

Master Thesis

Examining the buyers

How Director Generals' observable characteristics influence the spending on management consulting services in public agencies

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M.Sc. in Business and Management, spec. in Management

Submission date: 2017-05-15

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Abstract: Public organizations have during the past decades rapidly increased their spending on management consulting services (MCS). However, surprisingly little is still known about the hiring of management consultants. Many authors have focused on *how* and *why* organizations hire management consultants, but very few have looked at *who* is involved and even fewer at what role managers' characteristics play. The purpose of this thesis is to shed light on the buyer side of MCS purchases by public agencies, i.e. Director Generals (DG). The aim is to examine the links between DGs' characteristics and spending pattern on MCS as well as possible explanations for the spending patterns. Drawing on upper echelon theory, we formulate hypotheses which are tested using longitudinal data on 103 DGs in 43 Swedish public agencies during 2003–2011. Moreover, six DGs have been interviewed to generate a holistic picture. Key findings include: (i) DGs have a strong influence on the decision to hire consultants. (ii) Consultants are perceived as synonymous to change agents. (iii) DGs who have run public agencies before are spending significantly more (64–69%) on MCS than first-time DGs. (iv) Gender, age, and type and level of education show no significant effects on the spending. (v) A DG's tenure significantly affects the spending on MCS. The thesis contributes to the empirically-driven research of the contextual perspective on management consulting, research on public managers and the power of upper echelon theory. It holds several implications for civil servants, policy makers, and management consulting firms.

Keywords: Management Consulting Services, Public Agencies, Upper Echelon Theory, Observable Characteristics, Director General

Acknowledgements

We would like to send our utmost gratefulness to Frida Pemer, Docent and Assistant Professor at the Department of Management and Organization at the Stockholm School of Economics (SSE). As our supervisor, she has been irreplaceable. We would also like to mention and thank Frida's research colleagues Andreas Werr and Love Börjeson, as all three generously provided us with raw data from their research. Love Börjeson also increased our knowledge about linear mixed-effect models.

Another person we would like to thank wholeheartedly is Rickard Sandberg, Associate Professor and Director at the Center of Economic Statistics at SSE. Throughout the journey, Rickard has kindly guided us in statistical questions.

Moreover, we would like to thank the employees at the contacted public agencies and the Royal Library in Stockholm for their hours spent handling our requests for annual reports. We would also like to thank all interviewees for their time and input to the thesis.

Stockholm, May 15, 2017



Tim Biskup



Johan Lindbäck

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1 Introduction

Total spending on management consulting services (MCS) in Europe has on average been growing by 3.9% yearly between 2007 and 2016, ahead of the yearly average GDP growth of 1.0% during the same period (FEACO, 2016; Appendix A). In 1999, clients from the public sector accounted for only 7.6% of the total spending (FEACO, 1999) which has since grown significantly. In 2011, they accounted for 14% of the overall market size of 13 billion Euro. The public sector thereby became the third largest client sector (FEACO, 2012) and has since shown a steady market share of about 13% (FEACO, 2016).

Why has spending on MCS in the public sector grown so rapidly? Like in the private and non-profit sectors, today's modern organizations in the public sector are facing high complexity (Farazmand, 2002). Moreover, due to multiple generations of reform waves, they do not only face complex network environments (Krueathep, Riccucci, & Suwanmala, 2010; Thomson & Perry, 2006; Thomson, Perry, & Miller, 2009; O'Toole & Meier, 2004; Yang, 2012), but also trends toward hybrid organizations (Christensen & Lægreid, 2011). Additionally, they must deal with fast changing technology, pressure for high performance and outsourcing (Grimshaw, Vincent, & Willmott, 2002; Lazar, Sirbu, Marginean, & Maries-Les, 2010; West & Blackman, 2015) as well as an increasing variety of stakeholders and complex problems that exceed existing expertise and available resources (Bogason & Musso, 2006; O'Toole Jr., 2000; O'Toole & Meier, 1999, 2004; West & Blackman, 2015). Facing all these challenges, public organizations can either develop matching capabilities in-house or engage in collaborations with external parties, for example with management consultants, and access needed capabilities (Esteve, Boyne, Sierra, & Ysa, 2013; McGuire, 2006; McGuire & Silvia, 2010; Mullin & Daley, 2009; Smith, 2009).

Since the public sector has over time been one of the fastest growing sectors in the market for MCS, this comes simultaneously with an increasing cost for taxpayers (Glassmann & Winoograd, 2005; Howlett & Migone, 2014; Saint-Martin, 1998, 2012). At the same time, management consultants have become a "shadow government" (Guttman & Willner, 1976), removing some of the governing power from policy makers (Craig & Brooks, 2006). Management consultants have had significant influence in transforming the public sector and its agencies for the last few decades (Pollitt & Bouckaert, 2011). However, although there is academic research on how public organizations interact with external parties to gain access to new capabilities, surprisingly little is still known about the hiring of management consultants (Lapsley & Oldfield, 2001; Roodhooft & Van den Abbeele, 2006; Saint-Martin, 2012).

1.1 Problematization

A transformation of the public sector implies changes in public agencies, which are of great importance to the governance and steering of a nation. They serve an important role in a society and for its citizens and are thus of interest for all people (Pierre, 2004), especially since most funding comes from taxpayers (Dukakis & Portz, 2010). Nonetheless, the increased complexity that these agencies face forces them to adapt and change. Andersen (2010) reports significant ongoing changes in the Swedish public sector since the 1970s, leading to a profound discrepancy between what the state can provide and what the people demand. Meeting the citizens' demands implies large changes for civil servants to be coped with internally (Andersen, 2010) for which consultants are increasingly hired (Pollitt & Bouckaert, 2011).

Public agencies are run by Director Generals (DGs), the equivalent to a Chief Executive Officer (CEO) in the private sector. In the Swedish public sector, there is a saying that a DG (Swedish: *Generaldirektör*, GD) is separated from GOD just by the letter "O", originating from their unrivaled position and power within public agencies (Asplind 2009, p. 31). In such a setting, we believe that not just the management consultants' role in transforming the public sector is important to examine, but also how DGs affect public agencies' actions, for instance, their purchasing of MCS.

Professional services such as MCS are purchased differently compared to other goods and services. Day and Barksdale (1994) therefore present a purchasing model for professional services which starts with a need recognition and follows a rational sequential purchasing process. The process is however not always followed. Need recognition, for example, is complicated and not always of rational nature (Werr & Perner, 2007). Amongst other arguments, Werr and Perner (2007), building on Schein (1988, 1999), Kubr (2002) and Smeltzer and Ogden (2002), find that managers may not always be able to define their problems properly, and thereby their needs. They also highlight that the needs may not always be related to the organization's problems and thereby possible to speak out loud, where personal needs and insecurity can play a part in shaping a perceived need for MCS. In fact, managers occasionally use consultants for career or political purposes instead of business purposes (Jackall, 1988; Macdonald, 2006).

Management consultants are often hired for complex, important, and risky assignments, where failure is not easily rectified (Clark, 1995; Mitchell, Moutinho, & Lewis, 2003). Moreover, Mitchell (1994) highlights personal risks for managers when hiring consultants, such as personal exploitation and embarrassment. Perhaps related to this, managers have traditionally regarded themselves as experts in the purchasing process and found it necessary to be personally involved (Clark, 1995; Smeltzer & Ogden, 2002). Given that the hiring of management consultants stems from the manager's need and the decision's importance for both the organization

and the manager personally, one can assume that they are widely involved in it – especially in the public sector where powerful public managers (Ferlie, Ashburner, Fitzgerald, & Pettigrew, 1996) use public resources under high transparency.

Today, the hiring of consultants by public organizations in the European Union is regulated by the Council Directive 2014/24/EU on public procurement, in which context Furusten (2015, p. 80) finds a slightly different purchasing process than in Day and Barkdale's (1994) purchasing model. Furusten's (2015) described purchasing process, however, also starts with a need identification, which is not regulated by public procurement laws. A manager's need recognition plays an important role for the demand of MCS (Clark, 1995; Huczynski, 1993b; Jackall, 1988), but managers may not always – as has been argued previously – act rational, or be able to justify their perceived need. Combining the above with the increased hiring of consultants by public organizations, and their powerful leaders, we find it valuable to better understand the effect that different managers have on public organizations' spending.

While managers and their needs are important aspects, it is also possible that different managers have different needs and thus use consultants to various extents. Barker and Mueller (2002) find, in distinction to previous research emphasizing almost exclusively firm or ownership characteristics, that CEO characteristics are significant predictors of a firm's R&D spending. Similarly, research has almost invariably overlooked the effect of top manager characteristics on another type of resource allocation: spending on MCS. Many authors (e.g. Dawes, Dowling, & Patterson, 1992; Furusten & Werr 2009; Poulfelt & Paynee, 1994) have focused on *how* and *why* organizations and executives decide to hire management consultants, but very few have looked at *who* is involved in MCS purchases. The client in the client–consultant relationship has traditionally long been neglected in research. Only recently, there is a wave of client-focused research underway (Sturdy, Werr, & Buono, 2009). In a similar manner, public managers' characteristics and how they affect organizational actions are traditionally neglected (Esteve et al., 2013). This is somewhat surprising given their visibility to others, where strategic decision makers need to make judgments based on what is observable (Barker & Mueller, 2002). In that light, we emphasize one overlooked angle which has not been considered appropriately yet in academic research: Do public managers' characteristics influence their spending on MCS?

1.2 Purpose, Aim and Contribution

The purpose of this thesis is to shed light on the buyer side in the public sector – i.e. Director Generals (DGs) of public agencies – in purchasing MCS. As this can be done in various ways, we aim more specifically to examine the links between DGs' characteristics and spending patterns on MCS, as well as possible explanations for the spending patterns.

We elaborate on purchases of MCS in the public sector, hence contributing to the relatively limited knowledge within this field. We also aim to further understand public managers, the buyer-side of MCS and managerial influence on the purchase. By emphasizing the role of the individual ultimately in charge of the organization, we contribute to new knowledge about an executive's role in the purchasing of MCS. Moreover, the better understanding of DGs' spending provides practical implications for the government, taxpayers, civil servants and ultimately consulting firms.

1.3 Research Question

To concretize the purpose, aim, and contribution we examine the following research question:

How do Director Generals' observable characteristics influence their spending patterns on management consulting services?

1.4 Research Outline

Considering the purpose, aim, and research question, we use a mixed methods approach following a sequential explanatory research design. Initially, we use a quantitative approach to test hypotheses based on existing theory using longitudinal data. Combined with secondary data about the DGs' characteristics, this allows for a regression analysis using a linear mixed-effect model. Subsequently, six semi-structured interviews with current and former DGs and two interviews with industry experts contribute to deeper insights regarding DGs' spending patterns on MCS.

The results are presented according to our initial hypotheses, followed by a discussion of the findings. Lastly, the main findings are tied back to the aim of the thesis, and the conclusions are presented. For clarity, the thesis is divided into six sections: (1) Introduction, (2) Theory, (3) Methodology, (4) Results, (5) Discussion, and (6) Conclusions.

1.5 Delimitations

Certain delimitations for public agencies, DGs, and variables have been made.

1.5.1 Public Agencies

A first delimitation is a focus on public agencies in Sweden. However, even within this field, certain delimitations are required to find comparable organizations.

Statistics Sweden's (2017) classification of public agencies includes six subgroups¹. The agencies with transactions to MCS providers in the studied time frame are found within the subgroups "state agencies" and "governmentally-owned companies". However, the *Swedish Agency for Public Management* separates universities and college institutions from other state

¹ State agencies, agencies reporting to the Parliament, governmentally-owned companies, pension funds, courts, and foreign agencies.

agencies given the way they operate (Statskontoret, 2005). Similarly, Perner, Werr and Börjeson (2014, 2016), find different MCS spending patterns between *professional bureaucracies* comprising university and college institutions and *machine bureaucracies* comprising public administrative agencies. Thus, we exclude universities and colleges given their different nature. Moreover, because newly formed agencies face very specific issues, we have excluded the first three years of newly formed agencies. The remaining state agencies and governmentally-owned companies are thereby what we hereafter refer to as *public agencies*.

The main objective in this delimitation is to enable the best possible isolation of the influence of DG characteristics from other organizational factors. Although the selected agencies differ on some contextual aspects, it is fair to assume that the included DGs share commonalities in their objectives, tasks, and management issues.

1.5.2 Variables

A delimitation is also necessary for spending on MCS, as it can include a variety of different tasks and an established definition is lacking (Kubr, 2002). MCS are however offered by management consulting firms which are regarded a particular form of professional service firms (PSFs). We follow von Nordenflycht's (2010) taxonomy for PSFs which is based on various definitions in the literature. Management consulting firms are together with advertising agencies clustered as Neo-PSF since they share common characteristics, such as a high knowledge and low capital intensity. In comparison to classical/regulated PSFs like law, accounting or architecture firms, Neo-PSFs either lack or only have a weakly professionalized workforce (von Nordenflycht, 2010). Our research interest rests on MCS only due to the assumption that DGs in the public sector should have knowledge about 'general management' topics which management consultants are usually hired for. This contrasts with specialized knowledge which law, accounting or architecture firms (classical PSFs) provide, as well as IT problems which public managers are not expected to be experts in. Thus, IT consulting is deliberately excluded.

2 Theory

This chapter begins with a literature review, is followed by a presentation of the theoretical framework and ends with our hypothesis generation.

2.1 Literature Review

We outline relevant fields of research below, starting with a section on the increasing complexity of the public sector which serves as a background. Since the public sector increasingly hires management consultants, we subsequently introduce a section with research about management consulting, both in general and more specifically in the public sector. Finally, as DGs are the focus of this study, we synthesize research on top executives.

2.1.1 New Public Management and Increased Organizational Complexity

Today's representative democracies institutionalize administrative policies with increased speed which has led to different generations of public sector reform waves (Light, 1997; Lynn, 2006). Public organizations are thus becoming increasingly complex and hybrid and face "numerous and sometimes conflicting ideas, considerations, demands, structures and cultural elements at the same time" (Christensen & Lægreid, 2011, p. 407).

New Public Management (NPM), as one such reform wave, has carried the idea of marketization, privatization, efficiency, cost reduction, automation, decentralization, and competition (Aucoin, 1990; Dunsire, Hood, & Huby, 1989; Hood, 1987, 1990, 1991, 1995; Peters, 2001; Pollitt, 1993) whereby private sector organizations are expected to deliver public services in networks with public organizations (Bach, 1999; Montanheiro, Haigh, Morris, & Hrovatin, 1998; Osborne, 2007). The treatment of public organizations as private ones within NPM also came with a shift of public accountability. Politicians and civil servants are not liable to elected authorities (political sphere) anymore but to the people (managerial sphere) (Fatemi & Behmanesh, 2012).

NPM was a response to the challenges and problems of the 'old public administration'. A reform wave called 'post-NPM' followed NPM as the latter also had negative outcomes. Both have left the public sector in a complex process of layering or sedimentation where old, and new institutions co-exist and co-evolve (Olsen, 2009; Streeck & Thelen, 2005). Other scholars argue that the NPM-wave "has now largely stalled or been reversed in some key 'leading-edge' countries" (Dunleavy, Margetts, Bastow, & Tinkler, 2006, p. 467). The newest wave is the age of "digital-era governance", which encompasses moving functions back into the governmental sphere, adopting holistic and needs-oriented structures, and progressing digitalization of administrative processes (Dunleavy et al., 2006). NPM has also changed the roles of boards and top management teams (Hood, 1991; Simpson, 2014). By becoming more visible, public man-

agers have gained power while the board's role has shifted towards a more strategic role (Ferlie et al., 1996), monitoring and giving feedback (Simpson, 2014). Management consultants who have been part of implementing NPM-reforms in the past – e.g. lean implementations (Holmemo, Rolfsen, & Ingvaldsen, 2016) – are likely to face increasing demand in the ever-changing environment in the public sector, not least due to the digitization. Since management consultants are hired for developing and implementing NPM-reforms, the next chapter presents research on management consulting.

2.1.2 Management Consulting Services

This chapter provides a brief overview of research on management consulting both in general and more specifically in the public sector, which appears to lack equal attention.

2.1.2.1 Management Consulting

For decades, the demand for MCS has been growing. Top-management teams frequently hire management consultants and see them as agents of organizational development and change (Berry & Oakley, 1993; Huszczo & Sheahan, 1999; Mohe & Seidl, 2011; Nadler & Slywotzky, 2005; Wellstein & Kieser, 2008). Business advice from consulting firms has thus become a transnational form of corporate governance (Schmidt-Wellenburg, 2014).

Three perspectives of management consulting can be identified: (i) the functional perspective, (ii) the critical perspective, and a more recent (iii) contextual perspective (Werr 2002; Hellgren, Löwstedt, Tienari, Vaara, & Werr, 2004; Maaninen-Olsson 2007).

In the traditional *functional perspective*, the MCS industry is considered an industry in which knowledge and experience are sold to improve the client's organization (Greiner & Metzger, 1983; Schein 1988). Many researchers are former consultants, who write based on their experiences (Davenport & Prusak, 2005), and the underlying assumption is that consultants add value to the client organization (Block, 2000; Greiner & Metzger, 1983; Kubr 2002; Poulfelt, 1999). The decision to hire management consultants is a rational process in which the economic gains and losses of using consultants are compared with using internal resources (Armbrüster, 2006; Armbrüster & Glückler, 2007; Canback, 1998, 1999). Sahlin-Andersson and Engwall (2002) describe management consultants as knowledge carriers transferring knowledge between sectors. This is in line with the consultants' own perception of being change agents and knowledge transmitters (Belkhdja, Karuranga, & Morin, 2012). Management consultants are also hired to provide an outside perspective (Kipping & Armbrüster, 2002; O'Mahoney, 2010; Sturdy, Clark, Fincham, & Handley, 2009) and instantly available resources (Lapsley & Oldfield, 2001).

The *critical perspective* – which offers a broader view and was a reaction to criticism to the naïve and idealized functional perspective (Sturdy, Clark, Fincham, & Handley, 2009) – is concerned with the role consultants have in social, political and cultural settings and how they influence the public agenda (O'Mahoney, 2010, p. 260; Mohe & Seidl, 2011). Moreover, it highlights that managers possibly have personal agendas which may motivate them to purchase MCS but at the same time also highlights a manager's helpless and uncertain position (Clark & Salaman, 1996, 1998a; Huczynski, 1993b). Consultants may mediate this vulnerability and uncertainty by reassuring the managers and strengthening their self-esteem (Clark & Salaman, 1996) and reputation (Jackall, 1988). Consultants are *innovators* of new knowledge or *legitimizers* of existing knowledge, where the innovator perspective is closer to the functionalist perspective (Sturdy, Clark, Fincham, & Handley, 2009). Legitimizers on the other hand contrast with the functional perspective as there is no direct economic benefit associated with them and consultants are rather used due to organizational politics (Alvesson & Johansson, 2002; Armbrüster & Glücker, 2007; Hellgren et al., 2004). They justify a manager's change initiatives and ideas rather than providing expertise or working as "doctors" (O'Mahoney, 2010, p. 35). Clark and Fincham (2002), Fullerton and West (1996), Kihn (2005), and Kitay and Wright (2004) criticize the performance of management consultants who create institutional pressure by selling fads to organizations and being driven by management fashions (Abrahamson, 1996; Furusten, 1999; Grint & Case, 2000; Kieser, 2003; Sorge & van Witteloostuijn, 2004). Similarly, they are regarded as "fraudsters" (O'Mahoney, 2010, p. 16), "management gurus" (Clark & Salaman, 1996, 1998b) and "witchdoctors" (Micklethwait & Wooldridge, 1996). The reason for hiring management consultants is argued to be a function of the consultants' persuasive abilities and the creation of uncertainty and simultaneous offering of a remedy to this insecurity (Berglund & Werr, 2000; Clark, 1995; Czarniawska, 1988). Consultants are the controlling party, fooling the naïve and helpless clients through rhetoric and impression management (Fincham, 2012; Macdonald, 2006; Sturdy & Wright, 2011; Werr & Styhre, 2002).

In recent years, a *contextual perspective* has evolved and is argued to be the blend of the two other perspectives (Pemer, 2008). The emphasis within this research stream is partly to conduct systematic empirical studies, something that has not always been done within the two older streams, and partly to move the focus from solely emphasizing the consultants to the relation between consultant and client (Pemer, 2008). This also includes surrounding contextual factors which may influence the use of MCS, such as organizational or decision making structures (Armbrüster, 2006), institutional demands (Furusten & Werr, 2005), how the purchases of MCS are carried out (Werr & Pemer, 2007) or organizational cultures (Hislop, 2002). In a contextual perspective, Fincham (1999) and Sturdy (1997) argue that universal claims about the core of management consulting and the client–consultant relationship are problematic. Moreover, Furusten & Werr (2009) propose that the need for MCS is a consequence of

institutionalization, the organization, and trust and plays out on an individual level, an organizational level, and an institutional level.

In sum, researchers have emphasized, amongst other things, the reasons for hiring consultants, the practical way of hiring them, the roles they undertake (e.g. Schein 1988, 1998) and whether they are useful or simply carriers of management fads. Sturdy, Werr and Buono (2009) show that there has traditionally been rather limited research on the client side of MCS, which has lately gained at least some interest. Research taking the perspective of the client is not just limited, but also ambiguous, and the clients are surprisingly seldom asked about their understanding of the client–consultant relationship (Pemer & Werr, 2005). Accordingly, a growing body of research has emphasized the contextual perspective, moving focus to the client side and opening for traditionally uncommon empirical studies (Pemer, 2008). In line with this recent development, we find importance in carrying out a larger empirical study researching the client side while also interviewing clients.

2.1.2.2 Consulting in the Public Sector

For the past three decades, management consultants have increasingly been part of the process of government restructuring (Saint-Martin, 2012), partly due to the ‘audit explosion’ in the 1980s (Power, 1994) and the recent trend of “eGovernment” (Böhlen, Gamper, Polasek, & Wimmer, 2005). Since the 1960s, the management consultants’ roles for advising policy-makers has changed over time from “rational planners” to “apostles of NPM” and “partners in governance” (Saint-Martin, 2012, p. 450). Like in the private sector when management consultants are hired as scapegoats to mitigate risks (Semadeni & Krause, 2011), consultants in the public sector are also hired as scapegoats whom policy-makers can blame and who provide protection from attacks by the opposition (Martin, 1998). Similarly, management consulting firms create public-sector-specific management fashions, mainly through publishing books and networks with policy-makers in government (Saint-Martin, 2012, p. 454). The degree of existence, development, and reputation of management consultancies are drivers for why and to what extent the public sector hires management consultants to help to reform bureaucracies (Villette, 2003).

Saint-Martin (2012) shows that the literature has focused on macro-level topics such as the general increase of and cross-country differences in spending on MCS by the public sector. On an individual level, for example, the “revolving doors” between consulting and government and the purchase of MCS by former consultants who are now on the buyer side in the public sector are under-researched (Saint-Martin, 2012, p. 456). The government has become a more knowledgeable purchaser of MCS (Kipping & Saint-Martin, 2005) and due to cost-cutting and reports from government agencies and audit offices that promote ways for better value for

money, there are nowadays strict administrative procurement procedures in place (Jarett, 1998).

Saint-Martin (2012) notes that “in sum, given the importance of the public sector for consultancies noted at the outset, much therefore remains to be done to fill the remaining gaps in the corresponding research” (p. 460). This is especially surprising since spending on MCS in the public sector is much more transparent than in the private sector. As mainly the macro level patterns have been researched, it is important to understand the spending on MCS also on a lower level, such as DGs in public agencies. Top managers can seek advice from external advisors such as management consultants (Arendt, Priem, & Ndofo, 2005; Greiner & Poulfelt, 2005), and given our research interest, the following chapter shifts the focus to top executives.

2.1.3 Top Executives

Top executives have throughout history gained both public and academic interest. Naturally, the intensity of research and the central stage of leadership dissection has varied over time. Top-management as initiators of system-wide changes to organizations has long been emphasized among scholars of early strategic management (Barnard, 1938; Chandler, 1962, Selznick, 1957) They are also considered as the central rulers of a company’s direction, e.g. in the ‘Harvard Model’ (Andrews, 1971; Learned, Christensen, & Andrews, 1961). Whereas much of subsequent research took a broader view on strategy by increasingly emphasizing the importance of environment and business context, interest in executives was regained through Child (1972) and Kotter (1982). The ideas were ultimately structured into the theory of upper echelons, presented by Hambrick and Mason (1984). Upper echelon theory, which since its introduction has been central in research on executives, is built on the key perception that an organization, its strategic choices, direction and ultimately profitability is a function of its executives.

Scholarly attention to chief executives remains high (Baum, Bird, & Singh, 2011; Hambrick & Quigley, 2014) but research on leaders in public organizations has throughout history been argued to be lacking in its extension. Bower (1977) early on emphasized that while a difference between public and corporate management can be established, we still know far from close to as much as we should about public management. More recently, scholars still complain about a lack of empirical studies concerning public leadership (Andersen, 2010; van Wart, 2003). Traditionally, most research has been designed to examine differences between public and private managers (e.g. Andersen, 2010; Buchanan, 1975; Rainey, 1982; Van Keer & Bogaert, 2009). While other studies emphasize, for example, differences in public and private managers’ motivations (Agranoff, 2012; Diefenbach, 2011) and different challenges they face (Ferguson, Ronanye, & Rybacki, 2014), little attention has been paid to public managers’ characteristics and how they affect organizational actions (Esteve et al., 2013). Much is still to be

learned about public managers and not solely how they differ from private managers, but also how they influence actions.

2.1.4 Research Gap

Researchers in modern organization theory maintain a near-exclusive focus on the private sector, and the public sector has so far been rather overlooked in the organizational literature despite its potential for theory development (Murdoch, 2015). NPM and subsequent reform waves have however left the public sector in high complexity and hybrid states (Christensen & Lægreid, 2011; Olsen, 2009; Streeck & Thelen, 2005). Public managers have as a result gained power (Ferlie et al., 1996) and increasingly turn to management consultants to cope with constant changes in this new environment (e.g. Holmemo et al., 2016).

Macro level patterns for purchasing MCS in the public sector have been researched (Saint-Martin, 2012). However, it is important to also understand organizational and individual levels. Research is lacking on a personal level, for instance, the purchase of MCS by former consultants who are now on the buyer side in the public sector (Saint-Martin, 2012). Given the increased importance of the public sector as a client for management consulting firms, there are gaps to fill on the buyer side with a focus on the individual level.

