Government agencies' use of management consulting services in Sweden – an explorative study

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Abstract

The current paper investigates the use of management consultants in the Swedish public sector. Based on an analysis of the use of management consulting services in 55 Government agencies (GAs) in the years 2004-2011 the paper makes a number of contributions. First it confirms an overall growth of the use of consulting services in the public sector. However, it also shows that the use of consulting services and its growth are unevenly distributed across organizations, where GAs with a highly professionalized work force are less heavy users of consulting services than regular GAs. The study also points at temporal variations in GAs use of consulting services. Here changes in top management, especially the CEO, are identified as initiators of temporary reductions of the use of consulting services.

Background

The public sector has been one of the fastest growing segments of the management consulting market in recent years (Glassman & Winograd, 2005; Saint-Martin, 2012). In the wake of "new public management", the business oriented knowledge of management consulting services has been in increasing demand. In 2011, the public sector represented the third largest client sector (14%) in Europe after Industry and Banking and Insurance, amounting to a market size of about 13 billion Euro (FEACO, 2011). The size of the US public sector market for management consultancy was in 2005 estimated to about 30 Billion US$ (Glassman & Winograd, 2005).

While public sector spending on management consulting services has been a hot topic for investigative journalism, research interest has been surprisingly limited (Saint-Martin, 2012). In a recent review of the literature Saint-Martin (2012) shows that this has been mainly focused on the question of the overall growth of government spending on consulting services as well as cross country differences in government spending on consulting. Two main explanatory factors have been

discussed– the overall size of the government sector and the openness of the sector. The latter especially impacts the use of management consultants in public policy making processes.

While these analyses help understand patterns of consulting use on a macro level (country/long-term), they also obscure the variation in the use of consulting services on a more detailed level – the level of the different government agencies (GA) using consultants. Here, variation is large both between organizations and within organizations over time. Our study shows variations in spending on consulting services from some €10/employee/year to over €600/employee/year. The current paper aims to contribute to an understanding of the use of consulting services in the public sector by investigating these variations and their potential reasons. More specifically, the paper addresses the following research questions:

1. How has spending on management consulting services in the Swedish public sector developed in the years 2004-2011?
2. What are the differences in different government agencies use of consulting services and how can they be understood?
3. How does government agencies' spending on consulting services vary over time and how can these variations be understood?

By addressing these questions, the current paper both aims to contribute to a deeper understanding of the use of management consulting services in the public sector. However, any findings shedding light on patterns of different uses of consulting services across organizations and time also contribute to the rather scarce research on the client side of management consulting (Sturdy, Werr, & Buono, 2009) by increasing the understanding of the drivers and determinants of the use of management consultants on an organizational level.

Management consulting in the public sector

The public sector has in the past decade become an increasingly heavy user of management consulting services. However, the role of management consultants has shifted over the years. Saint-Martin (Saint-Martin, 2012) identifies three key roles that MCs have played in the public sector since the 60's. In the 60's they entered the public sector as *"rational planners"* as a response to initiatives to make the management of the welfare state more scientific and professional. MCs were involved in the formation and evaluation of policies in order to make them more efficient, and policy making was increasingly opened up through the introduction of e.g. think tanks that involved civil servants, academics and management consultants.

In the 1980's the role of MC shifted towards "apostles of New Public Management with a focus on cost-cutting" (Saint-Martin, 2012: 450). As a result of an increasing focus on costs in the public sector, driven not the least by new right-wing governments, consulting involvement in policy making was reduced, but instead shifted towards efforts to introduce more cost-effective organizations and processes. In this context of "New public Management", the methods and approaches of the private sector were viewed as suitable solutions. MCs were regarded a main vehicle to transfer such solutions to the private sector (see also Czarniawska, 1990).

In the mid 90's the consultants' role, according to Saint-Martin (20XX) shifted back towards policy, giving MC a role as "*Partners in governance*". Driven by political shifts towards the center-left, governments' ability to implement policies moved into focus. New ways of delivering policies through partnerships with private and voluntary actors were explored and MCs established themselves as possible partners for e.g. IT outsourcing. eGovernment has since then been an important area of business for MC and IT consulting firms. Glassman & Winograd (2005) identify four major consulting opportunities in the contemporary public sector, which reflect a continued focus on NPM initiatives as well as a focus on the delivery of policies as "partners in governance". These areas include strategic planning, e-business and customer service, strategic HRM and performance management.

In the Swedish context ideas of New-public management, involving the marketization of the public sector, the entry of private actors, and a strong focus on efficiency were adopted rather forcefully from the 90's onwards. Market-oriented reforms in the Healthcare and education sectors, involving a clear separation between purchasers and providers, opening up for private actors, were introduced by the Social Democratic Government at the time. In 2006, a center right-wing government took over and was reelected in 2010, which continued and accelerate these NPM reforms.

Approaches to understanding the use of management consultants

While the literature on why managers and organizations use management consulting services has been growing in the past twenty years (Sturdy et al., 2009) there is a surprising lack of explicit conceptualizations of how and why managers come to the conclusions that they need the services of management consultants (Furusten & Werr, 2005). Currently, reasons are discussed in the literature in the context of two complementary literature fields that we briefly describe below. Our discussion is not exhaustive but captures the main themes from each literature.

The rational/transaction-cost paradigm

From the perspective of a rational/transaction cost paradigm the decision to hire consultants is conceptualized as the result of a rational decision process in which the (economic) pros and cons of

using external consultants are weighed against internal resources (Armbrüster, 2006; Canbäck, 1998, 1999). As managers identify a specific (organizational) challenge in the course of requiring a specific set of expertise and skills, managers are assumed to compare the cost of mobilizing these resources internally with the costs of acquiring them externally. Client costs consist of both direct costs (e.g. consulting fees, or the financial resources required to maintain a certain resource internally) but also the transaction costs involved in mobilizing these resources. For the external purchase of these resources transaction costs include costs for identifying and comparing different potential suppliers, contracting them and monitoring their performance. For the mobilization of internal resources, transaction costs include the costs for making available resources (typically people), coordinating their work, which often spans over different functions, and monitoring their performance. (Armbrüster, 2006; Canbäck, 1998, 1999).

From the rational/transaction cost perspective, the resource most often emphasized as sought from external consultants is knowledge and expertise that applies across companies and industries, but is needed only occasionally by a particular client organization. Building on a rationale of specialization, it is argued that a consulting firm specializing in, for example, mergers and acquisitions can build a unique expertise from its wealth of experience which a firm that seldom engages in M&A activity can then draw upon (Bessant & Rush, 1995; Gallessich, 1983; Greiner & Metzger, 1983; Kubr, 2002). In the context of the public sector, such specific knowledge sought was the expertise in how the private sector, which was a key source of inspiration for NPM, organizes work and administrative processes. The specific resources sought from external consultants could also go beyond specific expertise and include an outsider perspective (Kipping & Armbrüster, 2002), readily available resources (Lapsley & Oldfield, 2001) and individuals with a strong energy and drive (Kubr, 2002).

Any organizational differences in the use of management consulting services may thus be explained by differences in the need for a specific expertise or resource. Extraordinary activities such as a merger or a radical reorganization or change project may trigger both competence and resource needs that are temporary and more cheaply supplied through external consultants than the building of internal competencies.

The critical paradigm

While the rational/transaction cost paradigm has focused on the hiring of consultants as a response to organizational needs, the critical paradigm acknowledges that managers may also have individual agendas and needs that may induce them to hire consultants. This paradigm emphasizes the vulnerable and uncertain position of the manager (Clark & Salaman, 1996, 1998; Huczynski, 1993) and suggests that management consultants may provide a remedy to this by reassuring them and

supporting their self-esteem (Clark & Salaman, 1996) and reputation (Jackall, 1988). The critical paradigm subdivides into two versions regarding the position of the client. A first representing a weak client, is produced in the neo-institutionalist literature focusing on consulting rhetoric and how consultants provide 'knowledge[1]' that creates certainty and reduces ambiguity (Berglund & Werr, 2000; Clark & Salaman, 1996; Czarniawska, 1988). By reproducing and disseminating ideas and models that are generally assumed to be "efficient" – Meyer and Rowan (1991) call these "rationalized myths" – they relieve managers' uncertainties, especially in contexts where "efficiency" is hard to assess, a situation that is typical for the public sector. Adapting to such "rationalized myths" is also viewed as providing organizations that lack unambiguous performance measures with legitimacy (Czarniawska, 1988; Meyer & Rowan, 1991). At the same time, management consultants, through their continuous production of new management ideas, are argued to fuel uncertainty and sense of lack of control in clients (Kieser, 2002b). Within this paradigm the decision to hire consultants is to a large extent influenced by the consultants themselves and with clients being characterized as helpless victims of the consultants' rhetorical skills (Fincham, 2012). By simultaneously creating uncertainty and offering a remedy to this insecurity, managers are easily convinced of the consultants' value and of their need to buy their services (Clark, 1995).

