, W. P. (2005). Organizational roles and transition to entrepreneurship. *Academy of Management Journal*, 48(3), 433-449.
- Delmar, F., & Shane, S. 2004. Legitimizing first: organizing activities and the survival of new ventures. *Journal of Business Venturing*, 19(3): 385-410.
- Delmar, F., & Wennberg, K. 2010. *The Birth, Growth, and Demise of Entrepreneurial Firms in the Knowledge Intensive Economy*. Cheltenham: Edward Elgar.
- Deutsch, M. (1985). Distributive justice: A social-psychological perspective.
- du Gay, P. (1994). "Making up managers: bureaucracy, enterprise and the liberal art of separation." *British Journal of Sociology*: 655-674.
- du Gay, P. 2000. In Praise of Bureaucracy. Sage, London.
- du Gay, P. 2005. The Values of Bureaucracy. Oxford University Press, Oxford, UK.
- Dubin, R. (1961). Human relations in administration, Prentice-Hall.
- Ehrenberg, R. G., & Bognanno, M. L. (1990). The incentive effects of tournaments revisited: Evidence from the European PGA tour. *Industrial and Labor Relations Review*, 74S-88.
- Ehrenberg, R. G., & Smith, R. S. (1985). Modern labor economics.
- Eisenhardt, K. M. (1989). "Making Fast Strategic Decisions in High-Velocity Environments." *Academy of Management Journal* 32(3): 543-576.
- Eisenhardt, K. M., and Schoonhoven, C. B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among US semiconductor ventures, 1978-1988. *Administrative science quarterly*, 504-529.
- Elfenbein, D. W., Hamilton, B. H., & Zenger, T. R. 2010. The Small Firm Effect and the Entrepreneurial Spawning of Scientists and Engineers. *Management Science*, 56(4): 659-681.

- Elman, C., & O'Rand, A. M. (2004). The Race Is to the Swift: Socioeconomic Origins, Adult Education, and Wage Attainment. *American Journal of Sociology*.
- Espeland, W. N., & Stevens, M. L. (2008). A sociology of quantification. *European Journal of Sociology*, 49(03), 401-436.
- Evans, P. and J. E. Rauch (1999). "Bureaucracy and growth: A cross-national analysis of the effects of" Weberian" state structures on economic growth." *American Sociological Review*: 748-765.
- Festinger, L. (1954). A theory of social comparison processes. *Human relations*, 7(2), 117-140.
- Finkelstein, S., Hambrick, D. C., & Cannella, A. A. (2009). Strategic leadership: Theory and research on executives, top management teams, and boards. Oxford University Press.
- Fiske, S. T., & Taylor, S. E. (1991). Social cognition, 1991. *Social Cognition* (2nd Ed.). Xviii, 717 Pp. New York, NY, England: McGraw-Hill Book Company.
- Folger, R., & Cropanzano, R. Organizational justice and human resource management, 1998.
- Follmann, D. A., & Goldberg, M. S. 1988. Distinguishing Heterogeneity from Decreasing Hazard Rates. *Technometrics*, 30(4): 389-396.
- Frank, R. H. (1985). *Choosing the right pond: Human behavior and the quest for status*. Oxford University Press.
- Fredrickson, J. W. (1986). "The Strategic Decision Process and Organizational Structure." *Academy of management review* 11(2): 280-297.
- Freeman, J. (1986). Entrepreneurs as organizational products: Semiconductor firms and venture capital firms. *Advances in the study of entrepreneurship, innovation, and economic growth*, 1(33-52).
- Freeman, R. B. (1982). Union wage practices and wage dispersion within establishments. *Industrial and Labor Relations Review*, 3-21.
- Fujiwara-Greve, T., & Greve, H. R. (2000). Organizational ecology and job mobility. *Social Forces*, 79(2), 547-585.
- Galanter, M., and Palay, T. (1991). Tournament of lawyers: The transformation of the big law firm. Chicago: University of Chicago Press.
- Garicano, L., and Hubbard, T. N. (2007). Managerial leverage is limited by the extent of the market: Hierarchies, specialization, and the utilization of lawyers' human capital. *Journal of Law and Economics*, 50(1), 1-43.
- Gehlen, A. (1988). Man, his nature and place in the world, Columbia University Press.
- Gibrat, R. (1931). *Les inégalités économiques*. Recueil Sirey.
- Gilson, R. J., and Mnookin, R. H. (1989). Coming of age in a corporate law firm: The economics of associate career patterns. *Stanford Law Review*, 567-595.