Although chief executives seek advice from external advisors such as management consultants (Arendt et al., 2005; Greiner & Poufelt, 2005), surprisingly little attention has been paid to the characteristics of public managers and how they affect organizational actions (Esteve et al., 2013). Rethemeyer (2005) concludes that research has only an incomplete picture of managers' influence on initiating collaborations in the public sector. Similarly, research focusing on the client perspective in the client–consultant relationship is limited and ambiguous (Pemer & Werr, 2005) and there is a general shortage of empirical research on public managers (Anderesen, 2010).

In sum, research has not kept pace with the increased usage of MCS in the public sector. Although there have been attempts to find reasons for the *how* and *why* of using MCS, many questions remain around the *who*. The client in the client–consultant relationship has traditionally been neglected in the research and only recently there is a wave of client-focused research underway (Sturdy, Werr, & Buono, 2009). We combine this new wave with the traditional lack of empirically-driven studies on consulting (Pemer, 2008), the public managers' increased power (Ferlie et al., 1996) as well as the neglected characteristics of public managers and their effect on organizational actions (Esteve et al., 2013). Within these areas, we find a research gap in the effect of managerial characteristics on MCS spending, which we attempt to contribute to with this thesis.

2.2 Theoretical Framework and Hypothesis Generation

To study how DG characteristics influence spending on MCS, we draw on upper echelon theory (Hambrick & Mason, 1984) which claims that executives' characteristics influence strategic choices. This theory has been tested in various studies and is generally supported (Wang, Holmes, Oh, & Zhu, 2016). Through this theory, it is possible to conceptualize what *executive characteristics* are, and what not, as well as how they relate to action and outcome.

2.2.1 Upper Echelon Theory

Upper echelon theory states that executives will affect an organization's strategic choices and is based on the theory's two central elements (Hambrick, 2007):

- (i) Managers act based on their personalized interpretations of the strategic situations they face.
- (ii) These interpretations are a function of experiences, values, and personalities.

Managers thereby act and make strategic choices through their own lenses and under bounded rationality. The cognitive base and values of an executive, combined with the managerial perception of the situation, form the basis for a strategic choice. The managerial perception, in turn, can be conceptualized sequentially. First, managers direct attention to restricted areas, called fields of vision. After that, a further narrowing occurs when managers selectively perceive certain phenomena within those fields. Lastly, the selected information is interpreted through a personal filter, which ultimately leads to the manager's perception of the situation (see Figure 1).

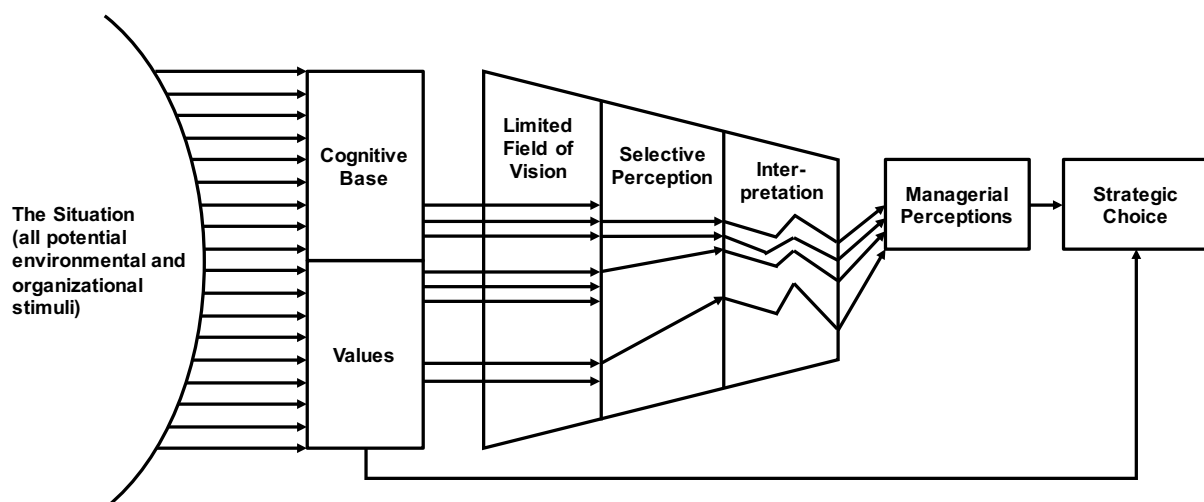


Figure 1: Strategic Choice Under Conditions of Bounded Rationality. Adapted from (Hambrick & Mason, 1984).

While both the cognitive base and values are close to impossible to study, Hambrick and Mason (1984) argue that they can be complemented by observable characteristics. Although de-

mographic characteristics do not exhaustively capture psychological characteristics, they provide a valid proxy of executives' cognitive frames. Thus, Hambrick and Mason (1984) adapted the model to capture upper echelon characteristics better, as shown in Figure 2.

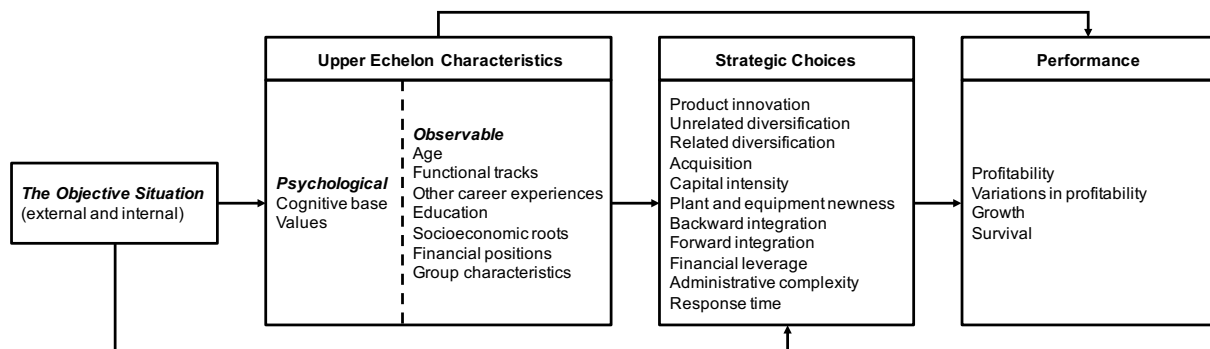


Figure 2: An Upper Echelons Perspective of Organizations. Adapted from (Hambrick & Mason, 1984).

One of the main subordinate ideas is that observable characteristics serve as valid proxies for psychological characteristics which has been holding true in multiple studies. Wang et al. (2016) examine upper echelon theory's validity through a meta-analysis based on 308 studies. Their findings support upper echelon theory and show that CEO characteristics have a significant influence on firms' strategic actions and firm performance.

2.2.2 Hypothesis Generation

Hambrick and Mason (1984) originally introduced the following observable characteristics as proxies for cognitive values: age, functional track, other career experiences, education, socioeconomic roots, financial position, and group characteristics. Functional track is, in line with Esteve et al. (2013), used by us as "type of education". We examine business degrees as it specifically is closely related to the services of management consultants. *Education*, however, represents "level of education".

Within our research context, some characteristics are, however, more relevant than others. Financial position is deemed irrelevant as no such thing as inside-ownership exists in the public sector. Socioeconomic roots are also not examined, as Swedish DGs have few differences in the socioeconomic background on an observable level. Moreover, we emphasize solely the DG whereby group characteristics are left out. We include gender as nowadays there are many female DGs in Sweden, in contrast to the original setting of the theory in the U.S in the 1980s. In sum, we examine what effect *age, type of education, level of education, gender and career experiences* have on spending on MCS.

2.2.2.1 Age

Child (1974) and Hart and Mellors (1970) find that younger managers are more likely to engage in projects with other organizations. This is further supported by Esteve et al. (2013) who find similar patterns for inter-organizational collaborations in the public sector.

While older managers are more committed to the status quo (Serfling, 2014), Yim (2013) highlights how younger managers introduce aggressive change initiatives to generate personal and organizational wealth. Similarly, Carlsson and Karlsson (1970), as well as Hambrick and Mason (1984), introduce the explanation that younger managers are preoccupied with career progression, whereas older managers enjoy and seek stability. Correspondingly, Van Keer and Bogaert (2009) find that younger managers in the public sector have the drive to change things and are more willing to test limits and take risks.

We thereby assume that younger DGs, in their strive for career progression, will initiate more aggressive change programs and seek results more than older, more content DGs. Given more large-scale change projects and a higher likelihood of engaging external parties in inter-organizational collaborations, we believe that this also implies a more extensive use of management consultants. The DGs have been grouped into three age groups whereby we propose:

Hypothesis 1: DGs in a younger age group spend more on management consulting services than DGs in an older age group.

2.2.2.2 Type of Education

Hambrick and Mason (1984) argue that the lenses through which managers see and evaluate alternatives are partly explained by their field of education. By attending a business school or studying medicine, certain values and ways of thinking are transferred to a person. The influence of type of education on strategic actions has empirical support (e.g. Bamber, Jiang, & Wang, 2010; Jensen & Zajac, 2004; Noordegraaf, Meurs, & Montijn-Stoopendaal, 2005). However, Esteve et al. (2013) find no significant effect of the functional track on inter-organizational collaboration in the public sector.

Executives with business educations are, however, more risk averse and less innovative than 'self-made' executives (Collins & Moore, 1970) and analytical techniques in business education are geared to avoid big losses or mistakes (Hambrick & Mason, 1984). Management consultants are often hired for complex, important, and risky assignments, where failure is not easily corrected (Clark, 1995; Mitchell et al., 2003). If former business students are taught to avoid failure, it is not unlikely that they embark on more incremental rather than radical change and avoid large MCS expenses, especially as the use of public resources for consultants are

frequently questioned. The 'organizers and rationalizers' drawn to business schools rather create more complex administrative systems, formal planning systems and coordination devices (Hambrick & Mason, 1984).

Barker and Mueller (2002), Cheng and Barker (2014), and Scherer and Huh (1992) find that CEOs with a science or engineering background are associated with more intensive R&D support and spending. As the link between science and R&D support, MCS are closely related to education in business administration whereby a strict adoption would yield more MCS purchases. The link in this case, however, also implies more advanced knowledge about general management tools, an eagerness to control and create more complex administrative systems as well as managers avoiding big losses. Combining no higher likelihood of collaborations (Esteve et al., 2013) with a similar skill base and management tools as those of MCS providers we hypothesize that:

Hypothesis 2: DGs with business degrees spend less on management consulting services than DGs with non-business degrees.

2.2.2.3 Level of Education

Education is not only thought of as an indication of a person's knowledge and skill base, but also his/her values and cognitive preferences (Hambrick & Mason, 1984). While this relates partly to the field of education, it is argued that people enrolled in certain programs are different from people enrolled in other programs, which should hold true also for the length of programs. This is supported by Esteve et al. (2013), emphasizing that public managers' extent of inter-organizational collaborations is largely driven by PhD degrees, with lower university degrees being less important. Given the additional time spent in the academic world, and the greater emphasis on research in a PhD program compared to lower university degrees, it is likely that PhD programs attract people with a distinct cognitive base and certain values.

Formal education may indicate a person's curiosity, and acceptance of novel concepts (Wang et al., 2016) and more formal education often leads to a greater receptivity to new ideas (Thomas, Litschert, & Ramaswamy, 1991). Similarly, a CEO's level of education is positively correlated to the receptivity of innovation (Becker, 1970; Kimberly & Evanisko, 1981; Rogers & Shoemaker, 1971).

Managers with higher levels of education have been argued to have a better capability of processing complex information and analyzing both situations and alternative actions (Wiersema & Bantel, 1992), which could imply less need for external help. However, in line with Esteve et al. (2013), McGuire (2009) shows that emergency managers' level of education positively correlate with their levels of collaboration, whereby the analysis of actions by people with more education seem to imply a higher involvement of external organizations and actors.

Moreover, Bantel and Jackson (1989) find that bank executives with higher education are more aware of the latest development. Being more aware of trends, it is not unlikely that managers with higher levels of education more easily see a need for change, adapt the organization to ongoing changes in the surrounding world, and engage consultants in that process.

In sum, it seems as if managers with higher education are more aware of the latest development, are open to implementing new ideas, collaborate more and make use of external competencies. Considering this, we hypothesize that:

Hypothesis 3: DGs with PhD degrees spend more on management consulting services than DGs without PhD degrees.

2.2.2.4 Gender

Although originally neglected by Hambrick and Mason (1984), much contemporary research revolves around gender influence on managerial decisions. Consensus about gender differences exists in the management of public organizations (e.g. Fox & Schuhmann, 1999; Jacobson, Palus, & Bowling, 2010; Meier, O'Toole, & Goerdel, 2006). Moreover, these differences often relate to the extent of stakeholder inclusion, where female managers involve more actors than their male counterparts (Fox & Schuhmann, 1999; Meier et al., 2006). Nonetheless, Esteve et al. (2013) find no differences between male and female managers' inter-organizational collaboration in the public sector. However, Jacobson et al. (2010) report differences in the networking activities between male and female managers. Moreover, most leadership research emphasizes female leaders as being more collaborative and inclusive (Aldrich, 1989; Buttner, 2001, Sorenson, Folker, & Brigham, 2008; Wajcman, 1998). This approach of cooperating more actively and participating in inclusive relationships with stakeholders is supported by Yazdanfar and Abbasian (2015). Although not in the public sector, their study is also conducted in Sweden and suggests that female small business owners more often use external business advice. Research thus largely points towards female leaders as more willing to involve external advisors whereby we hypothesize that:

Hypothesis 4: Female DGs spend more on management consulting services than male DGs.

2.2.2.5 Career Experiences

An executive's career experiences are carried as cognitive and emotional givens, and partly shape the lenses through which one sees opportunities and problems. For example, executives appointed from the outside normally make more radical changes than someone appointed from within the organization (Hambrick & Mason, 1984). This is partly due to a lower commitment to the status quo, to remove obstacles opposing the new executive but also to impose change to create loyal allies (Carlson, 1972). Internal or external succession is just

one aspect of previous career experiences. Of particular influence is the industry in which the executive has been working (Hambrick & Mason, 1984).

A very specific context a DG can be appointed from is public agencies, filled with politics, media attention, and transparency. Asplind (2009) has worked with over 250 Swedish DGs throughout the last two decades and finds differences in the way experienced DGs and first-timers act, such as how they navigate within the political landscape (pp.188-189). Another difference is the way they interpret instructions, where experienced DGs transform diffuse instructions into something else by taking control of the agenda and not just clarify the objectives, but also make them their own (Asplind 2009, p.74). First-time DGs do not always realize that the expectation is that they should not act primarily as task specialist, but leaders who change and adapt the agency to societal developments (Asplind, 2009, p. 40).

Former DGs are less likely than first-time DGs to have risen through internal ranks, and they have better control of the agency's agenda. They also know that they are expected to lead change and not work too much with details. Combining the above, we assume that they will impose and lead more change, thereby hiring more consultants:

Hypothesis 5: DGs with previous DG experience spend more on management consulting services than DGs without such experience.

2.2.3 Hypothesis Overview

In sum, we propose:

Hypotheses

Hypothesis 1: DGs in a younger age group spend more on management consulting services than DGs in an older age group.

Hypothesis 2: DGs with business degrees spend less on management consulting services than DGs with non-business degrees.

Hypothesis 3: DGs with PhD degrees spend more on management consulting services than managers without PhD degrees.

Hypothesis 4: Female DGs spend more on management consulting services than male DGs.

Hypothesis 5: DGs with previous DG experience spend more on management consulting services than DGs without such experience.

Table 1: Hypothesis Overview.

3 Methodology

This section outlines the methodology used to answer the research question. Firstly, we introduce the research approach and research setting. Subsequently, we highlight the methods used for quantitative data collection and describe the statistical model used for analyzing the collected data. After that, we elaborate on our qualitative data collection before ending with a discussion on data quality.

3.1 Research Approach

Given our research question, purpose, and aim, a philosophical position of critical realism establishes the study. From an ontological standpoint, realists are objective. A cornerstone in realism is that the world exists independently of human thoughts or knowledge, but critical realists also highlight a need for it to be interpreted through social conditioning (Saunders, Lewis, & Thornhill, 2012). Critical realists distinguish between three ontological realities: the empirical, the actual, and the true reality, moving from what can be observed to what generates phenomena (Bhaskar, 2013). Moreover, from an epistemological aspect, critical realism implies an acknowledgment that phenomena create sensations which are open for misinterpretations. It has a focus on explaining within a context (Saunders et al. 2012).

We investigate the relationship between observable DG characteristics and spending on MCS, where a positivist would aim at forming law-like generalizations as scientists do (Gill & Johnson, 2010). However, positivism has been criticized as a “naïve realism”, in which knowledge can be captured and generalized neglecting context (Guba & Lincoln, 1994). On the other end of the spectrum, interpretivism highlights the importance of contextual interpretations. Unlike interpretivists, however, critical realists do not reject causal explanations (Sayer, 2000) but simultaneously tackle central elements from both natural science and social science regimes (Zachariadis, Scott, & Barret, 2013).

DGs are embedded within a public, political sphere and its institutional logic (Meyer & Hamerschmid, 2006a, 2006b) as well as organizational contexts which may influence the DGs' use of consultants. We thereby adopt critical realism reasoning that law-like formulations and conclusions need to be studied, understood, and interpreted within that context. We aim not only to identify the relationship between characteristics and MCS spending but also to examine the mechanisms behind the spending patterns. Such a dual purpose is moreover impossible to achieve through solely a positivist or an interpretivist position, partly due to their problematic application in mixed methods research. In many cases, critical realists argue that the most effective methodological choice is to use a combination of quantitative and qualitative techniques (Olsen, 2004). Quantitative research aids the critical realist as it can develop reliable descriptions and comparisons (McEvoy & Richards, 2006) and test theory on how causal mechanisms operate (Mingers, 2004). Qualitative research on the other hand also helps as it

is open-ended, and can illuminate complex concepts and relationships (McEvoy & Richards, 2006). Using several data sources also allows for triangulation, where critical realism is compatible with the possibilities of confirmation, completeness and abductive reasoning (McEvoy & Richards, 2006). We follow a mixed methods approach, which has become increasingly accepted as a proper research method (Bryman & Bell, 2011). A mixed methods approach holds several benefits such as better explaining relationships between variables (Saunders et al., 2012). More specifically, a mixed methods research design in the form of a sequential explanatory research design (Saunders et al., 2012) is used, where a quantitative study is followed by a qualitative part. Today, however, some critique exists against mixing methods, such as that they are based on different epistemological and ontological values (Bryman & Bell, 2011; Hughes 1990). Nonetheless, our philosophical position of critical realism, as argued above, allows for the two methods to be used together.

While a research philosophy establishes the research, theory will be involved and used in different ways (Saunders et al., 2012). Given the application of the well-established upper echelon theory, we initially take on a deductive approach through hypothesis testing. Nonetheless, the thesis involves inductive elements, such as interviews. Thus, it is not unambiguously deductive or inductive in its nature but rather a mixture, and undertakes one important aspect in critical realism: the logic of retroduction. This involves moving from the observable to postulating about underlying structures and mechanisms (Mingers, 2003, 2006). Retroduction is a mode of analysis, studying events with respect to what has caused them (McEvoy & Richards, 2006). Similarly, we move from the quantitative part studying the MCS spending to the qualitative part, aiming to understand what causes spending patterns to occur.

The interviews were semi-structured and took place with each DG at one point in time. The first part of the thesis, however, was carried out as a longitudinal study, a method which measures phenomena over time and captures time effects (Bryman & Bell, 2011). Because MCS projects can last from weeks to years, and because spending can differ at different points of time (Pemer et al., 2014, 2016), a longitudinal study following several agencies and DGs for multiple years serves the research purpose the best, as it can reveal patterns over time. We now turn to a description of the context in which the study has been conducted.

3.2 Research Setting

Although NPM is accepted as a concept in the literature, there are significant country-specific variations. Sweden is characterized by highly independent agencies with autonomy for most of the operational and service-providing tasks of central government (Green-Pedersen, 2002; Pollitt & Summa, 1997). The Government and Parliament can set budgets and define the main activities for public agencies through “appropriation directives” (Swedish: *regleringsbrev*), but

this steering is quite subtle compared to other countries. The Constitution prevents departments and ministers to instruct agencies on their operational decisions and actions. If doing so, Cabinet members can be found guilty of “ministerial steering” (Swedish: *ministerstyre*) (Pierre, 2004; Swedish government, 2015). Moreover, DGs in Sweden are appointed on a six-year contract, with the possibility of a three-year extension (Asplind, 2009).

NPM-adoption in Sweden started in the 1980s when 65 agencies were closed, 45 new ones created, and 29 merged into 13 between 1980 and 1994 with a new approach of results-budgeting (Pollitt & Bouckaert, 2011). The Social Democratic government of the 1990s created purchasers and providers of healthcare and education services, with private companies entering the markets. The social welfare sector, municipalities, and other public sector areas followed. From 2006 onwards, a center-right-wing government continued with NPM-reforms with an increased speed, resulting in more complexity for public organizations (Andersson & Tengblad, 2009; Jacobsson, 2002; Jarl, Fredriksson, & Persson, 2012; Lantto, 2001; Rombach, 1997; Svanborg-Sjvall, 2014).

3.3 Quantitative Data Collection

For the statistical analysis, we mainly used secondary data and public sources, where some data were only accessible through direct contact with public agencies and archivists at the *Royal Library* in Stockholm. Moreover, access to raw data gathered by Perner et al. (2014, 2016) for their studies was generously provided.

3.3.1 Variables on Agency Level

The dependent variable – spending on MCS – is derived from a dataset which covers transactions between public agencies and management consulting firms between 2003 and 2011. These transactions identify buyer, supplier, date, and amount and are publicly available through the database *solidinfo.se* (Social Media Support Sverige AB, 2017). The 100 largest management consulting firms based on revenue as defined by *konsultguiden.se* (Alma Talent AB, 2016) were considered. Thanks to a classification of transactions, IT consulting services could be excluded if an agency purchased both IT consulting and MCS. The transactions were aggregated on a yearly basis and the DG in office for most of the year was assigned the total spending during that year. The agencies’ “total income” was collected from their annual reports. For comparing agency types, we used the “Classification of the functions of government” (COFOG) (United Nations Statistical Division, 2017) and manually categorized all public agencies in the sample according to the 10 COFOG areas, whereby there were no agencies in three areas (Appendix B).

3.3.2 Variables on DG Level

We gathered data for DG² characteristics through secondary sources such as the agencies' websites, annual reports, public CVs, LinkedIn profiles, press releases, interviews, and news articles. Additionally, we contacted some DGs directly but about 3% of the DGs in the sample had to be excluded as data was ultimately missing.

Apart from *tenure* which we adapt from Pemer et al. (2014, 2016), we generated five hypotheses about DG characteristics. *Gender* is grouped into male and female³. *Age* was calculated by the year of birth and chosen to comprise three age groups, one representing DGs around the sample average age of 55 (50-59 years) and two groups representing relatively younger (below 50 years) and older (above 60 years) DGs. The *level of education* was initially thought of as a five-level variable, with no higher education, bachelor's degree, master's degree, executive education, and PhD. However, only one person in the sample did not have a higher education and only very few an executive education. Moreover, separating between equivalents to bachelor and master degrees before the Bologna Process in 1999 is difficult. PhD-holders thus represent one subgroup, with all others pooled into the other group. The *type of education* is another dichotomous variable separated into business and non-business degrees. The latter includes, for example, medicine, engineering, and philosophy whereas persons with business administration or economics degrees have been sorted into the former. Lastly, for *career experiences*, we separate between DGs who have previously been the head of a public agency and not.

² We consider the head of a public agency a DG, although not all may formally be called DG.

³ Although some may identify themselves in other ways.

3.3.3 Variable Overview

Summarizing the above chapters, Table 2 shows descriptive statistics of all variables used.

	mean	sd	min	max	Description
Dependent variable					
<i>ln_spending</i>	13.894	2.095	6.856	18.530	Agencies' spending on MCS; natural logarithm transformation
Independent variables (fixed effects)					
<i>ln_income</i>	20.961	1.493	16.982	24.275	Agency's yearly income; natural logarithm transformation
<i>tenure1</i>	0.170	0.376	0	1	Dummy variable, 1 = DG is in his/her tenure year 1; 0 = otherwise
<i>tenure2</i>	0.161	0.368	0	1	Dummy variable, 1 = DG is in his/her tenure year 2, 0 = otherwise
<i>tenure3</i>	0.131	0.338	0	1	Dummy variable, 1 = DG is in his/her tenure year 3, 0 = otherwise
<i>tenure4</i>	0.112	0.316	0	1	Dummy variable, 1 = DG is in his/her tenure year 4, 0 = otherwise
<i>tenure5</i>	0.079	0.270	0	1	Dummy variable, 1 = DG is in his/her tenure year 5, 0 = otherwise
<i>tenure6plus</i>	0.143	0.350	0	1	Dummy variable, 1 = DG is in his/her tenure year 6 or higher, 0 = otherwise
<i>age_50_59</i>	0.514	0.501	0	1	Dummy variable, 1 = DG in age range 50–59, 0 = otherwise
<i>age_60plus</i>	0.277	0.448	0	1	Dummy variable, 1 = DG in age range ≥60, 0 = otherwise
<i>business</i>	0.347	0.477	0	1	Dummy variable, 1 = DG has business background, 0 = otherwise
<i>phd</i>	0.204	0.403	0	1	Dummy variable, 1 = DG has PhD, 0 = otherwise
<i>female</i>	0.353	0.479	0	1	Dummy variable, 1 = female DG, 0 = male DG
<i>formerdg</i>	0.347	0.477	0	1	Dummy variable, 1 = DG has experience of being DG at another agency before, 0 = otherwise
<i>cofog_def</i>	0.097	0.297	0	1	Dummy variable, 1 = Agency classified as <i>defense</i> , 0 = otherwise
<i>cofog_pos</i>	0.108	0.305	0	1	Dummy variable, 1 = Agency classified as <i>Public Order and Safety</i> , 0 = otherwise,
<i>cofog_eco</i>	0.231	0.422	0	1	Dummy variable, 1 = Agency classified as <i>Economic Affairs</i> , 0 = otherwise,
<i>cofog_env</i>	0.103	0.305	0	1	Dummy variable, 1 = Agency classified as <i>Environmental Affairs</i> , 0 = otherwise,
<i>cofog_edu</i>	0.058	0.234	0	1	Dummy variable, 1 = Agency classified as <i>Education</i> , 0 = otherwise
<i>cofog_soc</i>	0.091	0.288	0	1	Dummy variable, 1 = Agency classified as <i>Social Protection</i> , 0 = otherwise
Random effects					
<i>year_2004 to year_2011</i>					Dummy variables for years 2004–2011 compared to base year 2003
<i>dg</i>					Unique identifier for each DG in the sample
<i>agency</i>					Unique identifier for each public agency in the sample
<i>N</i> = 329 total observations					

Table 2: Variable Overview.