A second version of the critical paradigm, views the client as a more powerful actor. This literature Emphasizes the clients' use of consultants to further aid their personal agendas in organizational micro-politics (Alvesson & Johansson, 2002; Jackall, 1988; Kipping, 2000). Motives to use consultants may include legitimating desired strategies, undermining the agenda of rival managerial groups, establishing oneself as being up to date and innovative (Jackall, 1988) or gaining external certification of decisions to avoid law suits (McKenna, 2006). However, as discussed by Glassman and Winograd (2005), the political and power context of consulting in the public sector is more complex than in most private sector settings, with "the public" being an omnipresent stakeholder to be concerned with. The use of management consulting services may in this context be useful, but also runs a constant risk as being portrayed as a "waste of resources" by media.

The critical paradigm thus offers a number of alternative explanations to potential differences in public organizations' spending on MC services. The "weak client" version draws our attention to the managers' (and potentially the organizations') perceived uncertainty and stress, indicating that increased levels of perceived uncertainty in an organization will create an increasing use of consultants. The "strong client" version instead focuses on the decision making context within the organization, where more complex decision making settings may drive the use of consultants (see

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[1] Knowledge is used in quotes here, as one of the key assumptions of the critical perspective is the questioning of the existence of any objective knowledge and expertise among consultants (Alvesson, 1993).

also Hislop, 2002; Werr, 2005). At the same time, the visibility and transparency of political decision making processes may be a limiting force to the use of consulting services in the public sector.

Methodology

The sample

The paper is based on data derived from a publicly available database (solidinfo.se) covering about 90% of all transactions between Swedish government agencies and private organizations on a level of individual transactions identifying the supplier, the buyer and the amount of the transaction. Data for 55 individual GAs during the years 2003-2011 were collected. These 55 GAs were the ones that during the studied time period had transactions with a provider of MC services. Providers of MC services were identified based on their listing among the 100 largest management consultancies in Sweden (www.konsultguiden.se) in any single year between 2003 and 2011. Only transactions categorized as "other services" or "educational services" were included, and jointly classified as "MC-services" (Management Consulting Services). This excluded transactions classified as "IT-services". Newly formed GAs are excluded from the sample 3 years after their establishment. 9 outliers (of 364 cases) in terms of absolute changes for a single GA's spending on MC-services between two years have been excluded using Grubbs Test.

Analysis, Stage 1 (one way Anova)

In a first step of the analysis we focused on the cross sectional differences between different GAs. As a basis for this analysis, the 55 GAs were subdivided into three groups: ordinary, professionalized and academic GAs, labeled Type 1-3, respectively. Professionalized GAs were characterized by a professionalized workforce, sharing a standardized and homogenizing educational background. Examples of professionalized GAs were the police force and the health sector. Academic GAs consisted of universities and university colleges. Ordinary GAs were those not classified as either professionalized or academic GAs. The unit of analysis for the analysis stage 1 is the type of GA and the dependent variable is the mean per mille spending (in Swedish Krona, SEK) on MC-services for each type of GA. One way Anova and Tukey analysis of the pairwise differences were used.

Analysis, Stage 2 (repeated measure Anova, mixed model)

The unit of analysis in the second stage is the individual GA. The sample has been divided according to the results of the analysis stage 1, leaving 2 types of GAs to analyze – ordinary and professionalized/academic GAs (cf. below in following section). The dependent variable for each sub-sample is the annual change in the GAs spending on MC-services relative to the annual income of the GA the second year, measured in per mille of income. To avoid simultaneous decreases and increases of spending in the sub-sample to even out the dependent variable, decreases and increases of

spending on MC-services are analyzed separately. Zero-changes have been excluded from analysis, in 6 cases for type 1 GAs and in 2 cases for type 2 GAs. There are in consequence 4 data series that have been analyzed: a) positive changes of spending on MC-services type 1 GAs (n=92); b) negative changes of spending on MC-services type 1 GAs (n=74); c) positive changes of spending on MC-services type 2 GAs (n=90) and, finally; d) negative changes of spending on MC-services type 2 GAs (n=91).

The independent variables are CEO-tenure (0-6, where 6 is the sixth year and anything above) and year (2004-2011). Anova repeated measures mixed model, using restricted maximum likelihood estimation method (REML), has been used to model the dependent variable, where tenure is the repeated factor and fixed effects have been tested for tenure and year. The covariance is believed to be larger for data points closer in time and then rapidly declining to 0 after 3 years of separation. In consequence, banded Toeplitz structure (q=3) has been used to structure the covariance matrixes. When tested, the chosen covariance structure performed marginally better (in terms of model fit[2]) than compounded and autoregressive alternatives. In addition to the Anova, Tukey analysis of pairwise differences are applied for each independent variable.

Findings

Overall descriptives

The overall spending on MC-Services in the sample of GAs reveals a rapid growth in absolute terms, from 80 MSek in 2004 to over 300 MSek in 2011. This growth is interrupted only by smaller declines 2005 and 2009 (figure 1; see also appendix A). Incidentally, 2006 and 2010 are Swedish national election years.
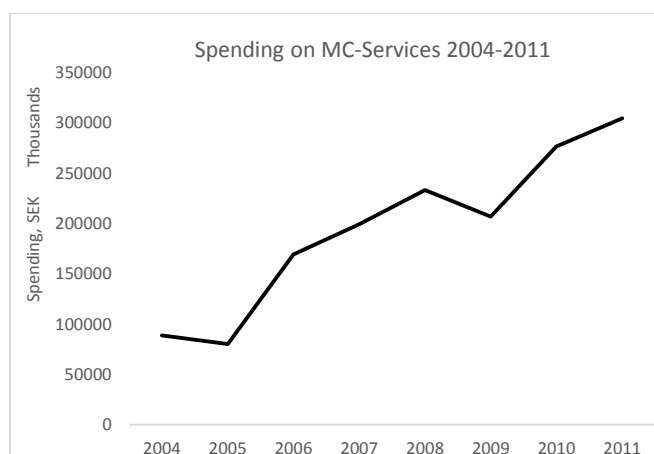
Figure 1. Government agencies' total spending on management consulting services 2004-2011

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[2] Model fit estimated with Akaike's information criterion (AIC), AIC with a correction for finite sample sizes (AICc), Bayesian/Schwarz' information criterion (SBC) and Bozdogan's consistent AIC (CAIC).

The overall growth is less pronounced when spending on MC-services is related to the income of the GA. The declines in 2005 and 2009, possible in anticipation of the election years of 2006 and 2010, are in contrast more sharply marked (figure 2, see also appendix A).
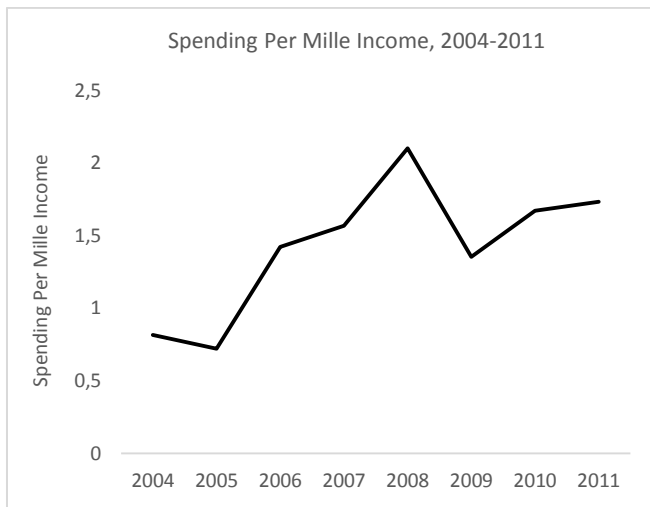
Figure 2. Government agencies' spending on management consulting services in relation to income 2004-2011

Analysis stage 1: Government agencies' differing use of MC services

In a first step of the analysis, we compared three different kinds of GAs – Ordinary (type 1), professionalized (type 2) and academic (type 3). The test of differences in per mille income spending on MC-services between the different types of GAs shows that ordinary GAs (Type 1) spend about 1,4 per mille more of their income on MC-services than professionalized/academic GAs (Type 2 & 3 GAs) (figure 3). The difference is statistically significant ($p=0,05$; Appendix B). There is however no detectible difference in spending on MC-services between professionalized and academic GAs, and thus no indication that they would behave differently. In the subsequent modelling of GAs spending on MC services, Type 2 and Type 3 GAs are thus merged into one type.
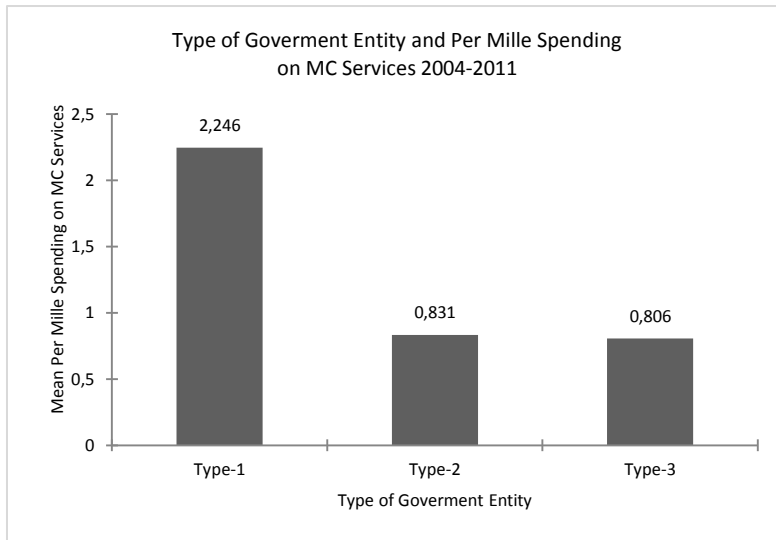
Figure 3. Per mille spending on management consulting services in ordinary (type 1), professionalized (type 2) and academic (type 3) GAs.