- Gittell, J. H. and A. Douglass (2012). "Relational bureaucracy: Structuring reciprocal relationships into roles." *Academy of management review* 37(4): 709-733.
- Gompers, P., Lerner, J., & Scharfstein, D. (2005). Entrepreneurial spawning: Public corporations and the genesis of new ventures, 1986 to 1999. *The Journal of Finance*, 60(2), 577-614.

- Granovetter, M. (1985). Economic action and social structure: the problem of embeddedness. *American journal of sociology*, 481-510.
- Granovetter, M. (1995). *Getting a job: A study of contacts and careers*. University of Chicago Press.
- Greening, D. W., & Johnson, R. A. (1997). Managing Industrial and Environmental Crises The Role of Heterogeneous Top Management Teams. *Business & Society*, 36(4), 334-361.
- Greve, H. R. (1994). Industry diversity effects on job mobility. *Acta Sociologica*, 37(2), 119-139.
- Greve, H. R. (2008). Multimarket contact and sales growth: Evidence from insurance. *Strategic Management Journal*, 29(3), 229-249.
- Gompers, P., Lerner, J., & Scharfstein, D. (2005). Entrepreneurial spawning: Public corporations and the genesis of new ventures, 1986 to 1999. *The Journal of Finance*, 60(2), 577-614.
- Guo, G. (1992). Event-history analysis for left-truncated data. *Sociological methodology*, 23, 217-243.
- Hage, J. and M. Aiken (1969). "Routine technology, social structure, and organization goals." *Administrative Science Quarterly*: 366-376.
- Hall, R. H. (1968). "Professionalization and bureaucratization." *American Sociological Review*: 92-104.
- Hall, R. H. 1977. Organizations: Structure and process. Englewood Cliffs, NJ: Prentice Hall.
- Hambrick, D. C. (1995). Fragmentation and the other problems CEOs have with their top management teams. *California Management Review*, 37(3).
- Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of management review*, 32(2), 334-343.
- Hambrick, D. C., Cho, T. S., & Chen, M. J. (1996). The influence of top management team heterogeneity on firms' competitive moves. *Administrative science quarterly*, 659-684.
- Hambrick, Donald C., and Richard A. D'Aveni. (1992). Top team deterioration as part of the downward spiral of large corporate bankruptcies. *Management Science*, 38: 1445-1466.
- Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. (1993). Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, 14(6), 401-418.
- Hambrick, D. C., Humphrey, S. E., & Gupta, A. (2014). Structural interdependence within top management teams: A key moderator of upper echelons predictions. *Strategic Management Journal*.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of management review*, 9(2), 193-206.
- Hamilton, B. H. (2000). Does entrepreneurship pay? An empirical analysis of the returns to self-employment. *Journal of Political economy*, 108(3), 604-631.
- Hannan, M. T. (1988). Social change, organizational diversity, and individual careers. *Social structure and human lives, social change and the life Course*, 1, 161-174.
- Hannan, M. T. and Carroll, G. R. (1992). Dynamics of organizational

- populations. New York: Oxford University Press.
- Hannan, Michael T., and John Freeman. (1984). Structural inertia and organizational change. *American Sociological Review*, 49: 149-164.
- Harder, J. W. (1992). Play for pay: Effects of inequity in a pay-for-performance context. *Administrative Science Quarterly*, 321-335.
- Harrison, J. R. (1988). Opportunity models: Adapting vacancy models to national occupational structures. *Research in Social Stratification and Mobility*, 7, 3-33.
- Harrison, J. R., & Carroll, G. (2006). *Culture and demography in organizations*. Princeton University Press.
- Haveman, H. A. (1995). The demographic metabolism of organizations: Industry dynamics, turnover, and tenure distributions. *Administrative Science Quarterly*, 586-618.
- Haveman, H. A., & Cohen, L. E. (1994). The ecological dynamics of careers: The impact of organizational founding, dissolution, and merger on job mobility. *American Journal of Sociology*, 104-152.
- Hedström, P. (1991). Organizational differentiation and earnings dispersion. *American Journal of Sociology*, 96-113.
- Helfat, C. E., & Lieberman, M. B. (2002). The birth of capabilities: market entry and the importance of pre- history. *Industrial and Corporate Change*, 11(4), 725-760.
- Heneman, R. L. (1992). *Merit pay: Linking pay increases to performance ratings*. Addison-Wesley/Addison Wesley Longman.