3.4 Statistical Model

In this chapter, we introduce the statistical model used to analyze the quantitative data.

3.4.1 Linear Mixed (-Effects) Model

For modelling the clustered longitudinal data, we used a linear mixed (-effects) model (LMM)⁴. The application of LMMs has increased greatly over the past few decades in various fields (Gurka, 2006). They are especially useful for modelling longitudinal data because they do not only model the mean (fixed effects) but also the covariance (random effects and pure error term) and provide researchers with powerful and flexible analytic tools (Gurka, 2006; West, Welch, Galecki, & Gillespie, 2015).

A popular general notation of a LMM with fixed effects β and random effects b_j stems back to Laird and Ware (1982) and is presented by Verbeke and Molenberghs (2000, pp. 23-24):

$$Y_j = X_j\beta + Z_jb_j + \varepsilon_j \quad (1)$$

and

$$\left\{ \begin{array}{l} b_j \sim N(0, D) \\ \varepsilon_j \sim N(0, \Sigma_j) \\ b_1, \dots, b_N, \varepsilon_1, \dots, \varepsilon_N \text{ independent,} \end{array} \right. \quad (2)$$

where Y_j is the n_j -dimensional response vector for subject j , $1 \leq j \leq N$, N is the number of subjects studied, X_j and Z_j are $(n_j \times p)$ and $(n_j \times q)$ dimensional matrices of known covariates, β is a p -dimensional vector containing the fixed effects, b_j is the q -dimensional vector containing the subject-specific random effects, and ε_j is an n_j -dimensional vector of residual components. Finally, D is a general $(q \times q)$ covariance matrix with (j, k) elements $d_{jk} = d_{kj}$ and Σ_j is a $(n_j \times n_j)$ covariance matrix which depends on j only through its dimension n_j , i.e. the set of unknown parameters in Σ_j will not depend upon j , whereas this last assumption can be relaxed.

Fixed factors constitute the time-varying variables *ln_income*, *tenure1* to *tenure6plus*, *cofog_def* to *cofog_soc*, *age_50_59*, and *age_60plus* as well as the time-constant variables *female*, *phd*, *business*, and *formgerdg* (see Table 2). Since longitudinal data can also be thought of as multilevel data (Raudenbush & Bryk, 2002), we used a three-level model (see Table 3 and Figure 3). Level 1 constitutes the repeated observations of log-transformed yearly spending on MCS (*ln_spending*) which are nested within 103 DGs (*dg*). The DGs form level 2 and are nested within 47 public agencies (*agency*) which form level 3. Both *dg* and *agency* are random factors as both are drawn randomly from a greater population. This allows

⁴ Linear mixed-effect models are also commonly referred to as (linear) hierarchical models or multilevel models.

random intercepts for each of them and thereby statistically allows a generalization to the greater population. A covariance structure for the single random effect associated with each DG is not required, because only a single variance will be estimated (West et al., 2015).

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
<i>agency</i>	47	1	7.0	9
<i>dg</i>	103	1	3.2	8

Table 3: Overview of Data Grouping.

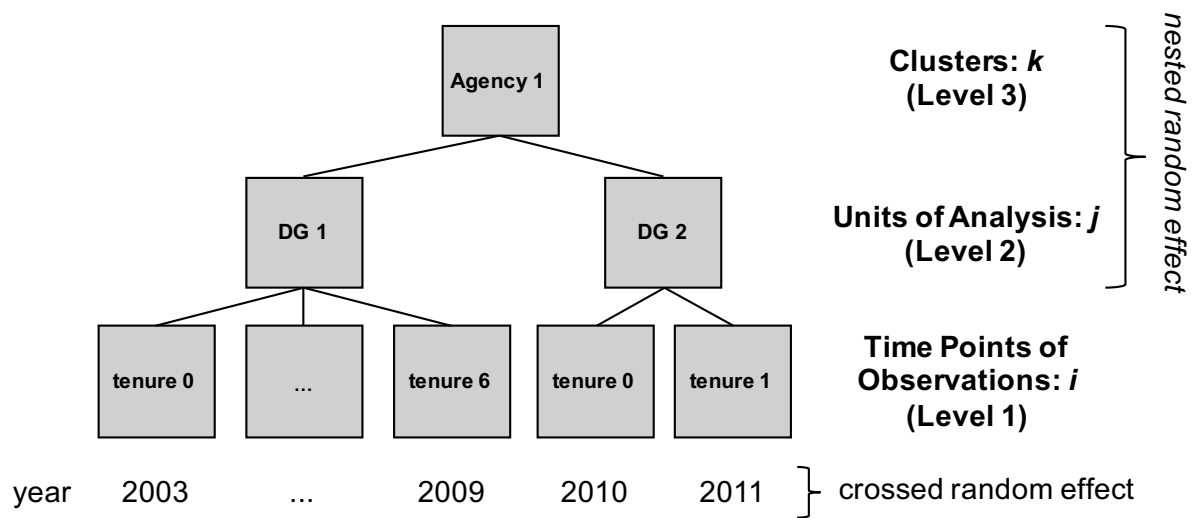


Figure 3: Data Structure of the Hierarchical Model.

There is no consensus about sufficient sample sizes in multi-level models. A rule of thumb commonly cited (e.g. Hox, 1998; Maas & Hox, 2004, 2005) calls for a minimum of 30 units at each level. For less than 15-20 level-2-units, Stegmueller (2013) shows that confidence intervals are unreliable. Similarly, Maas and Hox (2005) show that only a small sample size ($N < 50$) at level 2 leads to biased estimates of the second-level standard errors. Although simulation studies can usually not be generalized beyond the specific setting, confirming findings from previous studies, Bell, Morgan, Schoeneberger and Loudermilk (2010) show that multi-level modeling techniques can confidently be applied with relatively small samples sizes, across a variety of model types. Appropriate inferences regarding the point and interval estimates for fixed effects can be made. Although traditional Maximum Likelihood (ML) estimation methods for multi-level models have been shown to provide biased estimates when the number of clusters is below 30, Restricted Maximum Likelihood (REML) has shown to have potential to perform well with ten clusters or fewer in some scenarios (McNeish & Stapleton, 2016). Given the above, the estimates of the regression coefficients, variance components and standard errors should be unbiased and accurate as we used REML and there are 103 DGs and 47 agencies in our sample.

Equation (1) can be extended to two levels of clustering. Adopting Rabe-Hesketh and Skrondal's (2012) notation which will be followed from here on, a simple linear random-intercept model takes on this form:

$$Y_{ijk} = \beta_0 + \beta_1 x_{1ijk} + \beta_2 x_{2ijk} + \dots + \beta_q x_{qijk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \epsilon_{ijk} \quad (2)$$

with covariates x_{1ijk} through x_{qijk} and three variance components $\zeta_{jk}^{(2)}, \zeta_k^{(3)}, \epsilon_{ijk}$. The subject specific random intercept $\zeta_{jk}^{(2)}$ is specific to each subject j and cluster k but constant across occasions i . It has zero population mean, is uncorrelated across subjects, and has variance $\psi^{(2)}$. The cluster specific random intercept $\zeta_k^{(3)}$ is specific to each cluster k but constant across subject j and occasion i . It has zero population mean, is uncorrelated across clusters, and has variance $\psi^{(3)}$. Lastly, ϵ_{ijk} is the idiosyncratic component – often called level-1 residual or within-subject residual – and is the random deviation of Y_{ijk} from subject j 's mean with variance θ . Overall $Var(Y_{ijk}) = \psi^{(2)} + \psi^{(3)} + \theta$.

The crossed random effect *year* (see Figure 3) is used since a DG's certain tenure can randomly take place in a certain year, i.e. for example *tenure* 3 for *gd* 1 can be in *year* 2007 whereas *tenure* 3 for *gd* 2 can be in *year* 2004. However, *year* 2004 and 2007 might have different influences on *ln_spending*. By modelling *year* as a crossed random effect, external influences such as a general economic downturn or election years are accounted for. Following an idea initially proposed by Goldstein (1987) and described by Rabe-Hesketh and Skrondal's (2012, p.437), a crossed random effect can be modeled by treating the entire dataset as an artificial level 4 unit a within which both *agency* and *gd* are nested in. *Agency* keeps being treated as level 3 units k with random intercept $u_{ka}^{(3)}$. *Year* is treated as superficial level 4 unit l with a specific random intercept $u_{pa}^{(4)}$ ($p = 2003, \dots, 2011$) for each *year* by treating $u_{pa}^{(4)}$ as the random coefficient of the dummy variable d_{pi} for *year* p , where

$$d_{pi} = \begin{cases} 1 & \text{if } p = i \\ 0 & \text{otherwise} \end{cases}$$

The nine random coefficients for *year* are modelled to have variance ψ_1 and being uncorrelated. This leads to:

$$Y_{ijk} = \beta_0 + \beta_1 x_{1ijk} + \beta_2 x_{2ijk} + \dots + \beta_q x_{qijk} + u_{jka}^{(2)} + u_{ka}^{(3)} + \sum_p u_{pa}^{(4)} d_{pi} + \epsilon_{ijka} \quad (3a)$$

$$= \beta_0 + \beta_1 x_{1ijk} + \beta_2 x_{2ijk} + \dots + \beta_q x_{qijk} + u_{jka}^{(2)} + u_{ka}^{(3)} + u_{ia}^{(4)} + \epsilon_{ijka} \quad (3b)$$

$$= \beta_0 + \beta_1 x_{1ijk} + \beta_2 x_{2ijk} + \dots + \beta_q x_{qijk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \zeta_i^{(4)} + \epsilon_{ijk} \quad (3c) \text{ prev. notation}$$

where $u_{jka}^{(2)}, u_{ka}^{(3)}$ and $u_{ia}^{(4)}$ are uncorrelated since they are specified at different levels.

3.4.2 Model Building

The appropriateness of the chosen random effect structure was confirmed through log likelihood tests (LRT) (West et al., 2015). We used REML as it is preferred when accurate and unbiased estimators of the variance and covariance components of the model are in focus (Verbeke & Molenberghs, 2000; Harville, 1977). To compare various model specifications, we used both various information criteria⁵ – which are widely used as model selection criteria in the mixed model setting (Gurka, 2006) – and LRTs for nested models (Rabe-Hesketh & Skrondal, 2012; Verbeke & Molenberghs, 2000). Although in general, relatively little is known about the effectiveness of information criteria in mixed model selection (Gurka, 2006), comparing mixed models with different mean structures using information criterion based on REML is generally seen as inappropriate. Instead, we used information criteria calculated from ML parameter estimates, after fitting the model using REML as suggested by Verbeke and Molenberghs (2000) and Wolfinger (1993). Similarly, when comparing nested models employing LRTs, we used ML instead of REML estimation (Morrell, 1998; Rabe-Hesketh & Skrondal's, 2012; Verbeke & Molenberghs, 2000). The statistics software Stata/MP 14.2 was used to obtain all results.

3.4.3 Variance-Covariance Structure

Given the repeated measures on tenure nested within each DG, we followed Wolfinger's (1993) three-stage approach for testing various variance-covariance structures for random effects and residuals.

First, we tried different data transformations and selected fixed effects whereby over fitted models were preferred at this stage. Both standardizing the dependent variable *spending* per agency and log-transformation of it have been tried. Log-transformation of *spending* and *income* yielded residuals closest to being normally-distributed and homoscedasticity. Thus, we use the natural log-transformed variables *ln_spending* and *ln_income*.

Second, we selected initial covariance structures for random effects and residuals by using relevant scientific theory, residual plots, and semi-variograms. We tested different common covariance structures such as Unstructured, AR(1), MA(1), Banded, Toeplitz and independent structure (identically distributed Gaussian) with one common variance.

Third, we used constructed LRTs for nested models (Jennrich & Schluchter, 1986; Schaalje, Zhang, Pantulu, & Pollock, 1991). LRTs suffer from boundary problems, leading to accepting more restrictive variance-covariance structures than would be correct (Verbeke & Molenberghs, 2000). Therefore, we followed Berkhof and Snijders (2001) in largely correcting this

⁵ AIC (Akaike, 1974), AIC_c (Hurvich, Simonoff, & Tsai, 1998), CAIC (Bozdogan, 1987) and BIC (Schwarz, 1978).

bias by dividing the p-value obtained from the LRT by two. Additionally, we used information criteria for selecting covariance structures.

3.5 Qualitative Data Collection

In total, we conducted six semi-structured interviews with former and current DGs with questions grouped in themes (see Appendix C). Additionally, we interviewed an industry expert to develop questions for the interviews with the DGs. Other interviewees were the author Jan Asplind (2009) and his wife Gunilla, who have themselves worked with over 250 Swedish DGs throughout the last two decades (see Appendix D).

The interviews were an attempt to understand the world from the DGs' points of view, unravel the core of their experiences and explore their perceived situation prior to scientific explanations (Brinkmann & Kvale, 2015). We followed the proposed seven stages of an interview by Brinkmann and Kvale (2015) based on Bourdieu (1999). After promising anonymity to the interviewed DGs for ethical reasons (Brinkmann & Kvale, 2015), the interviews were recorded and transcribed, allowing more precise interpretation, quotations and limited note-taking. This allows for asking appropriate follow-up questions (Alvesson, 2011; Bryman & Bell, 2011) and exploring interesting side-tracks (Bryman & Bell, 2011; Gillham, 2005).

Following Alvesson's (2011) principles of representativeness and quality, we selected the interviewees from the quantitative sample. To get different perspectives, we chose both current and retired DGs covering all variables for the hypothesis tests. The interviews lasted 45–120 minutes each and were held face-to-face (except one telephone interview) during Spring 2017 in English (Appendix C). Occasionally an interviewee would not know a word in English but used the Swedish word instead which was later translated by the Swedish author.

3.6 Data Quality

Data quality is assessed below separately for the quantitative and the qualitative part of the study.

3.6.1 Statistical Approach

It is common to consider reliability, validity, and replicability when evaluating data quality for quantitative studies (Bryman & Bell, 2011), which are addressed below.

3.6.1.1 Reliability

Reliability deals with whether the used data collection techniques and analysis methods yield consistent findings when reproduced by another researcher (Saunders et al., 2012). All independent variables in this study are stable over time and would be the same when collected a second time which is considered a good quality for reliability (Bryman & Bell, 2011). As some variables were collected through online sources and in rare cases self-reported by the DG

through LinkedIn, it is, however, possible that they are not accessible anymore in the future⁶ (Bryman & Bell, 2011). Inter-observer consistency – which mainly entails subjective judgment and issues faced with two observers recording data (Bryman & Bell, 2011) – was thought of by cross-checking the dummy coding. Only one variable – *business* – was subject to interpretation, i.e. whether a certain education belongs to the business field or not. Therefore, subject and observer bias for the data are low.

3.6.1.2 Validity

Saunders et al. (2012) propose to assess validity to see whether the study measures what it aims to measure and if the relationship between observed variables is causal. Hypotheses about causal relationships were formulated based on the current state of research. The methodology to test them has been described thoroughly above. In years of a DG change, the sum of spending for the full year was either assigned for the incumbent or successor DG depending on who was in office for most of the time. This could lead to small discrepancies of which DG was responsible for that spending but is deemed overall as negligible. Similarly, there could be some shorter delays between hiring and paying consultants.

Internal validity deals with the question of whether *x* is responsible for variation in *y* and not something else producing an apparent causal relationship (Bryman & Bell, 2011). We used hierarchical linear models which play an important role in modeling causal effects as they adjust for unmeasured covariates. Multiple observations per DG allowed us to control for some of their unobserved characteristics. Repeated measures of both predictors and outcomes allowed us to examine within-individual covariance of these variables over time (Duckworth, Tsukayama, & May, 2010; Feller & Gelman, 2015; Wooldridge, 2015). As the sample is close to being population data, it is tempting to infer causality easily. However, all results are treated with caution.

External validity deals with whether the findings of a study can be generalized to a larger population (Bryman & Bell, 2011; Saunders et al., 2012). The data used are nearly population data of Swedish public agencies that purchase MCS and a test for COFOG areas suggests no differences. Therefore, a generalization can be done for the Swedish public sector. Yet, beyond that it should be treated cautiously.

3.6.1.3 Replicability

The ease with which it is possible to replicate a study to support or disprove the findings is generally considered as replicability (Bryman & Bell, 2011). We tried to ensure the possibility of replication by three concepts. First, the statistical model and analysis have been well-de-

⁶ All websites were visited between February and March 2017.

scribed and can be repeated. Second, we applied established statistical concepts which improve reliability, validity, and replicability. Third, most of the data used are publicly available. As the data are stable and based on past events, the quantitative tests should yield consistent results. Thus, we rate methodological replicability as high.

3.6.2 Interview Quality

Although many methods have been developed for evaluating qualitative research, none are considered better than reliability and validity (Flick, 2015) and they are therefore used.

3.6.2.1 Reliability

Reliability is concerned with whether alternative researchers would reveal similar information (Saunders et al., 2012). Researchers' interpretations of qualitative data are potentially influenced by their experiences, pre-existing ideas, and interpretations of the surroundings (Maxwell, 2013). This risk of bias was mediated by both of us being present during all interviews. Moreover, all transcripts were first interpreted individually, followed by a mutual discussion. This further mitigates the risk of misinterpretation, but researcher bias will always exist from the mere presence of the authors (Flick, 2015). As initial quantitative results were obtained before the interviews took place, it cannot be said that we had no preconceptions of DGs' influence on spending patterns. Yet, we tried to be as objective as possible in the interviews and had therefore developed the interview questions before the quantitative results were obtained.

Another bias is participant bias (Flick, 2015). Interviewees may have been focusing solely on positive aspects of using management consultants, being uncritical when wanting to present themselves in a good light. This was tried to be mitigated by guaranteeing anonymity, thereby increasing the probability of producing credible findings and continuously posing critical follow-up questions.

3.6.2.2 Validity

Validity is concerned with whether access was gained to the interviewee's knowledge and experience, and if we can infer a meaning that the interviewee intended from his or her language (Saunders et al., 2012). Validity was increased by clarifying for the interviewees what we were discussing by providing the objective of the interview, at the same time as letting contextual matters be discussed to gain a wider understanding, i.e. for example sidetracks in answers and differences in the DGs' organizational environments.

For improving external validity, a sample of interviewees as representative as possible was selected. Sample sizes used in qualitative studies tend to be too small to be representative of larger populations, which limits the ability for generalization. Although there is no consensus

about how many interviews one should conduct, Brinkmann (2012) argues that there are advantages in avoiding too many, and rather focus on a 'less can be more' approach. Eight in-depth interviews allowed for a deeper analysis which was deemed to be more important than many interviews. Even a single instance of a phenomenon that "this or that is the case... can be extremely interesting and relevant, even if the researcher makes no claims concerning generality" (Brinkman & Kvale, 2015, p.141).

4 Results

The following section presents the results of the analysis of the collected data to support or reject the hypotheses and is followed by the results of the interviews.

4.1 Industry Differences in Spending on Management Consulting Services

Hambrick and Mason (1984) suggest comparing upper echelons within the same industry. Model (0) is, therefore, testing for differences between types of public agencies in our sample using the COFOG variables for observation i , DG j , and public agency k :

$$\ln_spending_{ijk} = \beta_0 + \beta_1 \ln_income_{ijk} + \beta_{20} cofog_def_k + \beta_{21} cofog_pos_k + \beta_{22} cofog_eco_k + \beta_{23} cofog_env_k + \beta_{24} cofog_edu_k + \beta_{25} cofog_sop_k + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \zeta_i^{(4)} + \epsilon_{ijk}$$

Table 4 shows the results of the linear mixed model regression. Since none of the coefficients⁷ β_{20} to β_{25} are significantly different from 0 when compared to the base level COFOG “General public services”, it can be assumed that no ‘industry differences’ exist.

Model	(0)
Estimation Method	REML
<i>Fixed Part</i>	
β_0 [intercept]	3.328 (3.228)
β_1 [ln_income]	0.479** (0.158)
β_{20} [Defence]	1.463 (0.909)
β_{21} [Public Order and Safety]	-0.230 (0.875)
β_{22} [Economic Affairs]	0.799 (0.611)
β_{23} [Environmental Protection]	0.561 (0.849)
β_{24} [Education]	-0.212 (0.966)
β_{25} [Social Protection]	0.990 (0.843)
<i>Random Part</i>	
$\sqrt{\psi^{(4)}} [year]$	0.508
$\sqrt{\psi^{(3)}} [agency]$	1.350
$\sqrt{\psi^{(2)}} [dg]$	0.785
$\sqrt{\theta}$	0.961
Public agencies	47
DGs	103
N	329

⁷ Coefficients β_{20} to β_{25} are used to avoid confusion with the coefficients in models (1) to (8).

-2*Log Likelihood	1096.742
AIC	1120.742
AIC _c	1121.729
cAIC	1178.295
BIC	1166.295

Standard errors in parentheses

+ $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$ for fixed effects

Table 4: Mixed Model Results Testing for Public Agency Differences.

It is noteworthy that all results, i.e. the direction, magnitude, and significance of the fixed effects coefficients remain comparable in all models (1) to (8) even if the COFOG variables are not dropped. Preferring parsimonious models, they were however ultimately dropped which is supported by information criteria and LRTs, suggesting improved models excluding the COFOG variables.

4.2 Model Overview for Hypothesis Tests

The presented models fit the data best based on information criteria and LRTs as described in the methodology section. All models are for observation i , DG j , public agency k and crossed random effects $year$. Model (1) serves as a base model without the variables for the hypothesis tests. In model (2), all variables for the hypothesis tests are included at the same time. Subsequently, models (3) to (8) are testing each hypothesis separately.

In model (1), we test for the effect of tenure separately:

$$\ln_spending_{ijk} = \beta_0 + \beta_1 \ln_income_{ijk} + \beta_2 tenure1_{ijk} + \beta_3 tenure2_{ijk} + \beta_4 tenure3_{ijk} + \beta_5 tenure4_{ijk} + \beta_6 tenure5_{ijk} + \beta_7 tenure6plus_{ijk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \zeta_i^{(4)} + \epsilon_{ijk}$$

In model (2), all variables that are relevant for the hypothesis testing are included:

$$\ln_spending_{ijk} = \beta_0 + \beta_1 \ln_income_{ijk} + \beta_2 tenure1_{ijk} + \beta_3 tenure2_{ijk} + \beta_4 tenure3_{ijk} + \beta_5 tenure4_{ijk} + \beta_6 tenure5_{ijk} + \beta_7 tenure6plus_{ijk} + \beta_8 age_50_59_{ijk} + \beta_9 age_60plus_{ijk} + \beta_{10} business_{jk} + \beta_{11} phd_{jk} + \beta_{12} female_{jk} + \beta_{13} formerdg_{jk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \zeta_i^{(4)} + \epsilon_{ijk}$$

Model (3) is a sub model of model (2) in which only *formerdg* has been included:

$$\ln_spending_{ijk} = \beta_0 + \beta_1 \ln_income_{ijk} + \beta_2 tenure1_{ijk} + \beta_3 tenure2_{ijk} + \beta_4 tenure3_{ijk} + \beta_5 tenure4_{ijk} + \beta_6 tenure5_{ijk} + \beta_7 tenure6plus_{ijk} + \beta_{13} formerdg_{jk} + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \zeta_i^{(4)} + \epsilon_{ijk}$$

Model (4) is an extension of model (3) with added interaction terms for *tenure1* x *formerdg* up to *tenure6plus* x *formerdg*:

$$\ln_spending_{ijk} = \beta_0 + \beta_1 \ln_income_{ijk} + \beta_2 tenure1_{ijk} + \beta_3 tenure2_{ijk} + \beta_4 tenure3_{ijk} + \beta_5 tenure4_{ijk} + \beta_6 tenure5_{ijk} + \beta_7 tenure6plus_{ijk} + \beta_{13} formerdg_{jk} + \beta_{14} (formerdg_{jk} \times tenure1_{ijk}) + \beta_{15} (formerdg_{jk} \times tenure2_{ijk}) + \beta_{16} (formerdg_{jk} \times tenure3_{ijk}) +$$

$$\beta_{17}(\text{former}dg_{jk} \times \text{tenure}4_{ijk}) + \beta_{18}(\text{former}dg_{jk} \times \text{tenure}5_{ijk}) + \beta_{19}(\text{former}dg_{jk} \times \text{tenure}6plus_{ijk}) + \zeta_{jk}^{(2)} + \zeta_k^{(3)} + \zeta_i^{(4)} + \epsilon_{ijk}$$

Following the model building strategies as described in the methodology section, an independent variance-covariance structure for the level-1 residuals is chosen. Estimation results for model (2) show that none of the coefficients for hypothesis 1-4 are significant. Even when testing these hypotheses separately in model (5) to (8), the significance of the coefficients does not change. Thus, they can be found in Appendix E. Table 5 thereby contains the final selection of models.