Analysis stage 2: Government agencies spending on MC services over time

In a second stage of the analysis, we focused on the temporal patterns of GAs consulting spending. The overall spending patterns for the two distinguishable types of GAs (Type 1 - ordinary; Type 2 - professionalized/academic) shows that the levels of spending on MC-services in absolute terms is almost identical in the beginning and the end of the period, but that that the pattern for ordinary GAs (Type 1) is volatile with a sharp increase in spending 2005 to 2008 and a sharp decrease in spending 2008 to 2009. Professionalized/academic GAs show a sharp increase in spending on MC-services starting 2009 (figure 4).
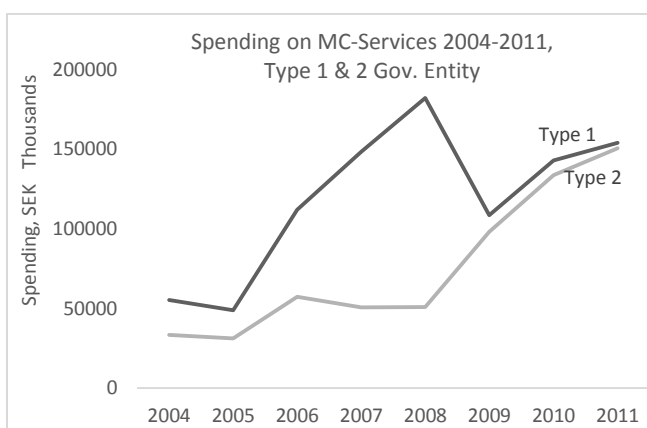
Figure 4. Type 1 and type 2 GAs spending on MC services 2004-2011

The development of the total income for the two types of agencies shows that though both types of GAs have growing incomes interrupted by shorter periods of cut backs, the changes for professionalized/academic GAs (type 2) are bigger (figure 5).

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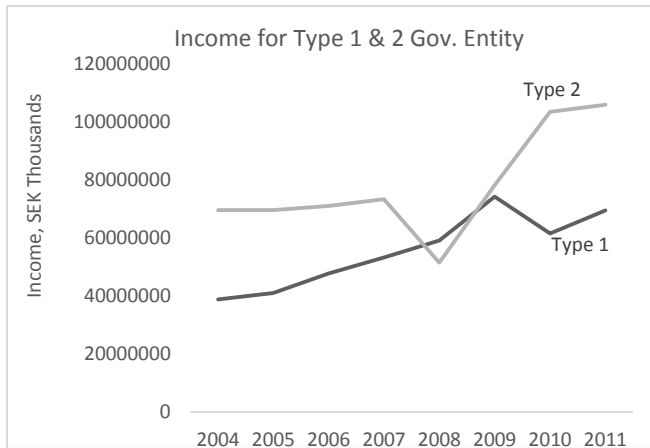
Figure 5. Income development of Type 1 and 2 government agencies.

In relative terms, volatility of spending on MC-services is much larger for ordinary GAs (type 1), and these variations also start from a higher level of per mille income spending. Most notable is the increase up to 2008 followed by a sharp decline in spending 2009. For professionalized/academic GAs the growth from 2004 to 2011 is stable, albeit starting from a comparatively low level.
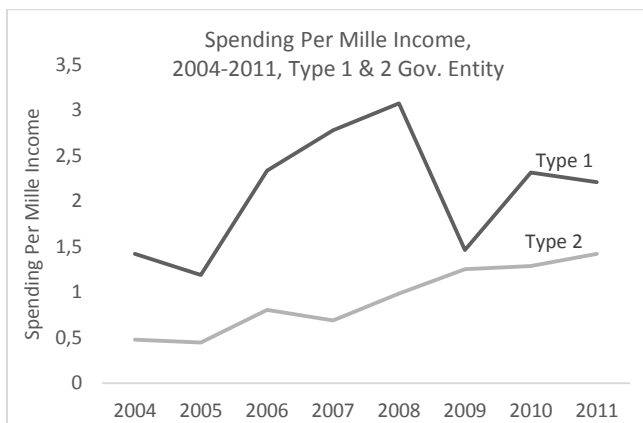
Figure 6. Development of type 1 and 2 type GAs spending on MC services as per mille of income

In the following, we will look deeper into these differences. Two independent variables are modelled: tenure and year. The dependency over time is expected to be related to the tenure of the CEO of the GA and it is therefore tenure that is modeled as the repeated factor, whereas year is better understood as a control variable that comprises macro changes that are equal for all GAs, such as macro-economic and political variations. Each independent variable is modelled for each type of distinguishable GA in accordance with the first stage of the analysis (cf. above). Further, the increases and decreases of spending on MC-services are modelled separately to avoid simultaneous increases and decreases to even out each other. Figure 7-10 each displays what can be thought of as *positive*

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and negative agency, the size of which is measured in the (absolute) distance from zero. The scale (-3 ‰ to 3 ‰) is kept constant in all 4 figures to facilitate comparisons between the results. The modelled results are based on standardized data, where individual changes in spending on MC-services are related to the size of the individual GA, in terms of GA income. The modelled results may consequently differ from the overall descriptive of absolute and relative spending on MC-services, since the latter are based on accumulated non-standardized figures.

Tenure Related Modeling

Figure 7 shows the positive and negative agency related to CEO tenure in ordinary (type 1) GAs. It shows that CEO tenure related negative agency for ordinary GAs, is largest in the third year of tenure (T2) and that the decreased negative agency T3-T4 is mirrored by an increased positive agency that peaks T4 (see also appendix C and D). The following years of tenure, the agency – negative and positive alike – decreases.
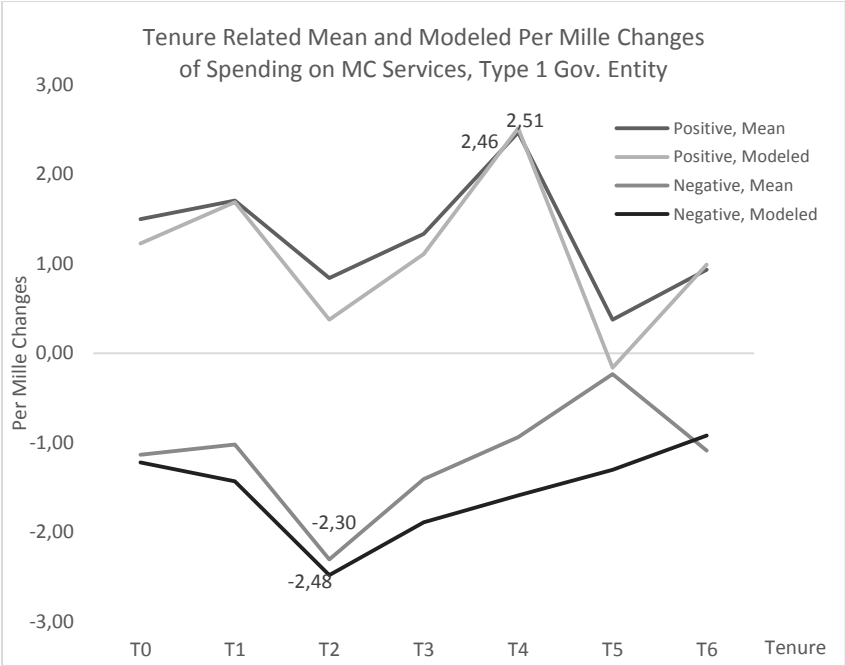
Figure 7. Tenure Related Mean and Modeled Per Mille Changes of Spending on MC Services, Type 1 government agencies

For the professionalized/academic government agencies, the pattern is somewhat different (figure 8). Figure 8 shows that the largest negative agency is later (in terms of tenure) for professionalized/academic GAs and that the increase of positive agency is contained to one year. The fixed effect of tenure for negative agency is not statistically significant (Appendix F). However, the pairwise differences between the lowest point tenure 4 (i.e. the largest negative agency) and the highest points tenure 0-2 (where the negative agency is smallest) is marginally significant ($0.05 < p <$

0,1, cf. Appendix F), thus offering weak support for the claim that tenure 4 has in fact the largest negative agency.

Figure 8. Tenure related mean and modeled per mille changes of spending on MC services, professionalized/academic (Type 2) government agencies.