- Hickson, D. J. (1987). "Decision-making at the top of organizations." Annual Review of Sociology: 165-192.
- Hickson, D., Butler, R., Cray, D., Mallory, G., & Wilson, D. (1986). *Top decisions: Strategic decision-making in organizations* (p. 247). Oxford: Blackwell.
- Hirsch, B. T. (1982). Interindustry Structure of Unionism, Earnings, and Earnings Dispersion, The. *Indus. & Lab. Rel. Rev.*, 36, 22.
- Hitt, M. A., Biermant, L., Shimizu, K., and Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management journal*, 44(1), 13-28.
- Holtom, B. C., Mitchell, T. R., Lee, T. W., & Eberly, M. B. (2008). Turnover and Retention Research: A Glance at the Past, a Closer Review of the Present, and a Venture into the Future. *The Academy of Management Annals*, 2(1), 231-274.
- Huber, G. P. (1982). Organizational Information Systems: Determinants of their Performance and Behavior. *Management Science*, 28, 135-155.
- Huber, G. P. (1984). The Nature and Design of Post-Industrial Organizations. *Management Science*, 30, 928-951.
- Huber, G. P. (1990). A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making. *Academy of Management Review*, 15, 47-71.
- Jackson, S. E. (1992). Consequences of group composition for the interpersonal dynamics of strategic issue processing. *Advances in strategic management*, 8(3), 345-382.

- Jackson, S. E., Brett, J. F., Sessa, V. I., Cooper, D. M., Julin, J. A., and Peyronnin, K. (1991). Some differences make a difference: Individual dissimilarity and group heterogeneity as correlates of recruitment, promotions, and turnover. *Journal of applied psychology*, 76(5), 675.
- Jackson, S. E., Joshi, A., & Erhardt, N. L. (2003). Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of management*, 29(6), 801-830.
- Jackson, S. E., & Joshi, A. (2011). Work team diversity.
- Jackson, S. E., May, K. E., & Whitney, K. (1995). Understanding the dynamics of diversity in decision-making teams. *Team effectiveness and decision making in organizations*, 204, 261.
- Jehn, K. A., Northcraft, G. and Neale, M. (1999). Why differences make a difference: A field study of heterogeneity, conflict, and performance in workgroups. *Administrative Science Quarterly*, 44: 741-763.
- Jenkins, S. P. (1997). Estimation of discrete time (grouped duration data) proportional hazards models: pgmhaz. *Stata Technical Bulletin Reprints, STB*, 17(7), 109-121.
- Ibarra, H. (1992). Homophily and differential returns: Sex differences in network structure and access in an advertising firm. *Administrative Science Quarterly*, 37, 422-447.
- Kacperczyk, A. J. (2012). Opportunity structures in established firms entrepreneurship versus intrapreneurship in mutual funds. *Administrative Science Quarterly*, 57(3), 484-521.
- Kacperczyk, A. J. (2013). Social influence and entrepreneurship: The effect of university peers on entrepreneurial entry. *Organization Science*, 24(3), 664-683.
- Kacperczyk, A. J., & Marx, M. (2014, January). Revisiting the small-firm effect in entrepreneurship: evidence from firm dissolutions. In *Academy of Management Proceedings* (Vol. 2014, No. 1, p. 17505). Academy of Management.
- Kalev, A. (2014). How You Downsize Is Who You Downsize Biased Formalization, Accountability, and Managerial Diversity. *American Sociological Review*, 79(1), 109-135.
- Kanter, R. M. (1977). *Men and Women of the Corporation* (Vol. 5049). Basic books.
- Katz, J., & Gartner, W. B. 1988. Properties of emerging organizations. *Academy of Management Review*, 13(3): 429-441.
- Keck, S. L. (1997). "Top management team structure: Differential effects by environmental context." *Organization Science* 8(2): 143-156.
- Keck, S. L. and M. L. Tushman (1993). "Environmental and Organizational Context and Executive Team Structure." *Academy of Management Journal* 36(6): 1314-1344.
- Keister, Lisa A. 2000. *Wealth in America*. New York: Cambridge University Press.
- Kiesler, S., L. Sproull. (1982). Managerial response to changing environments: Perspectives on problem sensing from social cognition. *Admin. Sci. Quart.* 27 548-570.
- Klepper, S., & Sleeper, S. (2005). Entry by spinoffs. *Management science*, 51(8),

- 1291-1306.