Model	(1)	(2)	(3)	(4)
Estimation Method	REML	REML	REML	REML
<i>Fixed Part</i>				
β_0 [intercept]	0.691 (2.928)	0.690 (2.961)	0.675 (2.921)	0.294 (2.935)
β_1 [ln_income]	0.614*** (0.139)	0.609*** (0.141)	0.605*** (0.139)	0.614*** (0.139)
β_2 [tenure1]	-0.048 (0.182)	-0.056 (0.183)	-0.037 (0.181)	0.059 (0.228)
β_3 [tenure2]	0.154 (0.192)	0.136 (0.196)	0.164 (0.191)	0.311 (0.238)
β_4 [tenure3]	0.693*** (0.227)	0.677** (0.218)	0.711*** (0.209)	0.920*** (0.251)
β_5 [tenure4]	0.759*** (0.222)	0.739** (0.234)	0.772*** (0.221)	1.000*** (0.273)
β_6 [tenure5]	0.390 (0.254)	0.370 (0.265)	0.396 (0.252)	0.930** (0.319)
β_7 [tenure6plus]	0.187 (0.255)	0.184 (0.280)	0.216 (0.254)	0.839** (0.309)
β_8 [age_50_59]		0.075 (0.234)		
β_9 [age_60plus]		0.013 (0.261)		
β_{10} [business]		-0.268 (0.274)		
β_{11} [phd]		0.284 (0.326)		
β_{12} [female]		-0.182 (0.244)		
β_{13} [former]dg]		0.523* (0.245)	0.493* (0.239)	0.940** (0.314)
β_{14} [former]dg × tenure1]				-0.212 (0.366)
β_{15} [former]dg × tenure2]				-0.330 (0.382)
β_{16} [former]dg × tenure3]				-0.544 (0.433)
β_{17} [former]gd × tenure4]				-0.506 (0.459)

β_{18} [<i>formerdg</i> \times <i>tenure5</i>]				-1.272*
				(0.513)
β_{19} [<i>formerdg</i> \times <i>tenure6plus</i>]				-1.799***
				(0.546)
Random Part				
$\sqrt{\psi^{(4)}}$ [<i>year</i>]	0.429	0.447	0.433	0.402
$\sqrt{\psi^{(3)}}$ [<i>agency</i>]	1.349	1.374	1.353	1.367
$\sqrt{\psi^{(2)}}$ [<i>dg</i>]	0.745	0.711	0.725	0.710
$\sqrt{\theta}$	0.940	0.942	0.937	0.926
Public agencies	47	47	47	47
DGs	103	103	103	103
N	329	329	329	329
-2*Log Likelihood	1096.394	1095.260	1093.205	1079.962
AIC	1120.394	1131.260	1119.205	1117.962
AIC _c	1121.381	1133.466	1120.360	1120.421
cAIC	1177.946	1217.589	1182.553	1209.087
BIC	1165.946	1199.589	1168.553	1190.087

Standard errors in parentheses † $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$ for fixed effects

Table 5: Comparison of Models (1) to (4).

The public agency's income (*ln_income*) shows a significant positive effect on spending on MCS in all models, serving as a control variable for size between different public agencies to make spending comparable. Due to the log-log-relationship between income and spending on MCS, we can interpret a 1% increase in income with an approximate 0.61% increase in spending on MCS in all models.

Based on AIC, model (4) followed by model (3) and based on AIC_c model (3) followed by model (4) shows the best fit. Model (1) is favored by cAIC followed by model (3). Based on BIC, model (1) fits the data best and model (3) second best. Table 6 shows several significant ($p < .5$) LRTs for nested models, suggesting that the full model is preferred over the sub model. Model (3) is therefore preferred over model (1), model (4) is preferred over model (1), and model (4) is preferred over model (3). This strengthens the support for the effect of *formerdg* on spending on MCS. In sum, we can say that model (3) and (4) are often preferred which both show a significant effect of *formerdg* on spending on MCS.

		Full model							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sub model	(1)		$\chi^2(6) = 7.17, p = .31$	$\chi^2(1) = 4.30, p = .04^*$	$\chi^2(7) = 18.18, p = .01^*$	$\chi^2(2) = 0.05, p = .97$	$\chi^2(1) = 0.83, p = .36$	$\chi^2(1) = 1.19, p = .28$	$\chi^2(1) = 0.24, p = .62$
	(2)		$\chi^2(5) = 2.87, p = .72$						
	(3)				$\chi^2(6) = 13.88, p = .03^*$				
	(4)								
	(5)		$\chi^2(5) = 7.11, p = .13$						
	(6)		$\chi^2(5) = 6.34, p = .27$						
	(7)		$\chi^2(5) = 5.98, p = .31$						
	(8)		$\chi^2(5) = 6.93, p = .23$						

† $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6: Likelihood Ratio Tests based on ML Estimations for Nested Models.

A graphical analysis of level-1, -2 and -3-residuals for all models (0) to (8) can be found in Appendix F. Level-1-residuals of all models follow a normal distribution reasonably well based on a visual inspection of various plots. Although a formal Skewness-Kurtosis test for normality is significant on a 5% level for all models (0) to (8), suggesting that residuals are significantly different from a normal distribution, this is not worrying as the sample size $N = 329$ is large. This contributes to the test being significant, and a large N also makes it less important for residuals to be normally distributed (Mehmetoglu & Jakobsen, 2017). Gelman and Hill (2007) even advise generally against normality checks. Level-2 and level-3 residual plots (i.e. the random effects) are shown for reasons of completeness although Verbeke and Molenberghs (2000) prove that if interest is only in inference for the fixed effects, valid inferences can be obtained by mixed models even if the random effects have been incorrectly assumed to be normally distributed.

When plotting the residuals against the independent variables for tenure and \ln_income for models (1) to (8), it is reasonable to assume homoscedasticity (see Appendix F). Following Hamilton (2012), the residuals have been checked for autocorrelation using Ljung-Box (1978)

tests for each dg separately⁸. Only a maximum of 2 out of 103 dg – depending on the model – show residual autocorrelation at certain lags. This also serves as an ex-post justification for the chosen variance-covariance structure. It is noteworthy that all results, i.e. the direction, magnitude and significance of the fixed effects coefficients for the hypothesis tests remain comparable if the year variables are modeled as fixed effects instead of a random effect.

4.3 Tenure

When including the hypothesis variables – both separately (see Appendix E) and at the same time (see Table 5) – there is a significant peak in spending on MCS in tenure year 3 and 4 compared to year 0. For model (1) there is a $(e^{0.693} - 1) \times 100 = 100.0\%$ higher spending in year 3 and respectively a $(e^{0.759} - 1) \times 100 = 113.6\%$ higher spending in year 4 than in year 0 holding everything else equal. Figure 4 shows the temporal pattern of spending on MCS over tenure as in model (1). Similar temporal patterns driven by *tenure*, with a significant peak in year 3 and 4, can be observed in models (2) to (8) when looking at the spending pattern for each subgroup separately.

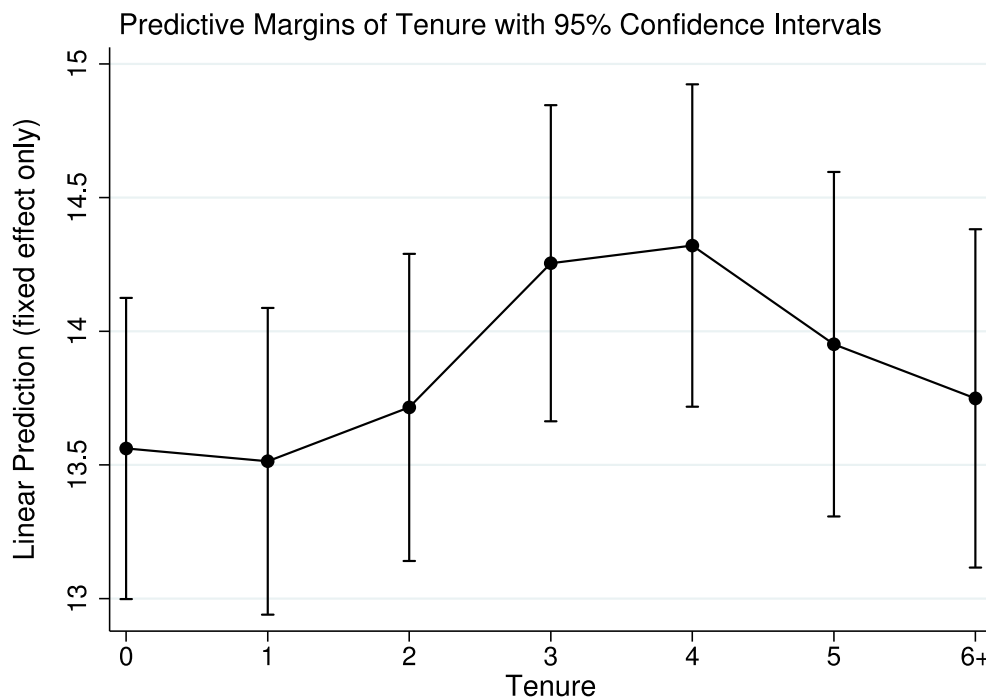


Figure 4: Model (1) Margins Plot with 95% Confidence Interval for Tenure Years.

⁸ Not reported in detail here.

4.4 Results of the Hypothesis Tests

The results for each hypothesis are presented separately below. The estimated coefficients of models (1) to (4) can be found in Table 5 and for model (5) to (8) in Appendix E.

4.4.1 Age

Both coefficients for *age_50_90* and *age_60plus* compared to being aged below 50 are not significantly different from 0 when tested together with the other variables in model (2) or separately in model (5). Therefore, it is fair to assume that a DG's age does not influence the level of spending on MCS.

4.4.2 Type of Education

The coefficient for *business* is not significantly different from 0 when tested together with the other variables in model (2), or separately in model (6). Therefore, one can assume that whether a DG has a business education does not influence the level of spending on MCS.

4.4.3 Level of Education

The coefficient for *phd* is not significantly different from 0 when tested together with the other variables in model (2) or separately in model (7). This indicates that the level of spending on MCS is not affected by whether a DG has a PhD degree.

4.4.4 Gender

The coefficient for *female* is not significantly different from 0 when tested together with the other variables in model (2), or separately in model (8). A DG's gender therefore does not seem to influence the level of spending on MCS.

4.4.5 Career Experiences

The coefficient for *formerdg* in model (2) is significant on a 5% level. It shows that DGs, who have at least once been DGs of a public agency, spend $(e^{0.523} - 1) \times 100 = 68.7\%$ more on MCS on average than their counterparts holding everything else equal. When removing the other variables for the hypothesis testing and just including *formerdg*, the coefficient for *formerdg* remains significant on a 5% level in model (3). Estimation results based on model (3) show that DGs with former DG experience spend $(e^{0.493} - 1) \times 100 = 63.7\%$ more on MCS than their counterparts.

To see whether there are any additional different patterns in *ln_spending* between DGs with and without previous DG experience, we included interaction terms between *formerdg* and *tenure* in model (4) to examine temporal patterns. Overall, we cannot observe any large differences. However, in tenure year 5 (5% significance level) and years 6+ (0.1% significance

level), former DGs spend less than first-time DGs holding everything else equal (see Figure 5).

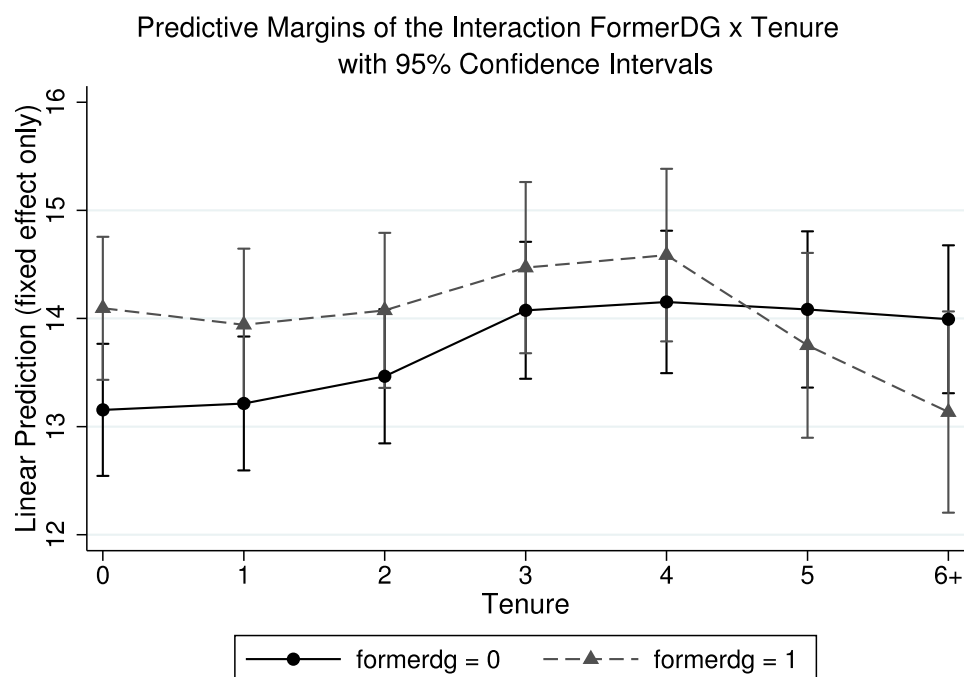


Figure 5: Model (4) Margins Plot with 95% Confidence Interval for Interaction formerDG x tenure.

4.4.6 Summarizing Tested Hypotheses

In sum, the hypothesis tests show the following results:

Hypotheses	Results
Hypothesis 1: DGs in a younger age group spend more on management consulting services than DGs in an older age group.	Rejected
Hypothesis 2: DGs with business degrees spend less on management consulting services than DGs with non-business degrees.	Rejected
Hypothesis 3: DGs with PhD degrees spend more on management consulting services than managers without PhD degrees.	Rejected
Hypothesis 4: Female DGs spend more on management consulting services than male DGs.	Rejected
Hypothesis 5: DGs with previous DG experience spend more on management consulting services than DGs without such experience.	Accepted

Table 7: Results of the Hypothesis Testing.

Hypotheses 1–4 have been rejected. Neither age group, business education, PhD degree nor gender has a significant effect on spending on MCS. However, hypothesis 5, testing for previous experience as a DG, is accepted. A significant positive relationship is found between DGs with previous experience from running public agencies and a higher spending on MCS.

4.5 Interviews with Director Generals

This section is presented in four themes. First, we highlight findings on the setting in which DGs use MCS. Subsequently, we introduce a section concerning the motivation to do so, a discussion on the tested hypotheses and the DGs' thoughts and own experiences on the effect of tenure.

4.5.1 The Setting in Which DGs Use Consultants

To understand how DGs' spending patterns play out, and why they do so, we initially aimed to understand the setting better in which consultants are used. We thereby examined questions such as: How much influence does a DG have? Are others involved in the purchase? Does the government interfere? Are there differences across agencies?

Talking about their influence on the organization and the decisions to hire consultants, all DGs portrayed themselves as having a quite strong influence. Some DGs of larger public agencies mention that department managers can hire consultants for small projects, but the DG controls all larger projects. DG 4 mentions that it was ultimately her⁹ decision to hire consultants, followed by a more general comment on DGs' authority:

"There are not many jobs in the public sector which give you as much power as a Director General" – DG 4

"I would say for limited [consulting contracts], they were completely free. Of course, if [middle managers] wanted to do a bigger thing that was something we discussed."

– DG 6

Similarly, the head of a smaller agency highlights how she had control over all MCS expenses and whether consultants should be used:

"Every agreement that is signed will have to be signed by me." – DG 3

DGs are also free to determine the number of consultants needed without much interference from higher instances:

"The principle is that the people who run the authority know if they should have 10% for offices and 40% for consultants. That's their responsibility. The government and the parliament just decide the total [budget], and then you can use it as you like." – DG 1

However, it seems as if the governmental situation may influence the DGs work to some extent:

⁹ All DGs are presented as females regardless of their gender.

“It's only inexperienced people that change an organization totally three months before an election. Because you have to get the agency on the track again. Then comes a new minister, a new state secretary, you should meet them: ‘How are your results going? I see that it's going down the last six months. Can you explain why?’. And then you say: ‘I did a big reorganization I thought was good’. I think people are very careful” – DG 2

The fact that DGs may hold off reorganizations prior to elections justifies the inclusion of *year* as a random effect in the statistical model. Similarly, the government can influence the DGs through for example new instructions. DG 2 faced a sudden budget cut, which she was informed about shortly after agreeing to take on the job:

*“Next week I was head of [Agency X¹⁰] with 1 billion in savings.
[The Prime Minister] didn't say that” – DG 2*

Others didn't face explicit instructions, but rather silent pressure:

“When I was recruited for [Agency XY], there was no direct instructions but I could feel some wishes they had. I could feel that they were not really pleased and probably that was why I started the change in that organization because I felt that it was expected also from the government, but they didn't exactly tell me what to do” – DG 5

Moreover, leading the agencies seems to be quite similar across organizations, although contextual differences were highlighted by some DGs. The perception of DGs leading organizations in a rather similar “industry” is thus supported:

“But what I learned from being DG is that you have to, like a doctor, make a diagnosis: What is the problem? What is the disease? (...) and this differ of course from organization to organization. (...) you need to have the same kind of management tools whether you are head of [Agency Y] or [Agency Z]. So the general management can be applied to I think most organizations (...) Of course, there are very specialized ones where you use special knowledge. But I think actually they are quite few” – DG 4

4.5.2 The Motivation to Hire Consultants

Subsequently, we aimed to understand better the reasoning behind using consultants. Why are consultants hired and for what kind of projects? Do different DGs hire them for different reasons?

Common for all DGs, regardless of their observable characteristics, is that they seem to view the hiring of management consultants as synonymous to change. They talk about helpers in change projects, reorganizations, cost-cutting and other more practical implementations:

¹⁰ All agency and company names have been replaced to not jeopardize the DGs' anonymity.

“I saw consultants more as a facilitator of change” – DG 4

“In my case, it was more change consultants that helped me reduce the costs and draw change in the organization” – DG 2

“Not everybody is an expert in how to change and how to make that change efficient. You often take in a consultant team who has a model for doing the changes and analyses that you feel confident with it.” – DG 1

Many DGs emphasized a need for help in the implementation of changes, but developed strategies and led change themselves:

“I was in total control, and you have to. Total. You have to. You can't let consultants [pause] you have to tell: I want this and this and this to happen. Otherwise you get out of control. You can't let anyone else change the organization” – DG 2

“And I think also for me using [Consultancy X] at that time not letting them do the job and come with the proposal but instead helping to introduce analytical tool presentations, I think that was part of the success because the responsibility was very, very clear the whole time that the different management people in the organization were completely responsible. That was not the consultancy” – DG 6

Some DGs also mentioned how they had a more ideological motivation for change:

“I needed to set a footprint, and I discovered very soon that the footprint for me in this organization should be to make it a modern organization with high ambitions concerning efficiency (...) So I wanted to create some changes which were visible for everyone to see” – DG 4

4.5.3 Comments on the Tested Hypotheses

After having formed an initial picture of the hiring of consultants, we set out to understand differences in leadership and preferences pertaining to the observable characteristics that could influence spending on MCS.

When asked for the effect of gender in shaping leadership, DG 1 replied:

“I think it was more of if you, not a gender, if you divide people into different groups, if you divide them into different personalities. It doesn't matter whether you are a man or a woman. It's your personality that's important.” – DG 1

Experience however seems to play a role for former DGs:

“Yes, [Former DGs] are in a way specialized. They go from authority to authority. They have the same mission. You have an authority with problems. DG succeeds.”

Then you put him on another authority with problems. You have different DGs specialized in different visions. (...) They are specialized for problem in an authority or if you should cut down costs or if you should get more user satisfaction to make it simple"

– DG 1

4.5.4 Comments on the Effect of Tenure

The last minutes of each interview were allocated to a presentation of the quantitative findings, showing a plotted graph of spending over tenure years (Figure 4) and asking for their interpretations. They all found it reasonable, and proposed similar explanations in line with:

"First you learn how it works and suddenly you get some ideas and then let's implement them. You call for the consultants, and you do the change, and then you are pleased with how things are, and you feel a little bit tired. It's enough now. It's good how it is now" – DG 1

"At the beginning of this 6-year term, actually I didn't take so many initiatives. Because I didn't know this organization (...) And above all, I wanted to know how this organization function, from top to the bottom. So, I think at the first year as a DG, I was traveling two days every week just to learn people, learn what they will do, get a grip out of the situation" – DG 4

Some mentioned how the 6+3-year contract design could have an influence:

"I think it's this activity curve. I think it also reflects, it's a consequence of the system of 6-year terms" – Former DG 4

In sum, DGs seem to have a strong influence on the decision to hire consultants and view them as change agents. They also find the few differences between observable characteristics and the pattern in Figure 4 as reasonable given their experiences. In the next section, a chapter of discussion about possible explanations for the results, as well as their implications, is presented before highlighting our conclusions.

5 Discussion

In this section, we further discuss the above results and combine the hypothesis testing with insights from the interviews. We highlight our main findings and interpretations of what could explain the patterns before ending with a general discussion of the study and its implications.

5.1 Tested Hypotheses

Existing research points towards younger managers as being engaged in more projects with other organizations, being more eager to initiate change and occupied with career progression (e.g. Carlsson & Karlsson; 1970; Esteve, 2013; Van Keer & Bogaert, 2009) whereby we expected younger managers to spend more on MCS. This is however not supported, and the coefficients, although non-significant, points in the opposite direction. Worth noting is, however, that the average age of DGs in our sample for the year 2003 is 55.1 ($SD = 5.4$), perhaps limiting the differences across age groups. Similarly, Van Keer and Bogaert (2009) find that only 10% of public managers are under 40, as compared to 30% in the private sector. Our finding highlights not only that the variable *age* may suit better for studies in the private sector, where the age range tends to be wider, but also that Swedish public managers are appointed at a late, even final, stage in their career. Given the stalled trend of NPM and shift towards a “digital-era governance” (Dunleavy et al., 2005), one can also raise questions of whether the age profile will, or should, remain the same in the future, or if a new generation of younger public managers will lead the digital adoption in the public sector.

Moreover, neither type nor level of education significantly influences spending on MCS. This is in line with Esteve et al. (2013) who find no effect of the type of education on inter-organizational collaboration in the public sector, but in contrast to the authors’ finding that level of education positively correlates with collaborations. Both coefficients, however, point in the expected directions. Again, these results are non-significant and indicate that there are no differences across education. That, on the other hand, is in line with Pfeffer (1981) who claims that a degree does not have a long-term effect on the holder or the organization, but rather functions as a selection criterion in the process of matching individuals and jobs. The fact that only one DG did not have a higher education would point at education thus being a hygiene factor for being considered DG, but not affecting MCS spending. This is in line with DG 3, saying that “It’s probably more down to experience than to education, but your education might also be the basis for the experience you get”.

Like younger managers, we argued that female managers would spend more on MCS as previous studies show that female managers are more likely to use external business advice (e.g. Yazdanfar & Abbasian, 2015). However, this hypothesis was not supported, thereby strengthening the results by Esteve et al. (2013) that no gender differences exist among managers in inter-organizational collaborations. Moreover, Van Keer and Bogaert (2009) find that female

leaders in the public sector “abandon part of their typically female personality traits and adopt a cooler persona”. While contradicting previous studies showing differences amongst genders (e.g. Fox & Schuhmann, 1999; Jacobson et al., 2010; Meier et al., 2006), our findings could reflect that top executive men and women in the public sector show fewer differences than men and women in other settings.

Nonetheless, the hypothesis for former DGs is supported and is in line with Hambrick and Mason (1984) who argue that the industry from which a manager is appointed from influences actions. Returning to the purpose, aim, and research question, we conclude that this variable is the only one of our observable characteristics tested which serves as an indicator of spending patterns, and more precisely for a higher overall level of and a slightly earlier temporal spending on MCS. We are however not just interested in statistically determining the relationships between characteristics and spending patterns. We therefore turn to a discussion on the underlying reasons for the identified results in the subsequent section. Doing so, we combine data, theory and the interviews to form a holistic picture of the situation and drivers of spending on MCS.

5.2 Three Interesting Findings

In extending the discussion on the tested hypotheses, we find the following three findings particularly interesting:

- i) Most observable characteristics seem to have no influence on the spending on MCS.
- ii) Former DGs, however, show different spending patterns than those without the same background.
- iii) Tenure, regardless of the number of variables tested for simultaneously, holds a strong explanatory power of the spending.

Consequently, we combine these findings with results from the interviews to elaborate on possible reasons for why these patterns occur, as well as their implications.

5.2.1 Only A Few Observable Characteristics Seem to Have an Influence

There are several points worth discussing when interpreting non-findings. The first section thus deals with interpretations related to upper echelon theory. Subsequently, a section follows with more contextual reasons for the rejected hypotheses.

5.2.1.1 Interpretations for Non-Findings

In their original article on upper echelon theory, Hambrick and Mason (1984) discuss three reasons for possible non-findings:

- 1) Observable demographic factors do not capture a person's makeup. People are more complex and must be studied more clinically.
- 2) Top managers are more homogenous than their demographic differences would suggest. It takes a certain characteristic to make it to the top, and while rising through the ranks, a certain process of homogenization takes place.
- 3) To study only managerial teams and managers neglects the influence of boards, trade associations, and others on strategic actions. Managers do not have blindfolds on. A "common body of knowledge" (Hambrick, 1982) exists within industries and is used in more or less the same way by executives within that industry.

Hambrick and Mason (1984, p. 204) also highlight that "none of these interpretations can be considered uninteresting". We find, considering these propositions, possible interpretations also for our sample.

Like DG 1's quotes in section 4.5.2 about personality being more important than gender, DG 4 highlighted "*vision*" and "*courage*" as the key components for becoming a successful DG. Both interviewees tap into traits relating to personality, rather than characteristics, and thus touch upon Hambrick and Mason's (1984) first explanation. It is possible that what drives the spending on MCS is not observable, but psychological characteristics.

Interestingly, the characteristic relating to more recent experiences is also the only one that yields significant differences in spending on MCS. Thus, it is possible that demographic characteristics occurring in early stages of a career are not as influential as differences in later stages. It is possible that the influence of, for instance, education is reduced over time through the proposed homogenization process while rising through the ranks. The fact that female executives abandon "female traits" (Van Keer & Bogaert, 2009) also indicates that a funnel process of homogenization could be in place when getting to a managerial position.

We also find some explanation in Hambrick and Mason's (1984) third proposition, that of a "common body of knowledge" (Hambrick, 1982). Around 80% of all DGs participate in development groups, where 5-6 DGs discuss their issues (Asplind, 2009, p. 18). There, much discussion revolves around change projects (Asplind, 2009, p. 22). Our interviewees highlight how they have acted on others' advice and the facilitator of the discussion has been described as giving recommendations based on experiences from working with other DGs. Like the proposed "body of knowledge" by Hambrick (1982), knowledge and experiences can thereby be argued to be transferred between DGs through these discussions, forming a common body of knowledge for DGs which could make them assimilate and act in less extreme ways.

However, we have also identified other circumstances, possibly offsetting differences in the DGs' spending, which will be discussed below.

5.2.1.2 The Influence of the DGs' Environment

Like Hambrick and Mason's (1984) third point above, we find external pressure as a potential factor explaining the lack of visible differences in spending patterns.