Year Related Modeling

The year related modeled agencies for ordinary GAs show that that there is a large negative agency 2006 and otherwise relatively small changes over time (figure 9). The fixed effect of year for positive agency is not significant, but the pairwise differences between year 2007 (smallest positive agency) and 2011 (largest positive agency) is marginally significant (7,1 %, cf. Appendix C).
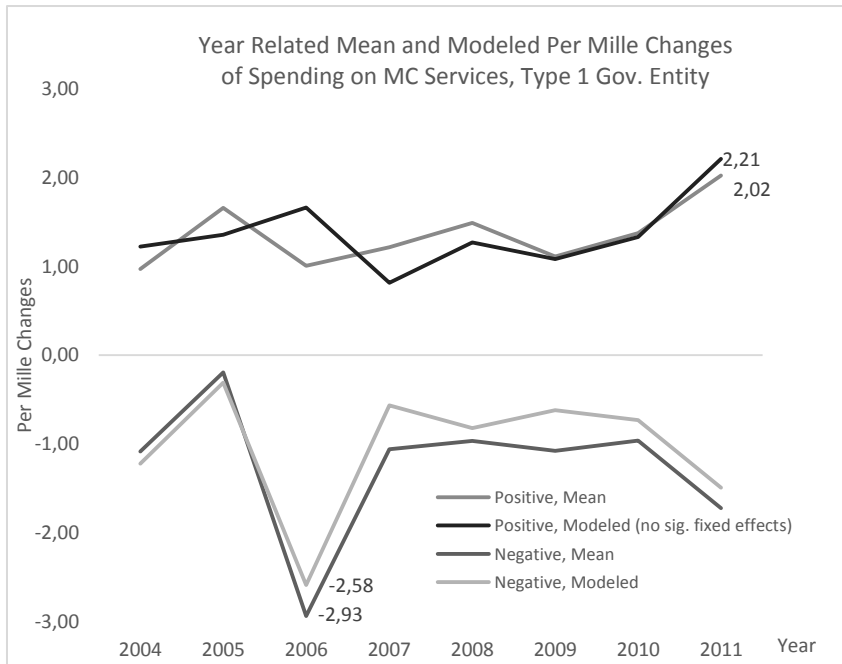
Figure 9. Year related mean and modeled per mille changes of spending on MC services, ordinary (type 1) government agencies

Both positive and negative year related modeled agency for professionalized/academic GAs are significant. There are relatively small changes, with a peak of positive agency 2008 followed by a downward peak of negative agency in 2009 (figure 10).
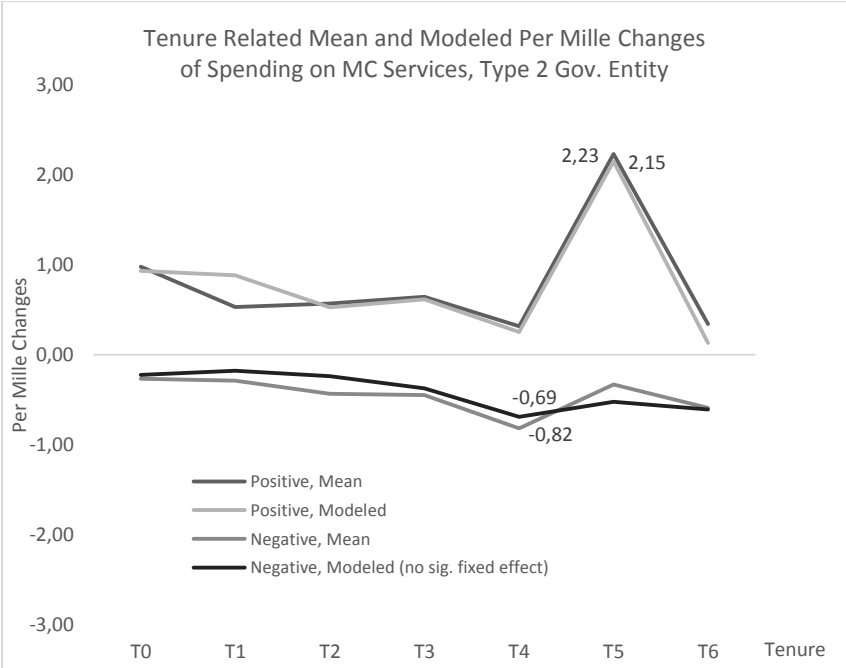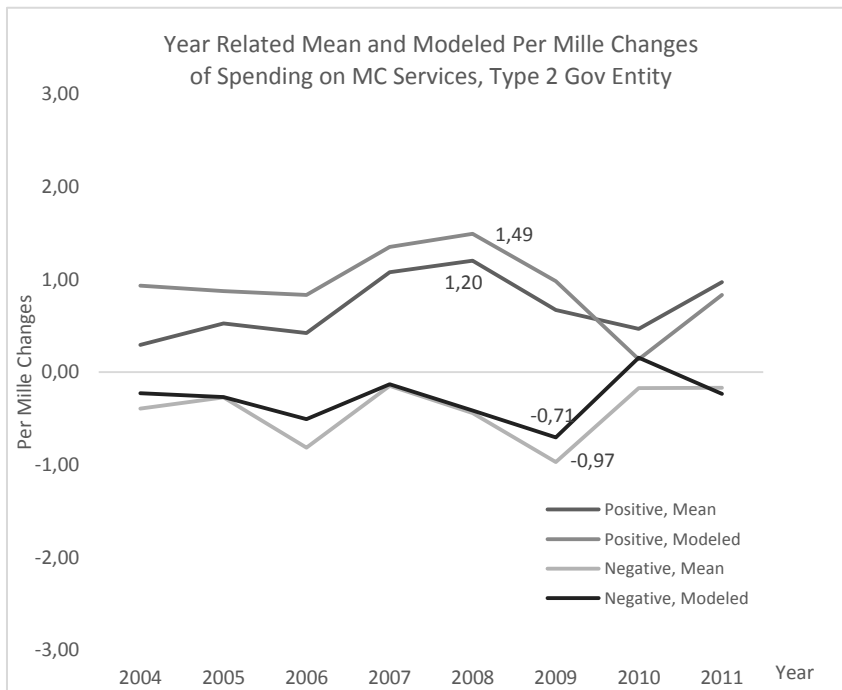

Figure 10. Year related mean and modeled per mille changes of spending on MC services, professionalized/academic (Type 2) government agencies.

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Discussion

The current paper provides insights into the overall use of MC services in the public sector but also points at differences between different GA's use of such services. Regarding the overall use, our findings confirm previous research that has identified a strong increase in the use of MC services in the public sector. In the years between 2004 and 2011 the studied GAs almost quadrupled their use of MC services from about 80 MSek in 2004 to over 300MSek in 2011 in absolute terms and from 0,8 per mille of income to 1,7 per mille of income in 2011 (with a top of 2,1 per mille of income in 2008). This growth was, however, interrupted by two periods of decrease in spending on consulting services – 2005 and 2009, both years preceding public elections, which were held in 2006 and 2010. In the election years, this decline was more than compensated by growth. Especially in 2006, the increase was over 100%. This coincides with a shift in government from a social democratic government to a coalition of center and conservative parties. Ideas of marketization and NPM were adopted rather early on in Sweden in the 90's. However, the intensity with which these ideas were implemented increased with the new government, which was reelected in 2010. This thus lends some support to claims made that center-right-wing governments with their neo-liberal ideas may be a driver of the use of consulting services in GA's (see e.g. Saint-Martin, 2012).

Beyond the overall growth pattern, our study points at considerable differences between different GAs use of MC services. This indicates that the increasing role of MC services in the public sector is not evenly distributed across GAs, an aspect that has not been pointed out in previous research as this has mainly been focused on aggregate spending of the public sector. The current study identifies 2 types of GAs – ordinary (type 1) and professionalized/academic (type 2), where the former spend almost 3 times as much on consulting services than the latter. Type 1 organizations comprised traditional bureaucracies, such as the Swedish tax authority or the national insurance agency. These organizations may be characterized as machine bureaucracies in the terms of Mintzberg (1992), with their strong focus on coordination through the standardization of work processes, designed and implemented by powerful, centralized technostructures. Type 2 organizations, in contrast, comprised GAs in which the central workforce was comprised of a body of professionals, such as the police force, or universities. These kinds of organizations may be characterized as professional bureaucracies (Mintzberg, 1992) with their focus on coordination through the standardization of skills and their rather weak strategic apex and technostructure. The decentralized and autonomous nature of the workforce in the professional bureaucracy may be one reason for the lesser use of MC services in these organizations. Research on professional services firms more generally has pointed out that professional organizations often perceive themselves as "different" and therefore are skeptical towards outside ideas – such as the kind of generic ideas provided by management

consultants (Løwendahl, 2005). Previous research has also shown that professionals, such as medical doctors, have considerable power to resist the implementation of NPM ideas (McGivern & Ferlie, 2007).

The Machine bureaucracies among the GA's on the other hand seemed to show more openness towards MC services. Given the focus on standardized work processes as a main means of coordination – and increased efficiency – consulting ideas related to both process improvement and IT related change would be expected to gain strong interest among the centralized technostructures within these organizations. Management consultants may here become central tools in the increasing focus on efficiency driven by a NPM focus in these organizations.