- Kochan, T. A. (1994). *The mutual gains enterprise: Forging a winning partnership among labor, management, and government*. Harvard Business Press.
- Kohn, A. (1999). *Punished by rewards: The trouble with gold stars, incentive plans, A's, praise, and other bribes*. Houghton Mifflin Harcourt.
- Kor, Y. Y. (2003). "Experience-based top management team competence and sustained growth." *Organization Science* 14(6): 707-719.
- Kor, Y. Y., and Misangyi, V. F. (2008). Outside directors' industry specific experience and firms' liability of newness. *Strategic Management Journal*, 29(12), 1345-1355.
- Kosters, M. H. (1990). Schooling, work experience, and wage trends. *The American Economic Review*, 308-312.
- Krueger, A. B., & Summers, L. H. (1988). Efficiency wages and the inter-industry wage structure. *Econometrica: Journal of the Econometric Society*, 259-293.
- Lancaster, T. (1985). Generalised residuals and heterogeneous duration models: With applications to the Weibull model. *Journal of Econometrics*, 28(1), 155-169.
- Landsberger, Henry A. (1961). "The horizontal dimension in bureaucracy." *Administrative Science Quarterly*, 6: 299-332.
- Langton, N., & Pfeffer, J. (1994). Paying the professor: Sources of salary variation in academic labor markets. *American Sociological Review*, 236-256.
- Lawrence, B. S. (1997). Perspective-The Black Box of Organizational Demography. *Organization Science*, 8(1), 1-22.
- Lazear, E. P. (1976). Age, Experience, and Wage Growth. *The American Economic Review*, 548-558.
- Lazear, E. P. (1995). *Personnel economics* (Vol. 1993). MIT press.
- Lazear, E. P. (2003). *Firm-specific human capital: A skill-weights approach* (No. w9679). National Bureau of Economic Research.
- Lazear, E. P. (2004). Balanced skills and entrepreneurship. *American Economic Review*, 208-211.
- Lazear, E., & Rosen, S. 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy*, 89: 841-864.
- Leavitt H. J. (2003). Why hierarchies thrive. *Harvard Business Review*, 81(3), 96-102.
- Leavitt H. J. (2005). Top down: Why hierarchies are here to stay and how to manage them more effectively. Boston: Harvard Business School Press.
- Lemieux, T. (2006). Increasing residual wage inequality: Composition effects, noisy data, or rising demand for skill?. *The American Economic Review*, 461-498.
- Lent, Van L. (1999). The Economics of the Audit Firm: The Benefits of Partnership Governance. *British Accounting Review* 31: 225-254.
- Lippmann, S., Davis, A., & Aldrich, H. E. (2005). Entrepreneurship and inequality. *Research in the Sociology of Work*, 15, 3-31.
- Lydall, H. F. (1959). The distribution of employment incomes. *Econometrica*:

- Journal of the Econometric Society*, 110-115.
- Mahoney, T. A. 1979. Compensation and reward perspectives. Homewood, IL: Irwin.
- Maijor, S., Buijink, W., Witteloostuljn, A., & Zinken, M. (1995). Long-Term Concentration in the Dutch Audit Market: The Use of Auditor Association Membership Lists in Historical Research. *Abacus*, 31(2), 152-177.
- Maijor, S., and van Witteloostuijn, A. (1996). An empirical test of the resource-based theory: Strategic regulation in the Dutch audit industry. *Strategic Management Journal*, 17: 549-569.
- Maister, D. H. (1997). Managing the professional service firm, Free Press.
- Manhardt, P. J. (1972). Job orientation of male and female college graduates in business. *Personnel Psychology*, 25(2), 361-368.
- March, J. G. (1981). Footnotes to organizational change. *Administrative science quarterly*, 26(4).
- March, J. G. (1994). *Primer on decision making: How decisions happen*. Simon and Schuster.
- March, J. G., and Simon, H. A. (1958). Organizations. NY: Wiley, New York.
- March, J.G., T. Weil. (2005). *On leadership*. Blackwell Publishing: Macklen MA.
- Martin, J. 1981. Relative deprivation: A theory of distributive injustice for an era of shrinking resources. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior*, vol. 3: 53-107. Greenwich, CT: JAI Press.
- Marvel, M. R., Davis, J. L., & Sproul, C. R. (2014). Human Capital and Entrepreneurship Research: A Critical Review and Future Directions. *Entrepreneurship Theory and Practice*.
- McCabe, D. L., & Trevino, L. K. (1995). Cheating among business students: A challenge for business leaders and educators. *Journal of Management Education*, 19(2), 205-218.