Häggroth (2008, p. 179) writes about his experiences as a DG and change projects in the public sector. He finds that the need for change comes mainly from three sources:

- 1) New laws or governmental demands
- 2) New customer demands, new competition, or vague requests from the government about a general cost consciousness
- 3) An internal analysis of change necessary to perform

One interpretation is that all change may not be voluntary from a DG's perspective. This view is supported by Asplind (2009), highlighting that the need for change can come from the contemporary surrounding world, instructions from the government and a DG's analysis (Asplind, 2009, pp. 139-141). Only the latter would be purely based on the upper echelon's perception of the situation.

Consequently, it is possible that change has been forced upon some DGs, and that they had to hire consultants to a different extent than when not facing the same external pressure. These circumstances could dilute underlying differences in the spending patterns.

Need for change by external parties is in line with Furusten (1999), who argues that organizations are subjects to institutional pressure. Our interviewees highlight both how some pressure comes from direct instructions, but also that some change was initiated due to a perception of what the government demanded. This is in line with March (1981) and Sevón (1996) who highlight that when facing different situations, managers will refer to patterns within the institutional dimension of what situation they are in, and what is demanded from them.

Moreover, the three sources of change proposed by Häggroth (2008) are not completely different from the individual, organizational, and institutional level proposed by Furusten and Werr (2009). While we have emphasized the individual level, it is possible that the other two outplay, or at least dilute, differences amongst managers. Moreover, these factors are, as highlighted, apparent in our interviews and seem to explain some of the DGs' decisions to hire consultants. This reasoning corresponds with Papadakis and Bourantas (1998) who find that CEO characteristics significantly influence technology innovation, but that organizational and environmental factors on aggregate are more influential.

5.2.2 Former DGs Spend More

Although we have so far discussed non-findings, one hypothesis was accepted as former DGs spend significantly more on MCS. This supports Hambrick and Mason's (1984) general claims of experience shaping managers' cognitive and emotional givens, as well as Asplind's (2009) perceptions of differences among former DGs and first-time DGs.

Why then are former DGs spending more? Apart from the arguments in our hypothesis generation, one reason could be that successful changes in one agency lead to a new nomination as a DG in another. It seems as if DGs normally start out in smaller, more quiet organizations before moving on to bigger and more problematic agencies (J. & G. Asplind, personal communication, April 11, 2017). People with previous background as a DG seem more often to be appointed in agencies with a need for change, and their instructions when entering office are more often to implement something, or to steer things up, as brought up by DG 1 in section 4.5.3.

DG 1's quote, however, indicates that there could be a reversed causality. For instance, a firm's spending on R&D is perhaps not driven by a CEO with R&D background, but firms which spend a lot on R&D could actively look for CEOs with R&D experiences (Datta & Guthrie, 1994; Barker & Mueller, 2002). In our case, former DGs could more often be appointed in troubled organizations and thus spend more on MCS because their organizational environment demand so, rather than the spending being driven by the DG's values and lenses. This correlation is hard to observe, as results and troubled public organizations are difficult to identify objectively. However, as former DGs prove themselves, they may not only be assigned to troubled organizations but to increasingly complex organizations, which could demand more consultants than organizations with less complex tasks. While public agency types in our sample in different COFOG areas show no differences in spending on MCS, we cannot rule out that other ways of grouping the complexity of the organizations would show differences. When examining 600 managers of S&P 500 companies, Birshan, Meakin and Strovink (2016) find, however, that the type and amount of strategic actions initiated was surprisingly similar regardless of whether the manager joined a successful or non-successful firm. The managers made strategic moves, such as changing the leadership team, initiating cost-reductions, or organizational redesigns at roughly the same rate. Nonetheless, while such a study points towards the performance of the organization as playing a minor role, it is worth bearing in mind that a connection between troubled agencies and former DGs could exist when assessing the causes for the significant relationship in our study. This would point towards McGuire and Silvia's (2010) findings, where local emergency managers facing severe problems were significantly more likely to use collaborations to solve them.

It could, on the other hand, also be the case that former DGs have positive experiences from using consultants during their previous appointment and thus use them more frequently. Being DG puts the manager in a position where consultants are more frequently used than for example when working within a ministry, or many of the other employments from which first-time DGs are appointed. Former DGs may be more confident in using consultants if they also made use of external expertise in their previous employment. Studies show that the chronology between a need for consultants and the establishment of a trustful relationship is not always followed, but that an established relation often functions as a prerequisite for triggering the need (Furusten & Werr, 2009). Relatedly, around two-thirds of consulting revenues comes from existing satisfied clients (Armbrüster, 2006, p.95). One could also think of a Darwinist process taking place. It is not unlikely that successful DGs get the opportunity to take on another term more often than those who were not as successful. The group of former DGs should thus be comprised of people with previous success from running public agencies. If they were successful and used management consultants during that time, one could imagine that they were satisfied with the consultants. One could thus tentatively propose that the subgroup of former DGs consists of people to a large extent with previous positive experiences from using consultants, which often triggers the need for MCS and increases the likelihood of turning to management consultants.

Another finding supporting former DGs having either instructions to change or a greater confidence in using consultants is the temporal aspect in which they use them. As can be seen in Figure 5, former DGs tend to spend more than non-former DGs during tenure year 0-4, but significantly less during year 5 and 6+. They are in other words quicker in their decision to use consultants and finished with their projects earlier, indicating a potentially clearer agenda from day one. Moreover, Forbes (2005) finds that entrepreneurs with previous entrepreneurial experience are quicker in taking strategic decisions, and our results in a similar way indicate that managers in a familiar setting navigate quicker.

Nonetheless, while the effect of former DGs is significantly positive, the main driver of spending is perhaps tenure, as will be discussed in the next section.

5.2.3 The Effect of Tenure

The interviewed DGs find a peak in spending in tenure year 3 and 4 far from unreasonable. Similarly, they see a common life cycle for a DG regardless of observable characteristics. When testing for various combinations of variables other than tenure, year 3 and 4 constantly show a significantly positive effect on spending. This strengthens the results by Perner et al. (2014, 2016) who found a similar pattern and was accordingly not unexpected. Nonetheless, the robustness of the variable tenure in year 3 and 4 is surprising. Examining different DG

groups and their spending on MCS during their time in office, we find that all tested characteristics follow comparable temporal patterns. Given this finding and the descriptions from the interviews, it is reasonable to draw the conclusion that tenure has a greater influence on spending on MCS than other observable characteristics.

As shown by Perner et al. (2016), the strong effect of tenure on MCS spending follows Hambrick and Fukutomi's (1991) reasoning, who emphasize how managers move through phases during their time in office; starting carefully, opening for external advice but ultimately exhibit less dependence on external actors. The shape of spending also resembles that found by Birshan, Meakin and West (2017) who examine deals activity, i.e. mergers, acquisitions, and divestitures within the S&P 500. They find a curve along a CEOs tenure similar to our findings, with a substantial increase of deals in year 2–4 followed by a decrease from year 5 onwards. The authors propose that the shape of the curve wanes mainly because of two reasons: a need for the organization to take a break and handle the integration, and subsequently CEO conservatism and unwillingness to take on risk at a later stage of his/her tenure. This fits the response from our interviews and the picture painted of DGs being satisfied and tired after having carried out change. As shown by DG 4's quote, some DGs also highlight how a pre-determined contract of 6+3 years could influence and explain the actions taken during a DG's tenure. While tenure is a strong indicator of spending, we will now turn to a more general discussion about the findings.

5.3 A General Discussion About the Study

Combining the above reasoning, we propose that although DGs have a strong influence on the spending on MCS, they are not easily grouped into subgroups that show clear different patterns. On an individual level, other parameters than those tested for, such as personality, may be the drivers of spending on MCS. However, although theory suggests that managerial characteristics influence many strategic actions, a lack of differences could relate not just to individuals, but also to the nature of purchasing MCS. In this process, managers' values and lenses may not affect action to the same extent as for other decisions. Moreover, external pressure as described in section 5.1.2 and organizational context may dilute differences and partly explain the spending.

The effect of tenure points towards another interesting proposition and even more so combined with the effect that hiring a former DG has on spending on MCS. Many researchers have paid interest to the question "Do executives matter?" (e.g. Lieberman & O'Connor, 1972, Weiner & Mahoney, 1981, Thomas, 1988). A potential reason for the lack of research on top executives' influence on spending on MCS could be the perception that it is not solely one person that purchases MCS, but rather a team, or also middle managers. While such situations occur in the studied organizations, our interviews, and the quantitative results point to the question

above being positively answered also concerning an organization's spending on MCS. We find significant effects of an individual executive and the organization's spending, both in relation to executive characteristics and tenure. Given these findings, the previously neglected influence of the individual calls for more research. It also adds a nuance to the client–consultant relationship, as managerial background and situation evidently hold explanatory power on the organizations' actions.

Moreover, one interesting finding expressed when interviewing DGs is the apparent interchangeability of “change” and “consultants” in their eyes. The perceptions of consultants as carriers of change fit well the established view of consultants as change agents in the management consulting discourse (e.g. Greiner & Metzger, 1983). The interviews suggest that changing a DG comes with new change projects and the quantitative analysis highlights that a new DG implies a new cycle of spending on MCS, with a peak in tenure year 3 and 4. Combining the above, changing a DG thereby seems to equal a new six-year-reign with the initiation of change projects, for which consultants are hired as change agents, mainly in tenure year 3 and 4.

Birshan et al. (2017) find that S&P 500 managers using a consistent strategy for deals activity, typically 3–4 smaller deals per year, outperform their peers with 3% on stock price development over their tenure. Managers making large acquisitions on the other hand typically destroy shareholder value. While deal transactions in the private sector are quite different from most change projects in the public sector, it still begs the question of whether tenure cycles with apparent large change projects in a middle phase or continuous smaller projects are the most efficient for the steering of public organizations. The pattern of MCS spending and change agendas also raises some questions about the long-termism of how public organizations are run. Returning to Jackall (1988) and Macdonald (2006), managers can use consultants for career or political purposes rather than business purposes. If DGs are eager to leave a visible footprint during their six years in charge, as highlighted by the quote by DG 4, and are evaluated on the results during that period, there is a possibility that visible change during their tenure comes at the expense of decisions that would have been better for the agency in the long-term. If not all changes by the DGs are necessary, and perhaps even erased by the successor, public funding could have been used better in other initiatives. When combining the identified peak of MCS spending, which seem to proxy initiated change over a DG's tenure, with Birshan et al. (2017) who found that many smaller changes outperform few large ones, the role of the board becomes increasingly important to ensure a long-term consistency in the strategic agenda of a public agency.

As shown, NPM has changed the role of boards and top-management teams (Hood, 1991; Simpson, 2014) and we believe that the board has an important role to play not just to make

sure the DG follows a long-term strategy, but also to combine the interest of several stakeholders. Consultants on the one hand form “shadow governments” (Guttman & Willner, 1976) and remove some of the governing power from policy-makers (Craig & Brooks, 2006). On the other hand, some ministers try to steer public agencies in subtle ways (Pierre, 2004). Governments want to carry out their agendas and policies during their elected time, and DGs want to implement visible change. Combining the interests of consultants, ministers, governments and DGs, one could think that instructions, directions, and agendas may change regularly in a public agency, whereby the board needs to work for what is best in the long-term to fulfill the purpose of the agency.

As mentioned, however, results are hard to follow up in the public sector and whether other stakeholders influence the agenda and whether DGs are aligned to the agency’s long-term strategy is difficult to tell. Nonetheless, we believe that our identified temporal pattern in which new DGs seem to change the organizations is useful information for the public and the government in their process of governing the agencies, selecting, and replacing DGs, formulating their missions and in designing and evaluating a system of pre-determined DG tenure.

6 Conclusions

In this last chapter, we present our conclusions and summarize the key findings and above discussion regarding implications for the purpose and aim of this thesis. Theoretical contributions and managerial implications are followed by possible limitations and suggestions for further research.

The motivation for this thesis was the neglected client side in the client–consultant relationship, the neglected influence of public managers' characteristics on actions given their strong position within public agencies, and a traditional lack of empirically-driven research on MCS. The aim was thus to investigate links between DGs' observable characteristics and spending on MCS as well as potential reasons for them. We found a research gap in that very few had emphasized the effect of executives on an organization's use of MCS and how their observable characteristics affect their spending patterns. To examine this, we built on upper echelon theory (Hambrick & Mason, 1984) and combined an analysis of longitudinal data of 103 DGs in 47 Swedish public agencies between 2003–2011 with interviews of six current and former DGs. The quantitative analysis established the DGs' spending patterns, which were later confirmed and elaborated upon through the in-depth interviews, thereby improving the balance and perspective of the patterns.

In the context of the Swedish public sector, our findings can be summarized in several points: (i) DGs have a strong influence on the decision to hire consultants. (ii) *Consultants* are perceived as a synonym to *change agents*. (iii) Consultants tend to be used rather as helpers in implementing new strategies than creating them. (iv) Career experiences – i.e. having been a DG before when taking on the DG role – have a significant positive effect on spending on MCS. Former DGs spend on average 64–69% more on MCS than first-time DGs keeping everything else equal. (v) Former DGs also have earlier spending patterns, with significantly less spending during the last years of their tenure. (vi) Gender, age, and type and level of education show no significant effects on the spending. (vii) A DG's tenure significantly affects the spending on MCS regardless of other variables tested for simultaneously. We can thereby strengthen earlier findings by Perner et al. (2016) and find that DGs spend roughly twice the amount on MCS in tenure year 3 and 4 compared to the first year in office. (viii) We also find that not just the DG characteristics, but also the organizational context and external pressure can explain parts of the spending pattern.

In sum, although DGs have a strong influence on the spending on MCS, we find that the tested observable characteristics do not significantly influence the spending except former career experience. Although organizational context and institutional pressure play some role, tenure seems to be the main driver of spending on MCS in the Swedish context.

6.1 Theoretical Contributions and Practical Implications

We believe this kind of study is important for several reasons and has both theoretical contributions and practical implications.

We contribute theoretically in different ways. First, given the shortage of research conducted on public managers (Andersen, 2010), these findings help to paint a more holistic picture of their role in organizations. As highlighted by Esteve et al. (2013), the influence of public managers' characteristics has gone largely unnoticed, and linking characteristics to the usage of consultants is research within a new avenue.

Second, we add to the current accumulation of knowledge regarding the validity of upper echelon theory since previous studies show both significant and non-significant relationships between upper echelon characteristics and organizational outcomes (Wang et al., 2016). While the application of upper echelon theory so far has focused largely on U.S. firms (Hambrick, 2007), we provide another context with the Swedish public sector and show that upper echelon theory is also valid for spending on MCS, a field neglected so far.

Third, we contribute to research on MCS and in particular to the relatively limited knowledge of it in the public sector (Saint-Martin, 2012). Even more, a traditional shortage exists for studies on individual levels (Sturdy, Werr, & Buono, 2009; Saint-Martin, 2012) which we contribute to with new knowledge about an executive's role in the purchasing of MCS. We also add to a traditional lack of both empirical studies on MCS and the clients' perception of the client-consultant relationship (Pemer, 2008). By doing so, we have aimed to advance knowledge of the under-researched buyer side of MCS.

Although a study linking psychological characteristics to spending on MCS could have yielded larger differences, observable characteristics are easier to act upon for external parties who might have an interest in the manager's strategic action (Barker & Mueller, 2002). Relatedly, the study holds practical implications for several actors.

First, the effect of tenure implies that civil servants working in – or others affected by – public agencies can expect change projects being initiated and consultants hired with a peak when a DG reaches 3-4 years in office. All studied DG groups are highly driven by tenure in their spending patterns. Even more consultants can be expected to be hired when a former DG steps in. Knowing this, employees can prepare for organizational change in advance. Additionally, the knowledge about DGs' actions, change projects, and resource allocation is of interest for taxpayers in Sweden.

Second, the strong effect of tenure is valuable for policy makers involved in selecting, replacing, and evaluating DGs. As shown, new DGs will most likely embark on a journey of change following the found temporal patterns. The interviewed DGs also highlight how they want to

put a personal touch on the organizations and carry out visible changes. Moreover, we find that the temporal pattern may be driven by the Swedish 6+3-year contracts design. As such, policy makers need to consider what implications this has on the actions DGs are taking and how boards are used in ensuring long-term consistency of the agencies' strategies. We also find that former DGs can serve as the government's change agents, given that they spend significantly more than their counterparts.

Third, knowing which DGs are likely to hire consultants and their temporal hiring patterns enables management consulting firms to develop a tailor-made approach for public agencies. Although a procurement act lessens the possibilities of targeting executives, a better understanding of public agencies and their executives' actions holds practical value for management consulting firms, particularly given the rapid increase in spending on MCS by public organizations and their growing importance as clients for management consulting firms.

In sum, we contribute to a deeper knowledge of public managers' characteristics, the validity of upper echelon theory, and the buyer's side of MCS. This has implications for the government, civil servants, taxpayers, and management consulting firms. Apart from the contributions above, more is still to be researched which will be discussed below, after presenting certain limitations that the study has.

6.2 Limitations

One should consider the Swedish context before extrapolating the results. Public agencies in Sweden are famous for their transparency and autonomy (Pierre, 2004). Although some public sectors share similarities with that in Sweden, there are country-specific differences for public agencies (Verhoest, Thiel, Bouckaert, & Lægreid, 2016). Another factor is the mentioned 6+3-year contract design for Swedish DGs. Together, these factors could influence the spending patterns. The fact that the most contextual variable was the one yielding a significant result is another factor with limited possibilities for drawing generalizable conclusions. We find that previous career experiences have a greater influence than other variables but being DG in a Swedish public agency is naturally circumstantial and not easily interpreted universally.

Smeltzer and Ogdon (2002) highlight how industry differences, organizational contexts, and company culture can serve as an explanation for different purchasing behaviors. Similarly, Hambrick and Mason (1984) propose that a comparison between upper echelons should be carried out within, rather than across, industries. We delimited the public agencies in our sample according to Statistics Sweden's (2017) classifications and subsequently grouped them according to COFOG areas. The public agencies showed no significant differences in spending on MCS. As a result, we concluded that no major differences explained by the organizational contexts exist and that the agencies could be treated as equal. Nonetheless, each agency faces specific challenges. When isolating and emphasizing the effect of individuals,

one should acknowledge the fact, as found throughout this study, that organizational factors to some extent are always present and may influence the results.

6.3 Suggestions for Future Research

Our findings are a first attempt to close the identified research gap. We encourage other researcher to follow this path and point out six areas of future research.

First, as highlighted previously, underlying differences in personalities are not necessarily captured by observable characteristics (Hambrick & Mason, 1984). Hence, we call for a study that examines differences in spending patterns on MCS across personality types.

Second, we have used interviews to aid answering the research question. Nonetheless, some conclusions which seem to appear across interviews cannot be fully drawn with confidence from the interview sample. Thus, a deeper assessment of some of the topics discussed are proposed. For example, while most of our interviewees describe the consultants as advisors in an implementation phase and few as purely strategic advisors, it would be interesting to cluster consulting projects by type and measure how certain DG characteristics correlate with different clusters of project types. Similarly, we propose for future research to consider larger studies examining whether different kinds of DGs have different needs or reasons for hiring the consultants and whether they hire the same consultancies again or different ones.

Third, although we show how previous career experiences significantly influence spending on MCS, we were not able to test for the effect of previous consultants now being on the buyer side (Saint-Martin, 2012) due to the lack of previous consultants in our data sample. Hence, we encourage researchers to examine this characteristic with a different sample.

Fourth, our findings highlight that a more recent characteristic – former DG experience – influences action in contrast to older, or ever-present, characteristics such as education and gender. While upper echelon theory makes no difference on the types of characteristics, we suggest examining which types of characteristics serve as the best predictors of action, and whether researchers could improve the theory by grouping and treating characteristics differently.

Fifth, we have discussed how DGs' perceive *change* and *consultants* as interchangeable. This provides insights to and a starting point for a discussion on other strategic actions by top executives in public organizations. By finding a significant link between certain kinds of executives and spending on MCS, it is possible that an indirect link between DG characteristics and amount of initiated change also has been found. Nonetheless, such conclusions would be interesting to examine further. Our empirical findings encourage a more thorough examination of upper echelons in public organizations and possible other outcomes such as initiated change, development, public support and ultimately performance. It also opens for broader

research on the aspects of how, and by who, change projects are carried out in the public sector.

Finally, we encourage researchers to replicate our study in public sectors outside of Sweden. There is also reason to believe that CEO characteristics in the private sector, especially across different industries, play a different role than those in the public sector as the institutional logics of the private and public sector differ substantially (Brunsson, 1994; Meyer & Hammerschmid, 2006a, 2006b; Pache & Santos, 2010). Therefore, results would be interesting to see also from the private sector. The more research conducted, the greater the understanding of managers, organizations, and the hiring of management consultants.

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Appendices

Appendix A

Development and split of spending on management consulting services in Europe based on FEACO (2016) and Sweden (based on our own sample)

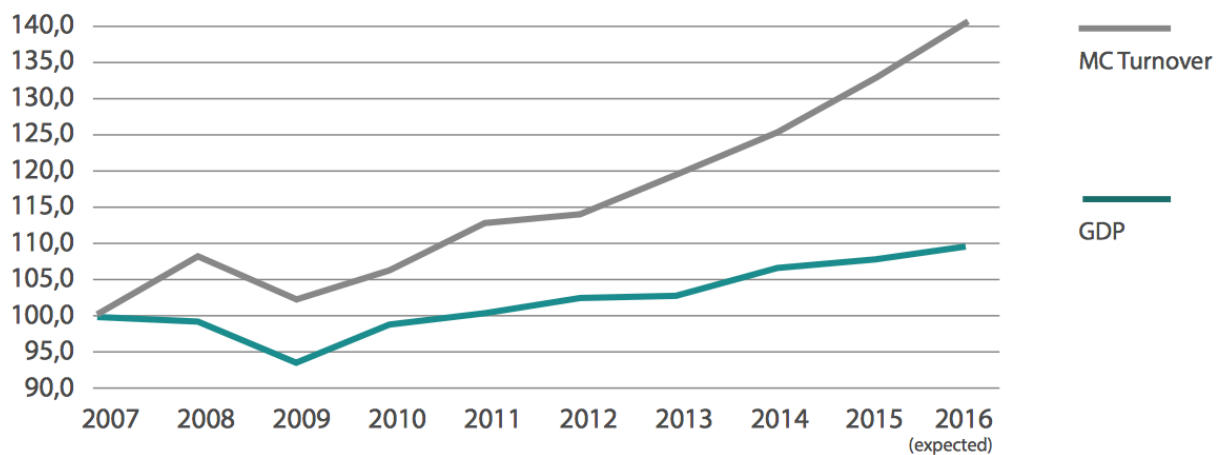


Figure A1: Management Consulting (MC) turnover and GDP in Europe with fixed base index 2007=100. Reproduced of FEACO (2016).

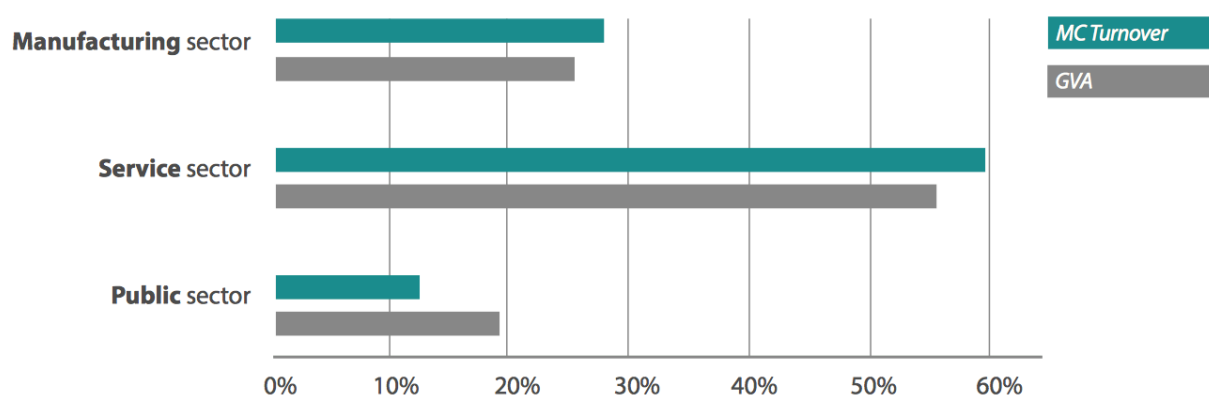


Figure A2: European Management Consulting (MC) Turnover vs Gross Value Added by economic sectors in 2015. Reproduced of FEACO (2016).

The sum of spending on management consulting services for the public agencies in Sweden has been growing rapidly (CAGR 17.5%) in between 2003 and 2011 (Figure A3).

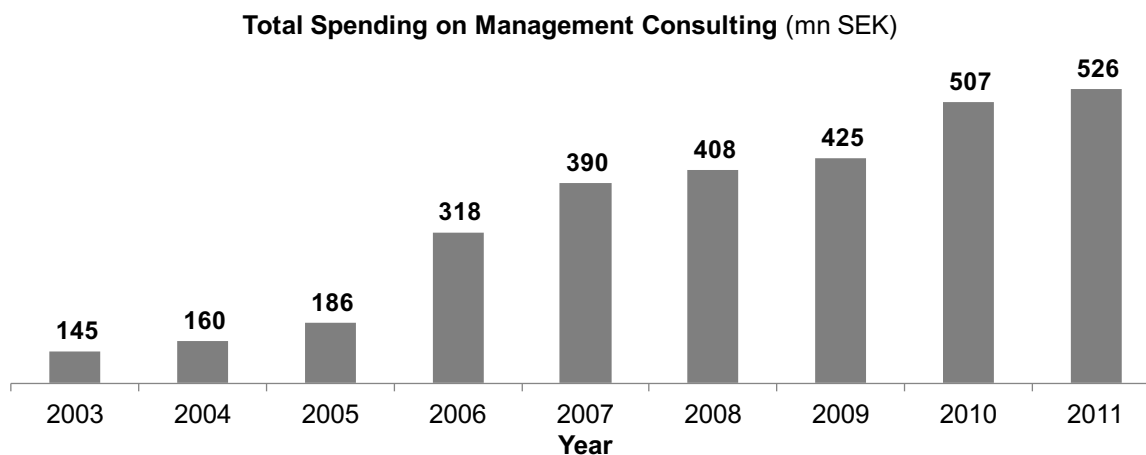


Figure A3: Sum of Public Agencies' Total Spending on Management Consulting Services by year in mn SEK based on our sample.