The observed differences between type 1 and 2 organizations may contribute to developing the neo-institutional understanding of the use of MC services (Kieser, 2002a; Meyer & Rowan, 1991; Røvik, 1998), which claims that especially managers in public organizations are more susceptible to modern management ideas providing legitimacy as they lack the unambiguous performance metric "profit" of private organizations (Czarniawska, 1988; Czarniawska & Sevon, 1996). The current study, however, indicates that this susceptibility may be moderated by the professionalization of the workforce. The type 2 GAs that had an operating core consisting of professionals were less dependent on the adoption of modern management ideas carried by consultants as their legitimacy as well as that of their managers was founded in being part of a profession.

In addition to pointing out differences across organizations, the current paper finally also identifies temporal patterns in GAs use of MC services. Two variables were investigated – year and CEO tenure. In relation to year we had expected some systematic effects related to the election cycle, which in the Swedish context implies elections every fourth year (2006 and 2010). Our findings indicate that overall spending decreased slightly in the year before the election year in order to increase strongly during the election year and the subsequent 3 years, indicating a relation between the political cycle and GAs spending on consulting services. The mechanisms underlying this dynamic, however, remain to be investigated.

Significant temporal effects were also found in relation to CEO tenure, especially in the ordinary GAs (type 1). These effects indicate that CEOs in their 2nd year of office significantly reduce spending on consulting services in order to significantly increase them in their 3rd and 4th year of tenure. In the following years of tenure (5+), spending remains rather stable. This indicates that management consultants are in regular use in GAs. A change in CEO leads to a temporary dip in consulting expenditures, which may be interpreted as a reorientation of consulting assignments within the organization. A new CEO thus seems to take 1-2 years to get an overview of ongoing consulting

assignments and initiate a termination of those not fitting into their new strategic agenda. After that, in their 3rd to 4th year of tenure, new projects are initiated throughout the organization, presumably in line with the new strategic agenda. This indicates that the CEO has important influence on the use of MC services in GAs, although we would expect that a large amount of these services are commissioned on lower organizational levels, and thus beyond the direct control of the CEO. Still, a new CEO seems to have strong effects on the use of these services. Whether this is through the replacement of the management team or through other mechanisms remains to be investigated.

The observed pattern of CEO agency on the use of MC services is at odds with the main-stream understanding of management consultants as change agents being called in by a new management to plan and realize its change agenda (e.g. Greiner & Poulfelt, 2005; Greiner & Metzger, 1983; Kubr, 2002). If that would have been their main role, we would have expected a low level of consulting use at the time of CEO change, and subsequent increase related to the formation and implementation of the change agenda and thereafter a decrease once the strategic changes had been implemented. We would have expected an inverted U shaped use of consultants. What we find is, however, a U shaped pattern.

The observed dynamic of consulting use triggered by CEO change was most readily observable in type 1 organizations, although CEO changes led to a decrease in consulting spending also in type 2 organizations. There the reduction in spending, however, took place later. This reflects the stronger position of the CEO and the higher level of centralization in type 1 organizations characterized as machine bureaucracies. In the type 2 organizations, characterized as professional bureaucracies, the level of decentralization is considerably higher and the role of the top management weaker (Mintzberg, 1992). Consequently the weaker and delayed effects of a CEO change on the use of MC services in type 2 GAs is expected and understandable.

Conclusions

The current paper set out to investigate the use of MC services in government agencies in Sweden. Its' findings shed some first light on the cross sectional differences and temporal dynamics of the use of management consulting services in government agencies. While previous research has provided a broad range of reasons why consultants may be used (see e.g. Fincham & Clark, 2002; Kubr, 2002) it has had less to say about context related differences in the use of MC services and whether there are any temporal patterns in the use of consultants. Based on an analysis of the use of MC services in 55 GAs during the years 2004-2011 the paper makes a number of contributions.

First, our study confirms the strong growth of the use of management consulting services in recent years pointed out in previous research (e.g. Saint Martin, 2012). In the years studied (2004-2011) spending on management consulting services more than tripled.

Second, it points at significant variations between different GAs. While previous research has acknowledged differences between organizations' use of consultants (Fincham, 1999; Hislop, 2002; Werr, 2005) there has been a lack of theorizing the reasons for these differences. The current study indicates that different organizational configurations (Mintzberg, 1992) may provide an explanation to these differences. GAs resembling the machine bureaucracy archetype (Mintzberg, 1992) were found to be larger consumers of consulting services than GAs resembling the professional bureaucracy archetype. These findings provide a basis for further theorizing of the relationship between organizational characteristics and the use of management consulting services (c.f. Fincham, 1999; Hislop, 2002).

Third, the current study points at the influence of both the election cycle and CEO tenure on the use of MC services. Elections seem to trigger a reduction in consulting spending in the year preceding the election and an increase in the election year. In a similar vein, changes in CEO first lead to a reduction of consulting spending and a subsequent increase. While the idea that a new CEO may be the driver of consultant use is in line with research linking the use of MC services to a specific change agenda that may be supported by consultants (e.g. Greiner & Poulfelt, 2005; Kubr, 2002) we find a somewhat different pattern. Our study indicates that MC services are a stable aspect of GAs operations. Rather than directly initiating a change agenda by hiring consultants, the current study indicates that new CEOs first terminate ongoing projects and thus reduce consulting spending and first thereafter increase spending, which thereafter remains rather stable. These findings highlight the temporal dynamics of organizations' use of MC services and the role of the CEO in driving these dynamics.

Limitations and further research

The current study provides insights into the differences between different GAs use of management consulting services, as well as the temporal variation of this use. The reasons for these differences, however, require further exploration. Further research may thus elaborate on the differences between type 1 and type 2 GAs and the mechanisms through which the differences between the two types of organizations influence the use of MC services. In a similar vein, further research may look closer into CEOs reasoning in relation to their use of MC services over time and in relation to the election cycle and how their reasoning trickles through the organization and affects its overall use of MC services. Finally, the current study makes no difference between different kinds of consultants. However, further research may differentiate between different kinds of consulting services, such as

strategy consulting services and more change management oriented services, as these may follow different temporal patterns.

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Appendixes

Appendix A, Overall GA MC-services spending and income

The whole sample

Year	Spending	Income	Relative Spending
2004	88665603	108610402000	0,816363822
2005	79905878	110795680000	0,721200300
2006	169154626	118984661000	1,421650692
2007	198978739	126856833000	1,568529925
2008	232943407	110826679000	2,101871217
2009	206622076	152558323000	1,354380882
2010	276450522	165295877000	1,672458665
2011	304467081	175633633000	1,733535174

Type 1 GAs (Ordinary GAs)

Year	Spending	Income	Relative Spending
2004	55278310	38926756000	1,420059498
2005	48826842	41085937000	1,188407647
2006	111830387	47859515000	2,336638542
2007	148382569	53360791000	2,780741562
2008	182134275	59203716000	3,076399374
2009	108603353	74278502000	1,462110164
2010	142862712	61666485000	2,316699456
2011	153902787	69627527000	2,210372737

Type 2 GAs (professionalized/academic GAs)

Year	Spending	Income	Relative Spending
2004	33387293	69683646000	0,47912667
2005	31079036	69709743000	0,44583489
2006	57324238	71125146000	0,80596303
2007	50596169	73496042000	0,68842033
2008	50809132	51622963000	0,98423509
2009	98018723	78279821000	1,25215825
2010	133587810	103629392000	1,2890919
2011	150564293	106006106000	1,42033604

Appendix B, One-Way ANOVA, Type of GAs

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
RelTot	355	0	355	0,000	23,615	1,505	2,530

Variable	Categories	Frequencies	%
Type	1	172	48,451
	2	18	5,070
	3	165	46,479

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	2	183,341	91,671	15,495	< 0,0001
Error	352	2082,418	5,916		
Corrected Total	354	2265,760			

Computed against model Y=Mean(Y)

Type / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standardized difference	Critical value	Pr > Diff	Significant
1 vs 3	1,440	5,435	2,344	< 0,0001	Yes
1 vs 2	1,415	2,348	2,344	0,049	Yes
2 vs 3	0,025	0,042	2,344	0,999	No
Tukey's d critical value:			3,314		

Category	LS means	Groups	
1	2,246	A	
2	0,831		B
3	0,806		B

Appendix C, Repeated Measure Anova Mixed Model, Ordinary GAs (Type 1), Positive Agency

Covariance structure:
Toeplitz(q), q=3
Constraints: a1=0

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
PosAgType1	92	0	92	0,014	6,845	1,345	1,583

Goodness of fit statistics:

Observations	92
Sum of weights	92
-2 Res Log(Likelihood)	317,633
AIC	323,633
AICC	323,906
SBC	331,199
CAIC	334,199
Iterations	8
Covariance parameters	3
Number of fixed effects	2
Number of random effects	0
Number of subjects	26
Maximum number of observations per subject	4

Covariance parameters - Repeated factor:

	Parameters	Standard error	Z	Pr > Z
Variance	2,400	0,399	6,021	< 0,0001
Sigma 1	-0,056	0,385	-0,145	0,884
Sigma 2	0,861	0,406	2,120	0,034

Null model likelihood ratio test:

DF	Chi-square	Pr > Chi²
2	4,636	0,098

Type III tests of fixed effects:

Effects	Num DF	Den DF	F	Pr > F
Year	7	78	0,732	0,646
Tenure	6	78	3,095	0,009

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	1,224	0,657	1,863	0,066	-0,081	2,530
Year-2004	0,000					
Year-2005	0,132	0,763	0,173	0,863	-1,384	1,649
Year-2006	0,439	0,678	0,647	0,519	-0,908	1,786
Year-2007	-0,408	0,721	-0,566	0,573	-1,840	1,024
Year-2008	0,044	0,669	0,066	0,948	-1,285	1,373
Year-2009	-0,142	0,634	-0,224	0,824	-1,401	1,118
Year-2010	0,107	0,669	0,160	0,873	-1,222	1,436
Year-2011	0,987	0,697	1,416	0,160	-0,397	2,371
Tenure-0	0,000					
Tenure-1	0,464	0,510	0,908	0,366	-0,550	1,477
Tenure-2	-0,852	0,612	-1,392	0,167	-2,067	0,364
Tenure-3	-0,116	0,556	-0,209	0,835	-1,220	0,988
Tenure-4	1,289	0,611	2,110	0,038	0,076	2,501
Tenure-5	-1,388	0,639	-2,170	0,033	-2,657	-0,118
Tenure-6	-0,235	0,599	-0,392	0,696	-1,424	0,954

Year / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Year-2011 vs Year-2007	1,395	0,763	1,827	0,071	No
Year-2011 vs Year-2009	1,129	0,763	1,478	0,143	No
Year-2011 vs Year-2004	0,987	0,763	1,293	0,200	No
Year-2011 vs Year-2008	0,943	0,763	1,235	0,221	No
Year-2011 vs Year-2010	0,880	0,763	1,152	0,253	No
Year-2011 vs Year-2005	0,855	0,763	1,119	0,266	No
Year-2011 vs Year-2006	0,548	0,763	0,718	0,475	No
Year-2006 vs Year-2007	0,847	0,763	1,110	0,270	No
Year-2006 vs Year-2009	0,581	0,763	0,761	0,449	No
Year-2006 vs Year-2004	0,439	0,763	0,575	0,567	No
Year-2006 vs Year-2008	0,395	0,763	0,517	0,606	No
Year-2006 vs Year-2010	0,332	0,763	0,434	0,665	No
Year-2006 vs Year-2005	0,307	0,763	0,402	0,689	No
Year-2005 vs Year-2007	0,541	0,763	0,708	0,481	No
Year-2005 vs Year-2009	0,274	0,763	0,359	0,721	No
Year-2005 vs Year-2004	0,132	0,763	0,173	0,863	No
Year-2005 vs Year-2008	0,088	0,763	0,115	0,908	No

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Year-2005 vs Year-2010	0,025	0,763	0,033	0,974	No
Year-2010 vs Year-2007	0,516	0,763	0,675	0,501	No
Year-2010 vs Year-2009	0,249	0,763	0,326	0,745	No
Year-2010 vs Year-2004	0,107	0,763	0,141	0,889	No
Year-2010 vs Year-2008	0,063	0,763	0,083	0,934	No
Year-2008 vs Year-2007	0,452	0,763	0,593	0,555	No
Year-2008 vs Year-2009	0,186	0,763	0,243	0,808	No
Year-2008 vs Year-2004	0,044	0,763	0,058	0,954	No
Year-2004 vs Year-2007	0,408	0,763	0,535	0,594	No
Year-2004 vs Year-2009	0,142	0,763	0,186	0,853	No
Year-2009 vs Year-2007	0,267	0,763	0,349	0,728	No

Tukey's d critical value: 4,405

Category	LS means	Groups
Year-2011	2,092	A
Year-2006	1,544	A
Year-2005	1,237	A
Year-2010	1,212	A
Year-2008	1,149	A
Year-2004	1,105	A
Year-2009	0,963	A
Year-2007	0,696	A

Tenure / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Tenure-4 vs Tenure-5	2,676	0,510	5,243	< 0,0001	Yes
Tenure-4 vs Tenure-2	2,140	0,510	4,193	< 0,0001	Yes
Tenure-4 vs Tenure-6	1,524	0,510	2,985	0,004	Yes
Tenure-4 vs Tenure-3	1,405	0,510	2,752	0,007	Yes
Tenure-4 vs Tenure-0	1,289	0,510	2,525	0,014	Yes
Tenure-4 vs Tenure-1	0,825	0,510	1,617	0,110	No
Tenure-1 vs Tenure-5	1,851	0,510	3,627	0,001	Yes
Tenure-1 vs Tenure-2	1,315	0,510	2,577	0,012	Yes
Tenure-1 vs Tenure-6	0,698	0,510	1,368	0,175	No
Tenure-1 vs Tenure-3	0,579	0,510	1,135	0,260	No
Tenure-1 vs Tenure-0	0,464	0,510	0,908	0,367	No
Tenure-0 vs Tenure-5	1,388	0,510	2,718	0,008	Yes
Tenure-0 vs Tenure-2	0,852	0,510	1,669	0,099	No
Tenure-0 vs Tenure-6	0,235	0,510	0,460	0,647	No
Tenure-0 vs Tenure-3	0,116	0,510	0,227	0,821	No
Tenure-3 vs Tenure-5	1,272	0,510	2,491	0,015	Yes
Tenure-3 vs Tenure-2	0,736	0,510	1,441	0,153	No
Tenure-3 vs Tenure-6	0,119	0,510	0,233	0,816	No
Tenure-6 vs Tenure-5	1,153	0,510	2,258	0,027	Yes
Tenure-6 vs Tenure-2	0,617	0,510	1,208	0,231	No

Tenure-2 vs Tenure-5	0,536		0,510	1,050	0,297	No
Tukey's d critical value:				4,28		

Category	LS means		Groups			
Tenure-4	2,658	A				
Tenure-1	1,833	A	B			
Tenure-0	1,369		B	C		
Tenure-3	1,253		B	C		
Tenure-6	1,134		B	C		
Tenure-2	0,518			C	D	
Tenure-5	-0,018				D	

Appendix D, Repeated Measure Anova Mixed Model, Ordinary GAs (Type 1), Negative Agnecy

Covariance structure:
Toeplitz(q), q=3
Constraints: a1=0

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
NegAgType1	74	0	74	-6,728	-0,001	-1,240	1,385

Goodness of fit statistics:

Observations	74
Sum of weights	74
-2 Res Log(Likelihood)	213,535
AIC	219,535
AICC	219,878
SBC	226,447
CAIC	229,447
Iterations	8
Covariance parameters	3
Number of fixed effects	2
Number of random effects	0
Number of subjects	28
Maximum number of observations per subject	4

Covariance parameters - Repeated factor:

	Parameters	Standard error	Z	Pr > Z
Variance	1,487	0,296	5,021	< 0,0001
Sigma 1	0,625	0,307	2,035	0,042
Sigma 2	0,624	0,269	2,322	0,020

Null model likelihood ratio test:

DF	Chi-square	Pr > Chi²
2	9,992	0,007

Type III tests of fixed effects:

Effects	Num DF	Den DF	F	Pr > F
Year	7	60	2,877	0,012
Tenure	6	60	2,626	0,025

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	-1,219	0,501	-2,433	0,017	-2,217	-0,221
Year-2004	0,000					
Year-2005	0,910	0,596	1,527	0,131	-0,278	2,097
Year-2006	-1,364	0,639	-2,136	0,036	-2,637	-0,092
Year-2007	0,657	0,574	1,145	0,256	-0,487	1,800
Year-2008	0,400	0,537	0,745	0,459	-0,671	1,471
Year-2009	0,600	0,611	0,981	0,330	-0,619	1,818
Year-2010	0,491	0,534	0,919	0,361	-0,574	1,556
Year-2011	-0,269	0,516	-0,522	0,603	-1,298	0,759
Tenure-0	0,000					
Tenure-1	-0,213	0,385	-0,554	0,582	-0,980	0,554
Tenure-2	-1,261	0,398	-3,166	0,002	-2,054	-0,467
Tenure-3	-0,669	0,581	-1,152	0,253	-1,827	0,489
Tenure-4	-0,371	0,497	-0,746	0,458	-1,362	0,620
Tenure-5	-0,082	0,569	-0,144	0,886	-1,216	1,052
Tenure-6	0,298	0,520	0,573	0,568	-0,738	1,334

Year / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Year-2005 vs Year-2006	2,274	0,596	3,816	0,000	Yes
Year-2005 vs Year-2011	1,179	0,596	1,979	0,052	No
Year-2005 vs Year-2004	0,910	0,596	1,527	0,132	No
Year-2005 vs Year-2008	0,509	0,596	0,855	0,396	No
Year-2005 vs Year-2010	0,419	0,596	0,703	0,485	No
Year-2005 vs Year-2009	0,310	0,596	0,520	0,605	No
Year-2005 vs Year-2007	0,253	0,596	0,424	0,673	No
Year-2007 vs Year-2006	2,021	0,596	3,392	0,001	Yes
Year-2007 vs Year-2011	0,926	0,596	1,554	0,125	No
Year-2007 vs Year-2004	0,657	0,596	1,102	0,275	No
Year-2007 vs Year-2008	0,257	0,596	0,431	0,668	No
Year-2007 vs Year-2010	0,166	0,596	0,278	0,782	No
Year-2007 vs Year-2009	0,057	0,596	0,096	0,924	No
Year-2009 vs Year-2006	1,964	0,596	3,296	0,002	Yes
Year-2009 vs Year-2011	0,869	0,596	1,459	0,150	No
Year-2009 vs Year-2004	0,600	0,596	1,006	0,318	No
Year-2009 vs Year-2008	0,199	0,596	0,335	0,739	No