- McCain, B. E., O'Reilly, C., & Pfeffer, J. (1983). The effects of departmental demography on turnover: The case of a university. *Academy of Management Journal*, 26(4), 626-641.
- McCall, L., & Percheski, C. (2010). Income inequality: New trends and research directions. *Annual Review of Sociology*, 36, 329-347.
- McEvily, B., Soda, G., & Tortoriello, M. (2014). More Formally: Rediscovering the Missing Link between Formal Organization and Informal Social Structure. *The Academy of Management Annals*, 8(1), 299-345.
- McGranahan, D. (1981). The Meaning and Measurement of Income Inequality. *American Sociological Review*, Vol. 46, No. 2 (Apr., 1981), pp. 240-241.
- Merton, R. K. (1936). "The unanticipated consequences of purposive social action." *American Sociological Review*: 894-904.
- Merton, R. K. (1940). "Bureaucratic structure and personality." *Social Forces*: 560-568.
- Meyer, J. W., Boli, J., Thomas, G. M., & Ramirez, F. O. (1997). World society and the nation-state. *American Journal of sociology*, 103(1), 144-181.
- Meyer, J. W. and B. Rowan (1977). "Institutionalized organizations: Formal

- structure as myth and ceremony." *American Journal of Sociology*: 340-363.
- Michel, J. G. and D. C. Hambrick (1992). "Diversification Posture and Top Management Team Characteristics." *Academy of Management Journal*: 9-37.
- Milgrom, P., & Roberts, J. (1988). An economic approach to influence activities in organizations. *American Journal of sociology*, S154-S179.
- Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of management review*, 21(2), 402-433.
- Mintzberg, H. (1979). *The structuring of organization: A synthesis of the research*. Prentice-Hall.
- Monin, P., Forges, B., & Wang, T. (2014). How organizations moderate and bound cultural processes surrounding equality. In Massey, D. S., et al. (ed). Understanding inequality through the lens of cultural processes: on Lamont, Beljean and Clair 'What is Missing? Cultural Processes and Causal Pathways to Inequality'. *Socio-Economic Review*, 12(3), 609-636.
- Mouw, T. & Kalleberg, A. L. 2010. Occupations and the Structure of Wage Inequality in the United States, 1980s to 2000s. *American Sociological Review*, 75(3): 402-431.
- Nanda, R., & Sørensen, J. B. (2010). Workplace peers and entrepreneurship. *Management Science*, 56(7), 1116-1126.
- Neal, D. (1995). Industry-specific human capital: Evidence from displaced workers. *Journal of labor Economics*, 653-677.
- Neckerman, K. M., & Torche, F. (2007). Inequality: causes and consequences. *Annual Review of Sociology*, 33, 335-357.
- Nielsen, S. (2009). Why do top management teams look the way they do? A multilevel exploration of the antecedents of TMT heterogeneity. *Strategic Organization*, 7(3), 277-305.
- Nielsen, S. (2010). Top management team diversity: a review of theories and methodologies. *International Journal of Management Reviews*, 12(3), 301-316.
- Nanda, R., & Sørensen, J. B. (2010). Workplace peers and entrepreneurship. *Management Science*, 56(7), 1116-1126.
- Oh, H., Chung, M., and Labianca, G. (2004). Group social capital and group effectiveness: The role of informal socializing ties. *Academy of Management Journal*, 47: 860-875.
- O'Reilly III, C. A., Caldwell, D. F., & Barnett, W. P. (1989). Work group demography, social integration, and turnover. *Administrative science quarterly*, 21-37.
- O'Reilly, C., and Chatman, J.(1996). Culture as social control: Corporations, cults and commitment. In B. Staw and L. Cummings (Eds.). *Research in Organizational Behavior: Vol. 18*, Greenwich, CT: JAI Press, 157-200.
- O'Reilly, C. A., Main, B. G., & Crystal, G. S. (1988). CEO compensation as tournament and social comparison: A tale of two theories. *Administrative Science Quarterly*, 257-274.

- Ouchi, W. G. (1978). The transmission of control through organizational hierarchy. *Administrative Science Quarterly*, 21: 173-192.
- Ouchi, W. G. (1980). Markets, bureaucracies, and clans. *Administrative science quarterly*, 25(1).
- Parker, S. C. 2009. Why do small firms produce the entrepreneurs? *The Journal of Socio-Economics*, 38(3): 484-494.