The increase in public agencies' total income is much smaller (CAGR 2.6%) in between 2003 and 2011 (Figure A4).

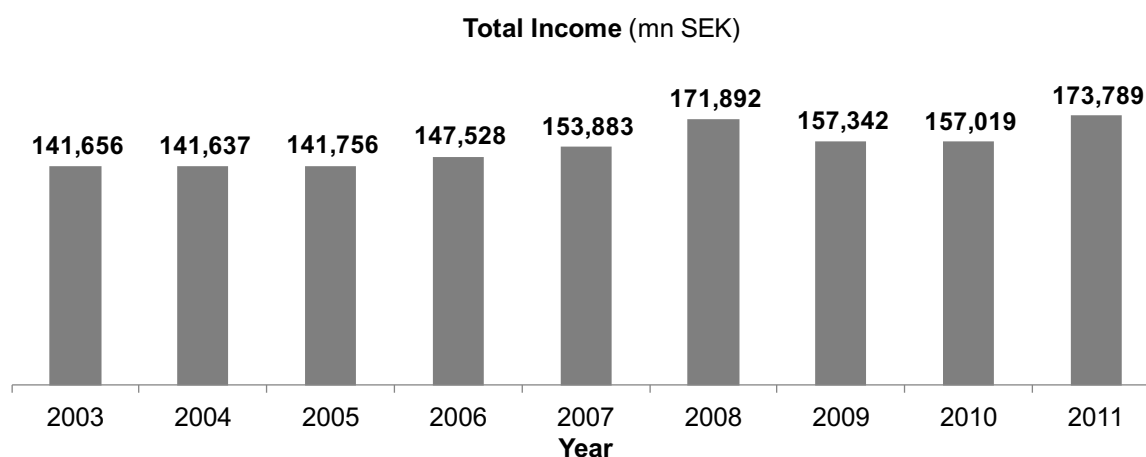


Figure A4: Sum of Public Agencies' Total Income by year in mn SEK based on our sample.

The relative spending on management consulting services in relation to income has therefore increased from about 0.1% in 2003 to 0.3% in 2011.

Appendix B

Overview Classification of the Functions of Government (COFOG)

Source: United Nations Statistics Division (2017)

01 - General public services

- 01.1 - Executive and legislative organs, financial and fiscal affairs, external affairs
- 01.2 - Foreign economic aid
- 01.3 - General services
- 01.4 - Basic research
- 01.5 - R&D General public services
- 01.6 - General public services n.e.c.
- 01.7 - Public debt transactions
- 01.8 - Transfers of a general character between different levels of government

02 - Defence

- 02.1 - Military defence
- 02.2 - Civil defence
- 02.3 - Foreign military aid
- 02.4 - R&D Defence
- 02.5 - Defence n.e.c.

03 - Public order and safety

- 03.1 - Police services
- 03.2 - Fire-protection services
- 03.3 - Law courts
- 03.4 - Prisons
- 03.5 - R&D Public order and safety
- 03.6 - Public order and safety n.e.c.

04 - Economic affairs

- 04.1 - General economic, commercial and labour affairs
- 04.2 - Agriculture, forestry, fishing and hunting
- 04.3 - Fuel and energy
- 04.4 - Mining, manufacturing and construction
- 04.5 - Transport
- 04.6 - Communication
- 04.7 - Other industries
- 04.8 - R&D Economic affairs
- 04.9 - Economic affairs n.e.c.

05 - Environmental protection

- 05.1 - Waste management

- 05.2 - Waste water management
- 05.3 - Pollution abatement
- 05.4 - Protection of biodiversity and landscape
- 05.5 - R&D Environmental protection
- 05.6 - Environmental protection n.e.c.

06 - Housing and community amenities [not existent in our sample]

- 06.1 - Housing development
- 06.2 - Community development
- 06.3 - Water supply
- 06.4 - Street lighting
- 06.5 - R&D Housing and community amenities
- 06.6 - Housing and community amenities n.e.c.

07 - Health [not existent in our sample]

- 07.1 - Medical products, appliances and equipment
- 07.2 - Outpatient services
- 07.3 - Hospital services
- 07.4 - Public health services
- 07.5 - R&D Health
- 07.6 - Health n.e.c.

08 - Recreation, culture and religion [not existent in our sample]

- 08.1 - Recreational and sporting services
- 08.2 - Cultural services
- 08.3 - Broadcasting and publishing services
- 08.4 - Religious and other community services
- 08.5 - R&D Recreation, culture and religion
- 08.6 - Recreation, culture and religion n.e.c.

09 - Education

- 09.1 - Pre-primary and primary education
- 09.2 - Secondary education
- 09.3 - Post-secondary non-tertiary education
- 09.4 - Tertiary education
- 09.5 - Education not definable by level
- 09.6 - Subsidiary services to education
- 09.7 - R&D Education
- 09.8 - Education n.e.c.

10 - Social protection

- 10.1 - Sickness and disability
- 10.2 - Old age

10.3 - Survivors

10.4 - Family and children

10.5 - Unemployment

10.6 - Housing

10.7 - Social exclusion n.e.c.

10.8 - R&D Social protection

10.9 - Social protection n.e.c.

Appendix C

Interview Guide

Change projects

- What kind of projects were initiated during your time as a Director General?
- What was the reasoning behind them?
- What were the goals?
- Were you supposed to come in and change? Was this an instruction by the government?
- Did you know already from the start what needed to be changed?
- How much are you adapting to the environment and how much are you looking at the organization and necessary "internal changes"?

The DG's influence and environment

- How much influence do you have in the agency's decisions? Who else are involved? Who do you report to?
- What is your contact with the government like?
- How involved are you in what happens at the agency?
- Do you know all the details of your agency's operations or do you delegate a lot?
- Do you think your leadership influences the agency's culture?
- Director Generals are often the main expert at his/her agency. Do you think this influences the leadership, in contrast to some Director Generals having little or no experience from the agency's field?
- What are the most crucial components for being a successful Director General?
- How much does the opinion in the society affect a Director General's decisions?
- Were you assigned on a 6+3-year contract?

Management consultants

- How does the process of hiring management consultants look like?
- Who is involved in the procurement phase? Who is involved in the project phase?
- Do you have knowledge/control over all projects?
- Do you have to formally approve all purchases? How free are others to hire consultants?
- Was there more than one project up and running at the same time?
- Is there an assigned budget for MCS purchases or is it based on a case-to-case basis?
- Why are consultants called in? For what kind of projects did you use them?
- How long are the projects usually and for how long are the consultants hired?

Discussions with other/former DGs

- How much contact did you have with others in similar positions?
- Did you attend any of the meeting groups?
- Did you ever discuss the use of consultants?
- Have you experienced differences among certain kinds of Director Generals and how they act?
- Have you experienced differences across agencies and their management issues?

Discussion about our findings from the quantitative analysis

- What is your initial take on these findings? Do they make sense to you?
- Do you think observable characteristics could possibly influence the spending?

Appendix D

Interview Overview

Name	Date	Duration	Type
Industry Expert	2017-03-07	1h 10 mins	Face-to-face
DG 1	2017-03-20	1h 30mins	Face-to-face
DG 2	2017-03-21	1h 15mins	Face-to-face
DG 3	2017-04-03	1h 05mins	Face-to-face
DG 4	2017-04-04	2h 00mins	Face-to-face
Jan and Gunilla Asplind	2017-04-11	1h 55 mins	Face-to-face
DG 5	2017-04-19	1h 05 mins	Face-to-face
DG 6	2017-04-24	0h 45 mins	Telephone

Appendix E

Estimation results for Models (5) to (8)

Model	(5)	(6)	(7)	(8)
Estimation Method	REML	REML	REML	REML
<i>Fixed Part</i>				
β_0 [intercept]	0.708 (2.940)	0.733 (2.973)	0.473 (2.905)	0.760 (2.930)
β_1 [ln_income]	0.612*** (0.140)	0.617*** (0.141)	0.622*** (0.138)	0.613*** (0.139)
β_2 [tenure1]	-0.052 (0.183)	-0.050 (0.182)	-0.050 (0.138)	-0.053 (0.182)
β_3 [tenure2]	0.147 (0.196)	0.145 (0.192)	0.150 (0.192)	0.147 (0.193)
β_4 [tenure3]	0.685** (0.218)	0.684** (0.210)	0.684** (0.210)	0.684** (0.211)
β_5 [tenure4]	0.751** (0.234)	0.754*** (0.222)	0.752*** (0.222)	0.747*** (0.223)
β_6 [tenure5]	0.383 (0.265)	0.385 (0.253)	0.385 (0.254)	0.378 (0.255)
β_7 [tenure6plus]	0.176 (0.280)	0.175 (0.254)	0.196 (0.257)	0.172 (0.258)
β_8 [age_50_59]	0.054 (0.236)			
β_9 [age_60plus]	0.036 (0.302)			
β_{10} [business]		-0.262 (0.273)		
β_{11} [phd]			0.354 (0.328)	
β_{12} [female]				-0.117 (0.240)
<i>Random Part</i>				
$\sqrt{\psi^{(4)}}$ [year]	0.430	0.428	0.433	0.433
$\sqrt{\psi^{(3)}}$ [agency]	1.354	1.390	1.324	1.342
$\sqrt{\psi^{(2)}}$ [dg]	0.745	0.718	0.761	0.754
$\sqrt{\theta}$	0.943	0.942	0.939	0.940
Public agencies	47	47	47	47
DGs	103	103	103	103
N	329	329	329	329
-2*Log Likelihood	1098.822	1096.308	1095.648	1097.178
AIC	1126.822	1122.308	1121.648	1123.178
AIC _c	1128.160	1123.464	1122.804	1124.334
cAIC	1193.967	1184.657	1183.997	1185.527
BIC	1179.967	1171.657	1170.997	1172.527

Standard errors in parentheses + $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$ for fixed effects

Appendix F

Graphical visualization of residuals for Models (0) to (8)

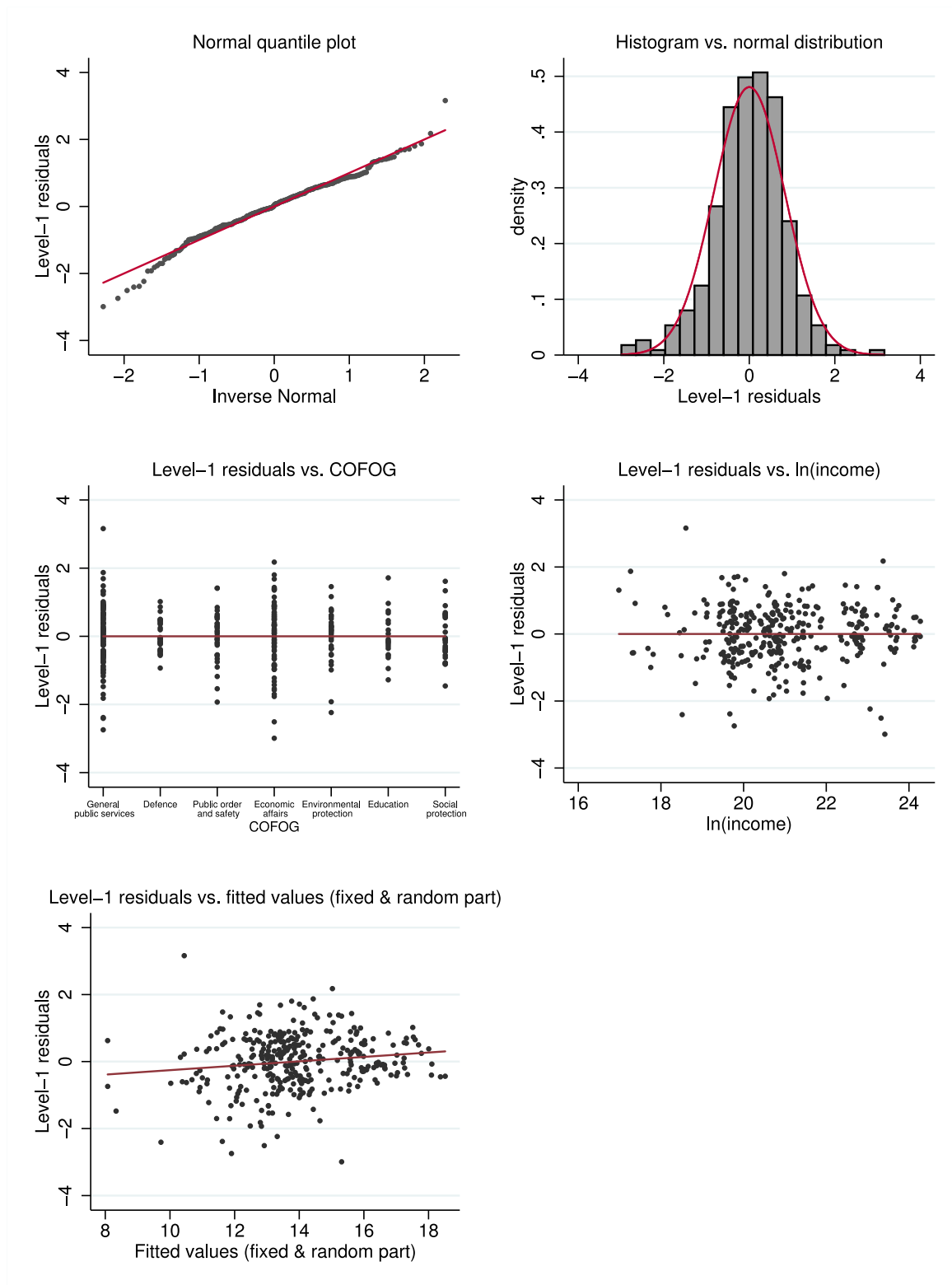


Figure C1: Various level-1-residual plots of model (0).

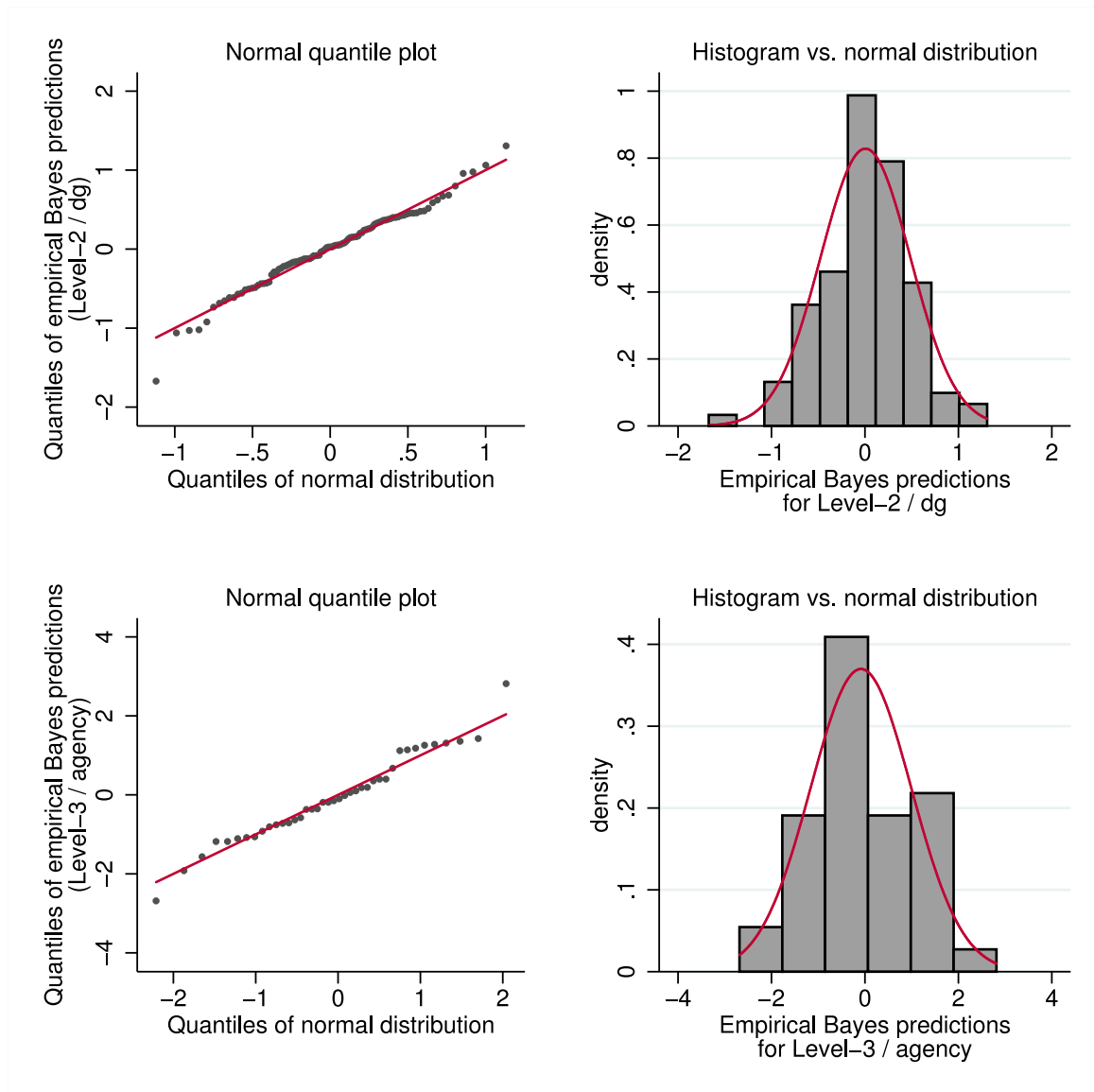


Figure C2: Various level-2 and level-3-residual plots of model (0).

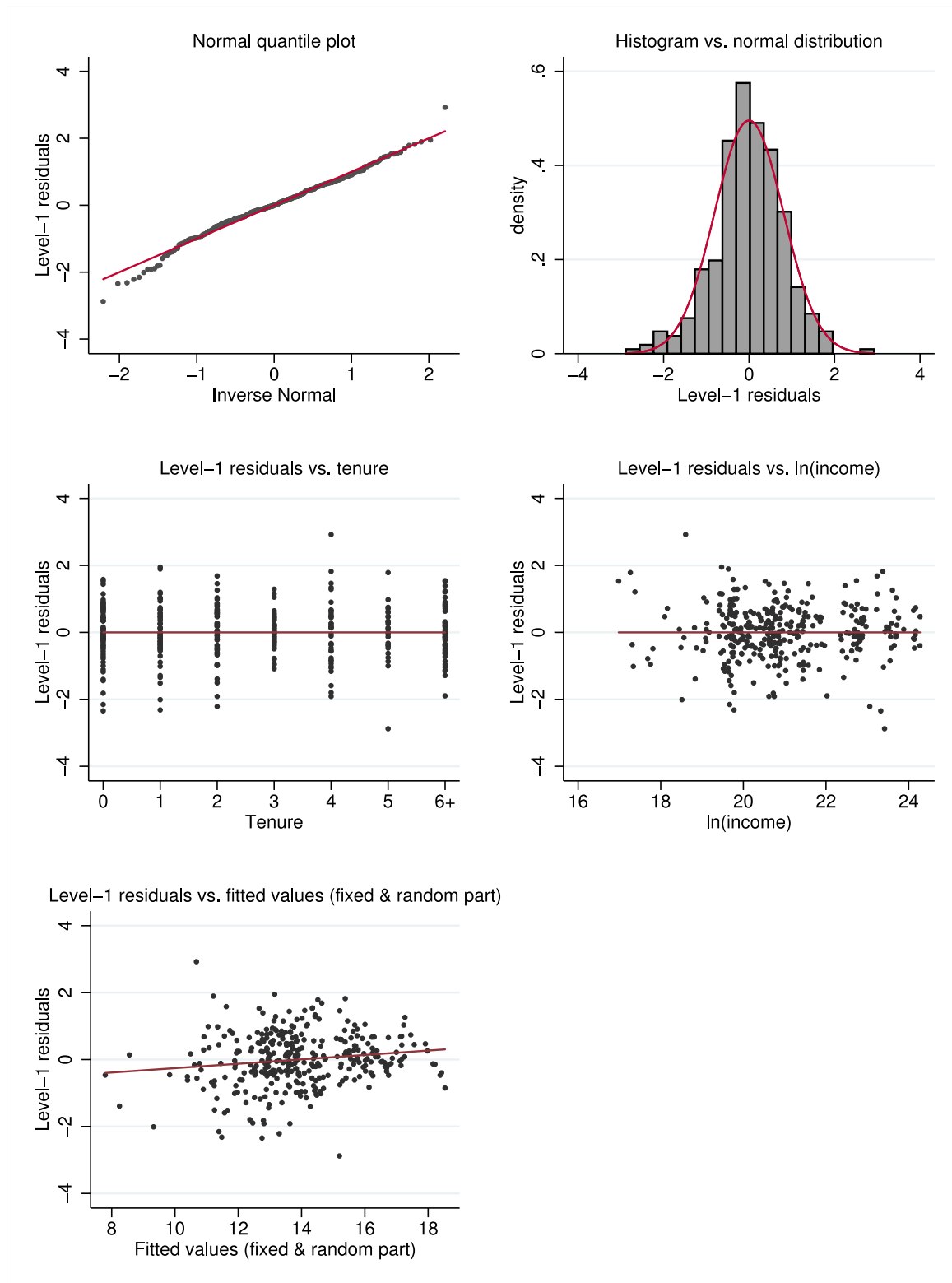


Figure C3: Various level-1-residual plots of model (1).

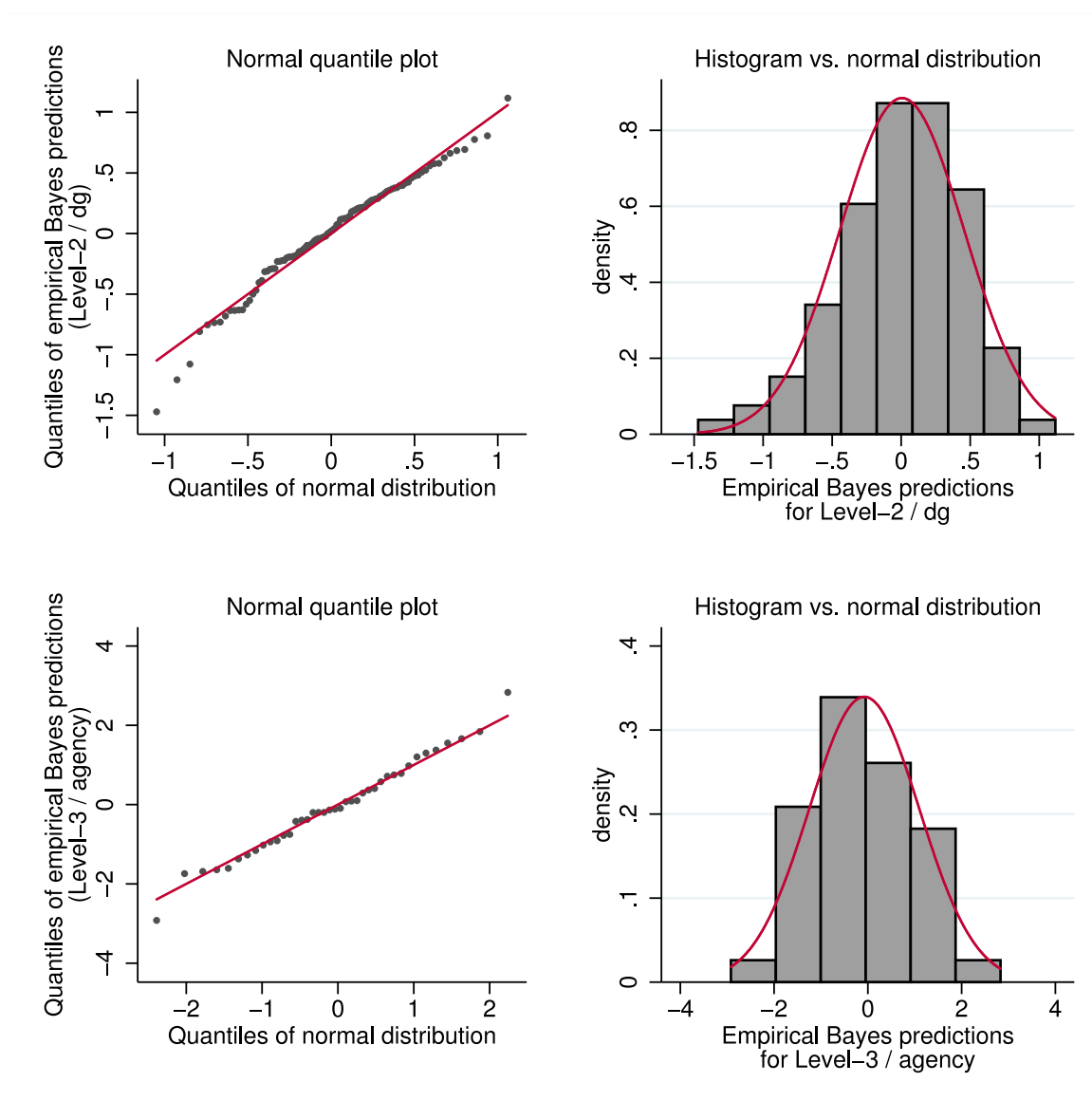


Figure C4: Various level-2 and level-3-residual plots of model (1).