Year-2009 vs Year-2010	0,109	0,596	0,182	0,856	No
Year-2010 vs Year-2006	1,855	0,596	3,114	0,003	Yes
Year-2010 vs Year-2011	0,760	0,596	1,276	0,207	No
Year-2010 vs Year-2004	0,491	0,596	0,824	0,413	No
Year-2010 vs Year-2008	0,091	0,596	0,152	0,880	No
Year-2008 vs Year-2006	1,765	0,596	2,962	0,004	Yes
Year-2008 vs Year-2011	0,670	0,596	1,124	0,266	No
Year-2008 vs Year-2004	0,400	0,596	0,672	0,504	No
Year-2004 vs Year-2006	1,364	0,596	2,290	0,026	Yes
Year-2004 vs Year-2011	0,269	0,596	0,452	0,653	No
Year-2011 vs Year-2006	1,095	0,596	1,838	0,071	No
Tukey's d critical value:			4,441		

Category	LS means	Groups	
Year-2005	-0,638	A	
Year-2007	-0,891	A	
Year-2009	-0,948	A	
Year-2010	-1,056	A	
Year-2008	-1,147	A	
Year-2004	-1,547	A	
Year-2011	-1,817	A	B
Year-2006	-2,912		B

Tenure / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Tenure-6 vs Tenure-2	1,559	0,385	4,050	0,000	Yes
Tenure-6 vs Tenure-3	0,967	0,385	2,514	0,015	Yes
Tenure-6 vs Tenure-4	0,669	0,385	1,739	0,087	No
Tenure-6 vs Tenure-1	0,511	0,385	1,328	0,189	No
Tenure-6 vs Tenure-5	0,380	0,385	0,988	0,327	No
Tenure-6 vs Tenure-0	0,298	0,385	0,774	0,442	No
Tenure-0 vs Tenure-2	1,261	0,385	3,276	0,002	Yes
Tenure-0 vs Tenure-3	0,669	0,385	1,739	0,087	No
Tenure-0 vs Tenure-4	0,371	0,385	0,964	0,339	No
Tenure-0 vs Tenure-1	0,213	0,385	0,554	0,582	No
Tenure-0 vs Tenure-5	0,082	0,385	0,214	0,832	No
Tenure-5 vs Tenure-2	1,178	0,385	3,062	0,003	Yes
Tenure-5 vs Tenure-3	0,587	0,385	1,525	0,132	No
Tenure-5 vs Tenure-4	0,289	0,385	0,751	0,456	No
Tenure-5 vs Tenure-1	0,131	0,385	0,340	0,735	No
Tenure-1 vs Tenure-2	1,048	0,385	2,722	0,008	Yes
Tenure-1 vs Tenure-3	0,456	0,385	1,186	0,240	No
Tenure-1 vs Tenure-4	0,158	0,385	0,411	0,683	No
Tenure-4 vs Tenure-2	0,890	0,385	2,312	0,024	Yes
Tenure-4 vs Tenure-3	0,298	0,385	0,775	0,441	No

Tenure-3 vs Tenure-2	0,591	0,385	1,537	0,130	No

Tukey's d critical value: 4,314

Category	LS means	Groups		
Tenure-6	-0,743	A		
Tenure-0	-1,041	A	B	
Tenure-5	-1,123	A	B	
Tenure-1	-1,254	A	B	
Tenure-4	-1,412	A	B	
Tenure-3	-1,710		B	C
Tenure-2	-2,302			C

Appendix E, Repeated Measure Anova Mixed Model, professionalized/academic GAs (Type 2), Positive Agency

Covariance structure:
Toeplitz(q), q=3
Constraints: a1=0

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
PosAgType2	90	0	90	0,002	6,613	0,721	1,262

Goodness of fit statistics:

Observations	90
Sum of weights	90
-2 Res Log(Likelihood)	245,568
AIC	251,568
AICC	251,847
SBC	259,068
CAIC	262,068
Iterations	9
Covariance parameters	3
Number of fixed effects	2
Number of random effects	0
Number of subjects	25
Maximum number of observations per subject	5

Covariance parameters - Repeated factor:

	Parameters	Standard error	Z	Pr > Z
Variance	1,302	0,242	5,385	< 0,0001
Sigma 1	0,752	0,206	3,657	0,000
Sigma 2	0,451	0,150	3,016	0,003

Null model likelihood ratio test:

DF	Chi-square	Pr > Chi²
2	32,727	< 0,0001

Type III tests of fixed effects:

Effects	Num DF	Den DF	F	Pr > F
Year	7	76	3,989	0,001
Tenure	6	76	4,577	0,001

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	0,932	0,371	2,516	0,014	0,196	1,668
Year-2004	0,000					
Year-2005	-0,059	0,371	-0,159	0,874	-0,795	0,677
Year-2006	-0,099	0,341	-0,289	0,773	-0,777	0,580
Year-2007	0,418	0,445	0,939	0,350	-0,466	1,302
Year-2008	0,561	0,371	1,510	0,135	-0,177	1,298
Year-2009	0,051	0,519	0,098	0,922	-0,980	1,082
Year-2010	-0,793	0,390	-2,035	0,045	-1,568	-0,019
Year-2011	-0,099	0,407	-0,242	0,809	-0,908	0,711
Tenure-0	0,000					
Tenure-1	-0,050	0,317	-0,158	0,875	-0,681	0,580
Tenure-2	-0,407	0,304	-1,337	0,185	-1,012	0,198
Tenure-3	-0,319	0,320	-0,996	0,322	-0,956	0,318
Tenure-4	-0,682	0,456	-1,496	0,138	-1,588	0,224
Tenure-5	1,217	0,446	2,727	0,008	0,330	2,104
Tenure-6	-0,802	0,401	-2,003	0,048	-1,598	-0,007

Year / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Year-2008 vs Year-2010	1,354	0,371	3,653	0,000	Yes
Year-2008 vs Year-2006	0,659	0,371	1,779	0,079	No
Year-2008 vs Year-2011	0,659	0,371	1,779	0,079	No
Year-2008 vs Year-2005	0,620	0,371	1,672	0,099	No
Year-2008 vs Year-2004	0,561	0,371	1,513	0,134	No
Year-2008 vs Year-2009	0,510	0,371	1,375	0,173	No
Year-2008 vs Year-2007	0,143	0,371	0,385	0,701	No
Year-2007 vs Year-2010	1,211	0,371	3,268	0,002	Yes
Year-2007 vs Year-2006	0,517	0,371	1,394	0,167	No
Year-2007 vs Year-2011	0,517	0,371	1,394	0,167	No
Year-2007 vs Year-2005	0,477	0,371	1,287	0,202	No
Year-2007 vs Year-2004	0,418	0,371	1,127	0,263	No
Year-2007 vs Year-2009	0,367	0,371	0,990	0,325	No
Year-2009 vs Year-2010	0,844	0,371	2,278	0,026	Yes
Year-2009 vs Year-2006	0,150	0,371	0,404	0,687	No
Year-2009 vs Year-2011	0,150	0,371	0,404	0,687	No

Year-2009 vs Year-2005	0,110	0,371	0,297	0,767	No
Year-2009 vs Year-2004	0,051	0,371	0,138	0,891	No
Year-2004 vs Year-2010	0,793	0,371	2,140	0,036	Yes
Year-2004 vs Year-2006	0,099	0,371	0,266	0,791	No
Year-2004 vs Year-2011	0,099	0,371	0,266	0,791	No
Year-2004 vs Year-2005	0,059	0,371	0,159	0,874	No
Year-2005 vs Year-2010	0,734	0,371	1,981	0,051	No
Year-2005 vs Year-2006	0,040	0,371	0,107	0,915	No
Year-2005 vs Year-2011	0,040	0,371	0,107	0,915	No
Year-2011 vs Year-2010	0,695	0,371	1,874	0,065	No
Year-2011 vs Year-2006	0,000	0,371	0,000	1,000	No
Year-2006 vs Year-2010	0,695	0,371	1,874	0,065	No
Tukey's d critical value:			4,408		

Category	LS means	Groups	
Year-2008	1,344	A	
Year-2007	1,201	A	
Year-2009	0,834	A	
Year-2004	0,783	A	
Year-2005	0,724	A	B
Year-2011	0,685	A	B
Year-2006	0,685	A	B
Year-2010	-0,010		B