- Parsons, T. (1964). *The Social System.(1951)*.
- Pennings, J. M., & Wezel, F. C. (2007). *Human capital, inter-firm mobility and organizational evolution*. Edward Elgar Publishing.
- Pennings, J. M., & Wezel, F. C. (2010). Faraway, yet so close: Organizations in demographic flux. *Organization Science*, 21(2), 451-468.
- Pfeffer, J. (1977). Toward an examination of stratification in organizations. *Administrative Science Quarterly*, 553-567.
- Pfeffer, J. (1983). Organizational demography. *Research in organizational behavior*.
- Pfeffer, J. (1995). *Competitive advantage through people: Unleashing the power of the work force*. Harvard Business Press.
- Pfeffer, J. (1998). *The human equation: Building profits by putting people first*. Harvard Business Press.
- Pfeffer, J. (2013). You're Still the Same: Why Theories of Power Hold over Time and Across Contexts. *The Academy of Management Perspectives*, 27(4), 269-280.
- Pfeffer, J., & Davis-Blake, A. (1991). Salary dispersion, location in the salary distribution, and turnover among college administrators. *Indus. & Lab. Rel. Rev.*, 45, 753.
- Pfeffer, J., & Fong, C. T. (2004). The Business School ‘Business’: Some Lessons from the US Experience. *Journal of Management Studies*, 41(8), 1501-1520.
- Pfeffer, J., & Langton, N. (1993). The effect of wage dispersion on satisfaction, productivity, and working collaboratively: Evidence from college and university faculty. *Administrative Science Quarterly*, 382-407.
- Pfeffer, J., & Leblebici, H. (1973). Executive recruitment and the development of interfirrm organizations. *Administrative Science Quarterly*, 449-461.
- Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.
- Phillips, A. W. (1958). The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–19571. *economica*, 25(100), 283-299.
- Phillips, D. J. (2002). A genealogical approach to organizational life chances: The parent-progeny transfer among Silicon Valley law firms, 1946–1996. *Administrative Science Quarterly*, 47(3), 474-506.
- Pinnington, A., & Morris, T. (2003). Archetype change in professional organizations: Survey evidence from large law firms. *British Journal of Management*, 14(1), 85-99.
- Priem, R. L., Lyon, D. W., and Dess, G. G. (1999). Inherent limitations of demographic proxies in top management team heterogeneity research. *Journal of Management*, 25(6), 935-953.
- Prigozhin A. I. (1989). Hierarchy in organizations. *Sociological Research*, 28(3),

9–14.

- Rabe-Hesketh, S., & Skrondal, A. 2012. *Multilevel and longitudinal modelling using Stata* (3rd ed.). College Station, Tex.: Stata Press Publication.
- Raub, W., & Weesie, J. (1990). Reputation and efficiency in social interactions: An example of network effects. *American Journal of Sociology*, 626-654.
- Reagans, R., and Zuckerman, E. 2001. Networks, heterogeneity, and productivity: The social capital of corporate RandD teams. *Organization Science*, 12, 502-517.
- Reagans, R., Zuckerman, E., and McEvily, B. (2004). How to make the team: Social networks vs. demography as criteria for designing effective teams. *Administrative Science Quarterly*, 49(1), 101-133.
- Rider, C. I., Thompson, P., Kacperczyk, A., & Tåg, J. (2014). *Experience and Entrepreneurship* (No. 970). IFN Working Paper.
- Ridgeway, C. L. (2014). Why Status Matters for Inequality. *American Sociological Review*, 79(1), 1-16.
- Riegel, J. W. (1937). *Wage determination* (No. 1). Bureau of Industrial Relations, University of Michigan.
- Rivera, L. A. (2012). Hiring as cultural matching the case of elite professional service firms. *American Sociological Review*, 77(6), 999-1022.
- Rosenbaum, J. E. (1979). Organizational career mobility: promotion chances in a corporation during periods of growth and contraction. *American Journal of Sociology*, 21-48.
- Rosenbaum, J. E. (1980). Hierarchical and individual effects on earnings. *Industrial Relations: A Journal of Economy and Society*, 19(1), 1-14.
- Rosenfeld, R. A. (1992). Job mobility and career processes. *Annual Review of Sociology*, 39-61.
- Ruef, M., H. E. Aldrich, and N. M. Carter. (2003). The structure of founding teams: Homophily, strong ties and isolation among U.S. entrepreneurs. *American Sociological Review*, 68: 195–222.