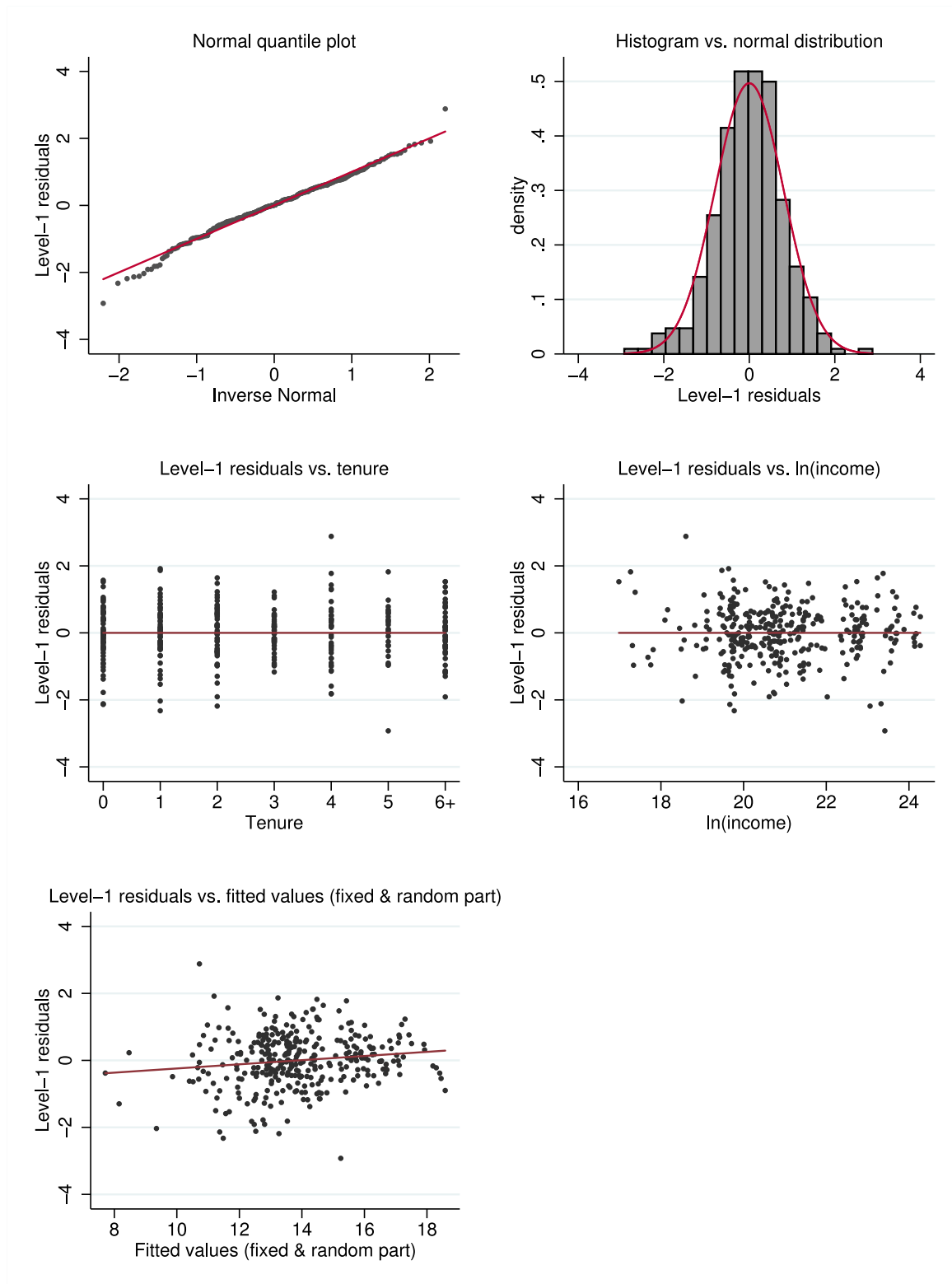


Figure C5: Various level-1-residual plots of model (2).

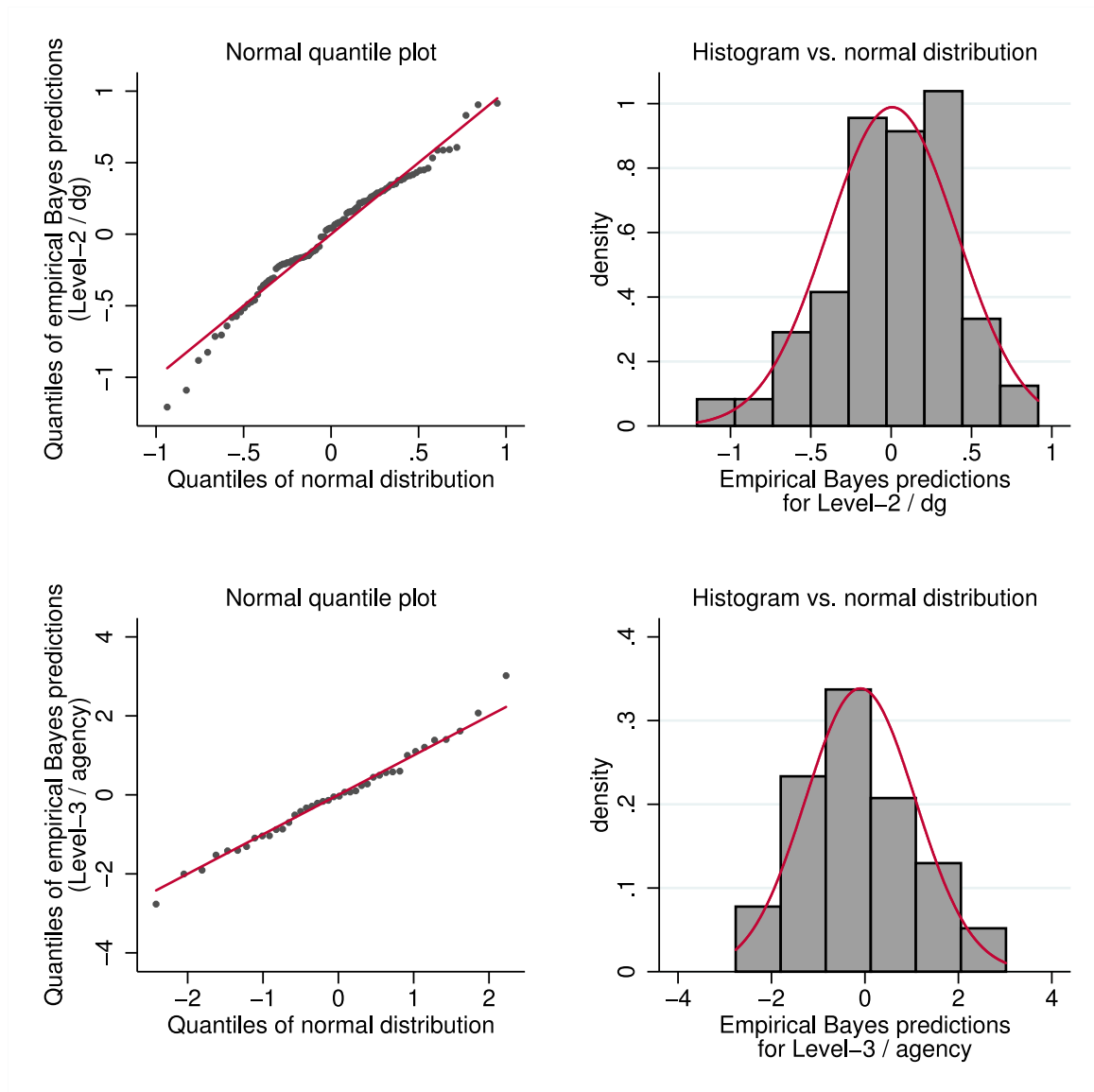


Figure C6: Various level-2 and level-3-residual plots of model (2).

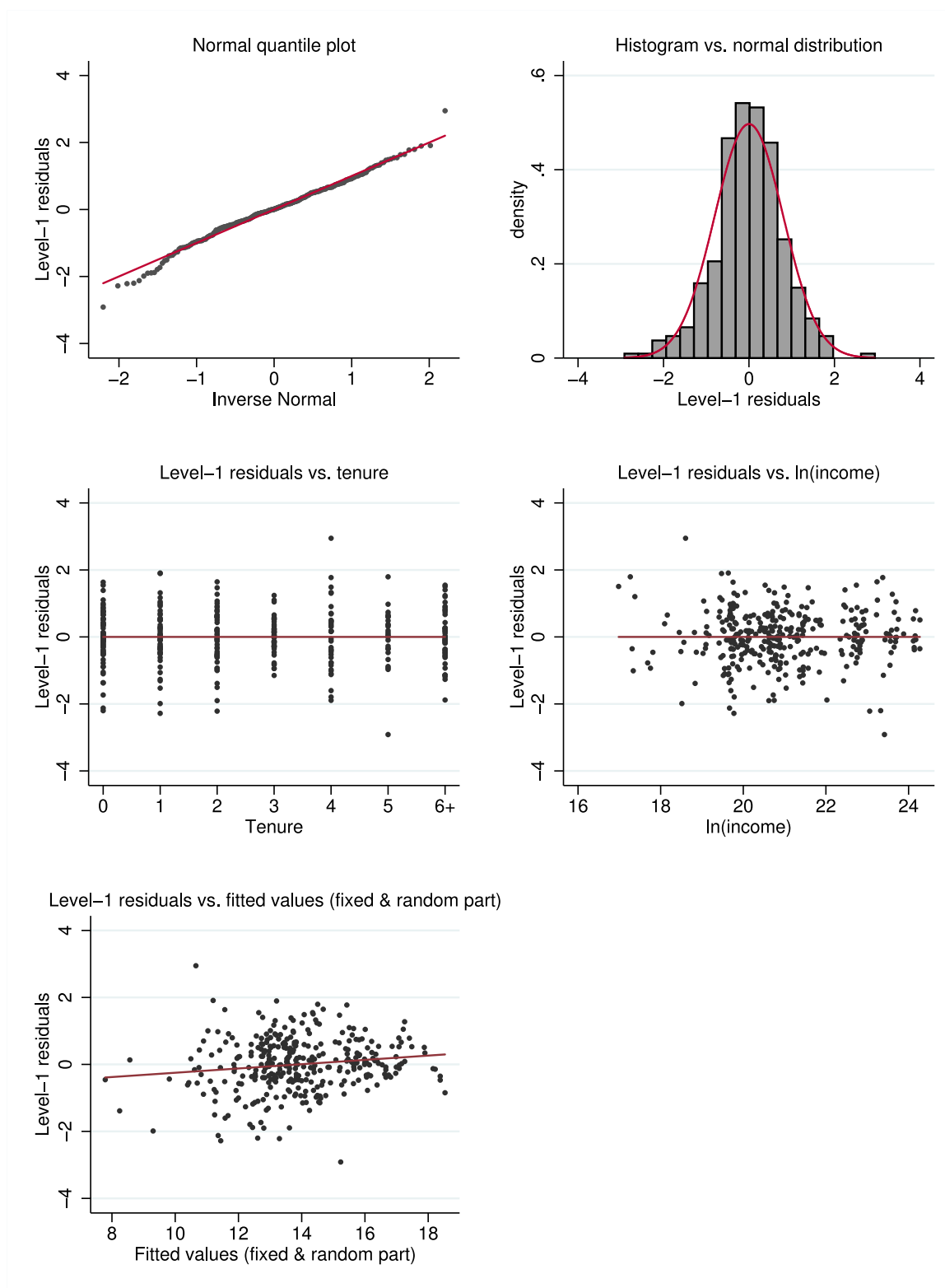


Figure C7: Various level-1-residual plots of model (3).

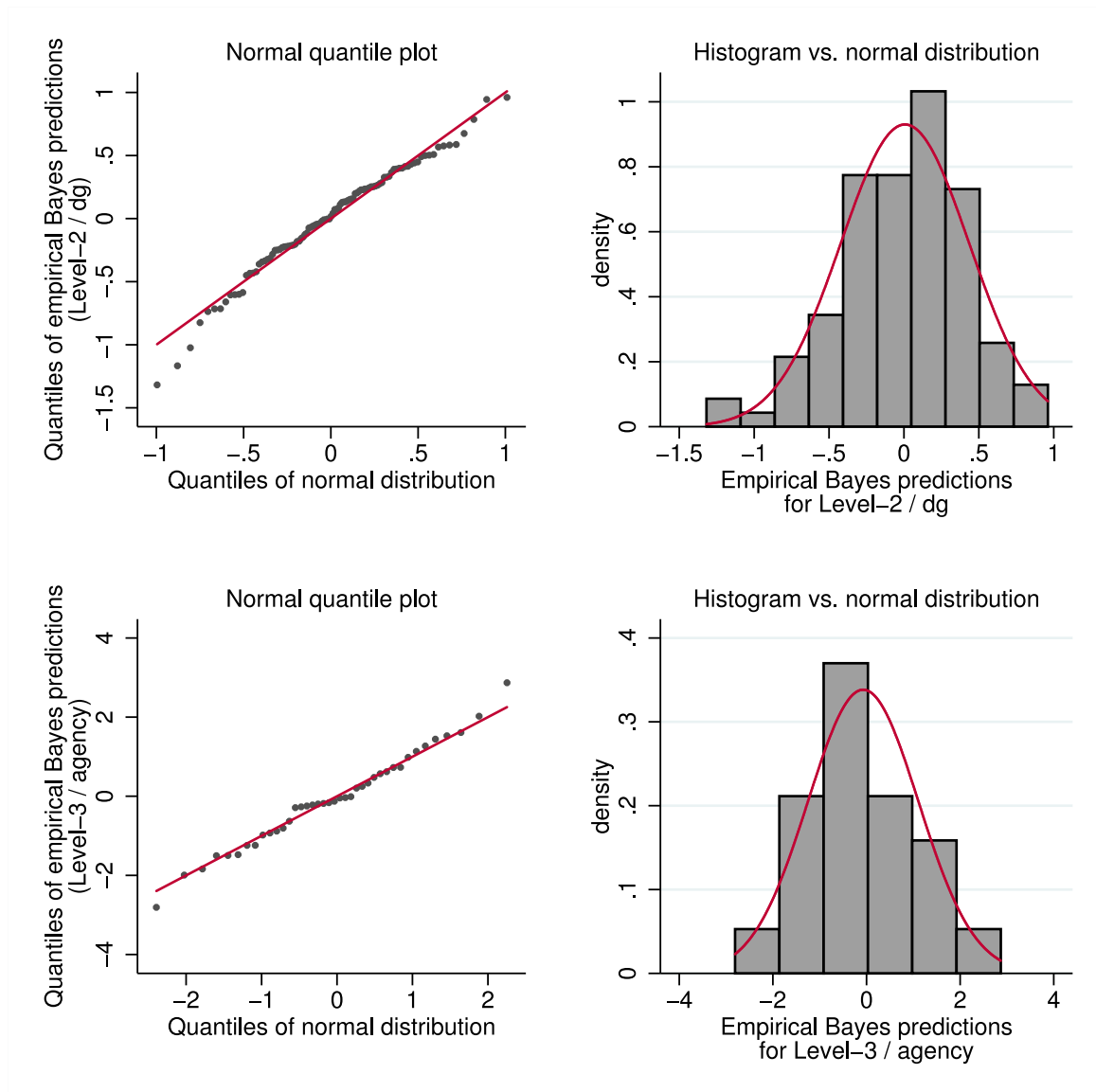


Figure C8: Various level-2 and level-3-residual plots of model (3).

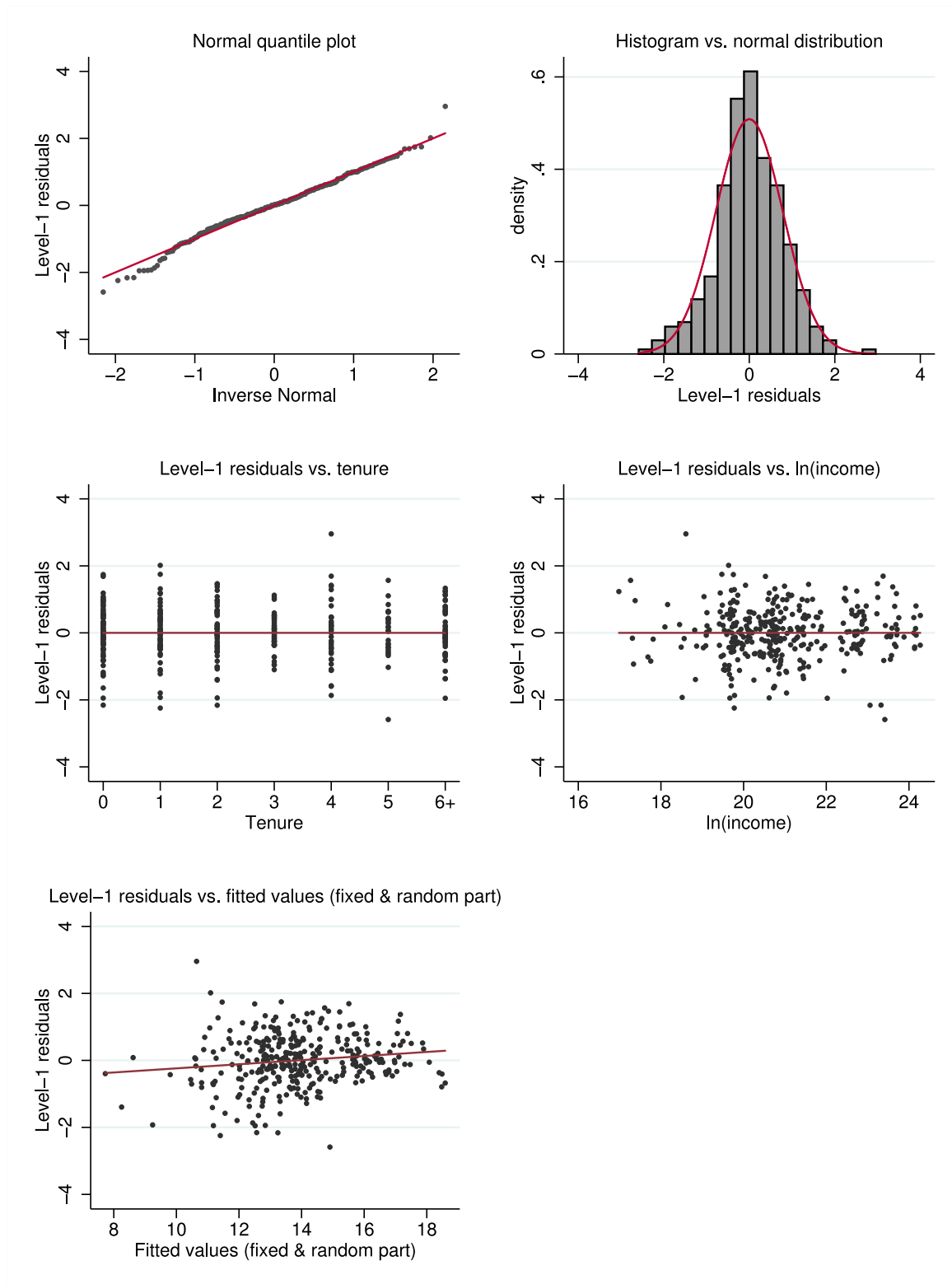


Figure C9: Various level-1-residual plots of model (4).

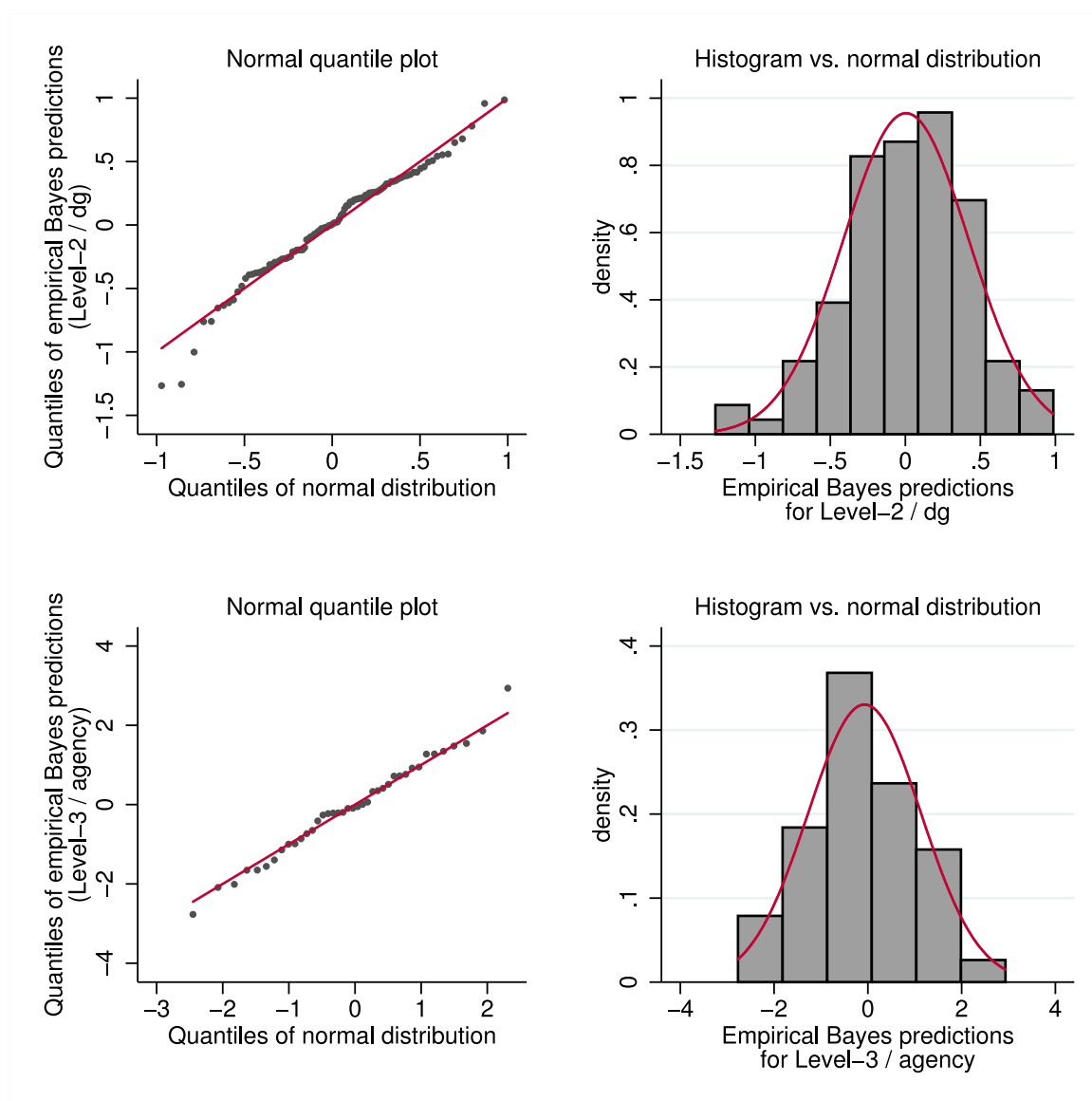


Figure C10: Various level-2 and level-3-residual plots of model (4).

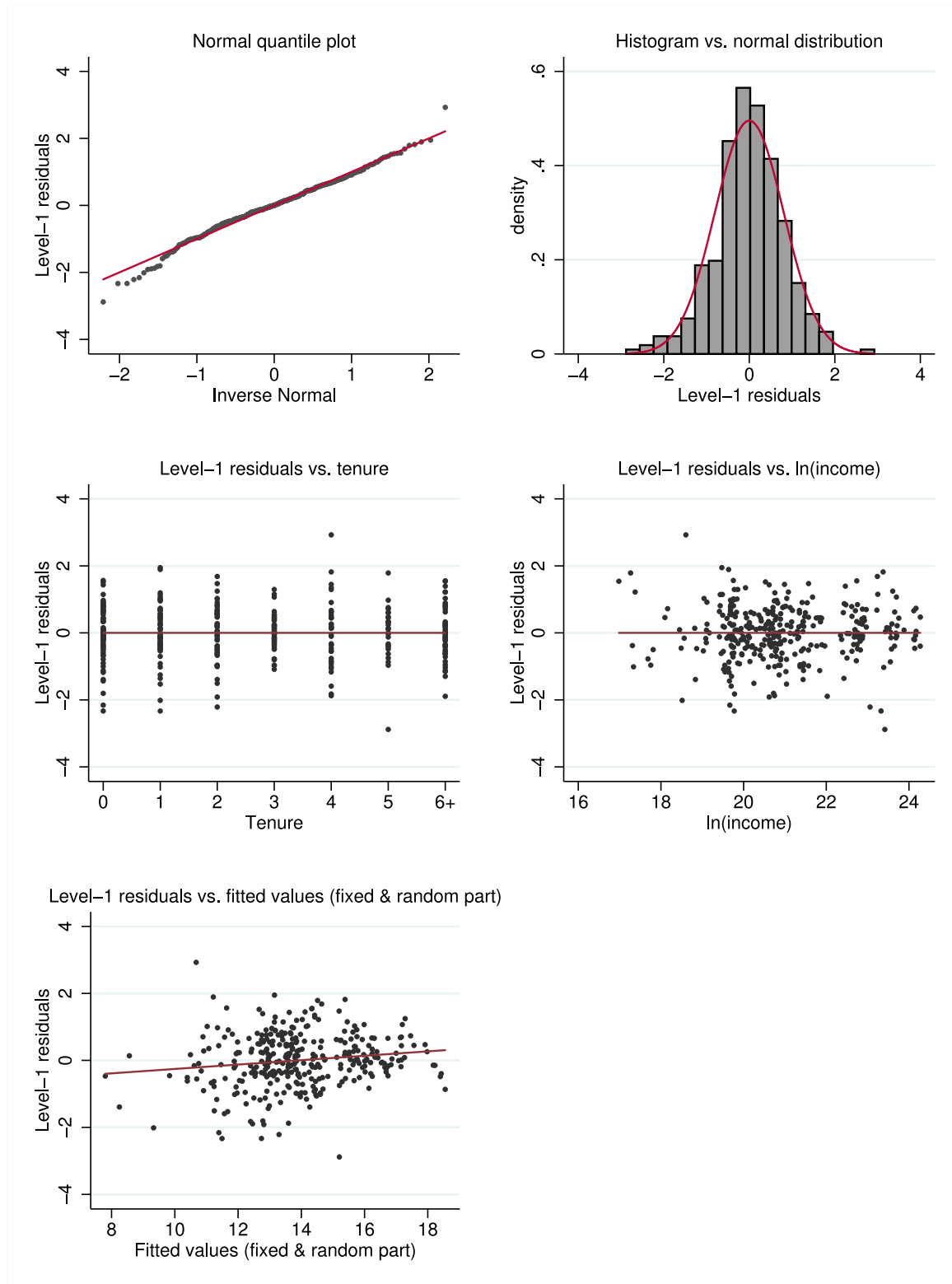


Figure C11: Various level-1-residual plots of model (5).