Tenure / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Tenure-5 vs Tenure-6	2,020	0,317	6,365	< 0,0001	Yes
Tenure-5 vs Tenure-4	1,900	0,317	5,987	< 0,0001	Yes
Tenure-5 vs Tenure-2	1,624	0,317	5,119	< 0,0001	Yes
Tenure-5 vs Tenure-3	1,536	0,317	4,842	< 0,0001	Yes
Tenure-5 vs Tenure-1	1,268	0,317	3,995	0,000	Yes
Tenure-5 vs Tenure-0	1,217	0,317	3,836	0,000	Yes
Tenure-0 vs Tenure-6	0,802	0,317	2,529	0,014	Yes
Tenure-0 vs Tenure-4	0,682	0,317	2,150	0,035	Yes
Tenure-0 vs Tenure-2	0,407	0,317	1,282	0,204	No
Tenure-0 vs Tenure-3	0,319	0,317	1,006	0,318	No
Tenure-0 vs Tenure-1	0,050	0,317	0,158	0,875	No
Tenure-1 vs Tenure-6	0,752	0,317	2,370	0,020	Yes
Tenure-1 vs Tenure-4	0,632	0,317	1,992	0,050	Yes
Tenure-1 vs Tenure-2	0,357	0,317	1,124	0,265	No
Tenure-1 vs Tenure-3	0,269	0,317	0,847	0,399	No
Tenure-3 vs Tenure-6	0,483	0,317	1,523	0,132	No
Tenure-3 vs Tenure-4	0,363	0,317	1,144	0,256	No
Tenure-3 vs Tenure-2	0,088	0,317	0,277	0,783	No
Tenure-2 vs Tenure-6	0,395	0,317	1,246	0,216	No

Tenure-2 vs Tenure-4	0,275		0,317	0,868	0,388	No
Tenure-4 vs Tenure-6	0,120		0,317	0,378	0,706	No
Tukey's d critical value:				4,283		

Category	LS means	Groups		
Tenure-5	2,147	A		
Tenure-0	0,930		B	
Tenure-1	0,880		B	
Tenure-3	0,611		B	C
Tenure-2	0,523		B	C
Tenure-4	0,248			C
Tenure-6	0,127			C

Appendix F, Repeated Measure Anova Mixed Model, professionalized/academic GAs (Type 2), Negative Agnecy

Covariance structure:
Toeplitz(q), q=3
Constraints: a1=0

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
NegAgType2	91	0	91	-5,807	-0,001	-0,439	0,853

Goodness of fit statistics:

Observations	91
Sum of weights	91
-2 Res Log(Likelihood)	211,711
AIC	215,711
AICC	215,847
SBC	220,733
CAIC	222,733
Iterations	10
Covariance parameters	2
Number of fixed effects	2
Number of random effects	0
Number of subjects	24
Maximum number of observations per subject	2

Covariance parameters - Repeated factor:

	Parameters	Standard error	Z	Pr > Z
Variance	0,750	0,141	5,335	< 0,0001
Sigma 1	0,363	0,104	3,492	0,000

Null model likelihood ratio test:

DF	Chi-square	Pr > Chi²
1	11,575	0,001

Type III tests of fixed effects:

Effects	Num DF	Den DF	F	Pr > F
Year	7	77	2,460	0,025
Tenure	6	77	0,799	0,574

Model parameters:

Source	Value	Standard error	t	Pr > |t|	Lower bound (95%)	Upper bound (95%)
Intercept	-0,226	0,301	-0,751	0,454	-0,823	0,371
Year-2004	0,000					
Year-2005	-0,043	0,282	-0,154	0,878	-0,603	0,516
Year-2006	-0,282	0,285	-0,988	0,326	-0,848	0,284
Year-2007	0,097	0,253	0,383	0,703	-0,405	0,599
Year-2008	-0,190	0,304	-0,624	0,534	-0,794	0,414
Year-2009	-0,479	0,247	-1,942	0,055	-0,970	0,011
Year-2010	0,382	0,275	1,388	0,169	-0,165	0,929
Year-2011	-0,007	0,282	-0,024	0,981	-0,566	0,552
Tenure-0	0,000					
Tenure-1	0,046	0,261	0,178	0,859	-0,472	0,565
Tenure-2	-0,013	0,297	-0,044	0,965	-0,603	0,577
Tenure-3	-0,149	0,330	-0,451	0,653	-0,806	0,507
Tenure-4	-0,466	0,338	-1,377	0,172	-1,138	0,206
Tenure-5	-0,299	0,324	-0,921	0,359	-0,942	0,345
Tenure-6	-0,384	0,332	-1,157	0,250	-1,044	0,276

Year / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Year-2010 vs Year-2009	0,861	0,282	3,056	0,003	Yes
Year-2010 vs Year-2006	0,664	0,282	2,355	0,021	Yes
Year-2010 vs Year-2008	0,572	0,282	2,029	0,046	Yes
Year-2010 vs Year-2005	0,425	0,282	1,510	0,135	No
Year-2010 vs Year-2011	0,389	0,282	1,380	0,172	No
Year-2010 vs Year-2004	0,382	0,282	1,356	0,179	No
Year-2010 vs Year-2007	0,285	0,282	1,012	0,315	No
Year-2007 vs Year-2009	0,576	0,282	2,044	0,044	Yes
Year-2007 vs Year-2006	0,378	0,282	1,343	0,183	No
Year-2007 vs Year-2008	0,287	0,282	1,017	0,312	No
Year-2007 vs Year-2005	0,140	0,282	0,497	0,620	No
Year-2007 vs Year-2011	0,104	0,282	0,368	0,714	No
Year-2007 vs Year-2004	0,097	0,282	0,343	0,732	No
Year-2004 vs Year-2009	0,479	0,282	1,701	0,093	No
Year-2004 vs Year-2006	0,282	0,282	0,999	0,321	No
Year-2004 vs Year-2008	0,190	0,282	0,673	0,503	No
Year-2004 vs Year-2005	0,043	0,282	0,154	0,878	No

Contrast	Difference					Significant
Year-2004 vs Year-2011	0,007		0,282	0,024	0,981	No
Year-2011 vs Year-2009	0,472		0,282	1,676	0,098	No
Year-2011 vs Year-2006	0,275		0,282	0,975	0,333	No
Year-2011 vs Year-2008	0,183		0,282	0,649	0,518	No
Year-2011 vs Year-2005	0,037		0,282	0,130	0,897	No
Year-2005 vs Year-2009	0,436		0,282	1,547	0,126	No
Year-2005 vs Year-2006	0,238		0,282	0,845	0,401	No
Year-2005 vs Year-2008	0,146		0,282	0,520	0,605	No
Year-2008 vs Year-2009	0,289		0,282	1,027	0,308	No
Year-2008 vs Year-2006	0,092		0,282	0,326	0,746	No
Year-2006 vs Year-2009	0,198		0,282	0,701	0,485	No

Tukey's d critical value: 4,407

Category	LS means	Groups		
Year-2010	-0,024	A		
Year-2007	-0,310	A	B	
Year-2004	-0,406	A	B	C
Year-2011	-0,413	A	B	C
Year-2005	-0,450	A	B	C
Year-2008	-0,596		B	C
Year-2006	-0,688		B	C
Year-2009	-0,886			C

Tenure / Tukey (HSD) / Analysis of the differences between the categories with a confidence interval of 95%:

Contrast	Difference	Standard-error	t	Pr > |t|	Significant
Tenure-1 vs Tenure-4	0,512	0,261	1,962	0,053	No
Tenure-1 vs Tenure-6	0,431	0,261	1,650	0,103	No
Tenure-1 vs Tenure-5	0,345	0,261	1,321	0,190	No
Tenure-1 vs Tenure-3	0,196	0,261	0,749	0,456	No
Tenure-1 vs Tenure-2	0,060	0,261	0,228	0,820	No
Tenure-1 vs Tenure-0	0,046	0,261	0,178	0,859	No
Tenure-0 vs Tenure-4	0,466	0,261	1,784	0,078	No
Tenure-0 vs Tenure-6	0,384	0,261	1,472	0,145	No
Tenure-0 vs Tenure-5	0,299	0,261	1,143	0,256	No
Tenure-0 vs Tenure-3	0,149	0,261	0,571	0,569	No
Tenure-0 vs Tenure-2	0,013	0,261	0,050	0,960	No
Tenure-2 vs Tenure-4	0,453	0,261	1,734	0,087	No
Tenure-2 vs Tenure-6	0,371	0,261	1,422	0,159	No
Tenure-2 vs Tenure-5	0,285	0,261	1,093	0,278	No
Tenure-2 vs Tenure-3	0,136	0,261	0,521	0,604	No
Tenure-3 vs Tenure-4	0,317	0,261	1,213	0,229	No
Tenure-3 vs Tenure-6	0,235	0,261	0,901	0,371	No
Tenure-3 vs Tenure-5	0,149	0,261	0,572	0,569	No
Tenure-5 vs Tenure-4	0,167	0,261	0,641	0,523	No
Tenure-5 vs Tenure-6	0,086	0,261	0,329	0,743	No

Tenure-6 vs Tenure-4	0,082	0,261	0,312	0,756	No
Tukey's d critical value:			4,282		

Category	LS means	Groups
Tenure-1	-0,245	A
Tenure-0	-0,291	A
Tenure-2	-0,304	A
Tenure-3	-0,440	A
Tenure-5	-0,590	A
Tenure-6	-0,675	A
Tenure-4	-0,757	A