- Saxenian, A. (1994). Regional advantage: Culture and competition in Silicon Valley and Route 128. *Harvard University, Cambridge, MA*.
- Saxenian, A. (1996). Beyond boundaries: Open labor markets and learning in Silicon Valley. *The boundaryless career: A new employment principle for a new organizational era*, 23-39.
- Schefczyk, M. and T. J. Gerpott (2001). Qualifications and turnover of managers and venture capital-financed firm performance: An empirical study of German venture capital-investments. *Journal of Business Venturing* 16(2): 145-163.
- Schneider, B. (1987). The people make the place. *Personnel psychology*, 40(3), 437-453.
- Schneider, B., Goldstein, H. W., & Smith, D. B. (1995). The ASA framework: An update. *Personnel Psychology*.
- Selznick, P. 1957 (1984). *Leadership in administration: A sociological interpretation*. University of California Press.
- Shane, S. (2008). *The Illusions of Entrepreneurship: The Costly Myths That Entrepreneurs, Investors, and Policy Makers Live By* New Haven: Yale University Press.

- Shane, S. (2012). Reflections on the 2010 AMR decade award: delivering on the promise of entrepreneurship as a field of research. *Academy of Management Review*, 37(1), 10-20.
- Sherer, P. D. (1994). Leveraging human assets in law firms: Human capital structures and organizational capabilities. *Indus. and Lab. Rel. Rev.*, 48, 671.
- Simon, H. A. (1947). *Administrative behavior*. New York: Free Press.
- Simon, H. A. (1957). The compensation of executives. *Sociometry*, 32-35.
- Simon, H. A. (1967). The business school: A problem in organizational design. *Journal of Management Studies*, 4(1), 1-16.
- Simon, H. A. (1991). *Models of my life*. Basic books.
- Simon, H. A., & Bonini, C. P. (1958). The size distribution of business firms. *The American Economic Review*, 607-617.
- Smith, K. G., Smith, K. A., Olian, J. D., Sims Jr, H. P., O'Bannon, D. P., and Scully, J. A. (1994). Top management team demography and process: The role of social integration and communication. *Administrative science quarterly*, 412-438.
- Sørensen, A. B. (1977). The structure of inequality and the process of attainment. *American Sociological Review*, 965-978.
- Sørensen, A. B. (1996). The structural basis of social inequality. *American Journal of Sociology*, 1333-1365.
- Sørensen, J. B. (1999). The ecology of organizational demography: Managerial tenure distributions and organizational competition. *Industrial and Corporate Change*, 8(4), 713-744.
- Sørensen, J. B. (2000). The longitudinal effects of group tenure composition on turnover. *American Sociological Review*, 298-310.
- Sørensen, J. B. (2007). Bureaucracy and entrepreneurship: Workplace effects on entrepreneurial entry. *Administrative Science Quarterly*, 52(3), 387-412.
- Sørensen, J. B., & Fassiotto, M. A. (2011). Organizations as fonts of entrepreneurship. *Organization Science*, 22(5), 1322-1331.
- Sørensen, J. B., & Phillips, D. J. (2011). Competence and commitment: employer size and entrepreneurial endurance. *Industrial and Corporate Change*, 20(5), 1277-1304.
- Sørensen, J. B., & Sharkey, A. J. (2014). Entrepreneurship as a mobility process. *American Sociological Review*, 79(2), 328-349.
- Stewman, S. (1988). Organizational demography. *Annual review of sociology*, 173-202.
- Stewman, S., & Konda, S. L. (1983). Careers and organizational labor markets: Demographic models of organizational behavior. *American Journal of Sociology*, 637-685.
- Sweeney, P. D., McFarlin, D. B., & Inderrieden, E. J. (1990). Research Notes: Using Relative Deprivation Theory to Explain Satisfaction With Income and Pay Level: A Multistudy Examination. *Academy of Management Journal*, 33(2), 423-436.
- Tåg, J., Åstebro, T., & Thompson, P. (2014). *Hierarchies, the small firm effect, and entrepreneurship: evidence from Swedish microdata* (No. 954). IFN working paper.

- Taylor, J. B. (1979). Staggered wage setting in a macro model. *The American Economic Review*, 108-113.
- Thompson, J. (1967). Organizations in Action: Social Science Bases of Administrative Theory. Classics in Organization and Management Series. *Trans. Publishers*.