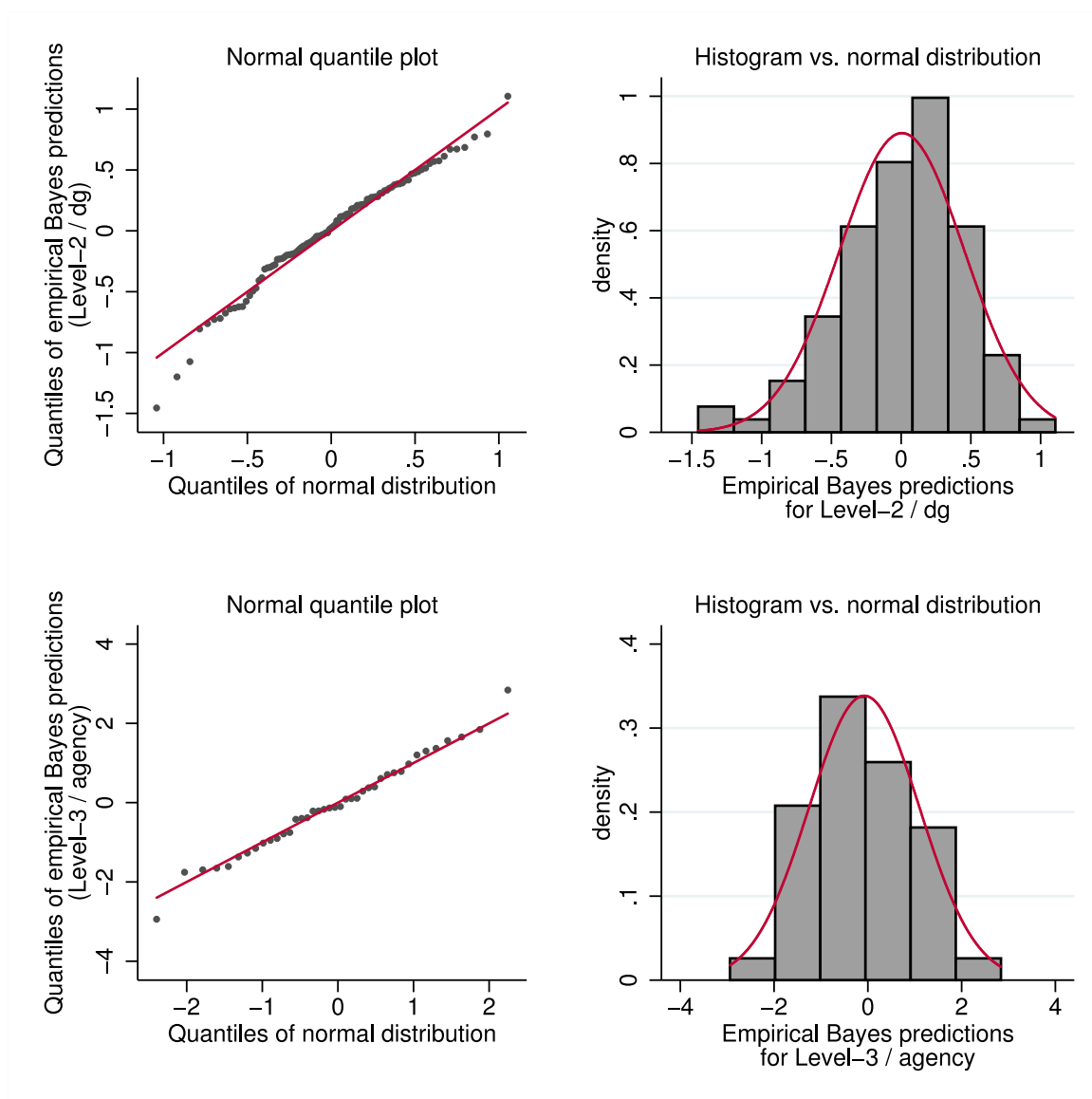


Figure C12: Various level-2 and level-3-residual plots of model (5).

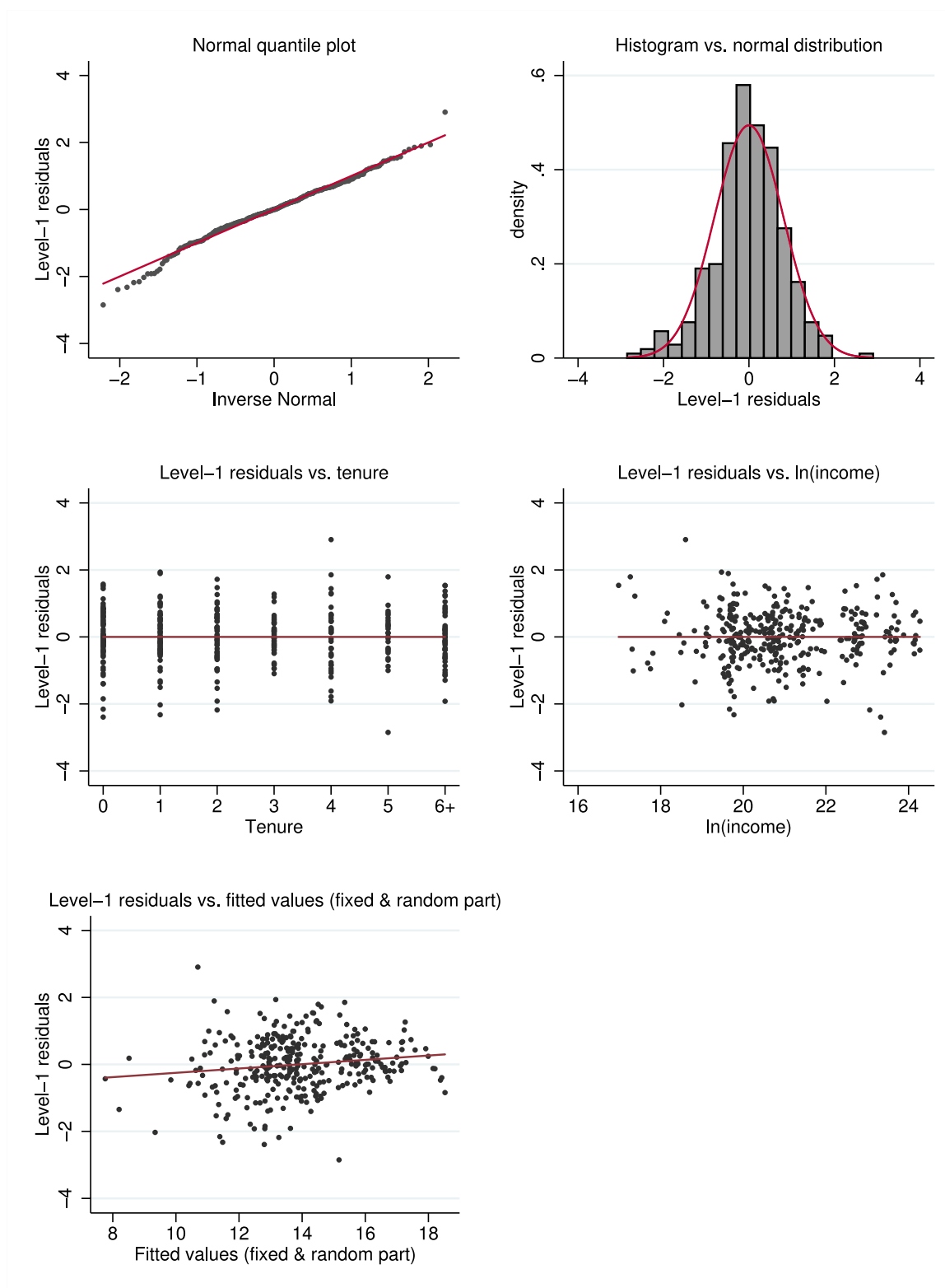


Figure C13: Various level-1-residual plots of model (6).

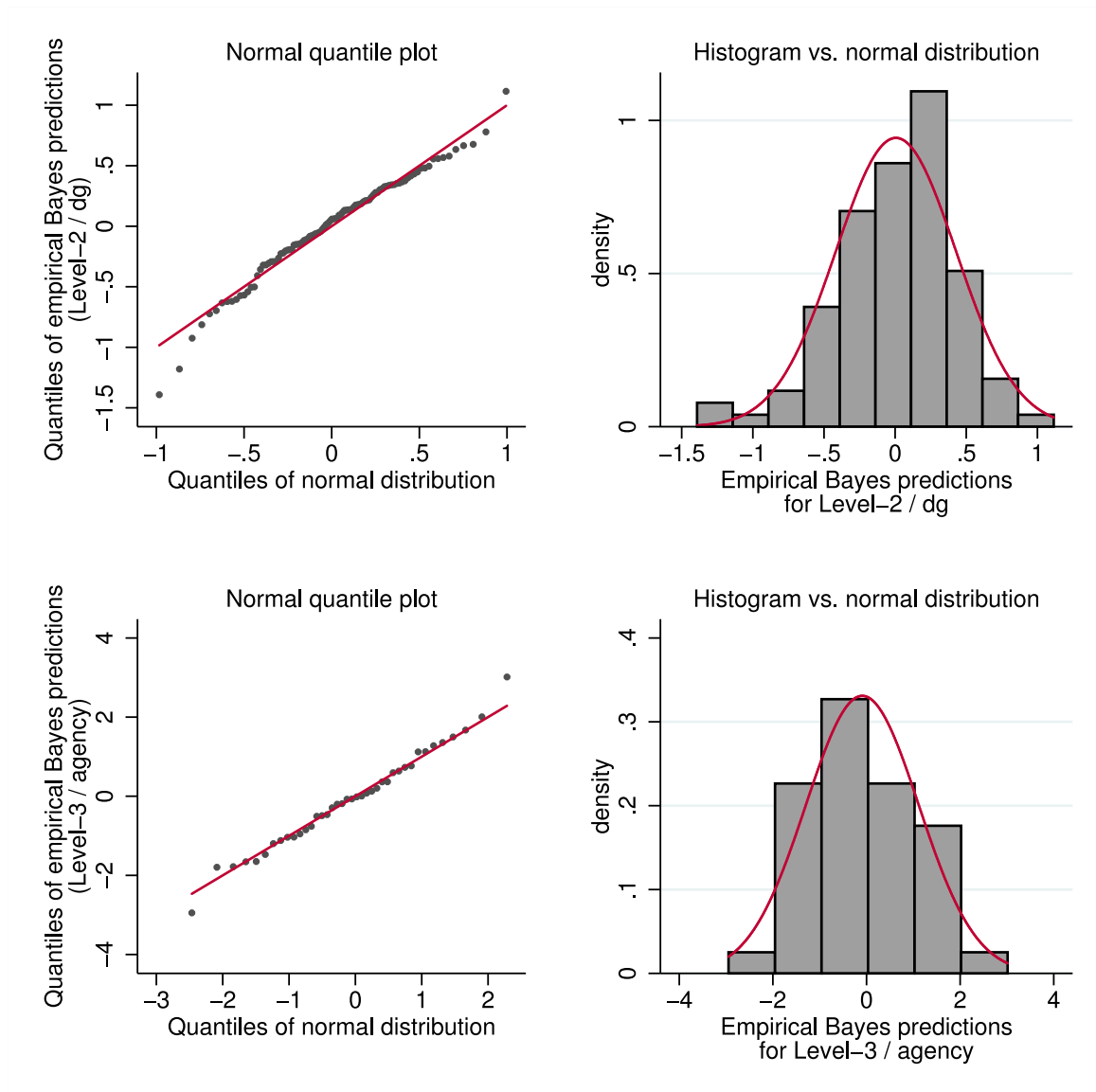


Figure C14: Various level-2 and level-3-residual plots of model (6).

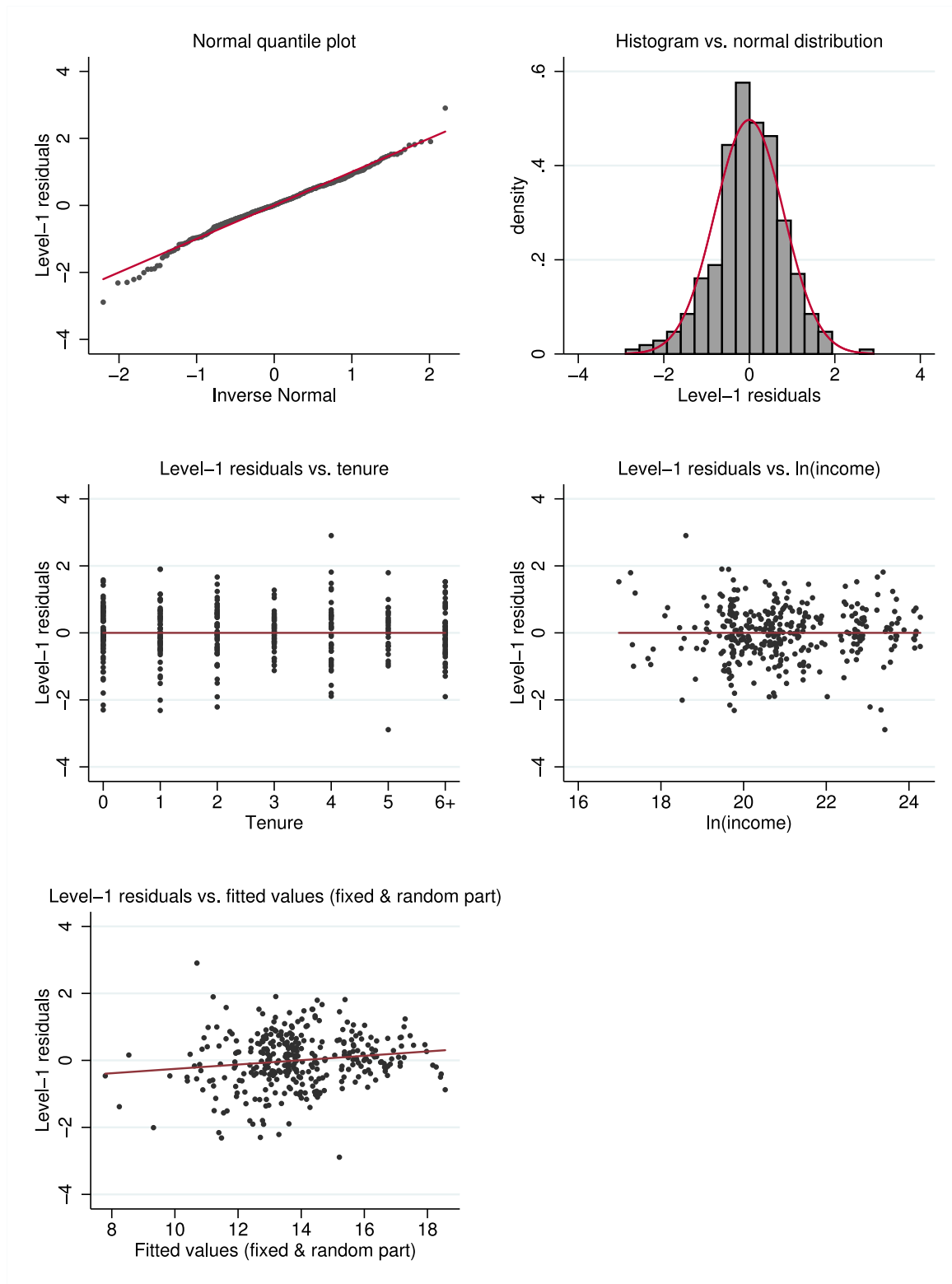


Figure C15: Various levele-1-residual plots of model (7).

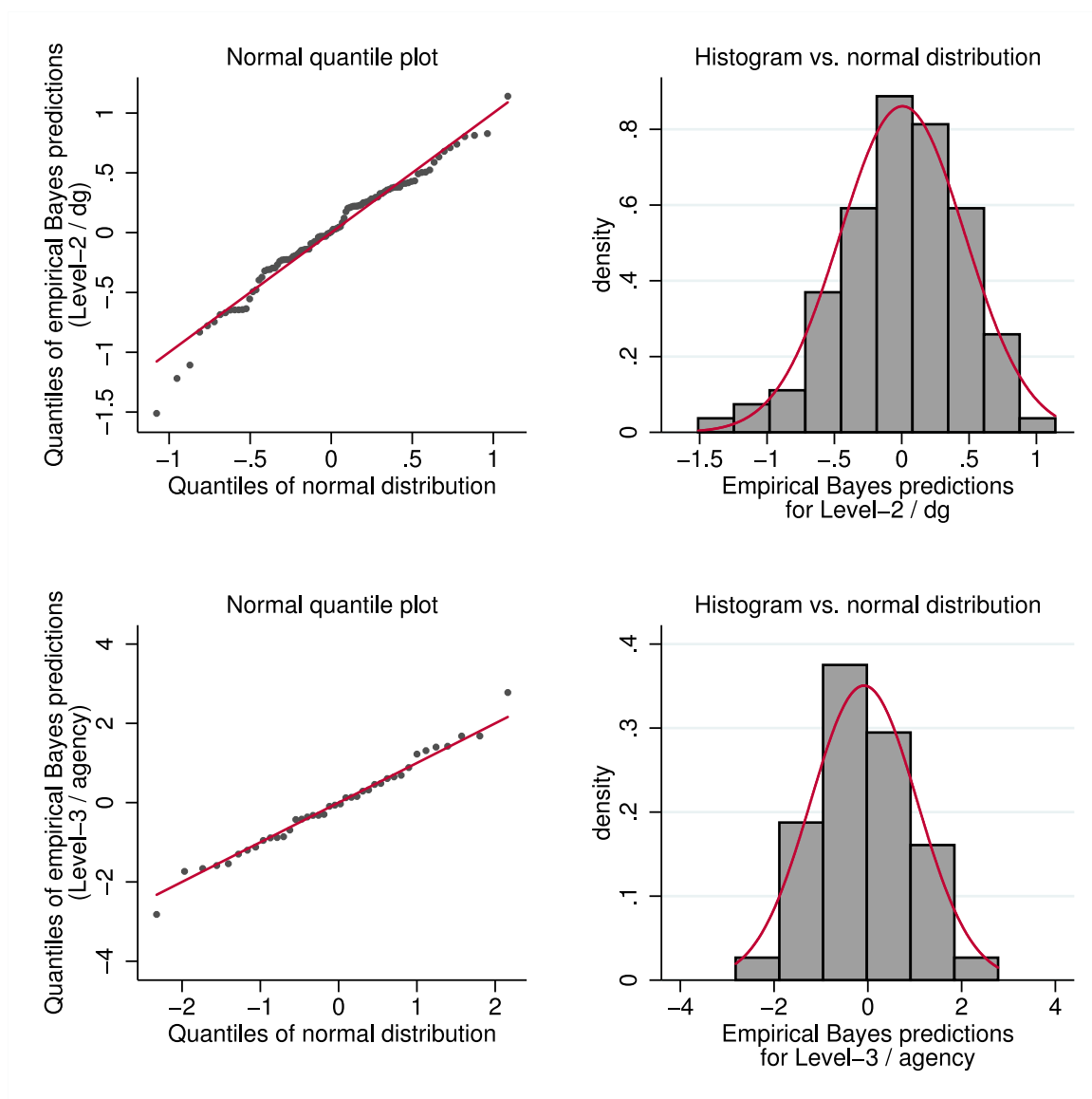


Figure C16: Various level-2 and level-3-residual plots of model (7).

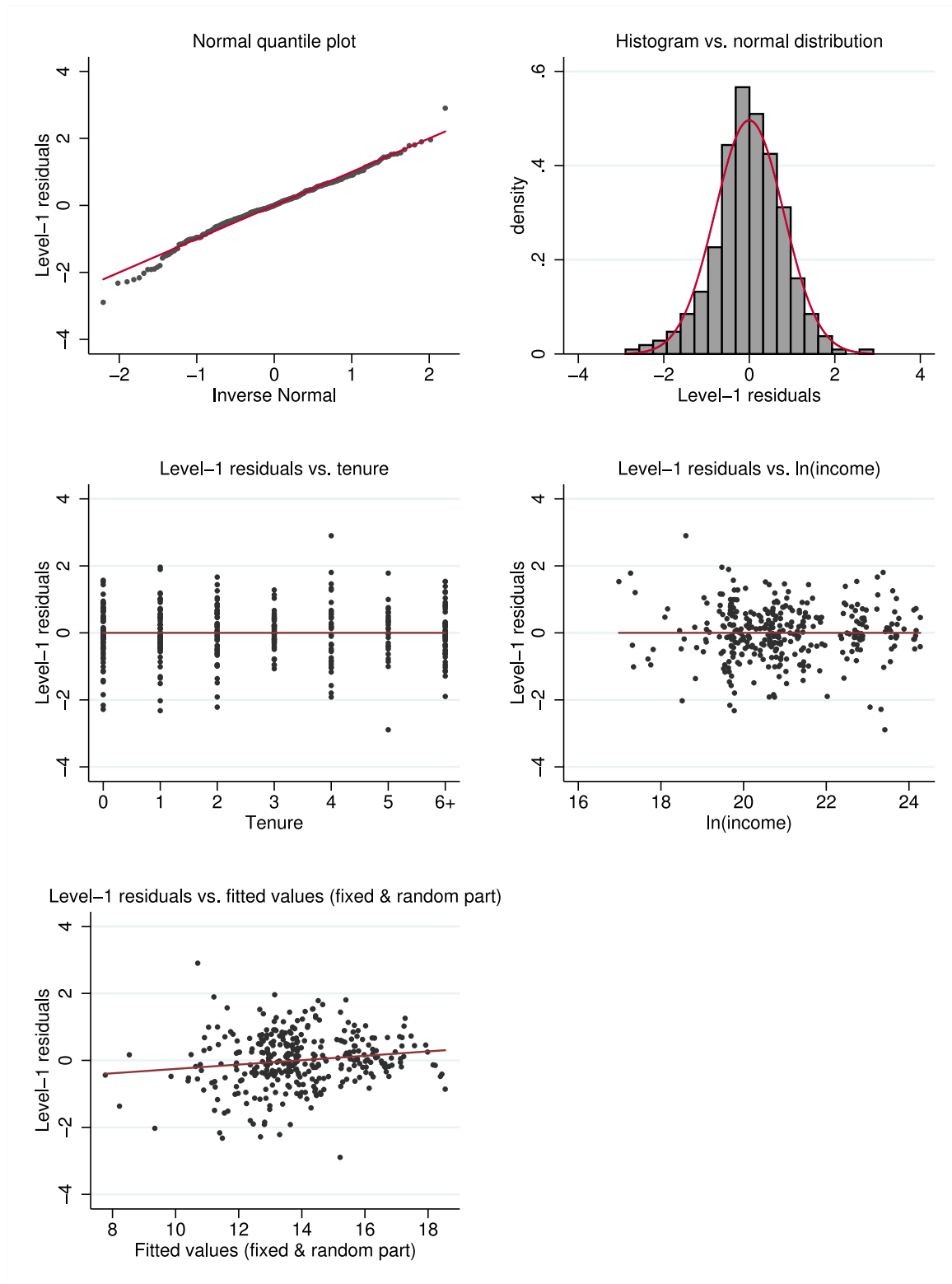


Figure C17: Various level-1-residual plots of model (8).

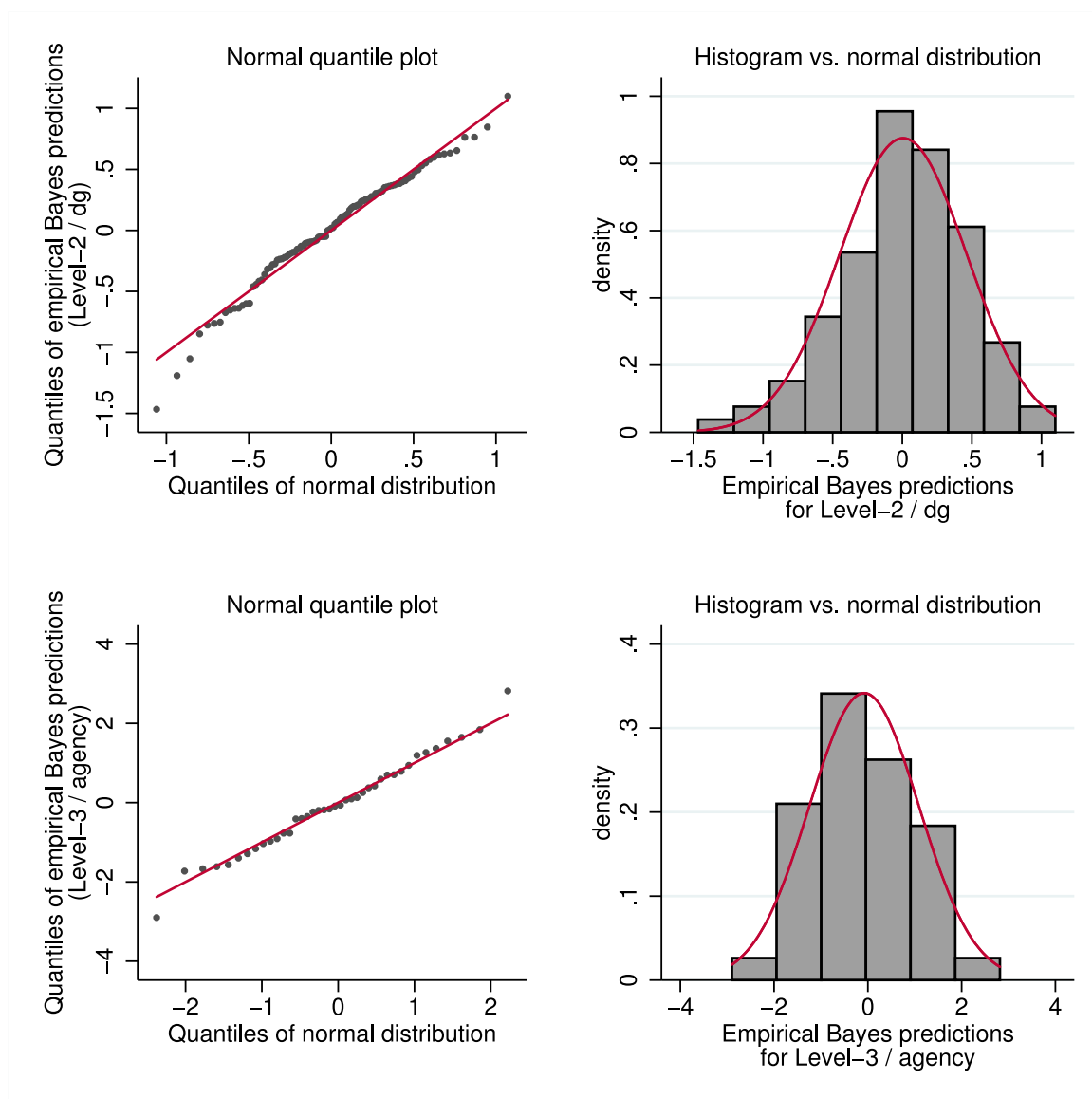


Figure C18: Various level-2 and level-3-residual plots of model (8).