- Tolbert, P. S. 1996. Occupations, organizations and boundaryless careers. M. B. Arthur, D. M. Rousseau, eds. *The Boundaryless Career: A New Employment Principle for a New Organizational Career*. Oxford University Press, Oxford, UK, 331–349.
- Trank, C. Q., & Rynes, S. L. (2003). Who moved our cheese? Reclaiming professionalism in business education. *Academy of Management Learning & Education*, 2(2), 189-205.
- Trevor, C. O., Reilly, G., & Gerhart, B. (2012). Reconsidering pay dispersion's effect on the performance of interdependent work: Reconciling sorting and pay inequality. *Academy of Management Journal*, 55(3), 585-610.
- Tsui, A. S., & Gutek, B. A. (1999). *Demographic differences in organizations: Current research and future directions*. Lexington Books.
- Ucbasaran, D., Westhead, P., & Wright, M. (2008). Opportunity identification and pursuit: does an entrepreneur's human capital matter?. *Small Business Economics*, 30(2), 153-173.
- Udy Jr, S. H. (1959). "" Bureaucracy" and" Rationality" in Weber's Organization Theory: An Empirical Study." *American Sociological Review*: 791-795.
- Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26(3), 341-358.
- Von Nordenflycht, A. 2010. What is a professional service firm? Toward a theory and taxonomy of knowledge-intensive firms. *Academy of Management Review*, 35(1): 155-174.
- Wagner, W. G., Pfeffer, J., & O'Reilly III, C. A. (1984). Organizational demography and turnover in top-management group. *Administrative Science Quarterly*, 74-92.
- Waters, M. (1989). Collegiality, bureaucratization, and professionalization: A Weberian analysis. *The American Journal of Sociology*, 94(5).
- Weber, M. (1978). Economy and Society: An Outline of Interpretive Sociology. Three volumes. New York: Bedmeister.
- Weber, M. (2003). *The history of commercial partnerships in the middle ages*. Rowman & Littlefield.
- Westphal, J. D., & Fredrickson, J. W. (2001). Who directs strategic change? Director experience, the selection of new CEOs, and change in corporate strategy. *Strategic Management Journal*, 22(12), 1113-1137.
- Westphal, J. D., & Zajac, E. J. (1995). Who shall govern? CEO/board power, demographic similarity, and new director selection. *Administrative Science Quarterly*, 40(1).
- Wezel, F.C., G. Cattani, and J. M. Pennings. (2006). *Competitive implications of interfirrm mobility*. *Organization Science* 17: 691-709.
- White, H. C. (1970). *Chains of opportunity: System models of mobility in organizations* (p. 3). Cambridge, MA: Harvard University Press.

- Wiersema, M. F., & Bantel, K. A. (1992). Top management team demography and corporate strategic change. *Academy of Management journal*, 35(1), 91-121.
- Wiklund, J., Davidsson, P., Audretsch, D. B., & Karlsson, C. (2011). The future of entrepreneurship research. *Entrepreneurship Theory and Practice*, 35(1), 1-9.
- Williams, K. Y., & O'Reilly, C. A. (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in organizational behavior*, 20, 77-140.
- Wholey, D. R. (1985). Determinants of firm internal labor markets in large law firms. *Administrative Science Quarterly*, 318-335.
- Wright, M., Robbie, K., & Ennew, C. (1997). Serial entrepreneurs. *British Journal of Management*, 8(3), 251-268.
- Xue, X., & Brookmeyer, R. 1997. Regression analysis of discrete time survival data under heterogeneity. *Statistics in Medicine*, 16(17): 1983-1993.
- Yamaguchi, K. (1991). Event history analysis, Sage Publications, Incorporated.
- Yang, T., & Aldrich, H. E. 2012. Out of sight but not out of mind: Why failure to account for left truncation biases research on failure rates. *Journal of Business Venturing*, 27(4): 477-492.
- Zajac, E. J., & Westphal, J. D. (1996). Director reputation, CEO-board power, and the dynamics of board interlocks. *Administrative Science Quarterly*, 41, 507-29.
- Zelizer, V. A. (2009). "Intimacy in economic organizations." *Research in the Sociology of Work* 18: 23-55.
- Zenger, T. R. (1992). Why do employers only reward extreme performance? Examining the relationships among performance, pay, and turnover. *Administrative Science Quarterly*, 198-219.
- Zhao, L., Chen, Y., and Schaffner, D. W. (2001). Comparison of logistic regression and linear regression in modeling percentage data. *Applied and environmental microbiology*, 67(5), 2129-2135.